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Limited Phase II Subsurface Investigation

1770 13th Street
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April 14, 2011

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EXECUTIVE SUMMARY

In October 2010, acting on behalf of Public Service Company of Colorado and the City of Boulder, ERM-West, Inc. conducted a limited subsurface investigation of the property located at 1770 13th Street in Boulder, Colorado. The Site is used for commercial purposes.

The limited subsurface investigation included advancing six soil borings, completing the borings as temporary groundwater monitoring wells and collecting subsurface soil and groundwater samples for laboratory analysis. Soil analytical results were compared to the Colorado Department of Public Health and Environment (CDPHE), Hazardous Materials and Waste Management Division, Colorado Soil Evaluation Values (CSEV) for Worker Protection, December 2007. CSEVs are state-established, risk-based screening guidelines used to evaluate soil contamination. The Worker Protection CSEVs were selected as the applicable reference points based on the Site's commercial use. Groundwater results were compared to the CDPHE, Water Quality Control Division, 5 CCR 1002-41, Regulation 41, The Basic Standards for Groundwater.

The results of the soil sample analysis indicate that Volatile Organic Compounds (VOCs) were not detected above the CSEVs for worker protection in any of the soil samples collected. Semivolatile Organic Compounds (SVOCs) were detected in the soil samples collected from the interval immediately above the water table (which ranged from 7.5 ft to 10 ft below the ground surface at the time of drilling) in borings MW-2, MW-3, MW-5 and MW-6 and also in MW-5 (from 5 to 7 ft below the ground surface). CSEVs for worker protection were exceeded for benzo(a)anthracene and benzo(a)pyrene in MW-5 (from 5 to 7 ft below ground surface) in MW-5 and benzo(a)pyrene in MW-3 (from 9 to 10 ft below ground surface). The results are illustrated next to the respective sampling location in Figure 5.

In summary, based on the samples collected and associated analytical data, the impacted soils are primarily 8 to 10 ft below ground surface except in the area of MW-5 where evidence of impacted soils was also present from 5 to 7 feet below ground surface. In the areas investigated, no direct evidence of impact was observed above these depths and the area overlying the impacted soils is covered in asphalt thereby preventing direct contact with the soils.

The results of the groundwater sample analysis indicate that VOCs are present in the groundwater samples collected from MW-3, MW-4, MW-5 and MW-6. The only VOC detected above the groundwater standard was

benzene in MW-3. SVOCs were detected in groundwater samples collected from wells MW-3, MW-4, MW-5 and MW-6. None of the compounds exceeded the groundwater standards with the exception of naphthalene. Naphthalene was detected in monitoring wells MW-3, MW-5 and MW-6 at concentrations above the groundwater standard. The results are illustrated next to the respective sampling location in Figure 6. There are no domestic drinking water wells on-site. Buildings on and in the vicinity of the Site receive domestic drinking water from the City of Boulder.

The regional groundwater flow direction is to the southeast (USGS, 2000), which differs from the measured local groundwater flow direction in October 2010, which is to the northeast.

1.0

INTRODUCTION

Acting on behalf of Public Service Company of Colorado (PSCo) and the City of Boulder, ERM-West, Inc. (ERM) conducted a limited subsurface investigation of the property located at 1770 13th Street in Boulder, Colorado (the "Site"). A Site location map is provided as Figure 1 and a Site topographic map is provided as Figure 2. The Site was formerly occupied by a Federal Gas Company manufactured gas plant (MGP) and is presently occupied by the Boulder Dushanbe Tea House, a parking lot, and a public plaza. The Site is bounded by 13th Street to the west, 14th Street to the east, and commercial businesses to the north and south.

The limited subsurface investigation included advancing six soil borings, completing the borings as temporary groundwater monitoring wells and collecting subsurface soil and groundwater samples for laboratory analysis. Soil analytical results were compared to the Colorado Department of Public Health and Environment (CDPHE), Hazardous Materials and Waste Management Division, Colorado Soil Evaluation Values (CSEV) for Worker Protection, December 2007. Groundwater results were compared to the CDPHE, Water Quality Control Division, 5 CCR 1002-41, Regulation 41, the Basic Standards for Groundwater.

The CSEVs and the groundwater standards were used as a reference point for evaluating the current soil and groundwater conditions at the Site. The CSEV values selected were based on the Site's commercial use. This report summarizes the methodology, field observations and laboratory results.

1.1

SPECIAL TERMS AND CONDITIONS

The scope of work was conducted in accordance with the terms and conditions specified in the Environmental Services Agreement, between PSCo and ERM, and the Access Agreement between City of Boulder and ERM, both dated September 20th, 2010. This Limited Phase II Subsurface Investigation Report was prepared for PSCo and the City of Boulder, for their sole use and reliance. Reliance on this report by any other person(s) or entity (ies) is strictly at their own risk, and ERM makes no warranties to person(s) or entity (ies) other than PSCo, and the City of Boulder who use the information provided in this report.

1.2

SCOPE OF WORK

As described in the Environmental Services Agreement, field activities consisted of the following:

- Locate underground utilities in the work areas using the Utility Notification Center of Colorado (UNCC), Diversified Underground, a private locating company, as well as with the City of Boulder Public Works Department;
- Advance six soil borings in cleared locations as shown on Figure 3;
- Collect and submit soil samples from soil borings for laboratory analysis of volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs);
- Construct monitoring wells in each soil boring. Each well was constructed of two-inch diameter PVC with 10 feet of slotted screen, which was placed at an interval that intersected the groundwater table;
- Develop monitoring wells by removing a minimum of five borehole volumes;
- Allow wells to recharge for a minimum of 24 hours and measure depth to groundwater in each monitoring well;
- Collect and submit groundwater samples from each monitoring well for laboratory analysis of VOCs and SVOCs; and
- Survey each monitoring well location and two points along Boulder and Left Hand Ditch to assess surface and groundwater elevations and groundwater flow.

These activities are described in detail in the following sections.

The Site is situated between 13th and 14th Streets, and Canyon Boulevard and Arapahoe Avenue, in downtown Boulder, Colorado (Figure 2). The Site is bounded by 13th Street to the west, 14th Street to the east, a commercial business to the north, and a paved recreational trail to the south that runs parallel to the Boulder and Left Hand Ditch, also known as the White Rock and Boulder Ditch.

The land use of the Site is for commercial purposes, and consists of a structure located near the southwest corner of the property, surrounded by an asphalt covered parking lot to the east and a concrete plaza/courtyard to the west and north. The land use within a one-mile radius of the Site is predominantly commercial mixed with some municipal and residential properties.

The surface topography of the Site is generally level and topographic relief across the Site is slightly toward the southeast, see Figure 2. The Boulder and Left Hand Ditch is located immediately to the south of the Site. The ditch is an irrigation channel that is fed from Boulder Creek. At the time of the limited subsurface investigation, the water depth in the ditch was approximately twelve inches. The ditch flows toward the east-northeast.

Six soil borings were advanced and completed as groundwater monitoring wells at locations across the Site to evaluate the current soil and groundwater conditions underlying the Site. Borings were located based on the anticipated groundwater flow direction, which was assumed to be south easterly following Boulder Creek drainage. Borings were therefore placed in an assumed upgradient location, in order to determine water quality flowing onto the Site, an assumed downgradient location within the Site, in order to determine groundwater quality on the Site, and on both sides of the ditch at the eastern Site boundary to evaluate groundwater quality flowing off of the Site.

Soil and groundwater samples were collected and submitted for laboratory analysis of VOCs and SVOCs by EPA Methods 8260B and 8270C, respectively. This analytical suite was chosen to evaluate the subsurface conditions at the Site, taking into consideration historical operations both on and in the vicinity of the Site. These operations included off-site gasoline fueling and maintenance facilities, off-site dry cleaning operations, and the former on-site manufactured gas plant.

The VOCs analyzed using EPA Method 8260B include compounds such as benzene, toluene, ethylbenzene and xylene (BTEX) which are commonly present in fuels, and petroleum naphtha, which can be associated with manufactured gas facilities. Other VOCs such as tetrachloroethylene (PCE) and trichloroethylene (TCE) are typical compounds used in dry cleaning and petroleum naphtha was historically used as a dry cleaning solvent. EPA Method 8260B also analyzes for methyl ethyl butyl ether which was formerly used as a fuel oxygenation additive from approximately 1979 to 1999 (ITRC, 2005). EPA Method 8270C provides a comprehensive list of SVOCs which includes naphthalene, anthracene, pyrene and other heavier polycyclic aromatic hydrocarbons (PAHs) that can be associated with manufactured gas facilities and other common industrial uses, such as fueling and wood treatment facilities.

Monitoring well MW-1 is located in the plaza area on the west side of the Site near 13th Street between the addresses 1300-1314 Canyon Boulevard and 1770 13th Street. Monitoring well MW-2 is located east of 1314 Canyon Boulevard. Monitoring wells MW-3, MW-5 and MW-6 are located in the parking area east of 1770 13th Street and north of Boulder and Left Hand Ditch. Monitoring well MW-4 is located in the parking area east of 1750 13th Street and south of Boulder and Left Hand Ditch. The monitoring well locations are illustrated on Figure 3.

3.1 *UTILITY LOCATE*

Prior to field activities, ERM contacted UNCC to locate underground utilities on the Site. Additionally, ERM contracted Diversified Underground, Inc., a private utility location company, to locate any private underground utilities in the work areas. The utility locate was conducted with Glenn Magee from the City of Boulder Public Works Department.

Proposed soil boring locations MW-1 and MW-3 were modified when conflicts with utilities were discovered. The new locations were placed greater than ten feet away from located underground utilities.

3.2 *SOIL BORING/MONITORING WELL INSTALLATION*

Between September 28 and September 30, 2010, Site Services, under the supervision of an ERM geologist, advanced six, 8-inch soil borings at the Site using a CME-75 hollow-stem auger drill rig. The soil borings were advanced to approximately five feet below groundwater to depths of 14 to 16 feet below ground surface (bgs).

During drilling, the soil was logged for lithology, color, moisture content, and for potential presence of staining/odors by the ERM geologist and screened for the presence of VOCs using a photo-ionization detector (PID). The PID was calibrated each morning using a 100 parts per million (ppm) regulator and flow controller using isobutylene gas. VOC background measurements in the ambient air ranged from 0.0 ppm to 0.3 ppm. The work zone air was continuously monitored during drilling and ranged from 0.0 ppm to 0.7 ppm. PID measurements of the soil removed from the boring ranged from 0.0 ppm to 454 ppm. This information was recorded on the appropriate boring log included as Appendix A.

All soil borings were constructed into groundwater monitoring wells with 10 feet of 0.010-inch slotted screen, two-inch nominal diameter Schedule 40 PVC with the screen placed to intersect the top of the groundwater table, with the exception of MW-5 which has 0.020-inch slotted screen. The wells were completed with a silica sand pack around the screen to a minimum of two feet above the well screen and the remaining annular space was sealed with bentonite grout to the surface. Each well was completed with an eight-inch, traffic-grade, flush-mounted cover.

The newly installed wells were allowed to stabilize for more than 24 hours prior to development. Well development was conducted from September 30, 2010 to October 1, 2010 by removing a minimum of five borehole

volumes (approximately 20 to 30 gallons) of groundwater. The well development forms are included as Appendix B.

Following the completion of the monitoring wells, each well and two points along the Boulder and Left Hand Ditch were surveyed by Flatirons, Inc., a Colorado-licensed Professional Land Surveyor (PLS), for horizontal position and vertical elevation. All elevation measurements are in feet above mean sea level using the 1988 North American Vertical Datum (NAVD). This information is recorded on Table 1.

3.2.1 *Soil Sample Collection*

During drilling, split spoon samples were collected from the ground surface to the total depth of the boring. A split spoon is a hollow tube split length-wise which is driven into the ground to collect in place soil samples. A maximum of two soil samples per boring were collected for laboratory analysis using the following protocol:

1. If field indications of impacted soil were observed (e.g. PID readings were observed above background levels, presence of odor or staining) a sample was collected from the depth interval exhibiting the highest PID reading; or

If no field indications of impacted soil were observed a sample was collected from native material within the upper four feet of the boring. Laboratory analysis of these shallow, soil samples was optional, and was only performed if requested by PSCo and the City of Boulder.

2. If groundwater was encountered, a sample was collected from the interval immediately above the groundwater interface; or

If groundwater was not encountered, a sample was collected from the deepest 2-foot soil interval.

Based on the PID readings in each boring and the presence of groundwater in each well, six soil samples were collected from the interval immediately above the groundwater table, as observed during drilling, and submitted for laboratory analysis. One additional shallow soil sample was submitted for laboratory analysis from MW-5 as requested by both PSCo and the City of Boulder, based on the elevated PID measurement (454 ppm) recorded between five to seven feet bgs.

Soil was collected from the split spoon sampler and placed into laboratory-provided containers. ERM labeled the containers with the sample location, depth, collection time and date and requested analysis

and immediately placed into a chilled cooler for preservation. The samples were subsequently transported to Accutest Laboratories in Wheat Ridge, Colorado for analysis of VOCs, EPA Method 8260B, and for SVOCs, EPA Method 8270C, following standard chain-of-custody protocols.

3.2.2 *Groundwater Sample Collection*

On October 4, 2010, a dual phase electronic water level indicator was used to determine the static water level measurement at each location and to detect the presence of, and if present, measure potential floating product on top of the water in the well. No measurable amount of product was identified in the monitoring wells. Static groundwater level measurements were recorded to the nearest 0.01-foot, as summarized in Table 1 and recorded on the well development/purge forms, which are included as Appendices B and C. Additionally, surface water elevations were measured at two points along the Boulder and Left Hand Ditch; upstream and downstream of the Site. The groundwater level measurement information was used to create a potentiometric surface map, which is included as Figure 4.

Monitoring wells were purged using a low discharge peristaltic pump. A minimum of three casing volumes (approximately three gallons) were removed from each well. During purging, water quality parameters were recorded including temperature, dissolved oxygen, specific conductance, pH, oxidation reduction potential (ORP) and turbidity. The well purge forms are included as Appendix C.

A slight sheen was observed and odor detected in the groundwater during development of monitoring wells MW-3, MW-4, MW-5 and MW-6. The dual phase electronic water level meter indicated the presence of a separate phase on the groundwater in MW-3, MW-5 and MW-6, but it was not substantial enough to measure. A sheen was also observed and odor was detected during the purging and sampling of wells MW-3 and MW-5. A slight odor but no sheen was observed during the purging and sampling of well MW-6.

Each groundwater sample was collected using dedicated environmental-grade tubing and precautions were taken to collect the groundwater from below any sheen. A dedicated outer sleeve of tubing was placed into each monitoring well and the dedicated sampling tubing was placed inside the sleeve to collect the groundwater. Groundwater was then collected directly into laboratory-provided containers using a low discharge peristaltic pump. ERM labeled the samples with the location, collection time and date, preservative, and requested analysis and immediately placed into a chilled cooler for preservation. The samples were

subsequently transported to Accutest Laboratories in Wheat Ridge, Colorado for analysis following standard chain-of-custody protocols.

3.3 *INVESTIGATIVE DERIVED WASTE*

All investigation derived waste (IDW) from drilling was containerized directly into properly labeled 55-gallon drums and stored, as approved by the City of Boulder, in the staging area behind the City of Boulder building located at 1720 13th Street, Boulder, Colorado.

All drilling equipment was decontaminated between soil borings and at the conclusion of field activities using pressurized steam cleaning equipment. Decontamination, groundwater monitoring well development and purge water were containerized into properly labeled 55-gallon drums and temporarily stored in the staging area. The City of Boulder is managing the IDW.

4.0 *FIELD OBSERVATIONS*

The following sections describe site-specific subsurface conditions at the time of the field investigation.

4.1 *GEOLOGY*

The Site is located at the base of the foothills of the Rocky Mountains at the eastern edge of the Front Range and the western edge of the Denver Basin. It is in an area of surficial alluvium deposits underlain by sedimentary rocks (USGS, 1976).

Geology at the Site generally consists of eight to ten feet of fill sand and debris with varying amounts of gravel and cobbles overlying a sand and gravel layer. During the drilling of MW-1 and MW-3, fill material (brick, wood and glass) was observed in the soil cuttings between three to nine feet bgs. Black and gray staining of the soil was observed during drilling at MW-3 between 12 and 15 feet bgs, at MW-5 between five and 15 feet bgs and in MW-6 between 10 and 15 feet bgs.

No odors or visible staining were observed in the soil cuttings during the drilling of MW-1, MW-2 and MW-4.

4.2 *HYDROGEOLOGY*

Based on water level measurements collected on October 4, 2010, the depth to groundwater in the monitoring wells ranged between 5.96 feet below the top of casing (TOC) elevation at MW-4 and 10.74 below TOC at MW-1. As measured on October 4, 2010, the local groundwater flow direction is to the northeast (Figure 4). However, according to the United States Geological Survey Hydrologic Investigations Atlas HA-746C (Robson, S.G. et al., 2000), the regional groundwater flow direction corresponds with surface topography toward the east/southeast.

Additional information would be needed to fully understand the potential variability of groundwater flow across the Site.

5.0 REGULATORY STANDARDS AND GUIDELINES

The soil and groundwater analytical results were compared to applicable Colorado regulatory guidelines or standards as summarized in this section.

5.1 SOIL STANDARDS AND GUIDELINES

The soil boring analytical results were compared to the CDPHE CSEVs for Worker Protection based on the commercial land use of the Site.

According to the CDPHE “Worker values are considered protective for indoor office workers with occasional contact with outdoor soil, and for outdoor workers engaged in light to moderate activity. Values are NOT APPLICABLE to outdoor workers routinely engaged in contact-intensive activity.” Although the Worker Protection CSEV contemplates occasional contact with soil, it should be noted that the area is covered in concrete and asphalt.

5.2 GROUNDWATER STANDARDS AND GUIDELINES

The CDPHE Water Quality Control Division regulates the discharge of pollutants into the state’s surface and groundwater and enforces the Primary Drinking Water Regulations. The CDPHE Water Quality Control Commission, 5CCR 1002-41 Basic Standards for Groundwater, November 2009, were used for comparison with the Site groundwater monitoring well results.

Since there is no established CDPHE groundwater standard for Methyl Tertiary Butyl Ether (MTBE), the United States Protection Agency (USEPA) Health Advisory for MTBE was referenced for comparison.

6.0 ANALYTICAL RESULTS AND OBSERVATIONS

The soil and groundwater analytical results are summarized in the following sections and in Table 2 and Table 3, respectively. Table 4 presents the combined soil and groundwater sampling results. The laboratory analytical reports are provided as Appendix D.

Compounds that were detected in soil and groundwater at concentrations in exceedance of CSEVs for worker protection or groundwater standards are illustrated next to the respective sampling location on Figures 5 and 6.

6.1 SOIL ANALYTICAL RESULTS

6.1.1 Volatile Organic Compounds

VOCs were detected only in the soil samples collected between five to seven feet bgs and eight to ten feet bgs from boring MW-5. The detected VOCs, included ethylbenzene and xylene, which were present at concentrations well below the CSEVs concentrations for worker protection. The concentration of ethylbenzene was estimated by the laboratory since the concentration reported is below the laboratory reporting limit. A concentration below the laboratory reporting limit is referred to as a "J-value".

Trichloroethylene (TCE) and vinyl chloride were not detected at or above the laboratory reporting limits in any of the soil samples collected during this investigation. However, the laboratory detection limit for TCE was slightly higher than the CSEVs for worker protection and the detection limit.

6.1.2 Semi-Volatile Organic Compounds

SVOCs were not detected at concentrations at or above the laboratory reporting limits in the soil samples collected from MW-1, MW-4 and MW-6.

Benzo(a)anthracene, benzo(a)pyrene, fluoranthene and pyrene were detected at concentrations below the CSEV for worker protection in the sample collected between eight to ten feet bgs in MW-2. Although detected, the concentration of fluoranthene was estimated (J-value).

In the soil sample collected between nine to ten feet bgs in MW-3, twelve compounds were detected. The compounds detected include the following: acenaphthylene, benzo(a)anthracene, benzo(a)pyrene,

benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene. These compounds were all detected at concentrations below the CSEV for worker protection with the exception of benzo(a)pyrene. Benzo(a)pyrene was detected at concentration of 0.924 milligrams per kilogram (mg/kg), which is slightly above the CSEV for worker protection of 0.390 mg/kg.

In the soil sample collected between five to seven feet bgs in MW-5, the following compounds were detected: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzofuran, fluoranthene, fluorene, indeno (1,2,3-cd)pyrene, 2-methylnaphthalene naphthalene, phenanthrene, and pyrene. Benzo(a)anthracene detected at 10.50 mg/kg and benzo(a)pyrene detected at 7.56 mg/kg were the only compounds that exceeded the CSEV worker protections values, which are 3.9 mg/kg and 0.39 mg/kg, respectively.

In the soil sample collected from eight to ten feet bgs in MW-5, the same compounds were present, with the exception of acenaphthylene and dibenzofuran. Benzo(a)pyrene (2.19 mg/kg) was the only compound detected above its respective CSEV for worker protection, which is 0.39 mg/kg.

Estimated concentrations (J-values) of naphthalene and pyrene were detected in the sample collected between five to seven feet bgs in MW-6. The estimated concentrations of both compounds are below the respective CSEVs.

6.2 GROUNDWATER ANALYTICAL RESULTS

6.2.1 Volatile Organic Compounds

Groundwater samples from wells MW-1 and MW-2 did not contain VOCs in concentrations above the laboratory reporting limits.

Benzene, toluene, ethylbenzene, xylene and methyl tertiary butyl ether (MTBE) were detected in the sample collected from well MW-3. Benzene was detected at 8.4 micrograms per liter ($\mu\text{g/L}$) which is slightly above the CDPHE Water Quality Control Commission, 5CCR 1002-41, Basic Standards for Groundwater (CDPHE, November 2009). All other detected VOC compounds were below the Basic Standards for Groundwater.

Trace levels of ethylbenzene and xylene were detected in the sample collected from MW-4. The detected concentrations were below their respective Colorado groundwater standards.

Benzene, toluene ethylbenzene and xylene were detected in the MW-5 sample at concentrations below the Colorado groundwater standard for the respective compound.

Benzene, ethylbenzene and xylene were detected in the sample collected from well MW-6 at concentrations below the Colorado groundwater standard for the respective compounds.

6.2.2 *Semi-Volatile Organic Compounds*

Groundwater samples from wells MW-1 and MW-2 did not contain detectable concentrations of SVOCs.

Six SVOCs were detected in the MW-3 sample (acenaphthene, acenaphthylene, fluorene, 2-methylnaphthalene, naphthalene, and phenanthrene). Naphthalene was detected at 1,880 µg/L which exceeded the groundwater standard of 140 µg/L. The detected concentrations for the other compounds were below the established Colorado groundwater standards.

Eight SVOCs were detected in the MW-4 sample (acenaphthene, acenaphthylene, anthracene, fluorene, 2-methylnaphthalene, naphthalene, phenanthrene and pyrene). None of the detected concentrations exceeded established Colorado groundwater standards.

Six SVOCs were detected in the MW-5 sample (acenaphthene, acenaphthylene, fluorene, 2-methylnaphthalene, naphthalene, and phenanthrene). Naphthalene was detected at 2,050 µg/L which exceeded the groundwater standard of 140 µg/L. The detected concentrations for the other compounds were below the established Colorado groundwater standards.

Six SVOCs were detected in the MW-6 sample (acenaphthene, acenaphthylene, fluorene, 2-methylnaphthalene, naphthalene, and phenanthrene). Naphthalene was detected at 371 µg/L which exceeded the groundwater standard of 140 µg/L. The detected concentrations for the other compounds were below the established Colorado groundwater standards.

Groundwater contaminants that were detected at concentrations above the Colorado groundwater standards are illustrated next to the corresponding location where the sample was collected on Figure 6.

COMPARISON OF SOIL AND GROUNDWATER ANALYTICAL RESULTS

The analytical data for soil and groundwater are summarized in this section and in Table 4 to compare the detected compounds in the soil and groundwater samples at each location.

No VOCs or SVOCs were detected above laboratory detection limits in soil or groundwater collected from MW-1.

No VOCs were detected above laboratory detection limits in soil or groundwater collected from MW-2. Four SVOC compounds (benzo(a)anthracene, benzo(a)pyrene, fluorene and pyrene) were detected in soil but not in groundwater collected from this location.

Five VOCs (benzene, toluene, ethylbenzene, xylene and MTBE) were detected in the groundwater sample collected from MW-3. These compounds were not detected in the soil collected from this location. Several SVOCs were detected in the soil collected from MW-3 and only two of the detected compounds (acenaphthylene and phenanthrene) were detected in the groundwater. Four SVOCs were detected in the groundwater (acenaphthene, fluorine, 2-methynaphthalene, naphthalene, and phenanthrene) and not in the soil sample collected from this location.

No VOCs or SVOCs were detected above laboratory limits in soil collected from MW-4. Trace levels of the VOCs (ethylbenzene and xylene) and SVOCs (acenaphthene, acenaphthylene, anthracene, fluorene, 2-methylnaphthalene, naphthalene, phenanthrene and pyrene) were detected in the groundwater and not in the soil sample collected from this location.

In the MW-5 sample location, the VOCs benzene, ethylbenzene, toluene and xylene were detected in groundwater and only ethylbenzene and xylene were detected in soil. Seventeen SVOCs were detected in the soil at this location and six SVOCs were detected in the groundwater. There were two soil samples collected at this location. A decrease in VOC and SVOC concentrations with depth was noted at this location.

No VOCs were detected in the soil at the MW-6 sample location and the VOCs benzene, ethylbenzene and xylene were detected in the groundwater at this location. Two SVOCs (naphthalene and pyrene) were detected in soil (below the reporting limit) and six SVOCs (including naphthalene) were detected in groundwater at this location.

As summarized in Table 4, certain compounds detected in the groundwater samples do not correlate with the compounds detected in

the soil samples collected from the same location. This may indicate that some of the detected groundwater constituents may have migrated on to the Site from potential upgradient sources.

Acting on behalf of PSCo and the City of Boulder, ERM conducted a limited subsurface investigation of the property located at 1770 13th Street in Boulder, Colorado referred to as the "Site" in this report.

ERM installed six soil borings and completed each boring as a groundwater monitoring well. Seven soil samples and six groundwater samples were collected for laboratory analysis of VOCs and SVOCs. The laboratory suite of analysis was selected based on historical operations both on and in the vicinity of the Site. These operations included off-site gasoline fueling and maintenance facilities, off-site dry cleaning operations, and the former on-site manufactured gas plant. ERM observations from the limited subsurface investigation are summarized herein.

7.1.1

Site Setting

- The Site land use is for commercial purposes, consisting of a structure, plaza/courtyard and parking lot.
- Land use within a one-mile radius of the Site is predominantly commercial mixed with some municipal and residential properties.
- The Boulder and Left Hand Ditch is located immediately to the south of the Site. The ditch is an irrigation channel that is fed from Boulder Creek, which is located about 325 feet to the west of the Site. This ditch flows to the east-northeast and is unlined.
- There are no domestic drinking water wells on-site. Buildings on and in the vicinity of the Site receive domestic drinking water from the City of Boulder.

7.1.2

Field Observations

- Groundwater levels were measured on October 4, 2010 and ranged from 5.96 to 10.74 feet below TOC in MW-4 and MW-1, respectively. The measured groundwater flow direction at the Site on October 4, 2010 was to the northeast.
- The reported regional groundwater flow direction is to the southeast (USGS, 2000), which differs from the measured local groundwater flow direction (northeast). The measured water levels in the Boulder and Left Hand Ditch were two to five feet higher

than the groundwater elevations, suggesting that this portion of the ditch may be losing water to the shallow groundwater flow system during the time of the year that groundwater level measurements were taken, resulting in local groundwater flow away from the ditch to the northeast. The local groundwater flow direction may change seasonally depending on the flow in the Boulder and Left Hand Ditch.

- The subsurface soils at the Site generally contain fill composed primarily of sand with varying amounts of sand and gravel overlying alluvial sand and gravel deposits. Debris (including brick, wood chips and glass) was encountered in MW-1 and MW-3 from approximately two to nine feet bgs.
- PID measurements of soil collected from the soil borings ranged from the lowest overall (0.0 ppm) in MW-2, MW-4 and MW-6 to the highest overall (454 ppm) in MW-5.
- A slight sheen was observed and odor detected in the groundwater during development of monitoring wells MW-3, MW-4, MW-5 and MW-6. This same sheen was observed during the purging of wells MW-3, MW-5 and MW-6 prior to sample collection, but not in MW-4.

7.1.3 *Soil Analytical Results*

- No VOCs were detected in any of the soil samples above the CSEVs for worker protection.
- SVOCs were detected in soil samples collected from the interval immediately above the water table in borings MW-2, MW-3, MW-5 and MW-6 and also in MW-5 in the interval 5 to 7 ft bgs. The highest concentrations were in MW-5; concentrations in MW-5 decreased with depth. CSEVs for worker protection were exceeded for benzo(a)anthracene in MW-5 and benzo(a)pyrene in both MW-3 and MW-5.

7.1.4 *Groundwater Analytical Results*

- VOCs were detected in groundwater samples collected from MW-3, MW-4, MW-5 and MW-6. The only VOC detected above the groundwater standard was benzene in MW-3. Benzene was detected at a concentration of 8.4 µg/L, which is slightly above the groundwater standard of 5 µg/L.

- MTBE, a fuel additive, was detected in groundwater at one location, MW-3. MTBE was used a gasoline additive from approximately 1979 to 1999 (ITRC, 2005).
- SVOCs were detected in groundwater samples collected from wells MW-3, MW-4, MW-5 and MW-6. None of the compounds exceeded the groundwater standards with the exception of naphthalene.
- Naphthalene was detected in monitoring wells MW-3, MW-5 and MW-6 at concentrations of 1,880 µg/L, 2,050 µg/L and 371 µg/L, respectively. These concentrations exceeded the groundwater standard of 140 µg/L. The source of the naphthalene contamination in groundwater, including whether it is from an on-site or off-site source, is uncertain at this time.

- Colorado Department of Public Health and Environment (CDPHE), Hazardous Materials and Waste Management Division, 2007. Table 1 Colorado Soil Evaluation Values.
- Colorado Department of Public Health and Environment (CDPHE), Water Quality Control Commission, 2009. 5CCR 1002-41, Regulation 41, The Basic Standards for Groundwater.
- Colorado Department of Labor and Employment , Division of Oil and Public Safety, 2005. Petroleum Storage Tank Owner/Operator Guidance Document.
- Interstate Technology Regulatory Council, (ITRC) 2005. Technology Overview, Overview of Groundwater Remediation Technologies for MTBE and TBA.
- United States Environmental Protection Agency, Office Of Solid Waste And Emergency Response, January 1998. EPA 510-F-97-014, MTBE Fact Sheet #1.
- United States Geological Survey (USGS), Robson, S.G. et al., 2000. Hydrologic Investigations Atlas HA-746C.
- United States Geological Survey (USGS) Geologic Investigations Series I-855-G. Geologic Map of the Boulder-Fort Collins-Greeley area, Colorado. Geology compiled in 1976; GIS database by Theodore R. Brandt, David W. Moore, and Kyle E. Murray; Digital Cartography by Theodore R. Brandt; Edited by Alex J. Donatich.

Table 1
Summary of Groundwater
Measurements

Table 1
 Summary of Groundwater Measurements
 1770 13th Street, Boulder, Colorado
 September 2010

Measurement Point ID	Northing	Easting	Top of Casing	Depth to Water	Ground Water Elevation
Monitoring Wells					
MW-1	1794900.918	3062301.321	5341.507	10.74	5330.767
MW-2	1794977.705	3062432.882	5339.48	9.91	5329.57
MW-3	1794947.954	3062497.286	5338.042	8.53	5329.512
MW-4	1794779.55	3062451.933	5336.633	5.96	5330.673
MW-5	1794872.624	3062474.869	5338.13	8.02	5330.11
MW-6	1794877.036	3062584.88	5337.509	7.83	5329.679
Boulder and Left Hand Ditch					
STREAM 1	1794783.005	3062336.031	5341.186	5.90	5335.286
STREAM 2	1794856.922	3062608.813	5337.101	4.62	5332.481

Notes:

All elevation measurements are in feet above mean sea level using the 1988 North American Vertical Datum (NAVD).
 Depth to water measurements were collected on October 4, 2010.

Table 2
Summary of Soil Analytical
Results

Table 2
Summary of Soil Analytical Results
1770 13th Street, Boulder, Colorado
September 2010

Analyte	Soil Boring Identification (Sample Depth)							CDPHE CSEVs
	MW1:SOIL:9-10	MW2:SOIL:8-10	MW3:SOIL:9-10	MW4:SOIL:5-7	MW5:SOIL:5-7	MW5:SOIL:8-10	MW6:SOIL:5-7	Worker
VOCs								
Benzene	ND (<0.052)	ND (<0.055)	ND (<0.052)	ND (<0.057)	ND (<0.058)	ND (<0.055)	ND (<0.053)	2.3
Toluene	ND (<0.100)	ND (<0.110)	ND (<0.100)	ND (<0.110)	ND (<0.120)	ND (<0.110)	ND (<0.110)	1,000
Ethylbenzene	ND (<0.100)	ND (<0.110)	ND (<0.100)	ND (<0.110)	0.507	0.0542 J	ND (<0.110)	1,000
Total Xylene	ND (<0.100)	ND (<0.110)	ND (<0.100)	ND (<0.110)	2.48	0.245	ND (<0.110)	1,000
Methyl Tert Butyl Ether	ND (<0.260)	ND (<0.270)	ND (<0.260)	ND (<0.280)	ND (<0.290)	ND (<0.270)	ND (<0.260)	NE
Methyl Ethyl Keytone	ND (<1.000)	ND (<1.100)	ND (<1.000)	ND (<1.100)	ND (<1.200)	ND (<1.100)	ND (<1.100)	NE
Tetrachloroethylene	ND (<0.260)	ND (<0.270)	ND (<0.260)	ND (<0.280)	ND (<0.290)	ND (<0.270)	ND (<0.260)	1.3
Trichloroethylene	ND (<0.260)	ND (<0.270)	ND (<0.260)	ND (<0.280)	ND (<0.290)	ND (<0.270)	ND (<0.260)	0.09
cis-1,2-Dichloroethylene	ND (<0.260)	ND (<0.270)	ND (<0.260)	ND (<0.280)	ND (<0.290)	ND (<0.270)	ND (<0.260)	170
trans-1,2-Dichloroethylene	ND (<0.260)	ND (<0.270)	ND (<0.260)	ND (<0.280)	ND (<0.290)	ND (<0.270)	ND (<0.260)	240
Vinyl chloride	ND (<0.260)	ND (<0.270)	ND (<0.260)	ND (<0.280)	ND (<0.290)	ND (<0.270)	ND (<0.260)	4
1,1-Dichloroethane	ND (<0.260)	ND (<0.270)	ND (<0.260)	ND (<0.280)	ND (<0.290)	ND (<0.270)	ND (<0.260)	1000
1,2-Dichloroethane	ND (<0.260)	ND (<0.270)	ND (<0.260)	ND (<0.280)	ND (<0.290)	ND (<0.270)	ND (<0.260)	0.78
SVOCs								
Acenaphthene	ND (<0.037)	ND (<0.038)	ND (<0.075)	ND (<0.039)	43.7	8.85	ND (<0.038)	1,000
Acenaphthylene	ND (<0.037)	ND (<0.038)	0.105	ND (<0.039)	1.37	ND (<0.770)	ND (<0.038)	NE
Anthracene	ND (<0.037)	ND (<0.038)	ND (<0.075)	ND (<0.039)	15.70	3.63	ND (<0.038)	1,000
Benzo(a)anthracene	ND (<0.037)	0.0422	0.751	ND (<0.039)	10.50	3.10	ND (<0.038)	3.9
Benzo(a)pyrene	ND (<0.037)	0.0385	0.924	ND (<0.039)	7.56	2.19	ND (<0.038)	0.390
Benzo(b)fluoranthene	ND (<0.041)	ND (<0.042)	0.660	ND (<0.043)	3.73	1.23	ND (<0.041)	3.9
Benzo(g,h,i)perylene	ND (<0.037)	ND (<0.038)	0.950	ND (<0.039)	2.66	1.01	ND (<0.038)	NE
Benzo(k)fluoranthene	ND (<0.047)	ND (<0.049)	0.729	ND (<0.050)	4.54	1.67	ND (<0.048)	39
Chrysene	ND (<0.047)	ND (<0.049)	0.821	ND (<0.050)	8.57	2.73	ND (<0.048)	390
Dibenzo(a,h)anthracene	ND (<0.041)	ND (<0.042)	0.179	ND (<0.043)	ND (<0.860)	ND (<0.840)	ND (<0.041)	0.39
Dibenzofuran	ND (<0.037)	ND (<0.038)	ND (<0.075)	ND (<0.039)	1.49	ND (<0.770)	ND (<0.038)	NE
Fluoranthene	ND (<0.071)	0.0463 J	0.647	ND (<0.075)	21.50	5.95	ND (<0.072)	1,000
Fluorene	ND (<0.041)	ND (<0.042)	ND (<0.082)	ND (<0.043)	20.70	4.86	ND (<0.041)	1,000
Indeno (1,2,3-cd)pyrene	ND (<0.037)	ND (<0.038)	0.796	ND (<0.039)	2.73	1.07	ND (<0.038)	3.9
2-Methylnaphthalene	ND (<0.037)	ND (<0.038)	ND (<0.075)	ND (<0.039)	52.80	6.44	ND (<0.038)	1,000
Naphthalene	ND (<0.071)	ND (<0.073)	ND (<0.140)	ND (<0.075)	91.80	10.80	0.0365 J	1,000
Phenanthrene	ND (<0.071)	ND (<0.073)	0.281	ND (<0.075)	58.30	14.30	ND (<0.072)	NE
Pyrene	ND (<0.041)	0.108	2.09	ND (<0.043)	39.90	9.68	0.0381 J	1,000

Notes:

All concentrations are reported in milligrams per kilogram (mg/kg).

Results were compared to the Colorado Department of Public Health and Environment (CDPHE) Colorado Soil Evaluation Values (CSEVs), December 2007 for worker protection.

ND - Compound was not detected at or above the laboratory reporting limit, which is shown in parenthesis (<0.00). In some cases reporting limits may be higher than CSEVs.

Bold and shaded values indicate that analyte was detected at a concentration above applicable CDPHE CSEVs.

NE - A soil evaluation value has not yet been established for this compound.

J = estimated value

Table 3
Summary of Groundwater
Analytical Results

Table 3
Summary of Groundwater Analytical Results
1770 13th Street, Boulder, Colorado
September 2010

Analyte	Monitoring Well Identification						Colorado Basic Standards for Groundwater
	MW1:GW:1010	MW2:GW:1010	MW3:GW:1010	MW4:GW:1010	MW5:GW:1010	MW6:GW:1010	
VOCs							
Benzene	ND (<1.0)	ND (<1.0)	8.4	ND (<1.0)	0.46 J	0.71 J	5
Toluene	ND (<2.0)	ND (<2.0)	24.3	ND (<2.0)	2.2	ND (<2.0)	560
Ethylbenzene	ND (<2.0)	ND (<2.0)	227	1.2 J	53.6	30.0	700
Xylene (total)	ND (<2.0)	ND (<2.0)	189	3.7	58.7	21.6	1400
Methyl Tert Butyl Ether	ND (<2.0)	ND (<2.0)	11.6	ND (<2.0)	ND (<2.0)	ND (<2.0)	20 *
Methyl Ethyl Ketone	ND (<10)	ND (<10)	30.9 J	ND (<10)	ND (<10)	ND (<10)	NE
Tetrachloroethylene	ND (<2.0)	ND (<2.0)	ND (<10)	ND (<2.0)	ND (<2.0)	ND (<2.0)	5
Trichloroethylene	ND (<2.0)	ND (<2.0)	ND (<10)	ND (<2.0)	ND (<2.0)	ND (<2.0)	5
cis-1,2-Dichloroethylene	ND (<2.0)	ND (<2.0)	ND (<10)	ND (<2.0)	ND (<2.0)	ND (<2.0)	70
trans-1,2-Dichloroethylene	ND (<2.0)	ND (<2.0)	ND (<10)	ND (<2.0)	ND (<2.0)	ND (<2.0)	100
Vinyl chloride	ND (<2.0)	ND (<2.0)	ND (<10)	ND (<2.0)	ND (<2.0)	ND (<2.0)	0.023
1,1-Dichloroethane	ND (<2.0)	ND (<2.0)	ND (<10)	ND (<2.0)	ND (<2.0)	ND (<2.0)	7
1,2-Dichloroethane	ND (<2.0)	ND (<2.0)	ND (<10)	ND (<2.0)	ND (<2.0)	ND (<2.0)	0.052
SVOCs							
Acenaphthene	ND (<1.0)	ND (<1.0)	115	2.0	63.9	48.9	420
Acenaphthylene	ND (<1.0)	ND (<1.0)	170	4.2	168	67.4	NE
Anthracene	ND (<1.3)	ND (<1.3)	ND (<13)	1.8	ND (<13)	ND (<13)	2,100
Fluorene	ND (<1.4)	ND (<1.4)	50.2	3.8	39.7	28.6	280
2-Methylnaphthalene	ND (<5.0)	ND (<5.0)	568	10.2	482	114	NE
Naphthalene	ND (<1.0)	ND (<1.0)	1,880	7.5	2,050	371	140
Phenanthrene	ND (<5.0)	ND (<5.0)	60.3	5.4	61.30	47.4 J	NE
Pyrene	ND (<1.0)	ND (<1.0)	ND (<10)	1.1	ND (<10)	ND (<10)	210

Notes:

All concentrations are reported in micrograms per liter (ug/L).

Results were compared to the Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Commission, 5CCR 1002-41,

The Basic Standards for Groundwater, November 2009.

* Since there is no established CDPHE groundwater standard for this compound, the Colorado Department of Labor and Employment, Division of Oil and Public Safety, Tier 1 Risk Based Screening Level was used for comparison.

ND - Compound was not detected at or above the laboratory reporting limit, which is shown in parenthesis (<0.00).

Bold and shaded values indicate that analyte was detected at a concentration above applicable regulatory standards.

NE - A groundwater evaluation value has not yet been established for this compound.

J = estimated value

MW1:GW:1010 - SVOC Low Surrogate Recovery outside limits for 2-Fluorophenol and Phenol-d5

Table 4
Comparison of Groundwater and
Soil Analytical Results

Table 4
Comparison of Groundwater and Soil Analytical Results
1770 13th Street, Boulder, Colorado
September 2010

Analyte	Sample Identification												CDPHE CSEVs Worker	CDPHE Basic Standards for Groundwater	
	MW1:SOIL:9-10	MW1:GW:1010	MW2:SOIL:8-10	MW2:GW:1010	MW3:SOIL:9-10	MW3:GW:1010	MW4:SOIL:5-7	MW4:GW:1010	MW5:SOIL:5-7	MW5:SOIL:8-10	MW5:GW:1010	MW6:SOIL:5-7			MW6:GW:1010
VOCs															
Benzene	ND (<0.052)	ND (<1.0)	ND (<0.055)	ND (<1.0)	ND (<0.052)	8.4	ND (<0.057)	ND (<1.0)	ND (<0.058)	ND (<0.055)	0.46 J	ND (<0.053)	0.71 J	2.3	5
Toluene	ND (<0.100)	ND (<2.0)	ND (<0.110)	ND (<2.0)	ND (<0.100)	24.3	ND (<0.110)	ND (<2.0)	ND (<0.120)	ND (<0.110)	2.2	ND (<0.110)	ND (<2.0)	1,000	560
Ethylbenzene	ND (<0.100)	ND (<2.0)	ND (<0.110)	ND (<2.0)	ND (<0.100)	227	ND (<0.110)	1.2 J	0.507	0.0542 J	53.6	ND (<0.110)	30.0	1,000	700
Total Xylene	ND (<0.100)	ND (<2.0)	ND (<0.110)	ND (<2.0)	ND (<0.100)	189	ND (<0.110)	3.7	2.48	0.245	58.7	ND (<0.110)	21.6	1,000	1400
Methyl Tert Butyl Ether	ND (<0.260)	ND (<2.0)	ND (<0.270)	ND (<2.0)	ND (<0.260)	11.6	ND (<0.280)	ND (<2.0)	ND (<0.290)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<2.0)	NE	20 *
Methyl Ethyl Ketone	ND (<1.000)	ND (<10)	ND (<1.100)	ND (<10)	ND (<1.000)	30.9 J	ND (<1.100)	ND (<10)	ND (<1.200)	ND (<1.100)	ND (<10)	ND (<1.100)	ND (<10)	NE	NE
Tetrachloroethylene	ND (<0.260)	ND (<2.0)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<10)	ND (<0.280)	ND (<2.0)	ND (<0.290)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<2.0)	1.3	5
Trichloroethylene	ND (<0.260)	ND (<2.0)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<10)	ND (<0.280)	ND (<2.0)	ND (<0.290)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<2.0)	0.09	5
cis-1,2-Dichloroethylene	ND (<0.260)	ND (<2.0)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<10)	ND (<0.280)	ND (<2.0)	ND (<0.290)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<2.0)	170	70
trans-1,2-Dichloroethylene	ND (<0.260)	ND (<2.0)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<10)	ND (<0.280)	ND (<2.0)	ND (<0.290)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<2.0)	240	100
Vinyl chloride	ND (<0.260)	ND (<2.0)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<10)	ND (<0.280)	ND (<2.0)	ND (<0.290)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<2.0)	4	0.023
1,1-Dichloroethane	ND (<0.260)	ND (<2.0)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<10)	ND (<0.280)	ND (<2.0)	ND (<0.290)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<2.0)	1000	7
1,2-Dichloroethane	ND (<0.260)	ND (<2.0)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<10)	ND (<0.280)	ND (<2.0)	ND (<0.290)	ND (<0.270)	ND (<2.0)	ND (<0.260)	ND (<2.0)	0.78	0.052
SVOCs															
Acenaphthene	ND (<0.037)	ND (<1.0)	ND (<0.038)	ND (<1.0)	ND (<0.075)	115	ND (<0.039)	2.0	43.7	8.85	63.9	ND (<0.038)	48.9	1,000	420
Acenaphthylene	ND (<0.037)	ND (<1.0)	ND (<0.038)	ND (<1.0)	0.105	170	ND (<0.039)	4.2	1.37	ND	168	ND (<0.038)	67.4	NE	NE
Anthracene	ND (<0.037)	ND (<1.3)	ND (<0.038)	ND (<1.3)	ND (<0.075)	ND (<13)	ND (<0.039)	1.8	15.70	3.63	ND (<13)	ND (<0.038)	ND (<13)	1,000	2,100
Benzo(a)anthracene	ND (<0.037)	ND (<1.0)	0.0422	ND (<1.0)	0.751	ND (<10)	ND (<0.039)	ND (<1.0)	10.50	3.10	ND (<10)	ND (<0.038)	ND (<10)	3.9	0.0048
Benzo(a)pyrene	ND (<0.037)	ND (<1.0)	0.0385	ND (<1.0)	0.924	ND (<10)	ND (<0.039)	ND (<1.0)	7.56	2.19	ND (<10)	ND (<0.038)	ND (<10)	0.390	0.0048
Benzo(b)fluoranthene	ND (<0.041)	ND (<1.5)	ND (<0.042)	ND (<1.5)	0.660	ND (<15)	ND (<0.043)	ND (<1.5)	3.73	1.23	ND (<15)	ND (<0.041)	ND (<15)	3.9	0.0048
Benzo(g,h,i)perylene	ND (<0.037)	ND (<2.0)	ND (<0.038)	ND (<2.0)	0.950	ND (<20)	ND (<0.039)	ND (<2.0)	2.66	1.01	ND (<20)	ND (<0.038)	ND (<20)	NE	NE
Benzo(k)fluoranthene	ND (<0.047)	ND (<1.5)	ND (<0.049)	ND (<1.5)	0.729	ND (<15)	ND (<0.050)	ND (<1.5)	4.54	1.67	ND (<15)	ND (<0.048)	ND (<15)	39	0.0048
Chrysene	ND (<0.047)	ND (<1.0)	ND (<0.049)	ND (<1.0)	0.821	ND (<10)	ND (<0.050)	ND (<1.0)	8.57	2.73	ND (<10)	ND (<0.048)	ND (<10)	390	0.0048
Dibenzo(a,h)anthracene	ND (<0.041)	ND (<2.0)	ND (<0.042)	ND (<2.0)	0.179	ND (<20)	ND (<0.043)	ND (<2.0)	ND (<0.860)	ND	ND (<20)	ND (<0.041)	ND (<20)	0.39	0.0048
Dibenzofuran	ND (<0.037)	ND (<5.0)	ND (<0.038)	ND (<5.0)	ND (<0.075)	ND (<50)	ND (<0.039)	ND (<5.0)	1.49	ND	ND (<50)	ND (<0.038)	ND (<50)	NE	NE
Fluoranthene	ND (<0.071)	ND (<1.2)	0.0463 J	ND (<1.2)	0.647	ND (<12)	ND (<0.075)	ND (<1.2)	21.50	5.95	ND (<12)	ND (<0.072)	ND (<12)	1,000	280
Fluorene	ND (<0.041)	ND (<1.4)	ND (<0.042)	ND (<1.4)	ND (<0.082)	50.2	ND (<0.043)	3.8	20.70	4.86	39.7	ND (<0.041)	28.6	1,000	280
Indeno (1,2,3-cd)pyrene	ND (<0.037)	ND (<2.0)	ND (<0.038)	ND (<2.0)	0.796	ND (<20)	ND (<0.039)	ND (<2.0)	2.73	1.07	ND (<20)	ND (<0.038)	ND (<20)	3.9	0.0048
2-Methylnaphthalene	ND (<0.037)	ND (<5.0)	ND (<0.038)	ND (<5.0)	ND (<0.075)	568	ND (<0.039)	10.2	52.80	6.44	482	ND (<0.038)	114	1,000	NE
Naphthalene	ND (<0.071)	ND (<1.0)	ND (<0.073)	ND (<1.0)	ND (<0.140)	1,880	ND (<0.075)	7.5	91.80	10.80	2,050	0.0365 J	371	1,000	140
Phenanthrene	ND (<0.071)	ND (<5.0)	ND (<0.073)	ND (<5.0)	0.281	60.3	ND (<0.075)	5.4	58.30	14.30	61.30	ND (<0.072)	47.4 J	NE	NE
Pyrene	ND (<0.041)	ND (<1.0)	0.108	ND (<1.0)	2.09	ND (<10)	ND (<0.043)	1.1	39.90	9.68	ND (<10)	0.0381 J	ND (<10)	1,000	210

Notes:

All groundwater concentrations are italicized and are reported in micrograms per liter (ug/L).

All soil concentrations are reported in milligrams per kilogram (mg/kg).

Only compounds that were detected at or above laboratory reporting limits, in one or more samples (soil or groundwater) are included in the table.

ND - Compound was not detected at or above the laboratory reporting limit, which is shown in parenthesis (<0.00).

Soil Results were compared to the Colorado Department of Public Health and Environment (CDPHE) Colorado Soil Evaluation Values (CSEVs), December 2007 for worker protection.

Groundwater Results were compared to the Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Commission, 5CCR 1002-41, The Basic Standards for Groundwater, November 2009.

* Since there is no established CDPHE groundwater standard for this compound, the Colorado Department of Labor and Employment, Division of Oil and Public Safety, Tier 1 Risk Based Screening Level was used for comparison.

Bold and shaded values indicate that analyte was detected at a concentration above applicable regulatory standards.

NE - A groundwater or soil evaluation value has not yet been established for this compound.

J = estimated value

Figure 1
Site Location Map

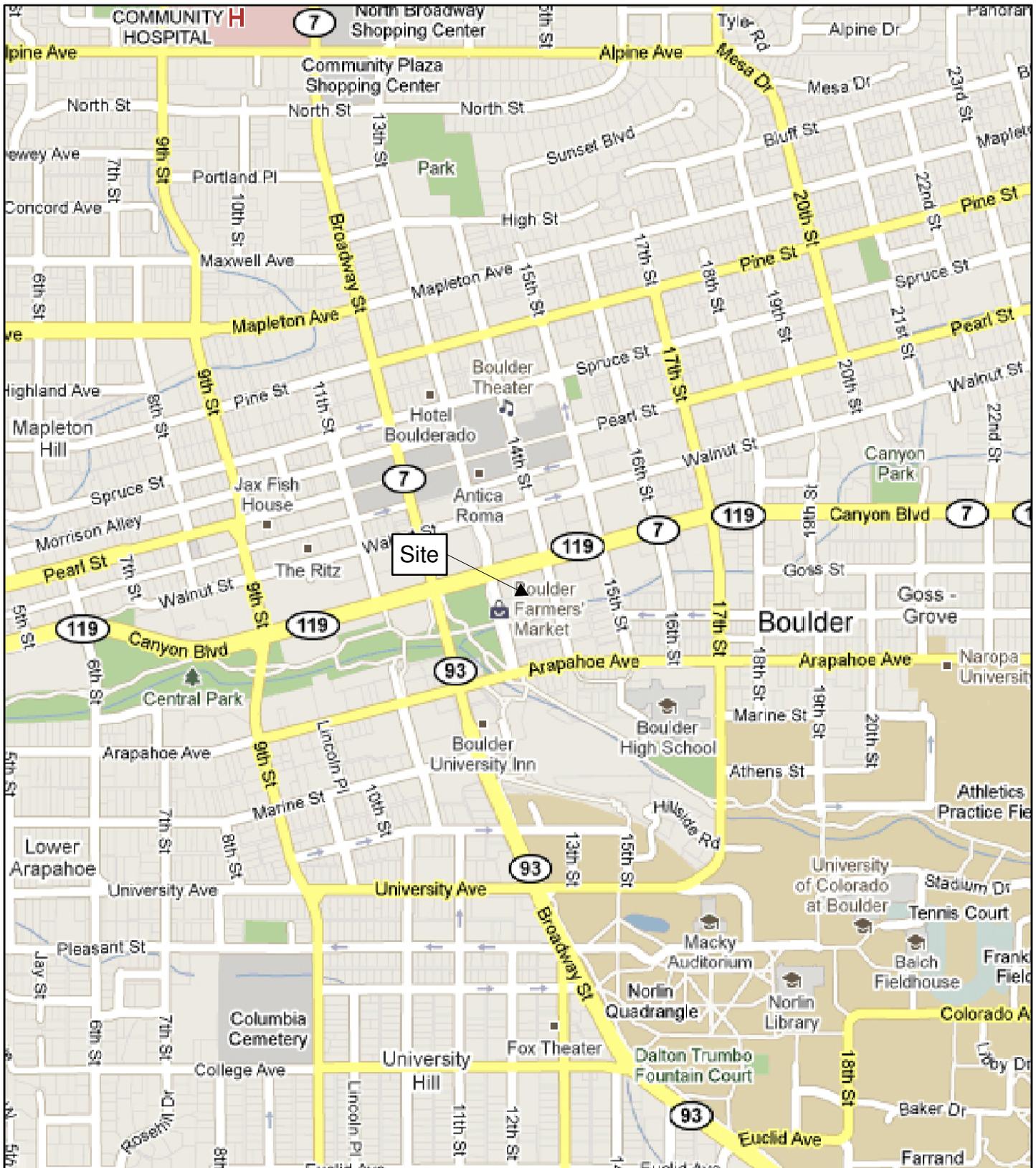


Figure 1
Site Location Map
Boulder, CO



ERM-West, Inc.
 6455 S. Yosemite Street, Suite 900
 Greenwood Village, CO 80111
 (303) 741-5050

Drawn by: EM Date: 11/2010
 Road Map Courtesy of: Google Maps (<http://maps.google.com>)

Figure 2
Topographic Map

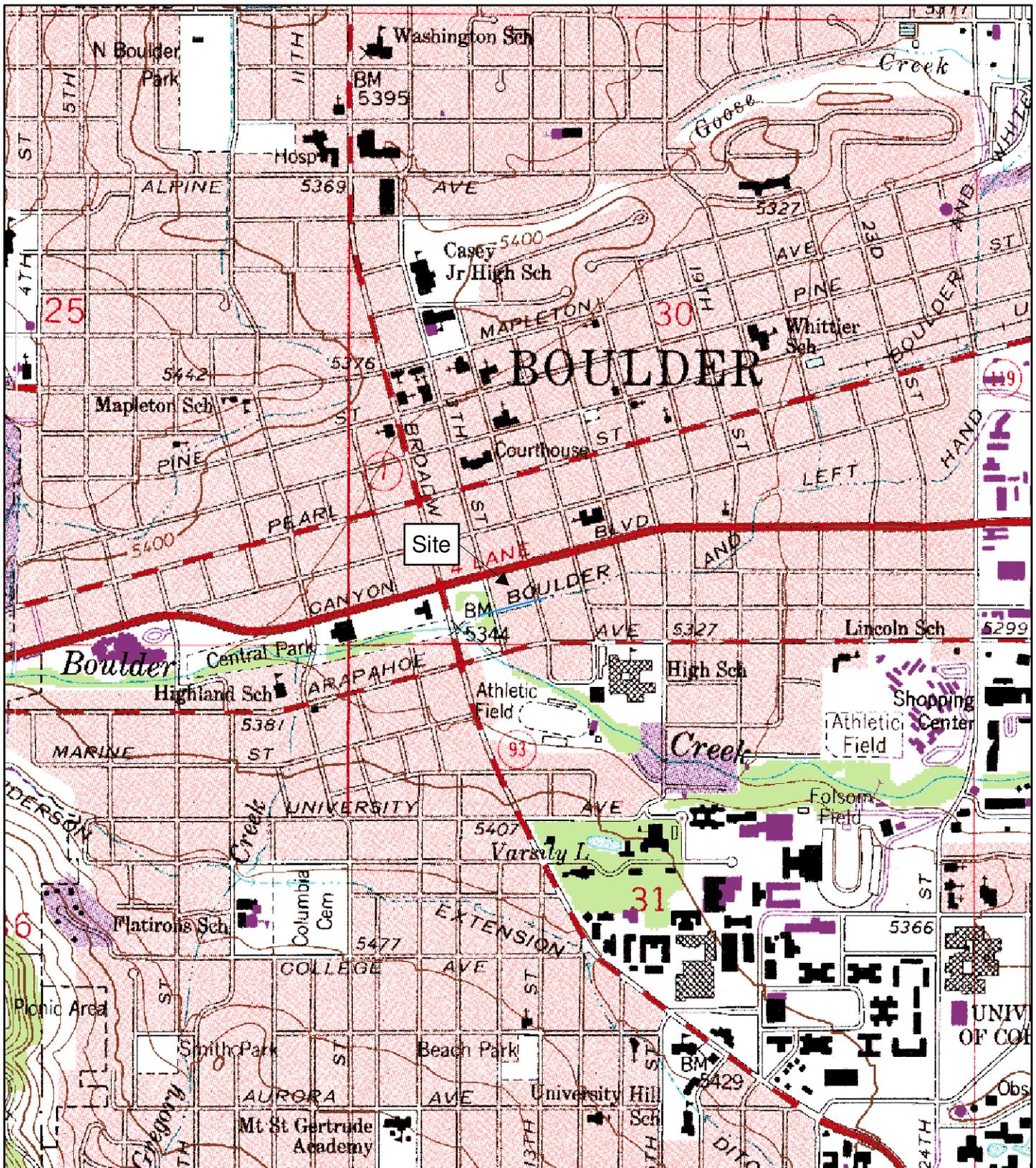


Figure 2
Topographic Map
Boulder, CO



ERM-West, Inc.
 6455 S. Yosemite Street, Suite 900
 Greenwood Village, CO 80111
 (303) 741-5050



0 375 750 1,500 Feet

Drawn by: EM Date: 11/2010
 Topographic Maps: Boulder Quad July 2005
 Topographic Map Courtesy of: USGS Seamless Server (<http://seamless.usgs.gov>)

Figure 3
Monitoring Well Location Map



Legend

-  Site Boundary
-  Monitoring Well
-  Stream Monitoring Point

Drawn by: EM Date: 04/2011
 Aerial Image Courtesy of: Google maps (<http://maps.google.com>)



0 15 30 60
 Feet

Figure 3
Monitoring Well Location Map
Boulder, CO



ERM-West, Inc.
 6455 S. Yosemite Street, Suite 900
 Greenwood Village, CO 80111
 (303) 741-5050

Figure 4
Potentiometric Surface Map



Legend

-  Potentiometric Contours as measured October, 2010
-  Site Boundary
-  Monitoring Well
-  Stream Monitoring Point

Drawn by: EM Date: 04/2011
 Aerial Image Courtesy of: Google maps (<http://maps.google.com>)



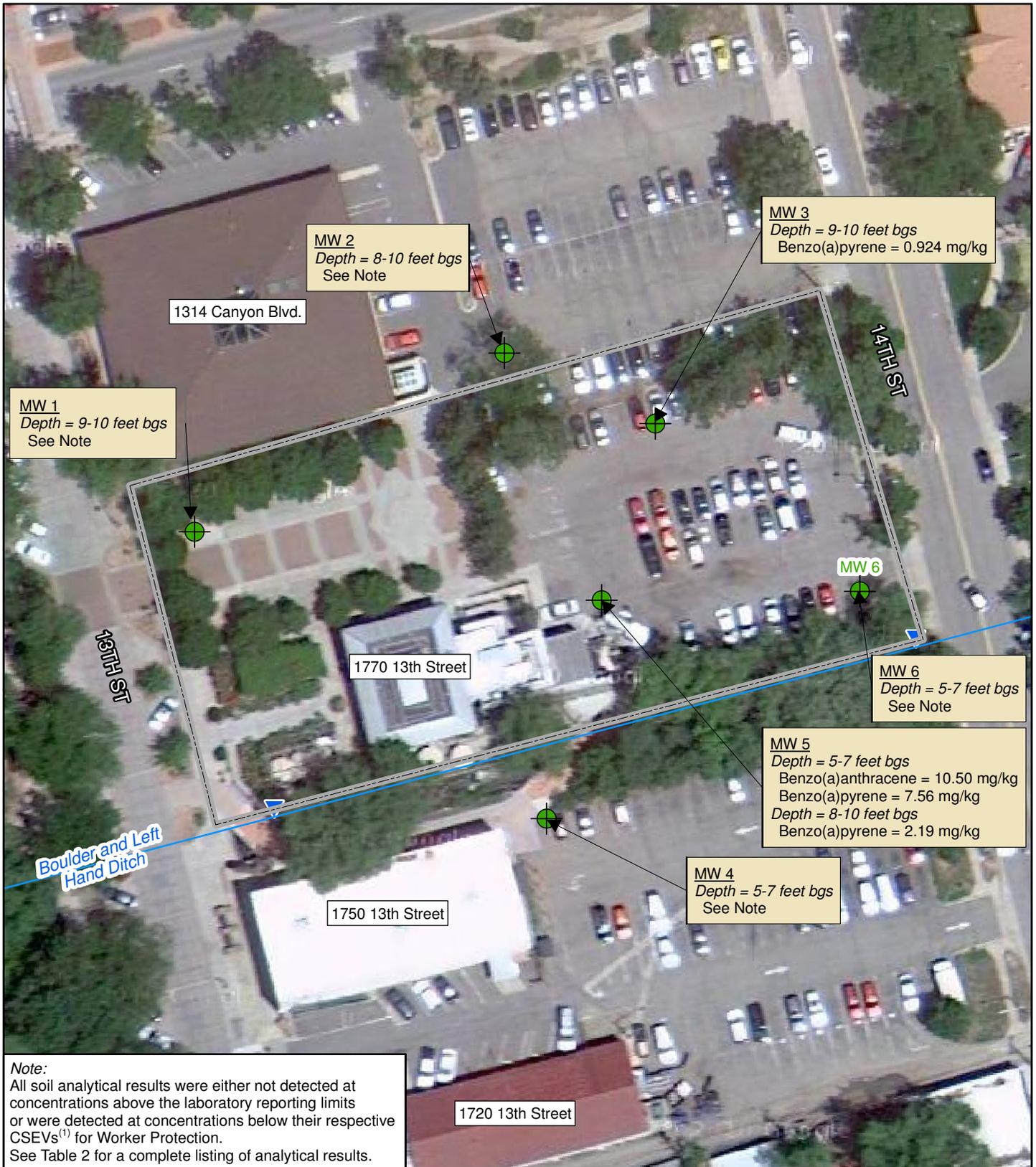
0 15 30 60
 Feet

Figure 4
Potentiometric Surface Map
Boulder, CO



ERM-West, Inc.
 6455 S. Yosemite Street, Suite 900
 Greenwood Village, CO 80111
 (303) 741-5050

Figure 5
Soil Testing Results Map



Legend

- Site Boundary
- Monitoring Well
- Stream Monitoring Point

Drawn by: EM Date: 04/2011
 Aerial Image Courtesy of: Google maps (<http://maps.google.com>)
⁽¹⁾Colorado Department of Public Health and Environment:
 Colorado Soil Evaluation Values - December 2007

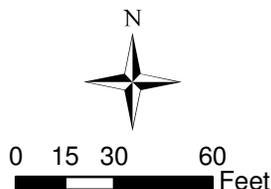
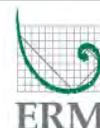
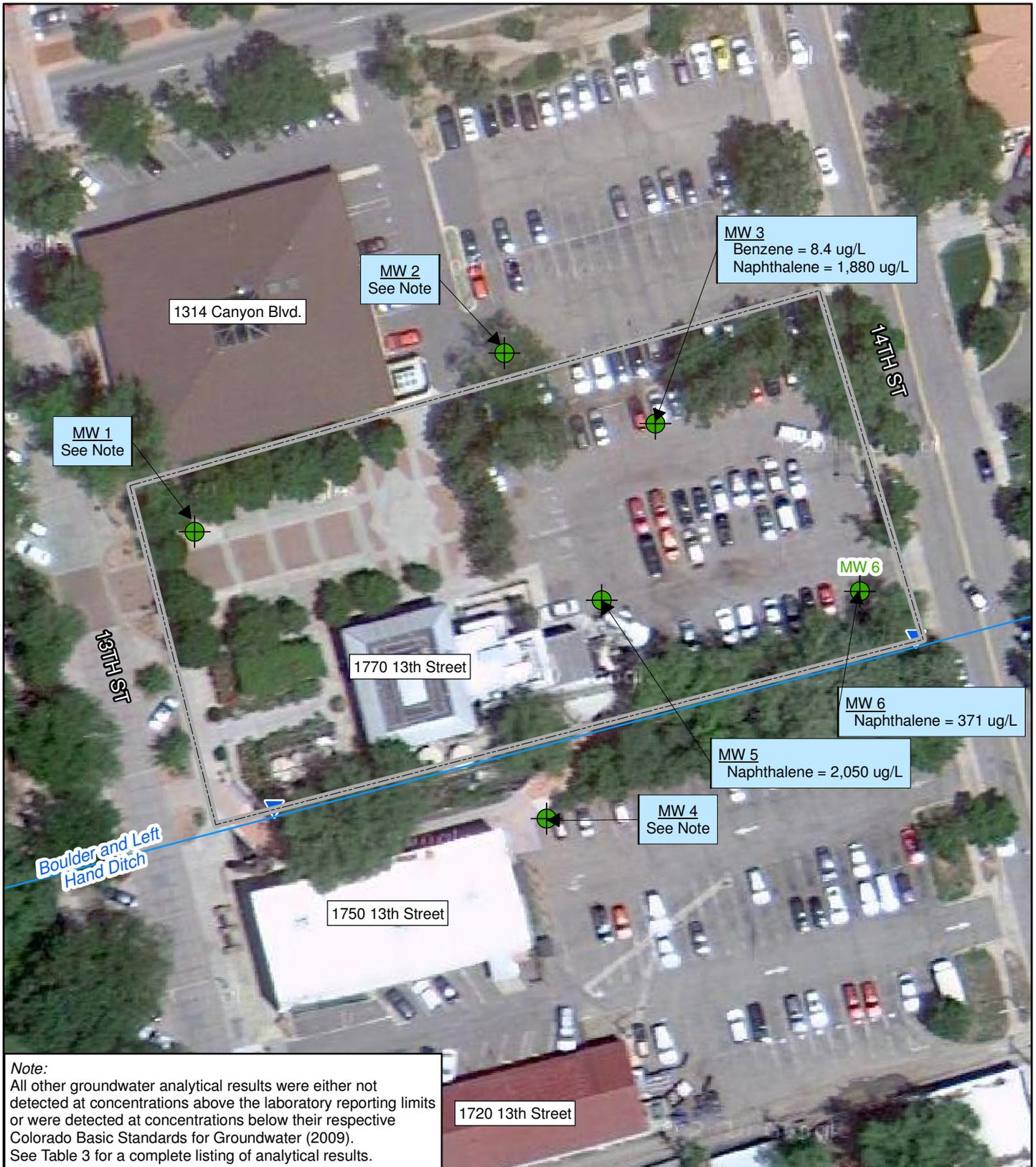


Figure 5
Soil Testing Results Map
Boulder, CO



ERM-West, Inc.
 6455 S. Yosemite Street, Suite 900
 Greenwood Village, CO 80111
 (303) 741-5050

Figure 6
Groundwater Analytical Results
Map



Legend

- Site Boundary
- Monitoring Well
- Stream Monitoring Point

Drawn by: EM Date: 04/2011
Aerial Image Courtesy of: Google maps (<http://maps.google.com>)



0 15 30 60
Feet

Figure 6
Groundwater Analytical Results Map
Boulder, CO



ERM-West, Inc.
6455 S. Yosemite Street, Suite 900
Greenwood Village, CO 80111
(303) 741-5050

Appendix A
Soil Boring Logs and Monitoring
Well Completion Diagrams

BOREHOLE NUMBER

MW1

BOREHOLE & WELL COMPLETION LOG

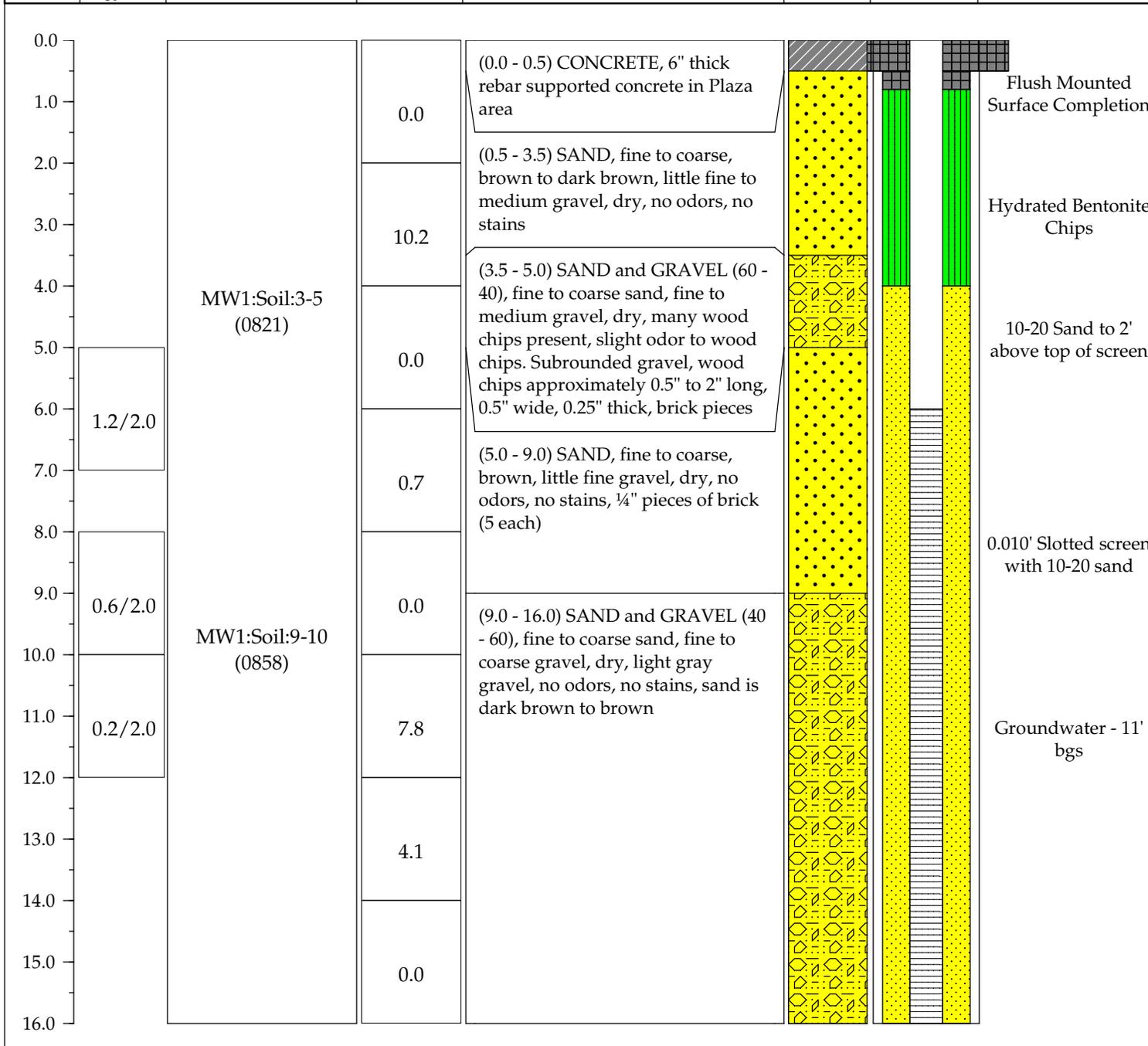
Environmental Resources Management
6455 South Yosemite St., Suite 900
Greenwood Village, CO 80111
303-741-5050



PROJECT NUMBER: 0122609
PROJECT NAME: Project Chai
LOCATION: Boulder, CO
DRILLER: Tony Goutar
DRILLING CO: Site Services
DRILL METHOD: Hollow Stem Auger

DATE DRILLED: 9/30/2010
LOGGED BY: Eric Moote
BOREHOLE DIAMETER: 8"
TOTAL DEPTH: 16'
SURFACE ELEV: 5341.507 MP ELEV: Top of Casing
NORTHING: 3062301.321 EASTING: 1794900.918

DEPTH (BGS)	SAMPLE INTERVAL /RECOVERY	LAB SAMPLE ID	ORGANIC VAPOR (ppm)	DESCRIPTION	GRAPHIC LOG	WELL CONSTRUCTION	WELL NOTES
				Trace: <5%, Few: 5-10%, Little: 15-25%, lithologic modifier: >35%			



BOREHOLE NUMBER

MW2

BOREHOLE & WELL COMPLETION LOG

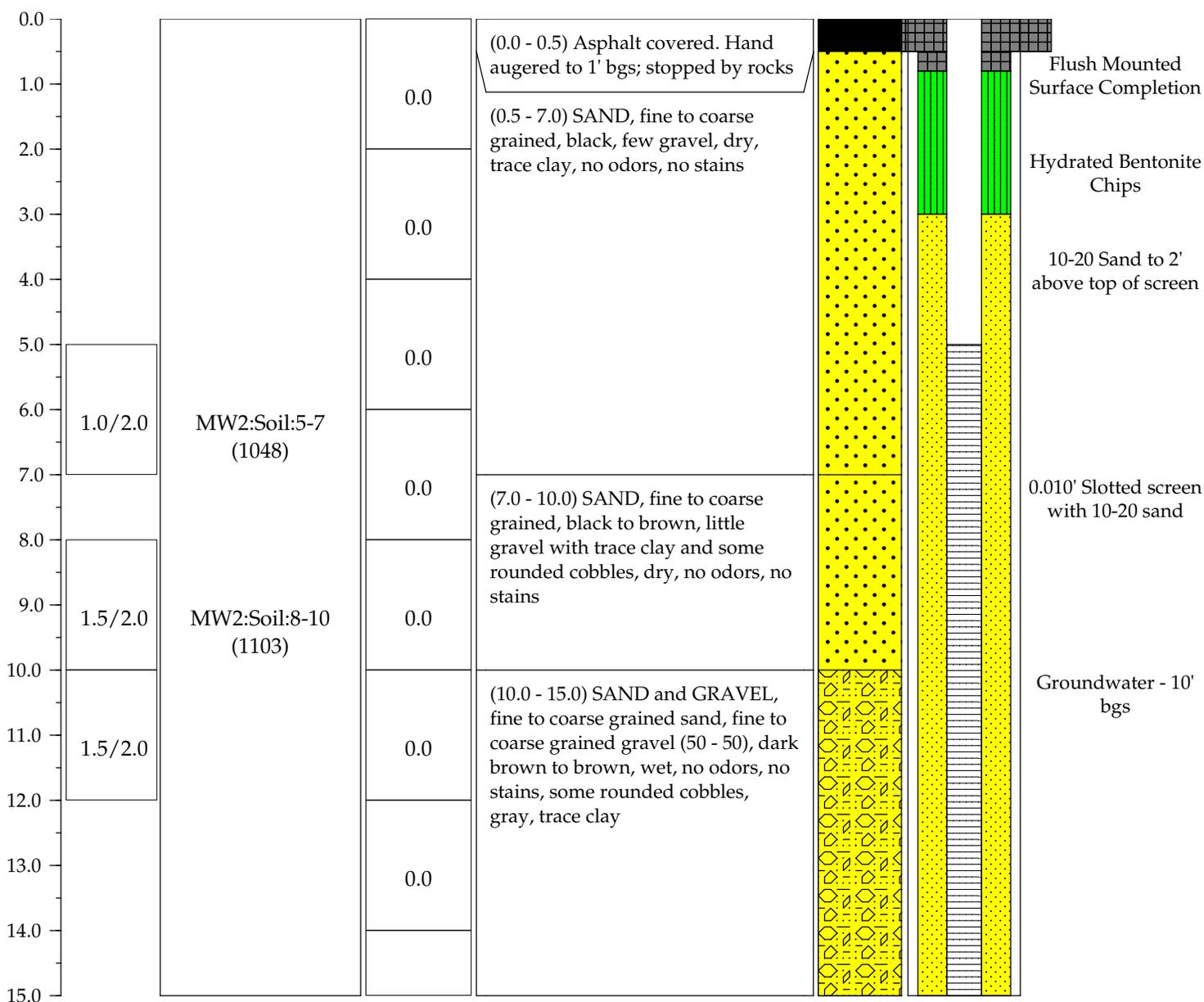
Environmental Resources Management
6455 South Yosemite St., Suite 900
Greenwood Village, CO 80111
303-741-5050



PROJECT NUMBER: 0122609
PROJECT NAME: Project Chai
LOCATION: Boulder, CO
DRILLER: Tony Goutar
DRILLING CO: Site Services
DRILL METHOD: Hollow Stem Auger

DATE DRILLED: 9/30/2010
LOGGED BY: Eric Moote
BOREHOLE DIAMETER: 8"
TOTAL DEPTH: 15'
SURFACE ELEV: 5339.48 MP ELEV: Top of Casing
NORTHING: 3062432.882 EASTING: 1794977.705

DEPTH (BGS)	SAMPLE INTERVAL /RECOVERY	LAB SAMPLE ID	ORGANIC VAPOR (ppm)	DESCRIPTION	GRAPHIC LOG	WELL CONSTRUCTION	WELL NOTES
				Trace: <5%, Few: 5-10%, Little: 15-25%, lithologic modifier: >35%			



BOREHOLE NUMBER

MW3

BOREHOLE & WELL COMPLETION LOG

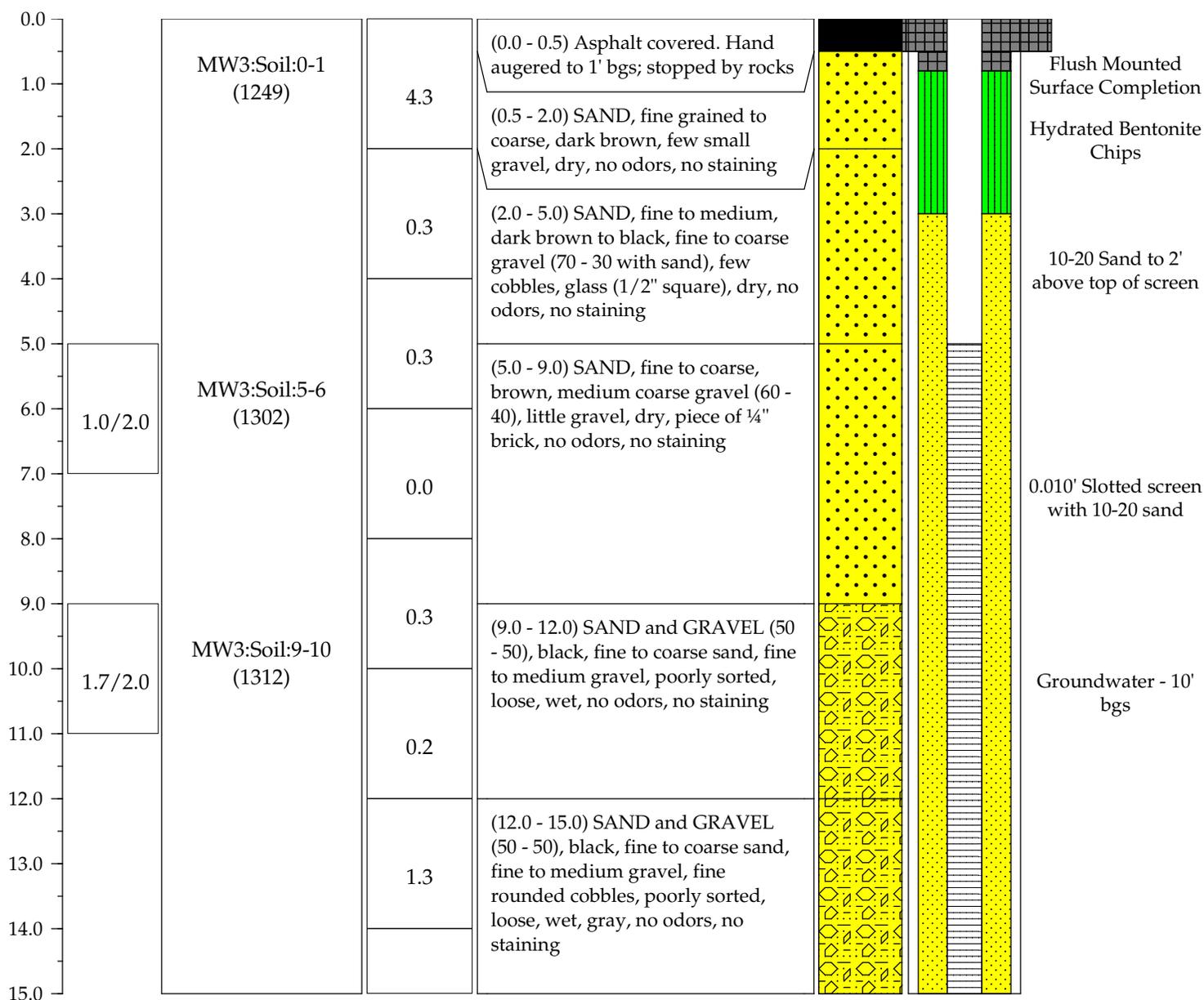
Environmental Resources Management
6455 South Yosemite St., Suite 900
Greenwood Village, CO 80111
303-741-5050



PROJECT NUMBER: 0122609
PROJECT NAME: Project Chai
LOCATION: Boulder, CO
DRILLER: Tony Goutar
DRILLING CO: Site Services
DRILL METHOD: Hollow Stem Auger

DATE DRILLED: 9/28/2010
LOGGED BY: Eric Moote
BOREHOLE DIAMETER: 8"
TOTAL DEPTH: 15'
SURFACE ELEV: 5338.042 MP ELEV: Top of Casing
NORTHING: 3062497.286 EASTING: 1794947.954

DEPTH (BGS)	SAMPLE INTERVAL /RECOVERY	LAB SAMPLE ID	ORGANIC VAPOR (ppm)	DESCRIPTION	GRAPHIC LOG	WELL CONSTRUCTION	WELL NOTES
				Trace: <5%, Few: 5-10%, Little: 15-25%, lithologic modifier: >35%			



BOREHOLE NUMBER

MW4

BOREHOLE & WELL COMPLETION LOG

Environmental Resources Management
6455 South Yosemite St., Suite 900
Greenwood Village, CO 80111
303-741-5050



PROJECT NUMBER: 0122609

DATE DRILLED: 9/29/2010

PROJECT NAME: Project Chai

LOGGED BY: Eric Moote

LOCATION: Boulder, CO

BOREHOLE DIAMETER: 8"

DRILLER: Tony Goutar

TOTAL DEPTH: 14'

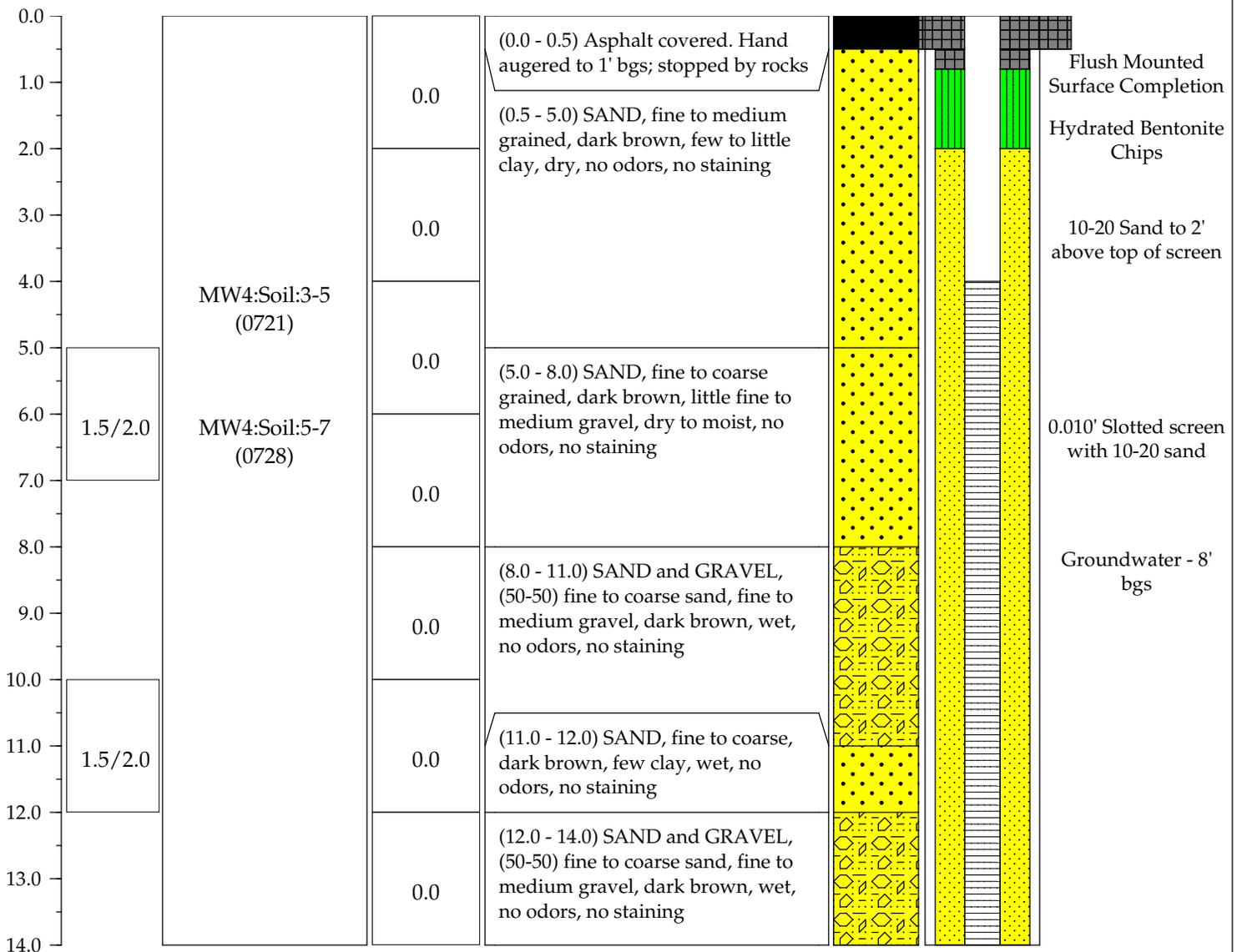
DRILLING CO: Site Services

SURFACE ELEV: 5336.633 MP ELEV: Top of Casing

DRILL METHOD: Hollow Stem Auger

NORTHING: 3062451.933 EASTING: 1794779.55

DEPTH (BGS)	SAMPLE INTERVAL /RECOVERY	LAB SAMPLE ID	ORGANIC VAPOR (ppm)	DESCRIPTION	GRAPHIC LOG	WELL CONSTRUCTION	WELL NOTES
				Trace: <5%, Few: 5-10%, Little: 15-25%, lithologic modifier: >35%			



BOREHOLE NUMBER

MW5

BOREHOLE & WELL COMPLETION LOG

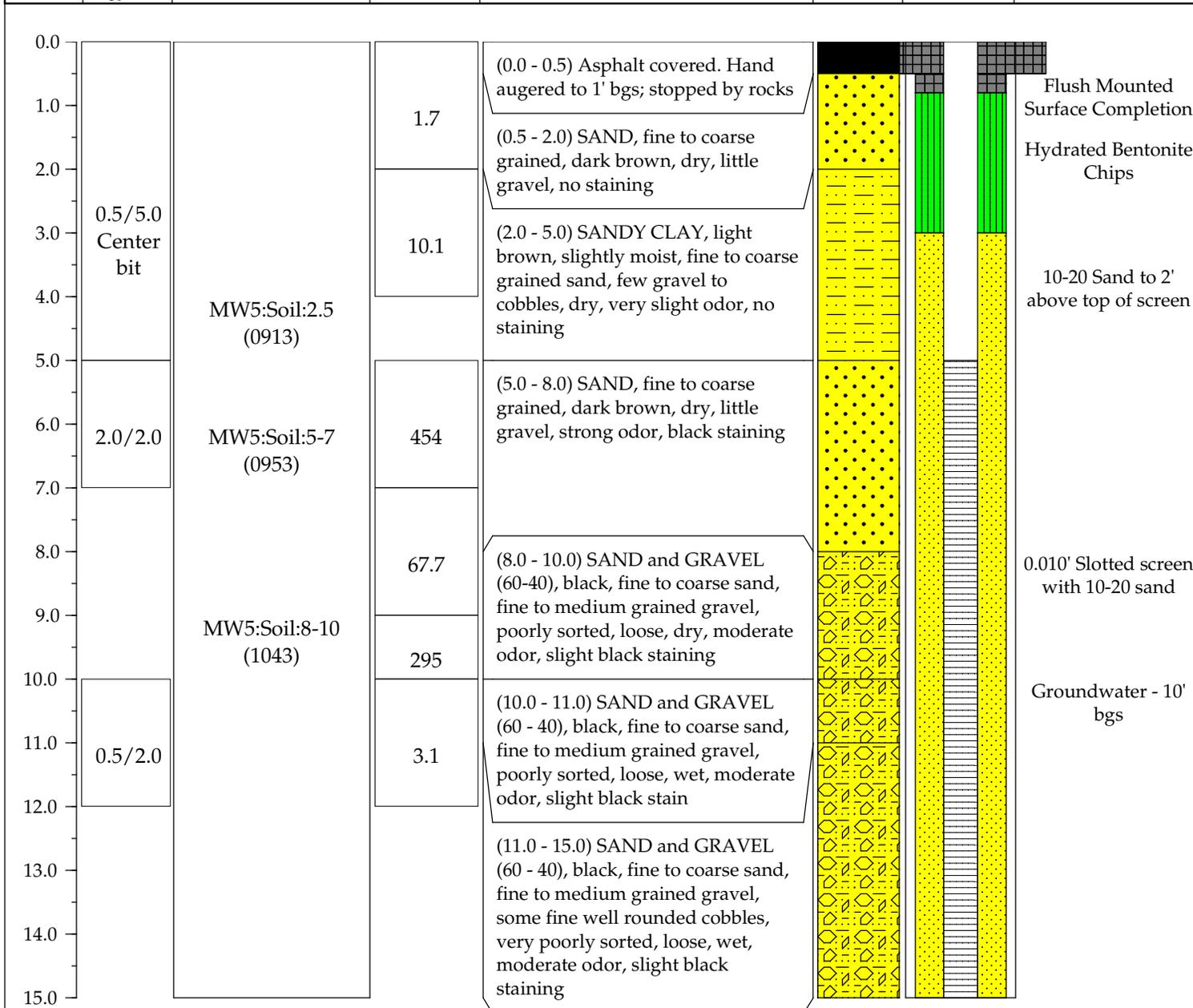
Environmental Resources Management
6455 South Yosemite St., Suite 900
Greenwood Village, CO 80111
303-741-5050



PROJECT NUMBER: 0122609
PROJECT NAME: Project Chai
LOCATION: Boulder, CO
DRILLER: Tony Goutar
DRILLING CO: Site Services
DRILL METHOD: Hollow Stem Auger

DATE DRILLED: 9/28/2010
LOGGED BY: Eric Moote
BOREHOLE DIAMETER: 8"
TOTAL DEPTH: 15'
SURFACE ELEV: 5338.13 MP ELEV: Top of Casing
NORTHING: 3062474.869 EASTING: 1794872.624

DEPTH (BGS)	SAMPLE INTERVAL /RECOVERY	LAB SAMPLE ID	ORGANIC VAPOR (ppm)	DESCRIPTION	GRAPHIC LOG	WELL CONSTRUCTION	WELL NOTES
				Trace: <5%, Few: 5-10%, Little: 15-25%, lithologic modifier: >35%			



BOREHOLE NUMBER

MW6

BOREHOLE & WELL COMPLETION LOG

Environmental Resources Management
6455 South Yosemite St., Suite 900
Greenwood Village, CO 80111
303-741-5050



PROJECT NUMBER: 0122609

DATE DRILLED: 9/29/2010

PROJECT NAME: Project Chai

LOGGED BY: Eric Moote

LOCATION: Boulder, CO

BOREHOLE DIAMETER: 8"

DRILLER: Tony Goutar

TOTAL DEPTH: 14'

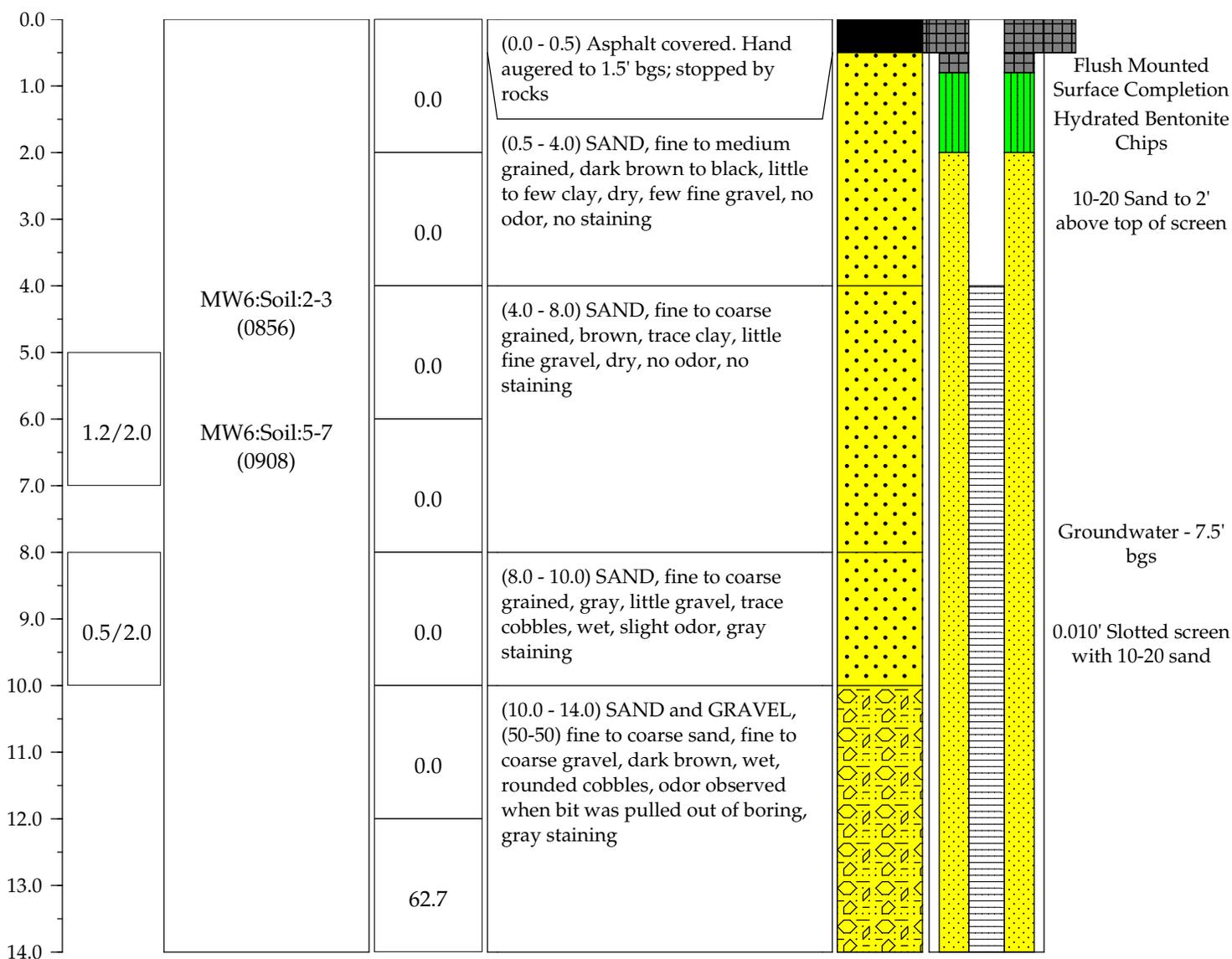
DRILLING CO: Site Services

SURFACE ELEV: 5337.509 MP ELEV: Top of Casing

DRILL METHOD: Hollow Stem Auger

NORTHING: 3062584.88 EASTING: 1794877.036

DEPTH (BGS)	SAMPLE INTERVAL /RECOVERY	LAB SAMPLE ID	ORGANIC VAPOR (ppm)	DESCRIPTION	GRAPHIC LOG	WELL CONSTRUCTION	WELL NOTES
				Trace: <5%, Few: 5-10%, Little: 15-25%, lithologic modifier: >35%			



Appendix B
Well Development Forms

Well Development / Purge Form

Project	Project Chai		Total Depth	15.64	Depth. Ind. S/N	
Project No.	0122609		Depth to Water	10.81	Weather	Sunny 80
Location	Boulder, CO		Water Column (ft. h.)	4.83		
Date	9/30/10		Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)			
Well Number	MW1		Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	3.52 x 5 = 17.63 gal		
Method	whale pump		Total Gallons Removed	19.0		
Field Personnel	Eric Moote		Sample Number & Time	N/A		

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/REDOX (Rel. MV)	Turbidity (NTU)	Remarks
	Surge	Pump								
1731		0	0						Very silty	Very silty, No odor, no sheen
1736		5	2.5						Silty	no odor or sheen
1740		9	5.0						Silty	lowered pumps to help clean out sediment from well.
1744		13	7.5						Silty	
1749		18	10						Silty	
1753		19	15						Slightly silty	
1756		22	17.5						Slightly silty	No sheen or odor
1800		26	19.0							

Sample Analytes: BTEX Napthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Napthalene (8270) PAHs (610)

Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)

General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

Well Development / Purge Form

Project	Project Chas	Total Depth	14.50	Depth.	In. S/N
Project No.	01022609	Depth to Water	9.92	Weather	Sunny, 79
Location	Boulder, CO	Water Column (ft. h.)	4.58		
Date	9/30/10	Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)			
Well Number	MW2	Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	3.34 x 5 = 16.717		
Method	Whale pump	Total Gallons Removed	20.3		
Field Personnel	Eric Moots				
Sample Number & Time					

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/REDOX (Rel. MV)	Turbidity (NTU)	Remarks
	Surge	Pump								
1818		0	0						very silty	No sheen, no odor
1822		4	2.5						silty	lower ±.5' to remove silt from well.
1824		8	5.0						slightly silty	No sheen or odor
1831		13	7.5						very silty	Pump is on bottom of well casing.
1835		17	10.0						very silty	
1838		20	12.5						slightly silty	Surging pump resulted in less fines in well casing odors.
1842		24	15.0						↓	Surging pump improved turbidity
1845		27	17.5							No odor or sheen
1846		30	20.0							

Sample Analytes: BTEX Napthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Napthalene (8270) PAHs (610)

Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)

General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

Well Development / Purge Form

Project Project Chai Total Depth 13.90 Depth. Ind. S. N
 Project No. 0122609 Depth to Water 8.53 Weather Sunny, Clear, 60s to 80F
 Location Boulder, CO Water Column (ft. h.) 5.43
 Date 9-30-10 Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)
 Well Number MW3 Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h) = 0.73 x 5.43' = 3.96 x 5 Vol
 Method Bailer Total Gallons Removed 20 gal
 Field Personnel PM & EM Sample Number & Time

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/REDOX (Rel. MV)	Turbidity (NTU)	Remarks
	Surge	Pump								
1435	-	0 ^{PM}	0	-	-	-	-	-	-	
1455			20							Thick sediment at well bottom. Dark brown product, sheen, strong odor
1510			35							Thick sediment in casing, but less than 1st 5 gal. Sheen, Dark Brown product, strong odor
1523			48							Thick sediment sheen, Dark Brown product, strong odor
1534			59							Sediment sheen, Dark brown product, strong odor
9/30/10										

Sample Analytes: BTEX Napthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Napthalene (8270) PAHs (610)
 Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)

General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

Well Development / Purge Form

Project	Project Chain		
Project No.	0122609		
Location	Boulder, CO		
Date	9-30-10		
Well Number	A445 MW4 5M 10/4/10		
Method	Pump (Peristaltic)		
Field Personnel	PM		
Total Depth	13.41'	Depth. Ind. S/N	(N)
Depth to Water	5.99'	Weather	Sunny clear, 60s - 80F
Water Column (ft. h.)	7.47'		
Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)			
Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)			
Total Gallons Removed	30 gal		30 gal for equals 5 borehole vol)
Sample Number & Time			

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/REDOX (Rel. MV)	Turbidity (NTU)	Remarks
	Surge	Pump								
10:20		0	0	—						Sediment at bottom of well.
10:47		27	5	15.6					644	Muddy water, thick sediment sl. Sheen, and slight (SI) odor.
11:06		46	10	15.3					48.8	Lessm Muddy water, w/yn decreasing sediment. Slight Sheen, and Slight odor.
11:24		64	15	15.2					9.06	Cloudy water at with less sediment than 1st 10 gal. Slight Sheen, Slight odor.
11:43		83	20	15.1					6.56	Slightly Cloudy water w/so less sediment, Slight Sheen, Slight odor.
12:01		101	25	15.1					5.50	Slightly Cloudy water, Slight Sheen, slight odor.
12:19		119	30	15.1					4.43	Water nearly clear w/ little sediment. Faint Sheen Slight odor.

Sample Analytes: BTEX Naphthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Naphthalene (8270) PAHs (610)

Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)

General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

Well Development / Purge Form

Project	Project Chai		Total Depth	13.41'	Depth.	
Project No.	0122609		Depth to Water	8.01	Ind. S/N	
Location	Boulder, CO		Water Column (ft. h.)	5.40	Weather	Sunny, 80's
Date	9/30/10		Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)			
Well Number	MWS		Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	3.942 * 5 = 19.71		
Method	Peristaltic Pump		Total Gallons Removed	20		
Field Personnel	EM, PM		Sample Number & Time			

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/REDOX (Rel. MV)	Turbidity (NTU)	Remarks
	Surge	Purap								
1331		0								
1352		21	5						very silty	water has sheen and slight odor. ± 2' of sediment on bottom of well.
1475		44	10						slightly silty	
1425		54	15						slightly silty	
1430		67	20						clear	
<i>[Handwritten signature]</i>										

Sample Analytes: BTEX Napthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Napthalene (8270) PAHs (610)
 Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)
 General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

WELL DEVELOPMENT FUND FORM

Project	Project Cwai		Total Depth	14.46	Depth Ind. S/N	
Project No.	0122609		Depth to Water	7.84	Weather	Sunny 80s
Location	Boilder, CO		Water Column (ft. h.)	6.62		
Date	9/30/10		Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)			
Well Number	MW6		Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	4.932 x 5 = 24.663		
Method	Whale pump & bailer		Total Gallons Removed	2.1		
Field Personnel	EM		Sample Number & Time			

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/REDOX (ReL. MV)	Turbidity (NTU)	Remarks
	Surge	Pump								
1922		20	1.4							
1544	Abandon whale pump go to bailer	20	1.8						very silty	Slight odor and sheen. Very silty. Pump operated fine and then stopped working
1600		20	2.1						very silty	Slight odor and sheen. Very silty. bailed well dry.
1410	Abandon bailer when bailed dry. Restart development on 10/1/10.	20							very silty	Continued on 10/1/10

Sample Analytes: BTEX Nitrate
 Naphthalene (8020) Glycols
 TVPH/GRO RCRA Metals F N/F
 TVPH/DRO VOC (8260)
 Naphthalene (8270) PAHs (610)
 Semi-Volatiles (8270)
 General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

Well Development/Purge Form

Project	Project Chq1	Total Depth	14.39	Depth Ind. S/N	
Project No.	0122609	Depth to Water	7.82	Weather	Sunny, 80's
Location	Bowler Co	Water Column (ft. h.)	6.57		
Date	9/8 10/1/10	Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)			
Well Number	MW6	Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	4.77 x 5 = 23.96		
Method	Peristaltic Pump	Total Gallons Removed	26.1 gallons		
Field Personnel	EM	Sample Number & Time			

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	(% DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/REDOX (ReL. MV)	Turbidity (NTU)	Remarks
	Surge	Pump								
0928	5									
1002	5									
1012		0	0	14.42	(22.1)	0.314	6.74	18.8	very silty	suged using boiler - stopped to calibrate YSI
1015		3	0.4	14.39	(13.7)	0.314	6.00	33.3		surged with boiler - set up to start pumping - Sheen & slight odor
1018		4								Pumping rate = 400 ml/min
1025		4	1.0	14.45	1.11	0.280	5.88	-45.9		stopped pumping b/c YSI is clogged w/ sediment. Clean, raise tube off bottom.
1028		9	1.3	14.53	1.01	0.259	5.87	-72.5	very silty	Pumping rate = 300 ml/min
1031		12	1.9	14.56	1.10	0.250	5.84	-78.0		No sheen, but odor observed
1034		15	2.5	14.54	0.83	0.234	5.85	-92.8		
1037		18	3.0	14.53	0.77	0.228	5.87	-112.6	silty	No sheen, but odor
1040		21	3.1	14.53	0.81	0.229	5.87	-70.6		Pumping rate = 300 ml/min
1043		24	3.2	14.56	0.83	0.227	5.88	-40.6	slightly silty	
1046		27	3.5	14.66	2.10	0.218	5.89	-148.4		
1049		30	3.8	14.43	2.09	0.211	5.89	-116.9		Continue on next page →

Sample Analytes: BTEX Napthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Napthalene (8270) PAHs (610)
 Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)
 General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

Well Development / Purge Form

Project Project Chat Depth. _____
 Project No. 0122609 Ind. S/N _____
 Location Boulder, CO Weather _____
 Date 10/1/10 Water Column (ft. h.) _____
 Well Number MW6 Casing Volume (gal) (2" = 0.16h, 4" = 0.66h) _____
 Method Peristaltic Pump Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h) _____
 Field Personnel Eric Moore Total Gallons Removed _____
 Sample Number & Time _____

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	(% DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/REDOX (ReL, MV)	Turbidity (NTU)	Remarks
	Surge	Pump								
1052	33		4.1	14.64	2.18	0.208	5.91	-126.0	slightly silty	Continued from page 1 No sheen, but odor observed Pumping rate = 300 ml/min Pumping Rate = 300 ml/min low Pumping Rate = 1150 ml/min high Slight odor, no sheen slight sheen, slight odor
1055	36		4.4	14.72	2.22	0.206	5.91	-116.0		
1058	39		4.7	14.65	2.22	0.202	5.94	-140.0		
1101	42		5.0	14.64	2.18	0.200	5.94	-157.0		
1104	45		5.1	14.64	2.03	0.197	5.93	-157.2		
1107	48		5.2	14.63	2.03	0.194	5.93	-158.6		
1110	51		5.5	14.61	1.99	0.190	5.94	-147.6		
1113	54		5.8	14.64	1.83	0.190	5.93	-147.3		
1114	57		6.1	14.67	1.71	0.186	5.94	-146.4		
1119	60		6.5	14.58	1.45	0.185	5.92	-170.9	clear	
1122	63		7.5	14.52	1.37	0.186	5.92	-187.1	slightly silty	
1125	66		8.0	14.37	1.61	0.203	5.98	-162.0	slightly silty	
1128	69		9.0	14.36	1.90	0.190	6.02	-131.1	silty	
1131	72		10.0	14.36	2.38	0.182	6.03	-107.3	silty	

Sample Analytes: BTEX Naphthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Naphthalene (8270) PAHs (610)
 Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)
 General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

Continue on page 3 →

Well Development / Purge Form

Project	Project Chaf		Total Depth	Depth.
Project No.	0122609		Depth to Water	Ind. S/N
Location	Boulder, CO		Water Column (ft. h.)	Weather
Date	10/1/10		Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)	
Well Number	Mw6		Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	
Method	Peristaltic Pump		Total Gallons Removed	
Field Personnel	Eric Moots		Sample Number & Time	

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/REDOX (Rel. MV)	Turbidity (NTU)	Remarks
	Surge	Pump								
1134		75	11.2	14.43	2.46	0.176	6.05	-93.8	very silty	odor observed, but no sheen.
1137		76	12.0	14.36	5.20	0.175	5.83	-74.0	silty	well ran dry. Lowered tube to bottom
1140	soiled	81	12.5	14.36	4.70	0.175	6.07	-78.8	silty	well ran dry. stopped pumping to allow it to recharge.
1314	10	81	14.0	14.52	1.54	0.192	6.81	15.9	very silty	Restarted. Water Level @ 7.85' bgs
1317		84	13.89	14.59	1.74	0.200	4.94	62.0		Pumping = 600 ml/min. Sheen and odor observed.
1320		87	15.5	14.32	1.98	0.198	5.38	6.3		
1323		90	14.1	14.14	1.85	0.205	5.70	-33.5		well running dry. Turn down pumping rate to 500 ml/min
1324		93	16.7	14.25	2.04	0.203	5.89	-47.0	slightly silty	water in tube = clear. flow thru = silty
1329		96	17.0	14.44	2.10	0.198	6.04	-47.0	clear	sheen and odor observed.
1332		99	17.4	14.57	2.10	0.193	6.08	-49.9	silty.	Lowered tube to bottom of well
1335		102	18.0	14.54	2.23	0.184	6.01	-35.4	silty.	Raised pumping rate to 900 ml/min
1338		105	18.3	14.23	2.24	0.189	6.05	-54.8	clear	Tube sitting on bottom of well.
1340		107								well runs dry. Allow to recharge.
1342		107	19	14.56	3.49	0.187	6.07	-48.0	clear	Resume @ slow pumping rate (500 ml/min)

Sample Analytes: BTEX Napthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Napthalene (8270) PAHs (610)
 Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)
 General Water Chemistry (cations plus manganese, anions, chloride, bicarbonate, and total alkalinity)

Well Development/Purge Form

Project	Project Chai	Total Depth	Depth.
Project No.	0122609	Ind. S/N	
Location	Boulder, CO	Depth to Water	Weather
Date	10/1/10	Water Column (ft. h.)	
Well Number	MW6	Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)	
Method	Peristaltic Pump	Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	23.93 gal
Field Personnel	Eric Moote	Total Gallons Removed	
		Sample Number & Time	

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/REDOX (Rel. MV)	Turbidity (NTU)	Remarks
	Surge	Pump								
1345		110	19.2	14.55	2.88	0.105	6.06	-40.2	clear	Odor, but no sheen
1348		113	19.5	14.52	2.74	0.102	6.07	-34.0	clear	
1351		116	19.8	14.63	2.54	0.175	6.06	-28.7	clear	
1354		119	20.1	14.61	2.43	0.172	6.02	-24.5	clear	Pumping Rate = 300 mL/min
1357		122	20.3	14.61	2.47	0.171	5.97	-23.2	clear	No sheen, but odor detected
1400		125	20.5	14.69	2.58	0.170	5.96	-26.0	clear	
1403		128	20.8	14.69	2.54	0.169	5.91	-32.7	clear	
1406		131	21.3	14.51	2.27	0.165	5.92	-44.6	clear	Turned pumping rate up to 900 mL/min
1409		134	22.1	14.52	2.02	0.158	5.94	-50.9	clear	Around 3' of water in well. Odor, but no sheen on water.
1412		137	22.8	14.21	2.08	0.169	6.07	-64.9	clear	
1415		140	23.8	14.04	2.13	0.171	6.11	-75.1	clear	Well ran dry. Pumping stopped to allow recharge
1418		140	24.0	14.06	2.44	0.166	6.11	-28.4	clear	Restarted pumping at low pump rate.
1421		143	24.1	14.62	2.45	0.159	6.01	-17.4	clear	
1424		146	24.2	14.66	2.43	0.157	6.06	-13.1	clear	Continue to next page →

Sample Analytes: BTEX Naphthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod PAHs (610)
 Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)

General Water Chemistry (cations plus manganese, anions, chloride, bicarbonate, and total alkalinity)

Well Development / Purge Form

Project		Total Depth	Depth.
Project No.		Ind. S/N	Weather
Location		Depth to Water	
Date		Water Column (ft. h.)	
Well Number	MW6	Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)	
Method		Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	
Field Personnel		Total Gallons Removed	
		Sample Number & Time	

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/ REDOX (ReL. MV)	Turbidity (NTU)	Remarks
	Surge	Pump								
1427		149	24.3	14.45	2.55	0.156	6.02	-10.2	clear	Turned up pump rate to 900 ml/min
1430		152	25.2	14.56	2.43	0.154	5.92	-10.6	clear	
1433		155	26.1	14.53	2.03	0.147	5.92	-21.1	clear	Development complete

Sample Analytes: BTEX Naphthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Naphthalene (8270) PAHs (610)
 Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)
 General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

Appendix C
Well Purge Forms

Well Development / Purge Form

Project		Project Chai		Total Depth	13.90	Depth. Ind. S <u>N</u>
Project No.		0122609		Depth to Water	8.63	Weather <u>cloudy, Breezy</u>
Location		Boulder, CO		Water Column (ft. h.)	5.37	
Date		10/4/10		Casing Volume (gal)	2" = 0.16h, 4" = 0.66h	0.8592 * 3 = 2.58 gal
Well Number		MW3		Borehole Volume (gal)	2" = 0.73h, 4" = 1.15h	
Method		Low flow Peristaltic pump		Total Gallons Removed	3.5	
Field Personnel		Eric Moots		Sample Number & Time	MW3: GW. 1010 @ 1539	

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	DO (mg/L)	Spec. Cond. (µs/ms)	pH	ORP/REDOX (Rel. MV)	Turbidity (NTU)	Remarks
	Surge	Pump								
1504		0	0	20.77	9.56	0.245	6.64	-15.5	9.65	Clear. Bheen and odor observed.
1507		3	.2	19.52	0.61	0.247	6.49	-37.3	5.69	Flow rate = 300 ml/min
1510		6	.4	19.45	0.85	0.247	6.50	-49.6	4.35	
1513		9	.6	19.50	0.42	0.247	6.50	-57.6	4.03	
1516		12	.9	19.51	0.55	0.247	6.51	-58.0	3.48	odor, but no sheen observed
1519		15	1.2	19.42	0.68	0.248	6.51	-65.0	2.86	
1522		18	1.5	19.41	0.53	0.248	6.51	-55.3	2.80	
1525		21	1.8	19.36	0.47	0.248	6.51	-54.0	2.32	
1528		24	2.0	19.29	0.44	0.248	6.52	-47.3	2.04	
1531		27	2.3	19.26	0.34	0.249	6.52	-49.7	2.18	
1534		30	2.6	19.25	0.48	0.249	6.52	-51.8	1.71	
1535		33	2.8	19.23	0.54	0.248	6.52	-49.5	1.60	
1538		36	3.0	19.18	0.35	0.249	6.52	-49.6	1.53	

Sampled when purge volume passed.

Sample Analytes: BTEX Nitrate General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

Napthalene (8020) Glycols

TVPH/GRO RCRA Metals F N/F

TVPH/DRO

Napthalene (8270) PAHs (610)

VOC (8260) Semi-Volatiles (8270)

Well Development/Purge Form

Project	Project Chair		Total Depth	Depth.	Ind. S/N
Project No.	0122609		Depth to Water	8.02	Weather
Location	Boulder, CO		Water Column (ft. h.)	5.39	Rainy
Date	10/4/10		Casing Volume (gal)	2" = 0.16h, 4" = 0.66h	0.62h x 2 = 2.537
Well Number	FWS		Borehole Volume (gal)	2" = 0.73h, 4" = 1.15h	
Method	Low flow peristaltic pump		Total Gallons Removed	3.6	
Field Personnel	Eric Moore		Sample Number & Time	MWS:GW: 1010 @ 1430	

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/REDOX (ReL. MV)	Turbidity (NTU)	Remarks
	Surge	Pump/Bail								
1404	0		0	17.22	6.60	0.186	6.82	3.1	NM	Clear Pumping rate = 300 ml/min
1407	3		0.3	16.82	0.70	0.182	6.81	-11.5	NM	Slightly silty
1410	6		0.6	16.81	0.44	0.202	6.88	-23.5	87.8	Slight sheen and odor observed.
1413	9		0.9	16.85	0.41	0.202	6.41	-36.8	19.6	
1416	12		1.0	16.89	0.45	0.201	6.42	-39.4	13.7	
1419	15		1.2	16.98	0.64	0.201	6.43	-30.8	7.03	
1422	18		1.5	17.02	0.67	0.202	6.44	-26.4	6.88	
1425	21		1.8	16.96	0.60	0.202	6.44	-28.3	4.44	
1428	24		2.1	17.13	0.46	0.201	6.43	-35.6	3.98	
1431	27		2.4	17.23	0.42	0.202	6.44	-27.9	2.99	
1434	30		2.7	17.34	0.45	0.203	6.44	-27.7	2.72	
1437	33		3.0	17.34	0.43	0.203	6.45	-36.8	2.57	
										Sample @ 1438 after purge volume reached

Sample Analytes: BTEX Napthalene (8020) TVPH/GRO Napthalene (8270) PAHs (610)

Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)

General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

Well Development/Purge Form

Project	Project Chai		Total Depth	14.39	Depth Ind. S/N	1010
Project No.	0122609		Depth to Water	1.83	Weather	Cloudy, 70s
Location	Boulder, CO		Water Column (ft. h.)	6.54		
Date	10/4/10		Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)	1.05 x 3 = 3.148 gal		
Well Number	M20		Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)			
Method	Lowflow Peristaltic Pump		Total Gallons Removed	4.0		
Field Personnel	Eric Moate		Sample Number & Time	MWD:GW:1010 @ 1333		

Time	Duration (Minutes)		Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/REDOX (Rel. MV)	Turbidity (NTU)	Remarks
	Surge	Pump								
1249		0	0	15.67	3.81	0.191	6.45	22.3	98.8	slightly silty. Pumping rate = 300 m ³ /min
1252		3	1.2	15.26	1.83	0.181	5.98	11.6	170	
1253		6	.4	15.31	1.51	0.180	5.84	9.7	134	slight odor, no screen observed
1256		9	.6	15.42	1.28	0.172	5.77	9.4	56.0	
1259		10	.8	15.42	1.10	0.167	5.81	12.6	20.4	Clear.
1302		13	1.0	15.30	0.86	0.164	5.83	8.4	8.85	
1305		16	1.2	15.22	0.80	0.163	5.86	4.5	7.03	
1308		19	1.4	15.14	0.69	0.143	5.87	9.5	9.36	
1311		22	1.6	15.03	0.64	0.162	5.88	6.7	4.62	
1314		25	1.9	15.10	0.70	0.141	5.88	7.9	4.01	
1317		28	2.1	15.11	0.59	0.141	5.88	-1.0	3.99	
1320		31	2.4	15.13	0.58	0.141	5.88	-15.9	3.93	
1323		34	2.7	15.01	0.57	0.162	5.88	-14.2	3.14	
1326		37	3.0	15.00	0.58	0.161	5.89	-23.8	3.07	

Continue to page 2 →

Sample Analytes: BTEX Napthalene (8020) TVPH/GRO RCRA Metals F N/F Napthalene (8270) PAHs (610)
 Nitrate Glycols General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity) VOC (8260) Semi-Volatiles (8270)

Appendix D
Laboratory Analytical Reports



10/25/10

Technical Report for

ERM-Rocky Mountain, Inc.

Project Chai

0122609

Accutest Job Number: D17925

Sampling Date: 10/04/10

Report to:

**ERM-Rocky Mountain, Inc.
6455 South Yosemite Suite #900
Greenwood Village, CO 80111
chris.thebo@erm.com**

ATTN: Chris Thebo

Total number of pages in report: 67



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

**John Hamilton
Laboratory Director**

Client Service contact: Shea Greiner 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)

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Test results relate only to samples analyzed.

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Sample Summary

ERM-Rocky Mountain, Inc.

Job No: D17925

Project Chai

Project No: 0122609

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D17925-1	10/04/10	09:04 EM	10/04/10	AQ	Ground Water	MW1:GW:1010
D17925-2	10/04/10	10:10 EM	10/04/10	AQ	Ground Water	MW2:GW:1010
D17925-3	10/04/10	11:11 EM	10/04/10	AQ	Ground Water	MW4:GW:1010
D17925-4	10/04/10	13:33 EM	10/04/10	AQ	Ground Water	MW6:GW:1010
D17925-5	10/04/10	14:30 EM	10/04/10	AQ	Ground Water	MW5:GW:1010
D17925-6	10/04/10	15:39 EM	10/04/10	AQ	Ground Water	MW3:GW:1010

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: ERM-Rocky Mountain, Inc.

Job No D17925

Site: Project Chai

Report Dat 10/25/2010 3:13:02 PM

On 10/04/2010, six (6) samples, 0 Trip Blanks, and 0 Field Blanks were received at Accutest Mountain States (AMS) at a temperature of 4.7°C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D17925 was assigned to the project. The lab sample IDs, client sample IDs, and dates of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ

Batch ID: V3V404

- All samples were analyzed within the recommended method holding time.
- Samples D17776-1MS and D17776-1MSD were used as the QC samples indicated.
- The method blank for this batch meets method specific criteria.
- 2-Chloroethylvinylether was not found in the samples and the matrix spike and matrix spike duplicate (MS/MSD; on another client's sample) showed no recoveries for this compound. This may be due to the acid preservation in the sample, which is known to destroy this analyte.
- The matrix spike and matrix spike duplicate (MS/MSD) recoveries of Chloroethane are outside control limits. Probable cause due to matrix interference. Refer to the lab control or spike blank for recovery information.

Matrix AQ

Batch ID: V3V408

- All samples were analyzed within the recommended method holding time.
- The method blank for this batch meets method specific criteria.
- Samples D18026-3MS and D18026-3MSD were used as the QC samples indicated.
- 2-Chloroethylvinylether was not found in the samples and the matrix spike and matrix spike duplicate (MS/MSD; on another client's sample) showed no recoveries for this compound. This may be due to the acid preservation in the sample, which is known to destroy this analyte.

Matrix AQ

Batch ID: V5V607

- All samples were analyzed within the recommended method holding time.
- Samples D17401-18RMS and D17401-18RMSD were used as the QC samples indicated.
- The method blank for this batch meets method specific criteria.

Extractables by GCMS By Method SW846 8270C

Matrix AQ

Batch ID: OP2643

- All samples were extracted and analyzed within the recommended method holding time.
- Samples D18104-1MS and D18104-1MSD were used as the QC samples indicated.
- The method blank for this batch meets method specific criteria.
- The blank spike (BS) recoveries of 3,3'-Dichlorobenzidine and 4,6-Dinitro-o-cresol are outside control limits. The matrix spike and matrix spike duplicate (MS/MSD) recoveries of these analytes are within QC limits.
- Sample D17925-1 has surrogates outside control limits. Probable cause due to matrix interference. Confirmed ND by re-extraction and reanalysis beyond holdtime.
- D17925-1: Confirmation run.
- Bis(2-Ethylhexyl)phthalate was detected in the method blank (MB) at 3.3 ug/L. This amount was not subtracted from the sample result. Since the bias for bis(2-Ethylhexyl)phthalate is high and the sample is non-detect for this analyte, no further action is required.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: MW1:GW:1010	
Lab Sample ID: D17925-1	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8260B	Percent Solids: n/a
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V07548.D	1	10/06/10	DC	n/a	n/a	V3V404
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.0	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	1.0	ug/l	
75-25-2	Bromoform	ND	4.0	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	1.0	ug/l	
75-00-3	Chloroethane	ND	4.0	1.5	ug/l	
67-66-3	Chloroform	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	4.0	1.0	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	1.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	1.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.0	ug/l	
74-83-9	Methyl bromide	ND	4.0	1.5	ug/l	
74-87-3	Methyl chloride	ND	4.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	4.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.5	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	4.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW1:GW:1010	
Lab Sample ID: D17925-1	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8260B	Percent Solids: n/a
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.50	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.50	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	ug/l	
108-05-4	Vinyl Acetate	ND	4.0	0.60	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.60	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	87%		63-130%
2037-26-5	Toluene-D8	88%		68-130%
460-00-4	4-Bromofluorobenzene	82%		61-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW1:GW:1010	Date Sampled:	10/04/10
Lab Sample ID:	D17925-1	Date Received:	10/04/10
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3520C		
Project:	Project Chai		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	1G09403.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299
Run #2 ^b	1G09429.D	1	10/15/10	TMB	10/11/10	OP2643	E1G300

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2	1000 ml	1.0 ml

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	5.0	4.1	ug/l	
95-57-8	2-Chlorophenol	ND	1.5	1.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	2.5	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.7	ug/l	
105-67-9	2,4-Dimethylphenol	ND	1.0	1.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.2	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	2.0	1.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	2.5	ug/l	
106-44-5	4-Methylphenol	ND	2.0	1.8	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	2.0	ug/l	
100-02-7	4-Nitrophenol	ND	1.1	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	5.0	1.3	ug/l	
108-95-2	Phenol	ND	5.0	2.2	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	1.5	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	2.0	1.7	ug/l	
83-32-9	Acenaphthene	ND	1.0	1.0	ug/l	
208-96-8	Acenaphthylene	ND	1.0	1.0	ug/l	
120-12-7	Anthracene	ND	1.3	1.3	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	1.0	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.90	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.5	1.4	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	2.0	2.0	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.5	1.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.5	ug/l	
85-68-7	Butyl benzyl phthalate	ND	1.1	1.1	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	2.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.8	ug/l	
106-47-8	4-Chloroaniline	ND	1.0	1.0	ug/l	
218-01-9	Chrysene	ND	1.0	1.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	2.2	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	1.0	1.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	2.5	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW1:GW:1010	Date Sampled:	10/04/10
Lab Sample ID:	D17925-1	Date Received:	10/04/10
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3520C		
Project:	Project Chai		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	2.5	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	1.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.8	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	1.0	1.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	2.0	1.6	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.8	ug/l	
84-74-2	Di-n-butyl phthalate	ND	1.3	1.3	ug/l	
117-84-0	Di-n-octyl phthalate	ND	1.8	1.8	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	2.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	2.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1.5	1.5	ug/l	
206-44-0	Fluoranthene	ND	1.2	1.2	ug/l	
86-73-7	Fluorene	ND	1.4	1.4	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	2.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	1.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l	
67-72-1	Hexachloroethane	ND	1.0	1.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	2.0	1.6	ug/l	
78-59-1	Isophorone	ND	1.0	1.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	1.8	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	2.2	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	1.8	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	1.5	ug/l	
91-20-3	Naphthalene	ND	1.0	1.0	ug/l	
98-95-3	Nitrobenzene	ND	1.0	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	1.6	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	1.0	1.0	ug/l	
85-01-8	Phenanthrene	ND	5.0	2.0	ug/l	
129-00-0	Pyrene	ND	1.0	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.8	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42% ^c	40%	43-130%
4165-62-2	Phenol-d5	38% ^c	38%	47-130%
118-79-6	2,4,6-Tribromophenol	32%	47%	32-138%
4165-60-0	Nitrobenzene-d5	52%	52%	45-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW1:GW:1010	
Lab Sample ID: D17925-1	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8270C SW846 3520C	Percent Solids: n/a
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	49%	49%	45-130%
1718-51-0	Terphenyl-d14	67%	54%	47-136%

- (a) Confirmed by re-extraction and reanalysis beyond hold time.
- (b) Confirmation run.
- (c) Confirmed low surrogate recoveries.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW2:GW:1010	
Lab Sample ID: D17925-2	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8260B	Percent Solids: n/a
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V07549.D	1	10/06/10	DC	n/a	n/a	V3V404
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.0	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	1.0	ug/l	
75-25-2	Bromoform	ND	4.0	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	1.0	ug/l	
75-00-3	Chloroethane	ND	4.0	1.5	ug/l	
67-66-3	Chloroform	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	4.0	1.0	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	1.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	1.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.0	ug/l	
74-83-9	Methyl bromide	ND	4.0	1.5	ug/l	
74-87-3	Methyl chloride	ND	4.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	4.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.5	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	4.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW2:GW:1010	
Lab Sample ID: D17925-2	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8260B	Percent Solids: n/a
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.50	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.50	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	ug/l	
108-05-4	Vinyl Acetate	ND	4.0	0.60	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.60	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	89%		63-130%
2037-26-5	Toluene-D8	88%		68-130%
460-00-4	4-Bromofluorobenzene	81%		61-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW2:GW:1010	
Lab Sample ID: D17925-2	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8270C SW846 3520C	Percent Solids: n/a
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G09404.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	5.0	4.1	ug/l	
95-57-8	2-Chlorophenol	ND	1.5	1.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	2.5	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.7	ug/l	
105-67-9	2,4-Dimethylphenol	ND	1.0	1.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.2	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	2.0	1.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	2.5	ug/l	
106-44-5	4-Methylphenol	ND	2.0	1.8	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	2.0	ug/l	
100-02-7	4-Nitrophenol	ND	1.1	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	5.0	1.3	ug/l	
108-95-2	Phenol	ND	5.0	2.2	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	1.5	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	2.0	1.7	ug/l	
83-32-9	Acenaphthene	ND	1.0	1.0	ug/l	
208-96-8	Acenaphthylene	ND	1.0	1.0	ug/l	
120-12-7	Anthracene	ND	1.3	1.3	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	1.0	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.90	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.5	1.4	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	2.0	2.0	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.5	1.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.5	ug/l	
85-68-7	Butyl benzyl phthalate	ND	1.1	1.1	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	2.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.8	ug/l	
106-47-8	4-Chloroaniline	ND	1.0	1.0	ug/l	
218-01-9	Chrysene	ND	1.0	1.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	2.2	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	1.0	1.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	2.5	ug/l	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW2:GW:1010	Date Sampled:	10/04/10
Lab Sample ID:	D17925-2	Date Received:	10/04/10
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3520C		
Project:	Project Chai		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	2.5	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	1.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.8	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	1.0	1.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	2.0	1.6	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.8	ug/l	
84-74-2	Di-n-butyl phthalate	ND	1.3	1.3	ug/l	
117-84-0	Di-n-octyl phthalate	ND	1.8	1.8	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	2.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	2.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1.5	1.5	ug/l	
206-44-0	Fluoranthene	ND	1.2	1.2	ug/l	
86-73-7	Fluorene	ND	1.4	1.4	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	2.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	1.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l	
67-72-1	Hexachloroethane	ND	1.0	1.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	2.0	1.6	ug/l	
78-59-1	Isophorone	ND	1.0	1.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	1.8	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	2.2	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	1.8	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	1.5	ug/l	
91-20-3	Naphthalene	ND	1.0	1.0	ug/l	
98-95-3	Nitrobenzene	ND	1.0	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	1.6	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	1.0	1.0	ug/l	
85-01-8	Phenanthrene	ND	5.0	2.0	ug/l	
129-00-0	Pyrene	ND	1.0	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.8	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		43-130%
4165-62-2	Phenol-d5	56%		47-130%
118-79-6	2,4,6-Tribromophenol	40%		32-138%
4165-60-0	Nitrobenzene-d5	53%		45-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW2:GW:1010	
Lab Sample ID: D17925-2	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8270C SW846 3520C	Percent Solids: n/a
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	51%		45-130%
1718-51-0	Terphenyl-d14	69%		47-136%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW4:GW:1010	
Lab Sample ID: D17925-3	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8260B	Percent Solids: n/a
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V07550.D	1	10/06/10	DC	n/a	n/a	V3V404
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.0	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	1.0	ug/l	
75-25-2	Bromoform	ND	4.0	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	1.0	ug/l	
75-00-3	Chloroethane	ND	4.0	1.5	ug/l	
67-66-3	Chloroform	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	4.0	1.0	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	1.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	1.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	1.2	2.0	0.30	ug/l	J
591-78-6	2-Hexanone	ND	2.0	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.0	ug/l	
74-83-9	Methyl bromide	ND	4.0	1.5	ug/l	
74-87-3	Methyl chloride	ND	4.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	4.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.5	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	4.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW4:GW:1010	
Lab Sample ID: D17925-3	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8260B	Percent Solids: n/a
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.50	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.50	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	ug/l	
108-05-4	Vinyl Acetate	ND	4.0	0.60	ug/l	
1330-20-7	Xylene (total)	3.7	2.0	0.60	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	90%		63-130%
2037-26-5	Toluene-D8	90%		68-130%
460-00-4	4-Bromofluorobenzene	83%		61-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW4:GW:1010	
Lab Sample ID: D17925-3	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8270C SW846 3520C	Percent Solids: n/a
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G09430.D	1	10/15/10	TMB	10/11/10	OP2643	E1G300
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	5.0	4.1	ug/l	
95-57-8	2-Chlorophenol	ND	1.5	1.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	2.5	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.7	ug/l	
105-67-9	2,4-Dimethylphenol	ND	1.0	1.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.2	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	2.0	1.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	2.5	ug/l	
106-44-5	4-Methylphenol	ND	2.0	1.8	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	2.0	ug/l	
100-02-7	4-Nitrophenol	ND	1.1	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	5.0	1.3	ug/l	
108-95-2	Phenol	ND	5.0	2.2	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	1.5	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	2.0	1.7	ug/l	
83-32-9	Acenaphthene	2.0	1.0	1.0	ug/l	
208-96-8	Acenaphthylene	4.2	1.0	1.0	ug/l	
120-12-7	Anthracene	1.8	1.3	1.3	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	1.0	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.90	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.5	1.4	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	2.0	2.0	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.5	1.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.5	ug/l	
85-68-7	Butyl benzyl phthalate	ND	1.1	1.1	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	2.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.8	ug/l	
106-47-8	4-Chloroaniline	ND	1.0	1.0	ug/l	
218-01-9	Chrysene	ND	1.0	1.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	2.2	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	1.0	1.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	2.5	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW4:GW:1010	
Lab Sample ID: D17925-3	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8270C SW846 3520C	Percent Solids: n/a
Project: Project Chai	

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	2.5	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	1.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.8	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	1.0	1.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	2.0	1.6	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.8	ug/l	
84-74-2	Di-n-butyl phthalate	ND	1.3	1.3	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	1.8	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	2.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	2.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1.5	1.5	ug/l	
206-44-0	Fluoranthene	ND	1.2	1.2	ug/l	
86-73-7	Fluorene	3.8	1.4	1.4	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	2.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	1.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l	
67-72-1	Hexachloroethane	ND	1.0	1.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	2.0	1.6	ug/l	
78-59-1	Isophorone	ND	1.0	1.0	ug/l	
91-57-6	2-Methylnaphthalene	10.2	5.0	1.8	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	2.2	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	1.8	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	1.5	ug/l	
91-20-3	Naphthalene	7.5	1.0	1.0	ug/l	
98-95-3	Nitrobenzene	ND	1.0	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	1.6	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	1.0	1.0	ug/l	
85-01-8	Phenanthrene	5.4	5.0	2.0	ug/l	
129-00-0	Pyrene	1.1	1.0	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.8	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	66%		43-130%
4165-62-2	Phenol-d5	69%		47-130%
118-79-6	2,4,6-Tribromophenol	62%		32-138%
4165-60-0	Nitrobenzene-d5	53%		45-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW4:GW:1010	
Lab Sample ID: D17925-3	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8270C SW846 3520C	Percent Solids: n/a
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	51%		45-130%
1718-51-0	Terphenyl-d14	50%		47-136%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW6:GW:1010	
Lab Sample ID: D17925-4	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8260B	Percent Solids: n/a
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V07551.D	1	10/06/10	DC	n/a	n/a	V3V404
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.0	ug/l	
71-43-2	Benzene	0.71	1.0	0.30	ug/l	J
75-27-4	Bromodichloromethane	ND	2.0	1.0	ug/l	
75-25-2	Bromoform	ND	4.0	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	1.0	ug/l	
75-00-3	Chloroethane	ND	4.0	1.5	ug/l	
67-66-3	Chloroform	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	4.0	1.0	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	1.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	1.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	30.0	2.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.0	ug/l	
74-83-9	Methyl bromide	ND	4.0	1.5	ug/l	
74-87-3	Methyl chloride	ND	4.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	4.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.5	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	4.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW6:GW:1010	
Lab Sample ID: D17925-4	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8260B	Percent Solids: n/a
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.50	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.50	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	ug/l	
108-05-4	Vinyl Acetate	ND	4.0	0.60	ug/l	
1330-20-7	Xylene (total)	21.6	2.0	0.60	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	89%		63-130%
2037-26-5	Toluene-D8	89%		68-130%
460-00-4	4-Bromofluorobenzene	83%		61-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW6:GW:1010	
Lab Sample ID: D17925-4	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8270C SW846 3520C	Percent Solids: n/a
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G09431.D	10	10/15/10	TMB	10/11/10	OP2643	E1G300
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	50	41	ug/l	
95-57-8	2-Chlorophenol	ND	15	12	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	50	25	ug/l	
120-83-2	2,4-Dichlorophenol	ND	20	17	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	50	12	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	20	10	ug/l	
95-48-7	2-Methylphenol	ND	50	25	ug/l	
106-44-5	4-Methylphenol	ND	20	18	ug/l	
88-75-5	2-Nitrophenol	ND	50	20	ug/l	
100-02-7	4-Nitrophenol	ND	11	11	ug/l	
87-86-5	Pentachlorophenol	ND	50	13	ug/l	
108-95-2	Phenol	ND	50	22	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	15	13	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	20	17	ug/l	
83-32-9	Acenaphthene	48.9	10	10	ug/l	
208-96-8	Acenaphthylene	67.4	10	10	ug/l	
120-12-7	Anthracene	ND	13	13	ug/l	
56-55-3	Benzo(a)anthracene	ND	10	10	ug/l	
50-32-8	Benzo(a)pyrene	ND	10	9.0	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	15	14	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	20	20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	15	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	50	15	ug/l	
85-68-7	Butyl benzyl phthalate	ND	11	11	ug/l	
100-51-6	Benzyl Alcohol	ND	50	20	ug/l	
91-58-7	2-Chloronaphthalene	ND	50	18	ug/l	
106-47-8	4-Chloroaniline	ND	10	10	ug/l	
218-01-9	Chrysene	ND	10	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	50	22	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	10	10	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	25	ug/l	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW6:GW:1010	Date Sampled:	10/04/10
Lab Sample ID:	D17925-4	Date Received:	10/04/10
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3520C		
Project:	Project Chai		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	25	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	10	10	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	10	10	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	10	10	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	50	18	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	20	16	ug/l	
132-64-9	Dibenzofuran	ND	50	18	ug/l	
84-74-2	Di-n-butyl phthalate	ND	13	13	ug/l	
117-84-0	Di-n-octyl phthalate	ND	18	18	ug/l	
84-66-2	Diethyl phthalate	ND	50	20	ug/l	
131-11-3	Dimethyl phthalate	ND	50	20	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	15	15	ug/l	
206-44-0	Fluoranthene	ND	12	12	ug/l	
86-73-7	Fluorene	28.6	14	14	ug/l	
118-74-1	Hexachlorobenzene	ND	50	20	ug/l	
87-68-3	Hexachlorobutadiene	ND	10	10	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	50	18	ug/l	
67-72-1	Hexachloroethane	ND	10	10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	20	16	ug/l	
78-59-1	Isophorone	ND	10	10	ug/l	
91-57-6	2-Methylnaphthalene	114	50	18	ug/l	
88-74-4	2-Nitroaniline	ND	50	22	ug/l	
99-09-2	3-Nitroaniline	ND	50	18	ug/l	
100-01-6	4-Nitroaniline	ND	50	15	ug/l	
91-20-3	Naphthalene	371	10	10	ug/l	
98-95-3	Nitrobenzene	ND	10	10	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	20	16	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	10	10	ug/l	
85-01-8	Phenanthrene	47.4	50	20	ug/l	J
129-00-0	Pyrene	ND	10	10	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	50	18	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	56%		43-130%
4165-62-2	Phenol-d5	57%		47-130%
118-79-6	2,4,6-Tribromophenol	62%		32-138%
4165-60-0	Nitrobenzene-d5	48%		45-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW6:GW:1010	
Lab Sample ID: D17925-4	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8270C SW846 3520C	Percent Solids: n/a
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	49%		45-130%
1718-51-0	Terphenyl-d14	55%		47-136%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW5:GW:1010	
Lab Sample ID: D17925-5	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8260B	Percent Solids: n/a
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V10998.D	1	10/08/10	DC	n/a	n/a	V5V607
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.0	ug/l	
71-43-2	Benzene	0.46	1.0	0.30	ug/l	J
75-27-4	Bromodichloromethane	ND	2.0	1.0	ug/l	
75-25-2	Bromoform	ND	4.0	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	1.0	ug/l	
75-00-3	Chloroethane	ND	4.0	1.5	ug/l	
67-66-3	Chloroform	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	4.0	1.0	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	1.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	1.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	53.6	2.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.0	ug/l	
74-83-9	Methyl bromide	ND	4.0	1.5	ug/l	
74-87-3	Methyl chloride	ND	4.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	4.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.5	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	4.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW5:GW:1010	
Lab Sample ID: D17925-5	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8260B	Percent Solids: n/a
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.50	ug/l	
108-88-3	Toluene	2.2	2.0	1.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	0.50	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	ug/l	
108-05-4	Vinyl Acetate	ND	4.0	0.60	ug/l	
1330-20-7	Xylene (total)	58.7	2.0	0.60	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	106%		63-130%
2037-26-5	Toluene-D8	91%		68-130%
460-00-4	4-Bromofluorobenzene	95%		61-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW5:GW:1010	
Lab Sample ID: D17925-5	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8270C SW846 3520C	Percent Solids: n/a
Project: Project Chai	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G09432.D	10	10/16/10	TMB	10/11/10	OP2643	E1G300
Run #2	1G09465.D	20	10/18/10	TMB	10/11/10	OP2643	E1G301

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2	1000 ml	1.0 ml

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	50	41	ug/l	
95-57-8	2-Chlorophenol	ND	15	12	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	50	25	ug/l	
120-83-2	2,4-Dichlorophenol	ND	20	17	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	50	12	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	20	10	ug/l	
95-48-7	2-Methylphenol	ND	50	25	ug/l	
106-44-5	4-Methylphenol	ND	20	18	ug/l	
88-75-5	2-Nitrophenol	ND	50	20	ug/l	
100-02-7	4-Nitrophenol	ND	11	11	ug/l	
87-86-5	Pentachlorophenol	ND	50	13	ug/l	
108-95-2	Phenol	ND	50	22	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	15	13	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	20	17	ug/l	
83-32-9	Acenaphthene	63.9	10	10	ug/l	
208-96-8	Acenaphthylene	168	10	10	ug/l	
120-12-7	Anthracene	ND	13	13	ug/l	
56-55-3	Benzo(a)anthracene	ND	10	10	ug/l	
50-32-8	Benzo(a)pyrene	ND	10	9.0	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	15	14	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	20	20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	15	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	50	15	ug/l	
85-68-7	Butyl benzyl phthalate	ND	11	11	ug/l	
100-51-6	Benzyl Alcohol	ND	50	20	ug/l	
91-58-7	2-Chloronaphthalene	ND	50	18	ug/l	
106-47-8	4-Chloroaniline	ND	10	10	ug/l	
218-01-9	Chrysene	ND	10	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	50	22	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	10	10	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	25	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW5:GW:1010	Date Sampled:	10/04/10
Lab Sample ID:	D17925-5	Date Received:	10/04/10
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3520C		
Project:	Project Chai		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	25	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	10	10	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	10	10	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	10	10	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	50	18	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	20	16	ug/l	
132-64-9	Dibenzofuran	ND	50	18	ug/l	
84-74-2	Di-n-butyl phthalate	ND	13	13	ug/l	
117-84-0	Di-n-octyl phthalate	ND	18	18	ug/l	
84-66-2	Diethyl phthalate	ND	50	20	ug/l	
131-11-3	Dimethyl phthalate	ND	50	20	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	15	15	ug/l	
206-44-0	Fluoranthene	ND	12	12	ug/l	
86-73-7	Fluorene	39.7	14	14	ug/l	
118-74-1	Hexachlorobenzene	ND	50	20	ug/l	
87-68-3	Hexachlorobutadiene	ND	10	10	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	50	18	ug/l	
67-72-1	Hexachloroethane	ND	10	10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	20	16	ug/l	
78-59-1	Isophorone	ND	10	10	ug/l	
91-57-6	2-Methylnaphthalene	482	50	18	ug/l	
88-74-4	2-Nitroaniline	ND	50	22	ug/l	
99-09-2	3-Nitroaniline	ND	50	18	ug/l	
100-01-6	4-Nitroaniline	ND	50	15	ug/l	
91-20-3	Naphthalene	2050 ^a	20	20	ug/l	
98-95-3	Nitrobenzene	ND	10	10	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	20	16	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	10	10	ug/l	
85-01-8	Phenanthrene	61.3	50	20	ug/l	
129-00-0	Pyrene	ND	10	10	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	50	18	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	72%	67%	43-130%
4165-62-2	Phenol-d5	75%	69%	47-130%
118-79-6	2,4,6-Tribromophenol	68%	48%	32-138%
4165-60-0	Nitrobenzene-d5	62%	55%	45-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW5:GW:1010	
Lab Sample ID: D17925-5	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8270C SW846 3520C	Percent Solids: n/a
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	63%	56%	45-130%
1718-51-0	Terphenyl-d14	62%	52%	47-136%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW3:GW:1010	
Lab Sample ID: D17925-6	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8260B	Percent Solids: n/a
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V07631.D	5	10/11/10	DC	n/a	n/a	V3V408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	20	ug/l	
71-43-2	Benzene	8.4	5.0	1.5	ug/l	
75-27-4	Bromodichloromethane	ND	10	5.0	ug/l	
75-25-2	Bromoform	ND	20	5.0	ug/l	
108-90-7	Chlorobenzene	ND	10	5.0	ug/l	
75-00-3	Chloroethane	ND	20	7.5	ug/l	
67-66-3	Chloroform	ND	10	2.5	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	20	5.0	ug/l	
75-15-0	Carbon disulfide	ND	10	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	10	5.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	10	5.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	10	2.5	ug/l	
107-06-2	1,2-Dichloroethane	ND	10	5.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	10	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	10	5.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	10	1.7	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	10	5.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	10	5.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	10	5.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	10	5.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	10	2.5	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	10	5.0	ug/l	
100-41-4	Ethylbenzene	227	10	1.5	ug/l	
591-78-6	2-Hexanone	ND	10	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	50	10	ug/l	
74-83-9	Methyl bromide	ND	20	7.5	ug/l	
74-87-3	Methyl chloride	ND	20	5.0	ug/l	
75-09-2	Methylene chloride	ND	25	22	ug/l	
78-93-3	Methyl ethyl ketone	30.9	50	13	ug/l	J
1634-04-4	Methyl Tert Butyl Ether	11.6	10	5.0	ug/l	
100-42-5	Styrene	ND	20	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	10	5.0	ug/l	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW3:GW:1010	
Lab Sample ID: D17925-6	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8260B	Percent Solids: n/a
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	10	5.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	10	5.0	ug/l	
127-18-4	Tetrachloroethylene	ND	10	2.5	ug/l	
108-88-3	Toluene	24.3	10	5.0	ug/l	
79-01-6	Trichloroethylene	ND	10	2.5	ug/l	
75-01-4	Vinyl chloride	ND	10	2.5	ug/l	
108-05-4	Vinyl Acetate	ND	20	3.0	ug/l	
1330-20-7	Xylene (total)	189	10	3.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	85%		63-130%
2037-26-5	Toluene-D8	89%		68-130%
460-00-4	4-Bromofluorobenzene	84%		61-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW3:GW:1010	
Lab Sample ID: D17925-6	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8270C SW846 3520C	Percent Solids: n/a
Project: Project Chai	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G09433.D	10	10/16/10	TMB	10/11/10	OP2643	E1G300
Run #2	1G09466.D	20	10/18/10	TMB	10/11/10	OP2643	E1G301

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2	1000 ml	1.0 ml

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	50	41	ug/l	
95-57-8	2-Chlorophenol	ND	15	12	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	50	25	ug/l	
120-83-2	2,4-Dichlorophenol	ND	20	17	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	10	ug/l	
51-28-5	2,4-Dinitrophenol	ND	50	12	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	20	10	ug/l	
95-48-7	2-Methylphenol	ND	50	25	ug/l	
106-44-5	4-Methylphenol	ND	20	18	ug/l	
88-75-5	2-Nitrophenol	ND	50	20	ug/l	
100-02-7	4-Nitrophenol	ND	11	11	ug/l	
87-86-5	Pentachlorophenol	ND	50	13	ug/l	
108-95-2	Phenol	ND	50	22	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	15	13	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	20	17	ug/l	
83-32-9	Acenaphthene	115	10	10	ug/l	
208-96-8	Acenaphthylene	170	10	10	ug/l	
120-12-7	Anthracene	ND	13	13	ug/l	
56-55-3	Benzo(a)anthracene	ND	10	10	ug/l	
50-32-8	Benzo(a)pyrene	ND	10	9.0	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	15	14	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	20	20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	15	10	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	50	15	ug/l	
85-68-7	Butyl benzyl phthalate	ND	11	11	ug/l	
100-51-6	Benzyl Alcohol	ND	50	20	ug/l	
91-58-7	2-Chloronaphthalene	ND	50	18	ug/l	
106-47-8	4-Chloroaniline	ND	10	10	ug/l	
218-01-9	Chrysene	ND	10	10	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	50	22	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	10	10	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	25	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW3:GW:1010	Date Sampled:	10/04/10
Lab Sample ID:	D17925-6	Date Received:	10/04/10
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3520C		
Project:	Project Chai		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	25	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	10	10	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	10	10	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	10	10	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	10	10	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	50	18	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	20	16	ug/l	
132-64-9	Dibenzofuran	ND	50	18	ug/l	
84-74-2	Di-n-butyl phthalate	ND	13	13	ug/l	
117-84-0	Di-n-octyl phthalate	ND	18	18	ug/l	
84-66-2	Diethyl phthalate	ND	50	20	ug/l	
131-11-3	Dimethyl phthalate	ND	50	20	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	15	15	ug/l	
206-44-0	Fluoranthene	ND	12	12	ug/l	
86-73-7	Fluorene	50.2	14	14	ug/l	
118-74-1	Hexachlorobenzene	ND	50	20	ug/l	
87-68-3	Hexachlorobutadiene	ND	10	10	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	50	18	ug/l	
67-72-1	Hexachloroethane	ND	10	10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	20	16	ug/l	
78-59-1	Isophorone	ND	10	10	ug/l	
91-57-6	2-Methylnaphthalene	568	50	18	ug/l	
88-74-4	2-Nitroaniline	ND	50	22	ug/l	
99-09-2	3-Nitroaniline	ND	50	18	ug/l	
100-01-6	4-Nitroaniline	ND	50	15	ug/l	
91-20-3	Naphthalene	1880 ^a	20	20	ug/l	
98-95-3	Nitrobenzene	ND	10	10	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	20	16	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	10	10	ug/l	
85-01-8	Phenanthrene	60.3	50	20	ug/l	
129-00-0	Pyrene	ND	10	10	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	50	18	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	65%	59%	43-130%
4165-62-2	Phenol-d5	68%	61%	47-130%
118-79-6	2,4,6-Tribromophenol	61%	44%	32-138%
4165-60-0	Nitrobenzene-d5	55%	50%	45-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW3:GW:1010	
Lab Sample ID: D17925-6	Date Sampled: 10/04/10
Matrix: AQ - Ground Water	Date Received: 10/04/10
Method: SW846 8270C SW846 3520C	Percent Solids: n/a
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	56%	52%	45-130%
1718-51-0	Terphenyl-d14	55%	48%	47-136%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

4036 Youngfield Street, Wheat Ridge, Colorado 80033
TEL: 303-425-6021; 877-737-4521 FAX: 303-425-6854
www.accutest.com

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # D17925

Client / Reporting Information	Project Information	Requested Analysis (see TEST CODE sheet)	Matrix Codes
Company Name ERM	Project Name Project Chai	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">VOC (8246) w/MTBE</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SvOC (8210)</div> </div>	<div style="display: flex; flex-direction: column; align-items: center;"> <p>10/4/10</p> </div>
Street Address 6455 S Yosemite, Suite 900	Street 1720 13TH ST		
City Greenwood Village, CO 80111	City Boulder State CO		
Project Contact Chris Thebo E-mail Chris.thebo@erm.com	Project # 0122609		
Phone # (303) 741-5050 Fax # (303) 773-2624	Client Purchase Order #		
Sampler(s) Name(s) Eric Moote Phone # (720) 253-5320	Project Manager Chris Thebo		DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIO - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank

Accutest Sample #	Field ID / Point of Collection	MECH/VI Val #	Collection		Sampled by	Matrix	# of bottles	Number of preserved bottles										LAB USE ONLY				
			Date	Time				HCl	NH3	HN03	RESA	NONE	D/Water	MECH	ENCORE							
MW1: GW:1010			10/4/10	0104	EM	GW	5	3										X	X	01		
MW2: GW:1010				1010																X	X	02
MW4: GW:1010				1111																X	X	03
MW6: GW:1010				1333																X	X	04
MW5: GW:1010				1438																X	X	05
MW3: GW:1010				1539																X	X	06

Turnaround Time (Business days)	Approved By (Accutest PM): / Date:	Data Deliverable Information	Comments / Special Instructions
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> UST Analysis 3-5 Days <input type="checkbox"/> 5 - 9 Day RUSH <input type="checkbox"/> 3 - 5 Day RUSH <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY		<input type="checkbox"/> Level 1 <input type="checkbox"/> Level 2 <input type="checkbox"/> Level 3 <input type="checkbox"/> Level 4 Level 1 = Results Only Level 2 = Results + QC Summary + Case Narrative Level 3 = Results + QC Summary + Partial Raw data Level 4 = Full Deliverable	<input type="checkbox"/> PDF <input type="checkbox"/> EDD Format <input type="checkbox"/> Other

Emergency & Rush T/A data available VIA Lablink			
Sample Custody must be documented below each time samples change possession, including courier delivery.			
Relinquished By: 1	Date Time: 10/4/10 1707	Received By: 1	Date Time:
Relinquished By: 2	Date Time:	Received By: 2	Date Time: 10/04/2010 507
Relinquished By: 3	Date Time:	Received By: 3	Date Time:
Relinquished By: 4	Date Time:	Received By: 4	Date Time:
Relinquished By: 5	Date Time:	Received By: 5	Date Time:

Custody Seal #	<input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Preserved where applicable	<input type="checkbox"/> On Ice <input checked="" type="checkbox"/> N/A	Cooler Temp	4.7
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4.1
4

D17925: Chain of Custody

Page 1 of 1

GC/MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V404-MB1	3V07530.D	1	10/06/10	DC	n/a	n/a	V3V404

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-1, D17925-2, D17925-3, D17925-4

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.0	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	1.0	ug/l	
75-25-2	Bromoform	ND	4.0	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	1.0	ug/l	
75-00-3	Chloroethane	ND	4.0	1.5	ug/l	
67-66-3	Chloroform	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	4.0	1.0	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	1.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	1.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.0	ug/l	
74-83-9	Methyl bromide	ND	4.0	1.5	ug/l	
74-87-3	Methyl chloride	ND	4.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	4.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.5	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	4.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.50	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	

Method Blank Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V404-MB1	3V07530.D	1	10/06/10	DC	n/a	n/a	V3V404

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-1, D17925-2, D17925-3, D17925-4

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	2.0	0.50	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	ug/l	
108-05-4	Vinyl Acetate	ND	4.0	0.60	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.60	ug/l	

CAS No.	Surrogate Recoveries	Limits	
17060-07-0	1,2-Dichloroethane-D4	87%	63-130%
2037-26-5	Toluene-D8	89%	68-130%
460-00-4	4-Bromofluorobenzene	84%	61-130%

Method Blank Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V607-MB1	5V10979.D	1	10/08/10	DC	n/a	n/a	V5V607

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-5

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.0	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	1.0	ug/l	
75-25-2	Bromoform	ND	4.0	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	1.0	ug/l	
75-00-3	Chloroethane	ND	4.0	1.5	ug/l	
67-66-3	Chloroform	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	4.0	1.0	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	1.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	1.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.0	ug/l	
74-83-9	Methyl bromide	ND	4.0	1.5	ug/l	
74-87-3	Methyl chloride	ND	4.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	4.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.5	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	4.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.50	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	

Method Blank Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V607-MB1	5V10979.D	1	10/08/10	DC	n/a	n/a	V5V607

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-5

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	2.0	0.50	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	ug/l	
108-05-4	Vinyl Acetate	ND	4.0	0.60	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.60	ug/l	

CAS No.	Surrogate Recoveries	Limits
17060-07-0	1,2-Dichloroethane-D4	97% 63-130%
2037-26-5	Toluene-D8	92% 68-130%
460-00-4	4-Bromofluorobenzene	89% 61-130%

Method Blank Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V408-MB1	3V07610.D	1	10/11/10	DC	n/a	n/a	V3V408

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-6

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.0	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	1.0	ug/l	
75-25-2	Bromoform	ND	4.0	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	1.0	ug/l	
75-00-3	Chloroethane	ND	4.0	1.5	ug/l	
67-66-3	Chloroform	ND	2.0	0.50	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	4.0	1.0	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	1.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	1.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.0	ug/l	
74-83-9	Methyl bromide	ND	4.0	1.5	ug/l	
74-87-3	Methyl chloride	ND	4.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	4.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.5	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	4.0	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	0.50	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	

Method Blank Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V408-MB1	3V07610.D	1	10/11/10	DC	n/a	n/a	V3V408

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-6

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	2.0	0.50	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	ug/l	
108-05-4	Vinyl Acetate	ND	4.0	0.60	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.60	ug/l	

CAS No.	Surrogate Recoveries	Limits	
17060-07-0	1,2-Dichloroethane-D4	82%	63-130%
2037-26-5	Toluene-D8	87%	68-130%
460-00-4	4-Bromofluorobenzene	85%	61-130%

Blank Spike Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V404-BS1	3V07531.D	1	10/06/10	DC	n/a	n/a	V3V404

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-1, D17925-2, D17925-3, D17925-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	42.4	85	49-130
71-43-2	Benzene	50	53.1	106	70-130
75-27-4	Bromodichloromethane	50	50.9	102	70-130
75-25-2	Bromoform	50	43.5	87	48-138
108-90-7	Chlorobenzene	50	54.3	109	70-130
75-00-3	Chloroethane	50	63.1	126	61-130
67-66-3	Chloroform	50	59.9	120	70-130
110-75-8	2-Chloroethyl vinyl ether	50	52.0	104	22-185
75-15-0	Carbon disulfide	50	55.7	111	55-130
56-23-5	Carbon tetrachloride	50	54.9	110	70-130
75-34-3	1,1-Dichloroethane	50	60.4	121	70-130
75-35-4	1,1-Dichloroethylene	50	56.2	112	70-130
107-06-2	1,2-Dichloroethane	50	58.4	117	70-130
78-87-5	1,2-Dichloropropane	50	54.9	110	70-130
124-48-1	Dibromochloromethane	50	52.2	104	64-132
156-59-2	cis-1,2-Dichloroethylene	50	56.3	113	70-130
10061-01-5	cis-1,3-Dichloropropene	50	50.7	101	67-130
541-73-1	m-Dichlorobenzene	50	49.3	99	52-148
95-50-1	o-Dichlorobenzene	50	50.0	100	53-146
106-46-7	p-Dichlorobenzene	50	48.7	97	57-136
156-60-5	trans-1,2-Dichloroethylene	50	56.0	112	70-130
10061-02-6	trans-1,3-Dichloropropene	50	48.9	98	66-130
100-41-4	Ethylbenzene	50	55.8	112	70-130
591-78-6	2-Hexanone	50	50.5	101	38-130
108-10-1	4-Methyl-2-pentanone	50	49.5	99	68-130
74-83-9	Methyl bromide	50	60.5	121	35-151
74-87-3	Methyl chloride	50	48.4	97	46-138
75-09-2	Methylene chloride	50	55.2	110	70-130
78-93-3	Methyl ethyl ketone	50	51.9	104	37-130
1634-04-4	Methyl Tert Butyl Ether	50	57.3	115	70-146
100-42-5	Styrene	50	49.3	99	38-130
71-55-6	1,1,1-Trichloroethane	50	52.9	106	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	51.3	103	70-130
79-00-5	1,1,2-Trichloroethane	50	53.0	106	69-130
127-18-4	Tetrachloroethylene	50	52.2	104	66-134
108-88-3	Toluene	50	53.7	107	70-140

Blank Spike Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V404-BS1	3V07531.D	1	10/06/10	DC	n/a	n/a	V3V404

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-1, D17925-2, D17925-3, D17925-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
79-01-6	Trichloroethylene	50	55.1	110	70-130
75-01-4	Vinyl chloride	50	48.4	97	58-135
108-05-4	Vinyl Acetate	50	49.6	99	50-130
1330-20-7	Xylene (total)	100	100	100	55-134

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	91%	63-130%
2037-26-5	Toluene-D8	89%	68-130%
460-00-4	4-Bromofluorobenzene	87%	61-130%

Blank Spike Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V607-BS1	5V10980.D	1	10/08/10	DC	n/a	n/a	V5V607

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	27.4	55	49-130
71-43-2	Benzene	50	50.5	101	70-130
75-27-4	Bromodichloromethane	50	49.2	98	70-130
75-25-2	Bromoform	50	40.7	81	48-138
108-90-7	Chlorobenzene	50	50.2	100	70-130
75-00-3	Chloroethane	50	39.1	78	61-130
67-66-3	Chloroform	50	51.6	103	70-130
110-75-8	2-Chloroethyl vinyl ether	50	49.2	98	22-185
75-15-0	Carbon disulfide	50	53.4	107	55-130
56-23-5	Carbon tetrachloride	50	51.6	103	70-130
75-34-3	1,1-Dichloroethane	50	52.4	105	70-130
75-35-4	1,1-Dichloroethylene	50	52.5	105	70-130
107-06-2	1,2-Dichloroethane	50	48.6	97	70-130
78-87-5	1,2-Dichloropropane	50	51.1	102	70-130
124-48-1	Dibromochloromethane	50	51.2	102	64-132
156-59-2	cis-1,2-Dichloroethylene	50	51.5	103	70-130
10061-01-5	cis-1,3-Dichloropropene	50	50.6	101	67-130
541-73-1	m-Dichlorobenzene	50	47.3	95	52-148
95-50-1	o-Dichlorobenzene	50	48.3	97	53-146
106-46-7	p-Dichlorobenzene	50	46.5	93	57-136
156-60-5	trans-1,2-Dichloroethylene	50	51.3	103	70-130
10061-02-6	trans-1,3-Dichloropropene	50	47.4	95	66-130
100-41-4	Ethylbenzene	50	52.3	105	70-130
591-78-6	2-Hexanone	50	39.1	78	38-130
108-10-1	4-Methyl-2-pentanone	50	47.3	95	68-130
74-83-9	Methyl bromide	50	38.0	76	35-151
74-87-3	Methyl chloride	50	34.8	70	46-138
75-09-2	Methylene chloride	50	48.2	96	70-130
78-93-3	Methyl ethyl ketone	50	37.8	76	37-130
1634-04-4	Methyl Tert Butyl Ether	50	52.6	105	70-146
100-42-5	Styrene	50	47.9	96	38-130
71-55-6	1,1,1-Trichloroethane	50	50.3	101	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	44.8	90	70-130
79-00-5	1,1,2-Trichloroethane	50	50.3	101	69-130
127-18-4	Tetrachloroethylene	50	51.7	103	66-134
108-88-3	Toluene	50	50.9	102	70-140

Blank Spike Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V607-BS1	5V10980.D	1	10/08/10	DC	n/a	n/a	V5V607

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
79-01-6	Trichloroethylene	50	52.4	105	70-130
75-01-4	Vinyl chloride	50	39.1	78	58-135
108-05-4	Vinyl Acetate	50	42.9	86	50-130
1330-20-7	Xylene (total)	100	96.3	96	55-134

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	95%	63-130%
2037-26-5	Toluene-D8	92%	68-130%
460-00-4	4-Bromofluorobenzene	100%	61-130%

Blank Spike Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V408-BS1	3V07611.D	1	10/11/10	DC	n/a	n/a	V3V408

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	50	30.1	60	49-130
71-43-2	Benzene	50	49.5	99	70-130
75-27-4	Bromodichloromethane	50	45.9	92	70-130
75-25-2	Bromoform	50	42.0	84	48-138
108-90-7	Chlorobenzene	50	52.2	104	70-130
75-00-3	Chloroethane	50	52.9	106	61-130
67-66-3	Chloroform	50	51.2	102	70-130
110-75-8	2-Chloroethyl vinyl ether	50	42.4	85	22-185
75-15-0	Carbon disulfide	50	49.9	100	55-130
56-23-5	Carbon tetrachloride	50	51.8	104	70-130
75-34-3	1,1-Dichloroethane	50	50.9	102	70-130
75-35-4	1,1-Dichloroethylene	50	51.0	102	70-130
107-06-2	1,2-Dichloroethane	50	45.6	91	70-130
78-87-5	1,2-Dichloropropane	50	48.7	97	70-130
124-48-1	Dibromochloromethane	50	49.4	99	64-132
156-59-2	cis-1,2-Dichloroethylene	50	50.6	101	70-130
10061-01-5	cis-1,3-Dichloropropene	50	46.2	92	67-130
541-73-1	m-Dichlorobenzene	50	48.2	96	52-148
95-50-1	o-Dichlorobenzene	50	48.4	97	53-146
106-46-7	p-Dichlorobenzene	50	48.1	96	57-136
156-60-5	trans-1,2-Dichloroethylene	50	50.7	101	70-130
10061-02-6	trans-1,3-Dichloropropene	50	43.7	87	66-130
100-41-4	Ethylbenzene	50	52.8	106	70-130
591-78-6	2-Hexanone	50	38.0	76	38-130
108-10-1	4-Methyl-2-pentanone	50	43.1	86	68-130
74-83-9	Methyl bromide	50	54.2	108	35-151
74-87-3	Methyl chloride	50	38.5	77	46-138
75-09-2	Methylene chloride	50	49.4	99	70-130
78-93-3	Methyl ethyl ketone	50	39.9	80	37-130
1634-04-4	Methyl Tert Butyl Ether	50	47.0	94	70-146
100-42-5	Styrene	50	47.1	94	38-130
71-55-6	1,1,1-Trichloroethane	50	47.9	96	70-130
79-34-5	1,1,2,2-Tetrachloroethane	50	44.2	88	70-130
79-00-5	1,1,2-Trichloroethane	50	48.1	96	69-130
127-18-4	Tetrachloroethylene	50	52.0	104	66-134
108-88-3	Toluene	50	51.6	103	70-140

Blank Spike Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V408-BS1	3V07611.D	1	10/11/10	DC	n/a	n/a	V3V408

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
79-01-6	Trichloroethylene	50	51.6	103	70-130
75-01-4	Vinyl chloride	50	38.9	78	58-135
108-05-4	Vinyl Acetate	50	41.5	83	50-130
1330-20-7	Xylene (total)	100	97.1	97	55-134

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	85%	63-130%
2037-26-5	Toluene-D8	87%	68-130%
460-00-4	4-Bromofluorobenzene	86%	61-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D17776-1MS	3V07533.D	1	10/06/10	DC	n/a	n/a	V3V404
D17776-1MSD	3V07534.D	1	10/06/10	DC	n/a	n/a	V3V404
D17776-1	3V07532.D	1	10/06/10	DC	n/a	n/a	V3V404

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-1, D17925-2, D17925-3, D17925-4

CAS No.	Compound	D17776-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	40.2	80	41.2	82	2	21-130/30
71-43-2	Benzene	ND	50	54.5	109	55.3	111	1	59-132/30
75-27-4	Bromodichloromethane	ND	50	53.0	106	54.1	108	2	58-130/30
75-25-2	Bromoform	ND	50	43.1	86	45.4	91	5	45-140/30
108-90-7	Chlorobenzene	ND	50	54.5	109	55.4	111	2	70-130/30
75-00-3	Chloroethane	ND	50	66.8	134* a	68.6	137* a	3	61-130/30
67-66-3	Chloroform	ND	50	61.7	123	63.4	127	3	69-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	50	ND	0* a	ND	0* a	nc	20-168/30
75-15-0	Carbon disulfide	ND	50	57.4	115	59.0	118	3	41-132/30
56-23-5	Carbon tetrachloride	ND	50	57.9	116	59.8	120	3	70-130/30
75-34-3	1,1-Dichloroethane	ND	50	61.9	124	64.0	128	3	70-130/30
75-35-4	1,1-Dichloroethylene	ND	50	56.3	113	58.4	117	4	69-137/30
107-06-2	1,2-Dichloroethane	ND	50	61.6	123	64.1	128	4	62-130/30
78-87-5	1,2-Dichloropropane	ND	50	56.0	112	56.8	114	1	63-131/30
124-48-1	Dibromochloromethane	ND	50	53.2	106	54.6	109	3	52-141/30
156-59-2	cis-1,2-Dichloroethylene	ND	50	56.7	113	57.6	115	2	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND	50	52.3	105	53.1	106	2	51-134/30
541-73-1	m-Dichlorobenzene	ND	50	50.9	102	50.4	101	1	38-148/30
95-50-1	o-Dichlorobenzene	ND	50	51.5	103	51.3	103	0	40-148/30
106-46-7	p-Dichlorobenzene	ND	50	51.1	102	50.7	101	1	43-136/30
156-60-5	trans-1,2-Dichloroethylene	ND	50	55.8	112	57.5	115	3	69-134/30
10061-02-6	trans-1,3-Dichloropropene	ND	50	51.5	103	51.8	104	1	50-130/30
100-41-4	Ethylbenzene	ND	50	57.6	115	58.6	117	2	68-130/30
591-78-6	2-Hexanone	ND	50	49.6	99	53.8	108	8	29-130/30
108-10-1	4-Methyl-2-pentanone	ND	50	45.4	91	48.8	98	7	62-130/30
74-83-9	Methyl bromide	ND	50	61.7	123	64.8	130	5	20-171/30
74-87-3	Methyl chloride	ND	50	53.3	107	54.8	110	3	25-148/30
75-09-2	Methylene chloride	ND	50	56.3	113	57.4	115	2	58-139/30
78-93-3	Methyl ethyl ketone	ND	50	49.2	98	54.3	109	10	37-130/30
1634-04-4	Methyl Tert Butyl Ether	9.3	50	68.3	118	70.2	122	3	57-150/30
100-42-5	Styrene	ND	50	50.5	101	51.1	102	1	27-130/30
71-55-6	1,1,1-Trichloroethane	ND	50	54.7	109	55.8	112	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	51.3	103	53.1	106	3	61-140/30
79-00-5	1,1,2-Trichloroethane	ND	50	53.8	108	55.1	110	2	52-135/30
127-18-4	Tetrachloroethylene	ND	50	52.0	104	52.5	105	1	61-134/30
108-88-3	Toluene	ND	50	54.3	109	55.7	111	3	56-142/30

5.3.1
5

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D17776-1MS	3V07533.D	1	10/06/10	DC	n/a	n/a	V3V404
D17776-1MSD	3V07534.D	1	10/06/10	DC	n/a	n/a	V3V404
D17776-1	3V07532.D	1	10/06/10	DC	n/a	n/a	V3V404

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-1, D17925-2, D17925-3, D17925-4

CAS No.	Compound	D17776-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
79-01-6	Trichloroethylene	ND	50	56.3	113	57.1	114	1	61-132/30
75-01-4	Vinyl chloride	ND	50	51.0	102	53.3	107	4	54-148/30
108-05-4	Vinyl Acetate	ND	50	56.0	112	56.6	113	1	40-139/30
1330-20-7	Xylene (total)	ND	100	102	102	104	104	2	36-146/30

CAS No.	Surrogate Recoveries	MS	MSD	D17776-1	Limits
17060-07-0	1,2-Dichloroethane-D4	93%	91%	92%	63-130%
2037-26-5	Toluene-D8	87%	89%	87%	68-130%
460-00-4	4-Bromofluorobenzene	88%	89%	85%	61-130%

(a) Outside control limits due to matrix interference.

5.3.1
5

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D17401-18RMS	5V10982.D	1	10/08/10	DC	n/a	n/a	V5V607
D17401-18RMSD	5V10983.D	1	10/08/10	DC	n/a	n/a	V5V607
D17401-18R	5V10981.D	1	10/08/10	DC	n/a	n/a	V5V607

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-5

CAS No.	Compound	D17401-18R Spike		MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
		ug/l	Q ug/l						
67-64-1	Acetone	ND	50	27.0	54	26.4	53	2	21-130/30
71-43-2	Benzene	ND	50	44.8	90	49.9	100	11	59-132/30
75-27-4	Bromodichloromethane	ND	50	44.8	90	50.0	100	11	58-130/30
75-25-2	Bromoform	ND	50	37.4	75	41.9	84	11	45-140/30
108-90-7	Chlorobenzene	ND	50	45.1	90	50.4	101	11	70-130/30
75-00-3	Chloroethane	ND	50	35.2	70	38.6	77	9	61-130/30
67-66-3	Chloroform	ND	50	47.3	95	51.8	104	9	69-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	50	45.2	90	47.6	95	5	20-168/30
75-15-0	Carbon disulfide	ND	50	47.2	94	51.9	104	9	41-132/30
56-23-5	Carbon tetrachloride	ND	50	44.8	90	51.1	102	13	70-130/30
75-34-3	1,1-Dichloroethane	ND	50	47.2	94	52.1	104	10	70-130/30
75-35-4	1,1-Dichloroethylene	ND	50	45.6	91	50.5	101	10	69-137/30
107-06-2	1,2-Dichloroethane	ND	50	44.7	89	48.0	96	7	62-130/30
78-87-5	1,2-Dichloropropane	ND	50	45.4	91	50.4	101	10	63-131/30
124-48-1	Dibromochloromethane	ND	50	46.6	93	52.6	105	12	52-141/30
156-59-2	cis-1,2-Dichloroethylene	ND	50	46.6	93	51.7	103	10	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND	50	46.0	92	51.0	102	10	51-134/30
541-73-1	m-Dichlorobenzene	ND	50	42.6	85	47.2	94	10	38-148/30
95-50-1	o-Dichlorobenzene	ND	50	43.7	87	48.2	96	10	40-148/30
106-46-7	p-Dichlorobenzene	ND	50	42.3	85	46.3	93	9	43-136/30
156-60-5	trans-1,2-Dichloroethylene	ND	50	45.8	92	50.6	101	10	69-134/30
10061-02-6	trans-1,3-Dichloropropene	ND	50	43.2	86	47.7	95	10	50-130/30
100-41-4	Ethylbenzene	ND	50	46.2	92	51.4	103	11	68-130/30
591-78-6	2-Hexanone	ND	50	35.0	70	37.3	75	6	29-130/30
108-10-1	4-Methyl-2-pentanone	ND	50	41.2	82	42.5	85	3	62-130/30
74-83-9	Methyl bromide	ND	50	35.1	70	38.5	77	9	20-171/30
74-87-3	Methyl chloride	ND	50	31.8	64	34.7	69	9	25-148/30
75-09-2	Methylene chloride	ND	50	43.4	87	48.1	96	10	58-139/30
78-93-3	Methyl ethyl ketone	ND	50	34.6	69	36.0	72	4	37-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	50	48.9	98	52.6	105	7	57-150/30
100-42-5	Styrene	ND	50	43.4	87	48.0	96	10	27-130/30
71-55-6	1,1,1-Trichloroethane	ND	50	43.5	87	48.6	97	11	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	40.4	81	43.8	88	8	61-140/30
79-00-5	1,1,2-Trichloroethane	ND	50	45.6	91	49.4	99	8	52-135/30
127-18-4	Tetrachloroethylene	ND	50	45.1	90	50.0	100	10	61-134/30
108-88-3	Toluene	ND	50	45.0	90	50.5	101	12	56-142/30

5.3.2
5

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D17401-18RMS	5V10982.D	1	10/08/10	DC	n/a	n/a	V5V607
D17401-18RMSD	5V10983.D	1	10/08/10	DC	n/a	n/a	V5V607
D17401-18R	5V10981.D	1	10/08/10	DC	n/a	n/a	V5V607

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-5

CAS No.	Compound	D17401-18R Spike		MS	MS	MSD	MSD	RPD	Limits
		ug/l	Q ug/l	ug/l	%	ug/l	%		Rec/RPD
79-01-6	Trichloroethylene	ND	50	45.7	91	50.3	101	10	61-132/30
75-01-4	Vinyl chloride	ND	50	34.7	69	38.2	76	10	54-148/30
108-05-4	Vinyl Acetate	ND	50	40.0	80	43.5	87	8	40-139/30
1330-20-7	Xylene (total)	ND	100	85.0	85	94.9	95	11	36-146/30

CAS No.	Surrogate Recoveries	MS	MSD	D17401-18R Limits	
17060-07-0	1,2-Dichloroethane-D4	90%	94%	101%	63-130%
2037-26-5	Toluene-D8	87%	96%	96%	68-130%
460-00-4	4-Bromofluorobenzene	93%	102%	93%	61-130%

5.3.2
5

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D18026-3MS	3V07613.D	1	10/11/10	DC	n/a	n/a	V3V408
D18026-3MSD	3V07614.D	1	10/11/10	DC	n/a	n/a	V3V408
D18026-3	3V07612.D	1	10/11/10	DC	n/a	n/a	V3V408

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-6

CAS No.	Compound	D18026-3 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	50	29.1	58	30.3	61	4	21-130/30	
71-43-2	Benzene	ND	50	50.3	101	50.9	102	1	59-132/30	
75-27-4	Bromodichloromethane	ND	50	47.9	96	49.0	98	2	58-130/30	
75-25-2	Bromoform	ND	50	42.9	86	44.7	89	4	45-140/30	
108-90-7	Chlorobenzene	ND	50	52.0	104	53.4	107	3	70-130/30	
75-00-3	Chloroethane	ND	50	55.3	111	56.5	113	2	61-130/30	
67-66-3	Chloroform	ND	50	52.7	105	54.3	109	3	69-130/30	
110-75-8	2-Chloroethyl vinyl ether	ND	50	ND	0*	ND	0*	nc	20-168/30	
75-15-0	Carbon disulfide	ND	50	51.4	103	52.7	105	2	41-132/30	
56-23-5	Carbon tetrachloride	ND	50	53.7	107	55.1	110	3	70-130/30	
75-34-3	1,1-Dichloroethane	ND	50	53.3	107	54.2	108	2	70-130/30	
75-35-4	1,1-Dichloroethylene	ND	50	52.3	105	52.3	105	0	69-137/30	
107-06-2	1,2-Dichloroethane	ND	50	49.3	99	50.1	100	2	62-130/30	
78-87-5	1,2-Dichloropropane	ND	50	50.6	101	50.3	101	1	63-131/30	
124-48-1	Dibromochloromethane	ND	50	50.5	101	51.3	103	2	52-141/30	
156-59-2	cis-1,2-Dichloroethylene	ND	50	52.3	105	53.2	106	2	70-130/30	
10061-01-5	cis-1,3-Dichloropropene	ND	50	47.3	95	48.2	96	2	51-134/30	
541-73-1	m-Dichlorobenzene	ND	50	48.2	96	49.1	98	2	38-148/30	
95-50-1	o-Dichlorobenzene	ND	50	47.9	96	49.2	98	3	40-148/30	
106-46-7	p-Dichlorobenzene	ND	50	48.4	97	49.2	98	2	43-136/30	
156-60-5	trans-1,2-Dichloroethylene	ND	50	52.1	104	52.5	105	1	69-134/30	
10061-02-6	trans-1,3-Dichloropropene	ND	50	45.7	91	45.8	92	0	50-130/30	
100-41-4	Ethylbenzene	ND	50	53.4	107	54.7	109	2	68-130/30	
591-78-6	2-Hexanone	ND	50	40.8	82	42.4	85	4	29-130/30	
108-10-1	4-Methyl-2-pentanone	ND	50	44.3	89	45.2	90	2	62-130/30	
74-83-9	Methyl bromide	ND	50	57.7	115	57.4	115	1	20-171/30	
74-87-3	Methyl chloride	ND	50	40.9	82	42.0	84	3	25-148/30	
75-09-2	Methylene chloride	ND	50	51.3	103	52.3	105	2	58-139/30	
78-93-3	Methyl ethyl ketone	ND	50	44.7	89	43.9	88	2	37-130/30	
1634-04-4	Methyl Tert Butyl Ether	ND	50	50.1	100	50.8	102	1	57-150/30	
100-42-5	Styrene	ND	50	47.0	94	48.1	96	2	27-130/30	
71-55-6	1,1,1-Trichloroethane	ND	50	48.7	97	50.0	100	3	70-130/30	
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	45.8	92	46.9	94	2	61-140/30	
79-00-5	1,1,2-Trichloroethane	ND	50	49.3	99	50.6	101	3	52-135/30	
127-18-4	Tetrachloroethylene	ND	50	51.7	103	52.9	106	2	61-134/30	
108-88-3	Toluene	ND	50	51.9	104	52.5	105	1	56-142/30	

5.3.3
5

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D18026-3MS	3V07613.D	1	10/11/10	DC	n/a	n/a	V3V408
D18026-3MSD	3V07614.D	1	10/11/10	DC	n/a	n/a	V3V408
D18026-3	3V07612.D	1	10/11/10	DC	n/a	n/a	V3V408

The QC reported here applies to the following samples:

Method: SW846 8260B

D17925-6

CAS No.	Compound	D18026-3 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
79-01-6	Trichloroethylene	ND	50	52.3	105	51.6	103	1	61-132/30
75-01-4	Vinyl chloride	ND	50	40.8	82	41.9	84	3	54-148/30
108-05-4	Vinyl Acetate	ND	50	45.1	90	46.6	93	3	40-139/30
1330-20-7	Xylene (total)	ND	100	96.8	97	98.5	99	2	36-146/30

CAS No.	Surrogate Recoveries	MS	MSD	D18026-3	Limits
17060-07-0	1,2-Dichloroethane-D4	88%	87%	84%	63-130%
2037-26-5	Toluene-D8	88%	87%	88%	68-130%
460-00-4	4-Bromofluorobenzene	86%	85%	84%	61-130%

5.3.3
5

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2643-MB	1G09398.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299

The QC reported here applies to the following samples:

Method: SW846 8270C

D17925-1, D17925-2, D17925-3, D17925-4, D17925-5, D17925-6

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	5.0	4.1	ug/l	
95-57-8	2-Chlorophenol	ND	1.5	1.2	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	2.5	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.7	ug/l	
105-67-9	2,4-Dimethylphenol	ND	1.0	1.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.2	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	2.0	1.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	2.5	ug/l	
106-44-5	4-Methylphenol	ND	2.0	1.8	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	2.0	ug/l	
100-02-7	4-Nitrophenol	ND	1.1	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	5.0	1.3	ug/l	
108-95-2	Phenol	ND	5.0	2.2	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	1.5	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	2.0	1.7	ug/l	
83-32-9	Acenaphthene	ND	1.0	1.0	ug/l	
208-96-8	Acenaphthylene	ND	1.0	1.0	ug/l	
120-12-7	Anthracene	ND	1.3	1.3	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	1.0	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.90	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.5	1.4	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	2.0	2.0	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.5	1.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.5	ug/l	
85-68-7	Butyl benzyl phthalate	ND	1.1	1.1	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	2.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.8	ug/l	
106-47-8	4-Chloroaniline	ND	1.0	1.0	ug/l	
218-01-9	Chrysene	ND	1.0	1.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	2.2	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	1.0	1.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	2.5	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	2.5	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	1.0	ug/l	

Method Blank Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2643-MB	1G09398.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299

The QC reported here applies to the following samples:

Method: SW846 8270C

D17925-1, D17925-2, D17925-3, D17925-4, D17925-5, D17925-6

CAS No.	Compound	Result	RL	MDL	Units	Q
121-14-2	2,4-Dinitrotoluene	ND	1.0	1.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.8	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	1.0	1.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	2.0	1.6	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.8	ug/l	
84-74-2	Di-n-butyl phthalate	ND	1.3	1.3	ug/l	
117-84-0	Di-n-octyl phthalate	ND	1.8	1.8	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	2.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	2.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate ^a	2.0	1.5	1.5	ug/l	
206-44-0	Fluoranthene	ND	1.2	1.2	ug/l	
86-73-7	Fluorene	ND	1.4	1.4	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	2.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	1.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l	
67-72-1	Hexachloroethane	ND	1.0	1.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	2.0	1.6	ug/l	
78-59-1	Isophorone	ND	1.0	1.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	1.8	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	2.2	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	1.8	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	1.5	ug/l	
91-20-3	Naphthalene	ND	1.0	1.0	ug/l	
98-95-3	Nitrobenzene	ND	1.0	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	1.6	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	1.0	1.0	ug/l	
85-01-8	Phenanthrene	ND	5.0	2.0	ug/l	
129-00-0	Pyrene	ND	1.0	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.8	ug/l	

CAS No.	Surrogate Recoveries	Limits	
367-12-4	2-Fluorophenol	76%	43-130%
4165-62-2	Phenol-d5	75%	47-130%
118-79-6	2,4,6-Tribromophenol	40%	32-138%

Method Blank Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2643-MB	1G09398.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299

The QC reported here applies to the following samples:

Method: SW846 8270C

D17925-1, D17925-2, D17925-3, D17925-4, D17925-5, D17925-6

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	62% 45-130%
321-60-8	2-Fluorobiphenyl	57% 45-130%
1718-51-0	Terphenyl-d14	73% 47-136%

(a) Compound ND in most associated samples.

Blank Spike Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2643-BS	1G09399.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299

The QC reported here applies to the following samples:

Method: SW846 8270C

D17925-1, D17925-2, D17925-3, D17925-4, D17925-5, D17925-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	50	47.8	96	17-130
95-57-8	2-Chlorophenol	50	38.7	77	42-130
59-50-7	4-Chloro-3-methyl phenol	50	35.4	71	46-130
120-83-2	2,4-Dichlorophenol	50	37.9	76	47-130
105-67-9	2,4-Dimethylphenol	50	27.0	54	31-130
51-28-5	2,4-Dinitrophenol	50	20.5	41	35-135
534-52-1	4,6-Dinitro-o-cresol	50	24.9	50* a	54-130
95-48-7	2-Methylphenol	50	37.6	75	47-130
106-44-5	4-Methylphenol	50	36.4	73	45-130
88-75-5	2-Nitrophenol	50	43.0	86	43-130
100-02-7	4-Nitrophenol	50	38.0	76	52-130
87-86-5	Pentachlorophenol	50	27.1	54	49-130
108-95-2	Phenol	50	41.2	82	32-130
95-95-4	2,4,5-Trichlorophenol	50	39.4	79	59-130
88-06-2	2,4,6-Trichlorophenol	50	38.5	77	57-130
83-32-9	Acenaphthene	50	36.6	73	58-130
208-96-8	Acenaphthylene	50	36.0	72	56-130
120-12-7	Anthracene	50	37.6	75	59-130
56-55-3	Benzo(a)anthracene	50	41.3	83	58-130
50-32-8	Benzo(a)pyrene	50	39.7	79	58-130
205-99-2	Benzo(b)fluoranthene	50	43.1	86	64-130
191-24-2	Benzo(g,h,i)perylene	50	41.3	83	62-130
207-08-9	Benzo(k)fluoranthene	50	42.2	84	60-130
101-55-3	4-Bromophenyl phenyl ether	50	37.9	76	65-130
85-68-7	Butyl benzyl phthalate	50	41.7	83	56-130
100-51-6	Benzyl Alcohol	50	37.2	74	60-130
91-58-7	2-Chloronaphthalene	50	37.6	75	60-130
106-47-8	4-Chloroaniline	50	37.2	74	32-130
218-01-9	Chrysene	50	37.2	74	58-130
111-91-1	bis(2-Chloroethoxy)methane	50	35.9	72	58-130
111-44-4	bis(2-Chloroethyl)ether	50	38.9	78	55-130
108-60-1	bis(2-Chloroisopropyl)ether	50	31.8	64	53-130
7005-72-3	4-Chlorophenyl phenyl ether	50	33.9	68	67-130
95-50-1	1,2-Dichlorobenzene	50	32.3	65	52-130
541-73-1	1,3-Dichlorobenzene	50	30.6	61	50-130
106-46-7	1,4-Dichlorobenzene	50	31.3	63	51-130

Blank Spike Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2643-BS	1G09399.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299

The QC reported here applies to the following samples:

Method: SW846 8270C

D17925-1, D17925-2, D17925-3, D17925-4, D17925-5, D17925-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
121-14-2	2,4-Dinitrotoluene	50	39.6	79	51-131
606-20-2	2,6-Dinitrotoluene	50	40.5	81	59-130
91-94-1	3,3'-Dichlorobenzidine	50	23.8	48* a	51-130
53-70-3	Dibenzo(a,h)anthracene	50	40.8	82	62-130
132-64-9	Dibenzofuran	50	37.4	75	60-130
84-74-2	Di-n-butyl phthalate	50	35.9	72	55-130
117-84-0	Di-n-octyl phthalate	50	51.5	103	59-130
84-66-2	Diethyl phthalate	50	34.8	70	70-130
131-11-3	Dimethyl phthalate	50	34.5	69	51-130
117-81-7	bis(2-Ethylhexyl)phthalate	50	46.1	92	58-130
206-44-0	Fluoranthene	50	34.0	68	60-130
86-73-7	Fluorene	50	35.8	72	61-130
118-74-1	Hexachlorobenzene	50	39.5	79	58-130
87-68-3	Hexachlorobutadiene	50	28.6	57	42-130
77-47-4	Hexachlorocyclopentadiene	50	4.8	10	10-110
67-72-1	Hexachloroethane	50	27.0	54	43-130
193-39-5	Indeno(1,2,3-cd)pyrene	50	39.9	80	62-130
78-59-1	Isophorone	50	38.5	77	52-130
91-57-6	2-Methylnaphthalene	50	34.3	69	54-130
88-74-4	2-Nitroaniline	50	39.1	78	60-130
99-09-2	3-Nitroaniline	50	38.1	76	62-130
100-01-6	4-Nitroaniline	50	34.8	70	56-130
91-20-3	Naphthalene	50	33.9	68	54-130
98-95-3	Nitrobenzene	50	39.9	80	50-130
621-64-7	N-Nitroso-di-n-propylamine	50	33.8	68	60-130
86-30-6	N-Nitrosodiphenylamine	50	31.9	64	54-130
85-01-8	Phenanthrene	50	37.7	75	62-130
129-00-0	Pyrene	50	50.2	100	54-130
120-82-1	1,2,4-Trichlorobenzene	50	32.1	64	52-130

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	78%	43-130%
4165-62-2	Phenol-d5	75%	47-130%
118-79-6	2,4,6-Tribromophenol	68%	32-138%

Blank Spike Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2643-BS	1G09399.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299

The QC reported here applies to the following samples:

Method: SW846 8270C

D17925-1, D17925-2, D17925-3, D17925-4, D17925-5, D17925-6

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	69%	45-130%
321-60-8	2-Fluorobiphenyl	61%	45-130%
1718-51-0	Terphenyl-d14	89%	47-136%

(a) Outside control limits. Matrix spike and matrix spike duplicate recoveries are within QC limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2643-MS	1G09401.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299
OP2643-MSD	1G09402.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299
D18104-1	1G09438.D	1	10/16/10	TMB	10/11/10	OP2643	E1G300

The QC reported here applies to the following samples:

Method: SW846 8270C

D17925-1, D17925-2, D17925-3, D17925-4, D17925-5, D17925-6

CAS No.	Compound	D18104-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	50	55.4	111	51.3	103	8	8.2-155/30	
95-57-8	2-Chlorophenol	ND	50	45.5	91	43.3	87	5	43-130/30	
59-50-7	4-Chloro-3-methyl phenol	ND	50	39.8	80	35.7	71	11	48-130/30	
120-83-2	2,4-Dichlorophenol	ND	50	43.8	88	41.7	83	5	47-130/30	
105-67-9	2,4-Dimethylphenol	ND	50	30.8	62	28.8	58	7	40-130/30	
51-28-5	2,4-Dinitrophenol	ND	50	28.7	57	29.2	58	2	53-130/30	
534-52-1	4,6-Dinitro-o-cresol	ND	50	34.5	69	36.9	74	7	65-130/30	
95-48-7	2-Methylphenol	ND	50	43.4	87	41.4	83	5	41-130/30	
106-44-5	4-Methylphenol	ND	50	43.0	86	40.5	81	6	42-130/30	
88-75-5	2-Nitrophenol	ND	50	47.9	96	46.2	92	4	46-130/30	
100-02-7	4-Nitrophenol	ND	50	41.1	82	36.6	73	12	52-130/30	
87-86-5	Pentachlorophenol	ND	50	33.1	66	34.2	68	3	51-130/30	
108-95-2	Phenol	ND	50	47.6	95	45.4	91	5	41-130/30	
95-95-4	2,4,5-Trichlorophenol	ND	50	42.7	85	40.6	81	5	56-130/30	
88-06-2	2,4,6-Trichlorophenol	ND	50	43.3	87	42.4	85	2	56-130/30	
83-32-9	Acenaphthene	ND	50	39.1	78	38.7	77	1	54-130/30	
208-96-8	Acenaphthylene	ND	50	40.1	80	38.8	78	3	55-130/30	
120-12-7	Anthracene	ND	50	40.5	81	39.1	78	4	60-130/30	
56-55-3	Benzo(a)anthracene	ND	50	43.8	88	42.6	85	3	54-130/30	
50-32-8	Benzo(a)pyrene	ND	50	41.3	83	40.0	80	3	59-130/30	
205-99-2	Benzo(b)fluoranthene	ND	50	44.5	89	45.7	91	3	58-130/30	
191-24-2	Benzo(g,h,i)perylene	ND	50	47.8	96	44.5	89	7	58-130/30	
207-08-9	Benzo(k)fluoranthene	ND	50	43.8	88	41.9	84	4	53-130/30	
101-55-3	4-Bromophenyl phenyl ether	ND	50	41.5	83	42.2	84	2	61-130/30	
85-68-7	Butyl benzyl phthalate	ND	50	42.2	84	42.3	85	0	51-130/30	
100-51-6	Benzyl Alcohol	ND	50	44.1	88	41.7	83	6	40-130/30	
91-58-7	2-Chloronaphthalene	ND	50	41.1	82	41.1	82	0	57-130/30	
106-47-8	4-Chloroaniline	ND	50	43.0	86	40.1	80	7	32-130/30	
218-01-9	Chrysene	ND	50	40.1	80	39.4	79	2	55-130/30	
111-91-1	bis(2-Chloroethoxy)methane	ND	50	41.6	83	40.1	80	4	48-130/30	
111-44-4	bis(2-Chloroethyl)ether	ND	50	43.1	86	42.1	84	2	45-130/30	
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	36.2	72	34.6	69	5	41-130/30	
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	36.8	74	35.3	71	4	56-130/30	
95-50-1	1,2-Dichlorobenzene	ND	50	36.8	74	33.1	66	11	41-130/30	
541-73-1	1,3-Dichlorobenzene	ND	50	34.3	69	30.6	61	11	39-130/30	
106-46-7	1,4-Dichlorobenzene	ND	50	35.7	71	31.5	63	13	39-130/30	

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2643-MS	1G09401.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299
OP2643-MSD	1G09402.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299
D18104-1	1G09438.D	1	10/16/10	TMB	10/11/10	OP2643	E1G300

The QC reported here applies to the following samples:

Method: SW846 8270C

D17925-1, D17925-2, D17925-3, D17925-4, D17925-5, D17925-6

CAS No.	Compound	D18104-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
121-14-2	2,4-Dinitrotoluene	ND	50	42.5	85	39.1	78	8	56-130/30	
606-20-2	2,6-Dinitrotoluene	ND	50	44.2	88	41.5	83	6	61-130/30	
91-94-1	3,3'-Dichlorobenzidine	ND	50	29.6	59	27.6	55	7	19-130/30	
53-70-3	Dibenzo(a,h)anthracene	ND	50	47.4	95	44.1	88	7	61-130/30	
132-64-9	Dibenzofuran	ND	50	40.5	81	39.1	78	4	57-130/30	
84-74-2	Di-n-butyl phthalate	ND	50	38.8	78	38.1	76	2	57-130/30	
117-84-0	Di-n-octyl phthalate	ND	50	47.9	96	50.3	101	5	49-130/30	
84-66-2	Diethyl phthalate	ND	50	37.9	76	35.7	71	6	70-130/30	
131-11-3	Dimethyl phthalate	ND	50	39.0	78	37.5	75	4	55-130/30	
117-81-7	bis(2-Ethylhexyl)phthalate	2.0	50	42.5	80	44.3	83	4	54-130/30	
206-44-0	Fluoranthene	ND	50	37.7	75	35.2	70	7	54-130/30	
86-73-7	Fluorene	ND	50	38.7	77	37.2	74	4	54-130/30	
118-74-1	Hexachlorobenzene	ND	50	43.6	87	44.6	89	2	59-130/30	
87-68-3	Hexachlorobutadiene	ND	50	30.4	61	29.0	58	5	32-130/30	
77-47-4	Hexachlorocyclopentadiene	ND	50	8.8	18	9.8	20	11	10-110/30	
67-72-1	Hexachloroethane	ND	50	29.6	59	27.0	54	9	31-130/30	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	50	44.6	89	40.7	81	9	59-130/30	
78-59-1	Isophorone	ND	50	43.3	87	41.8	84	4	45-130/30	
91-57-6	2-Methylnaphthalene	ND	50	38.5	77	36.6	73	5	43-130/30	
88-74-4	2-Nitroaniline	ND	50	42.1	84	39.4	79	7	58-130/30	
99-09-2	3-Nitroaniline	ND	50	41.5	83	36.2	72	14	55-130/30	
100-01-6	4-Nitroaniline	ND	50	38.8	78	33.2	66	16	58-130/30	
91-20-3	Naphthalene	ND	50	38.5	77	36.4	73	6	43-130/30	
98-95-3	Nitrobenzene	ND	50	44.7	89	42.7	85	5	47-130/30	
621-64-7	N-Nitroso-di-n-propylamine	ND	50	39.0	78	37.8	76	3	41-130/30	
86-30-6	N-Nitrosodiphenylamine	ND	50	35.3	71	35.2	70	0	56-132/30	
85-01-8	Phenanthrene	ND	50	40.6	81	39.7	79	2	59-130/30	
129-00-0	Pyrene	ND	50	49.7	99	48.0	96	3	51-130/30	
120-82-1	1,2,4-Trichlorobenzene	ND	50	34.9	70	33.7	67	3	43-130/30	

CAS No.	Surrogate Recoveries	MS	MSD	D18104-1	Limits
367-12-4	2-Fluorophenol	88%	83%	61%	43-130%
4165-62-2	Phenol-d5	86%	81%	61%	47-130%
118-79-6	2,4,6-Tribromophenol	73%	67%	58%	32-138%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17925
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2643-MS	1G09401.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299
OP2643-MSD	1G09402.D	1	10/14/10	TMB	10/11/10	OP2643	E1G299
D18104-1	1G09438.D	1	10/16/10	TMB	10/11/10	OP2643	E1G300

The QC reported here applies to the following samples:

Method: SW846 8270C

D17925-1, D17925-2, D17925-3, D17925-4, D17925-5, D17925-6

CAS No.	Surrogate Recoveries	MS	MSD	D18104-1	Limits
4165-60-0	Nitrobenzene-d5	77%	73%	49%	45-130%
321-60-8	2-Fluorobiphenyl	71%	71%	47%	45-130%
1718-51-0	Terphenyl-d14	88%	87%	52%	47-136%



10/11/10

Technical Report for

ERM-Rocky Mountain, Inc.

Project Chai

0122609

Accutest Job Number: D17870

Sampling Date: 09/30/10

Report to:

ERM-Rocky Mountain, Inc.
6455 South Yosemite Suite #900
Greenwood Village, CO 80111
chris.thebo@erm.com

ATTN: Chris Thebo

Total number of pages in report: **34**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

John Hamilton
Laboratory Director

Client Service contact: Shea Greiner 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)

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Test results relate only to samples analyzed.

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Sample Summary

ERM-Rocky Mountain, Inc.

Job No: D17870

Project Chai
Project No: 0122609

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D17870-2	09/30/10	08:58 EM	09/30/10	SO	Soil	MW1:SOIL:9-10
D17870-4	09/30/10	11:03 EM	09/30/10	SO	Soil	MW2:SOIL:8-10

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: ERM-Rocky Mountain, Inc.

Job No D17870

Site: Project Chai

Report Dat 10/11/2010 4:06:30 PM

On 09/30/2010, four (4) samples, 0 Trip Blanks, and 0 Field Blanks were received at Accutest Mountain States (AMS) at a temperature of 4 °C. Two (2) samples were placed on hold by the client. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D17870 was assigned to the project. The lab sample IDs, client sample IDs, and dates of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix SO	Batch ID: V3V405
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Samples D17772-1MS and D17772-1MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C

Matrix SO	Batch ID: OP2637
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Samples D17814-4MS and D17814-4MSD were used as the QC samples indicated.
- The RPD for the MS and MSD recoveries of Hexachlorocyclopentadiene is outside control limits for sample OP2637-MSD. The high RPD is due to possible sample nonhomogeneity.

Wet Chemistry By Method SM19 2540B M

Matrix SO	Batch ID: GN6630
------------------	-------------------------

- The data for SM19 2540B M meets quality control requirements.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: MW1:SOIL:9-10	
Lab Sample ID: D17870-2	Date Sampled: 09/30/10
Matrix: SO - Soil	Date Received: 09/30/10
Method: SW846 8260B	Percent Solids: 98.4
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V07570.D	1	10/07/10	DC	n/a	n/a	V3V405
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.00 g	5.0 ml	100 ul
Run #2			

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1000	520	ug/kg	
71-43-2	Benzene	ND	52	15	ug/kg	
75-27-4	Bromodichloromethane	ND	260	100	ug/kg	
75-25-2	Bromoform	ND	260	100	ug/kg	
108-90-7	Chlorobenzene	ND	260	100	ug/kg	
75-00-3	Chloroethane	ND	260	100	ug/kg	
67-66-3	Chloroform	ND	260	52	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	1000	620	ug/kg	
75-15-0	Carbon disulfide	ND	260	100	ug/kg	
56-23-5	Carbon tetrachloride	ND	260	100	ug/kg	
75-34-3	1,1-Dichloroethane	ND	260	100	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	260	100	ug/kg	
107-06-2	1,2-Dichloroethane	ND	260	52	ug/kg	
78-87-5	1,2-Dichloropropane	ND	260	100	ug/kg	
124-48-1	Dibromochloromethane	ND	260	100	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	260	100	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	260	100	ug/kg	
541-73-1	m-Dichlorobenzene	ND	260	100	ug/kg	
95-50-1	o-Dichlorobenzene	ND	260	100	ug/kg	
106-46-7	p-Dichlorobenzene	ND	260	100	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	260	100	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	260	100	ug/kg	
100-41-4	Ethylbenzene	ND	100	21	ug/kg	
591-78-6	2-Hexanone	ND	1000	150	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	1000	150	ug/kg	
74-83-9	Methyl bromide	ND	260	100	ug/kg	
74-87-3	Methyl chloride	ND	260	100	ug/kg	
75-09-2	Methylene chloride	ND	260	100	ug/kg	
78-93-3	Methyl ethyl ketone	ND	1000	210	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	260	150	ug/kg	
100-42-5	Styrene	ND	260	100	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	260	52	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW1:SOIL:9-10	
Lab Sample ID: D17870-2	Date Sampled: 09/30/10
Matrix: SO - Soil	Date Received: 09/30/10
Method: SW846 8260B	Percent Solids: 98.4
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	520	100	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	260	100	ug/kg	
127-18-4	Tetrachloroethylene	ND	260	100	ug/kg	
108-88-3	Toluene	ND	100	52	ug/kg	
79-01-6	Trichloroethylene	ND	260	52	ug/kg	
75-01-4	Vinyl chloride	ND	260	100	ug/kg	
108-05-4	Vinyl Acetate	ND	1000	410	ug/kg	
1330-20-7	Xylene (total)	ND	100	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	87%		70-130%
460-00-4	4-Bromofluorobenzene	82%		70-130%
17060-07-0	1,2-Dichloroethane-D4	86%		70-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW1:SOIL:9-10	
Lab Sample ID: D17870-2	Date Sampled: 09/30/10
Matrix: SO - Soil	Date Received: 09/30/10
Method: SW846 8270C SW846 3540C	Percent Solids: 98.4
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G09330.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	330	190	ug/kg	
95-57-8	2-Chlorophenol	ND	41	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	37	30	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	37	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	41	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	130	ug/kg	
95-48-7	2-Methylphenol	ND	41	37	ug/kg	
106-44-5	4-Methylphenol	ND	41	37	ug/kg	
88-75-5	2-Nitrophenol	ND	41	37	ug/kg	
100-02-7	4-Nitrophenol	ND	71	47	ug/kg	
87-86-5	Pentachlorophenol	ND	170	100	ug/kg	
108-95-2	Phenol	ND	71	51	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	37	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	37	32	ug/kg	
83-32-9	Acenaphthene	ND	37	29	ug/kg	
208-96-8	Acenaphthylene	ND	37	34	ug/kg	
120-12-7	Anthracene	ND	37	25	ug/kg	
56-55-3	Benzo(a)anthracene	ND	37	29	ug/kg	
50-32-8	Benzo(a)pyrene	ND	37	25	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	41	37	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	37	25	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	47	41	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	37	31	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	100	ug/kg	
100-51-6	Benzyl Alcohol	ND	71	44	ug/kg	
91-58-7	2-Chloronaphthalene	ND	37	29	ug/kg	
106-47-8	4-Chloroaniline	ND	47	41	ug/kg	
218-01-9	Chrysene	ND	47	41	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	71	33	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	37	30	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	170	85	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW1:SOIL:9-10	Date Sampled:	09/30/10
Lab Sample ID:	D17870-2	Date Received:	09/30/10
Matrix:	SO - Soil	Percent Solids:	98.4
Method:	SW846 8270C SW846 3540C		
Project:	Project Chai		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	47	41	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	51	41	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	37	32	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	37	31	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	61	51	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	61	51	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	71	41	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	41	30	ug/kg	
132-64-9	Dibenzofuran	ND	37	27	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	37	32	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	41	37	ug/kg	
84-66-2	Diethyl phthalate	ND	71	41	ug/kg	
131-11-3	Dimethyl phthalate	ND	71	41	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	170	100	ug/kg	
206-44-0	Fluoranthene	ND	71	37	ug/kg	
86-73-7	Fluorene	ND	41	34	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	100	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	31	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	170	100	ug/kg	
67-72-1	Hexachloroethane	ND	41	37	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	37	27	ug/kg	
78-59-1	Isophorone	ND	37	31	ug/kg	
91-57-6	2-Methylnaphthalene	ND	37	28	ug/kg	
88-74-4	2-Nitroaniline	ND	41	34	ug/kg	
99-09-2	3-Nitroaniline	ND	71	41	ug/kg	
100-01-6	4-Nitroaniline	ND	170	81	ug/kg	
91-20-3	Naphthalene	ND	71	34	ug/kg	
98-95-3	Nitrobenzene	ND	170	51	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	51	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	51	ug/kg	
85-01-8	Phenanthrene	ND	71	37	ug/kg	
129-00-0	Pyrene	ND	41	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	37	31	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	75%		10-138%
4165-62-2	Phenol-d5	76%		10-176%
118-79-6	2,4,6-Tribromophenol	88%		10-156%
4165-60-0	Nitrobenzene-d5	62%		10-193%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW1:SOIL:9-10	
Lab Sample ID: D17870-2	Date Sampled: 09/30/10
Matrix: SO - Soil	Date Received: 09/30/10
Method: SW846 8270C SW846 3540C	Percent Solids: 98.4
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	60%		20-138%
1718-51-0	Terphenyl-d14	87%		17-174%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: MW2:SOIL:8-10	
Lab Sample ID: D17870-4	Date Sampled: 09/30/10
Matrix: SO - Soil	Date Received: 09/30/10
Method: SW846 8260B	Percent Solids: 95.4
Project: Project Chai	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V07571.D	1	10/07/10	DC	n/a	n/a	V3V405
Run #2							

Run #1	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.00 g	5.0 ml	100 ul
Run #2			

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1100	550	ug/kg	
71-43-2	Benzene	ND	55	16	ug/kg	
75-27-4	Bromodichloromethane	ND	270	110	ug/kg	
75-25-2	Bromoform	ND	270	110	ug/kg	
108-90-7	Chlorobenzene	ND	270	110	ug/kg	
75-00-3	Chloroethane	ND	270	110	ug/kg	
67-66-3	Chloroform	ND	270	55	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	1100	660	ug/kg	
75-15-0	Carbon disulfide	ND	270	110	ug/kg	
56-23-5	Carbon tetrachloride	ND	270	110	ug/kg	
75-34-3	1,1-Dichloroethane	ND	270	110	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	270	110	ug/kg	
107-06-2	1,2-Dichloroethane	ND	270	55	ug/kg	
78-87-5	1,2-Dichloropropane	ND	270	110	ug/kg	
124-48-1	Dibromochloromethane	ND	270	110	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	270	110	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	270	110	ug/kg	
541-73-1	m-Dichlorobenzene	ND	270	110	ug/kg	
95-50-1	o-Dichlorobenzene	ND	270	110	ug/kg	
106-46-7	p-Dichlorobenzene	ND	270	110	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	270	110	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	270	110	ug/kg	
100-41-4	Ethylbenzene	ND	110	22	ug/kg	
591-78-6	2-Hexanone	ND	1100	160	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	1100	160	ug/kg	
74-83-9	Methyl bromide	ND	270	110	ug/kg	
74-87-3	Methyl chloride	ND	270	110	ug/kg	
75-09-2	Methylene chloride	ND	270	110	ug/kg	
78-93-3	Methyl ethyl ketone	ND	1100	220	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	270	160	ug/kg	
100-42-5	Styrene	ND	270	110	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	270	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW2:SOIL:8-10	
Lab Sample ID: D17870-4	Date Sampled: 09/30/10
Matrix: SO - Soil	Date Received: 09/30/10
Method: SW846 8260B	Percent Solids: 95.4
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	550	110	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	270	110	ug/kg	
127-18-4	Tetrachloroethylene	ND	270	110	ug/kg	
108-88-3	Toluene	ND	110	55	ug/kg	
79-01-6	Trichloroethylene	ND	270	55	ug/kg	
75-01-4	Vinyl chloride	ND	270	110	ug/kg	
108-05-4	Vinyl Acetate	ND	1100	440	ug/kg	
1330-20-7	Xylene (total)	ND	110	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	86%		70-130%
460-00-4	4-Bromofluorobenzene	83%		70-130%
17060-07-0	1,2-Dichloroethane-D4	86%		70-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW2:SOIL:8-10	
Lab Sample ID: D17870-4	Date Sampled: 09/30/10
Matrix: SO - Soil	Date Received: 09/30/10
Method: SW846 8270C SW846 3540C	Percent Solids: 95.4
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G09331.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	350	190	ug/kg	
95-57-8	2-Chlorophenol	ND	42	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	38	31	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	38	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	42	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	130	ug/kg	
95-48-7	2-Methylphenol	ND	42	38	ug/kg	
106-44-5	4-Methylphenol	ND	42	38	ug/kg	
88-75-5	2-Nitrophenol	ND	42	38	ug/kg	
100-02-7	4-Nitrophenol	ND	73	49	ug/kg	
87-86-5	Pentachlorophenol	ND	170	100	ug/kg	
108-95-2	Phenol	ND	73	52	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	38	32	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	38	33	ug/kg	
83-32-9	Acenaphthene	ND	38	30	ug/kg	
208-96-8	Acenaphthylene	ND	38	35	ug/kg	
120-12-7	Anthracene	ND	38	26	ug/kg	
56-55-3	Benzo(a)anthracene	42.2	38	30	ug/kg	
50-32-8	Benzo(a)pyrene	38.5	38	26	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	42	38	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	38	26	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	49	42	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	38	32	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	100	ug/kg	
100-51-6	Benzyl Alcohol	ND	73	45	ug/kg	
91-58-7	2-Chloronaphthalene	ND	38	30	ug/kg	
106-47-8	4-Chloroaniline	ND	49	42	ug/kg	
218-01-9	Chrysene	ND	49	42	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	73	35	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	38	31	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	170	87	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW2:SOIL:8-10	Date Sampled:	09/30/10
Lab Sample ID:	D17870-4	Date Received:	09/30/10
Matrix:	SO - Soil	Percent Solids:	95.4
Method:	SW846 8270C SW846 3540C		
Project:	Project Chai		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	49	42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	52	42	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	38	33	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	38	32	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	63	52	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	63	52	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	73	42	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	42	31	ug/kg	
132-64-9	Dibenzofuran	ND	38	28	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	38	33	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	42	38	ug/kg	
84-66-2	Diethyl phthalate	ND	73	42	ug/kg	
131-11-3	Dimethyl phthalate	ND	73	42	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	170	100	ug/kg	
206-44-0	Fluoranthene	46.3	73	38	ug/kg	J
86-73-7	Fluorene	ND	42	35	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	100	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	32	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	170	100	ug/kg	
67-72-1	Hexachloroethane	ND	42	38	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	38	28	ug/kg	
78-59-1	Isophorone	ND	38	32	ug/kg	
91-57-6	2-Methylnaphthalene	ND	38	29	ug/kg	
88-74-4	2-Nitroaniline	ND	42	35	ug/kg	
99-09-2	3-Nitroaniline	ND	73	42	ug/kg	
100-01-6	4-Nitroaniline	ND	170	84	ug/kg	
91-20-3	Naphthalene	ND	73	35	ug/kg	
98-95-3	Nitrobenzene	ND	170	52	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	52	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	52	ug/kg	
85-01-8	Phenanthrene	ND	73	38	ug/kg	
129-00-0	Pyrene	108	42	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	38	32	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		10-138%
4165-62-2	Phenol-d5	65%		10-176%
118-79-6	2,4,6-Tribromophenol	64%		10-156%
4165-60-0	Nitrobenzene-d5	54%		10-193%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW2:SOIL:8-10	
Lab Sample ID: D17870-4	Date Sampled: 09/30/10
Matrix: SO - Soil	Date Received: 09/30/10
Method: SW846 8270C SW846 3540C	Percent Solids: 95.4
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	50%		20-138%
1718-51-0	Terphenyl-d14	78%		17-174%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

GC/MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V405-MB1	3V07557.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17870-2, D17870-4

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1000	500	ug/kg	
71-43-2	Benzene	ND	50	15	ug/kg	
75-27-4	Bromodichloromethane	ND	250	100	ug/kg	
75-25-2	Bromoform	ND	250	100	ug/kg	
108-90-7	Chlorobenzene	ND	250	100	ug/kg	
75-00-3	Chloroethane	ND	250	100	ug/kg	
67-66-3	Chloroform	ND	250	50	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	1000	600	ug/kg	
75-15-0	Carbon disulfide	ND	250	100	ug/kg	
56-23-5	Carbon tetrachloride	ND	250	100	ug/kg	
75-34-3	1,1-Dichloroethane	ND	250	100	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	250	100	ug/kg	
107-06-2	1,2-Dichloroethane	ND	250	50	ug/kg	
78-87-5	1,2-Dichloropropane	ND	250	100	ug/kg	
124-48-1	Dibromochloromethane	ND	250	100	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	250	100	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	250	100	ug/kg	
541-73-1	m-Dichlorobenzene	ND	250	100	ug/kg	
95-50-1	o-Dichlorobenzene	ND	250	100	ug/kg	
106-46-7	p-Dichlorobenzene	ND	250	100	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	250	100	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	250	100	ug/kg	
100-41-4	Ethylbenzene	ND	100	20	ug/kg	
591-78-6	2-Hexanone	ND	1000	150	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	1000	150	ug/kg	
74-83-9	Methyl bromide	ND	250	100	ug/kg	
74-87-3	Methyl chloride	ND	250	100	ug/kg	
75-09-2	Methylene chloride	ND	250	100	ug/kg	
78-93-3	Methyl ethyl ketone	ND	1000	200	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	250	150	ug/kg	
100-42-5	Styrene	ND	250	100	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	250	50	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	500	100	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	250	100	ug/kg	
127-18-4	Tetrachloroethylene	ND	250	100	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	

Method Blank Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V405-MB1	3V07557.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17870-2, D17870-4

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	250	50	ug/kg	
75-01-4	Vinyl chloride	ND	250	100	ug/kg	
108-05-4	Vinyl Acetate	ND	1000	400	ug/kg	
1330-20-7	Xylene (total)	ND	100	35	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	87% 70-130%
460-00-4	4-Bromofluorobenzene	82% 70-130%
17060-07-0	1,2-Dichloroethane-D4	85% 70-130%

Blank Spike Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V405-BS1	3V07558.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17870-2, D17870-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	50	28.2	56	34-130
71-43-2	Benzene	50	51.1	102	68-130
75-27-4	Bromodichloromethane	50	46.8	94	65-133
75-25-2	Bromoform	50	40.1	80	55-130
108-90-7	Chlorobenzene	50	52.6	105	70-130
75-00-3	Chloroethane	50	54.2	108	67-130
67-66-3	Chloroform	50	52.7	105	70-130
110-75-8	2-Chloroethyl vinyl ether	50	44.4	89	20-177
75-15-0	Carbon disulfide	50	51.2	102	23-130
56-23-5	Carbon tetrachloride	50	51.3	103	62-130
75-34-3	1,1-Dichloroethane	50	53.0	106	70-130
75-35-4	1,1-Dichloroethylene	50	52.8	106	70-130
107-06-2	1,2-Dichloroethane	50	48.0	96	70-130
78-87-5	1,2-Dichloropropane	50	50.4	101	70-130
124-48-1	Dibromochloromethane	50	49.7	99	65-130
156-59-2	cis-1,2-Dichloroethylene	50	53.3	107	70-130
10061-01-5	cis-1,3-Dichloropropene	50	47.4	95	66-130
541-73-1	m-Dichlorobenzene	50	49.2	98	70-130
95-50-1	o-Dichlorobenzene	50	49.8	100	70-130
106-46-7	p-Dichlorobenzene	50	49.0	98	70-130
156-60-5	trans-1,2-Dichloroethylene	50	53.1	106	70-130
10061-02-6	trans-1,3-Dichloropropene	50	44.0	88	70-130
100-41-4	Ethylbenzene	50	53.1	106	70-130
591-78-6	2-Hexanone	50	38.2	76	46-130
108-10-1	4-Methyl-2-pentanone	50	43.1	86	58-130
74-83-9	Methyl bromide	50	55.3	111	40-145
74-87-3	Methyl chloride	50	38.8	78	42-130
75-09-2	Methylene chloride	50	51.7	103	70-130
78-93-3	Methyl ethyl ketone	50	42.5	85	21-130
1634-04-4	Methyl Tert Butyl Ether	50	48.7	97	67-150
100-42-5	Styrene	50	47.7	95	38-130
71-55-6	1,1,1-Trichloroethane	50	47.9	96	68-130
79-34-5	1,1,2,2-Tetrachloroethane	50	45.9	92	70-130
79-00-5	1,1,2-Trichloroethane	50	49.5	99	70-130
127-18-4	Tetrachloroethylene	50	52.2	104	70-130
108-88-3	Toluene	50	52.2	104	70-130

Blank Spike Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V405-BS1	3V07558.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17870-2, D17870-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
79-01-6	Trichloroethylene	50	52.8	106	70-130
75-01-4	Vinyl chloride	50	39.8	80	55-130
108-05-4	Vinyl Acetate	50	42.8	86	54-130
1330-20-7	Xylene (total)	100	97.8	98	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	87%	70-130%
460-00-4	4-Bromofluorobenzene	84%	70-130%
17060-07-0	1,2-Dichloroethane-D4	86%	70-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D17772-1MS	3V07560.D	1	10/07/10	DC	n/a	n/a	V3V405
D17772-1MSD	3V07561.D	1	10/07/10	DC	n/a	n/a	V3V405
D17772-1	3V07559.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17870-2, D17870-4

CAS No.	Compound	D17772-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	4140	3170	77	3400	82	7	34-130/30
71-43-2	Benzene	ND	4140	4140	100	4270	103	3	55-140/30
75-27-4	Bromodichloromethane	ND	4140	3560	86	3830	93	7	50-146/30
75-25-2	Bromoform	ND	4140	3140	76	3420	83	9	56-130/30
108-90-7	Chlorobenzene	ND	4140	4260	103	4410	107	3	66-130/30
75-00-3	Chloroethane	ND	4140	4560	110	4770	115	5	62-130/30
67-66-3	Chloroform	ND	4140	4290	104	4450	107	4	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	4140	3710	90	3920	95	6	20-162/30
75-15-0	Carbon disulfide	ND	4140	4030	97	4170	101	3	19-130/30
56-23-5	Carbon tetrachloride	ND	4140	4070	98	4230	102	4	54-141/30
75-34-3	1,1-Dichloroethane	ND	4140	4320	104	4530	109	5	70-130/30
75-35-4	1,1-Dichloroethylene	ND	4140	4310	104	4510	109	5	70-140/30
107-06-2	1,2-Dichloroethane	ND	4140	4050	98	4270	103	5	68-130/30
78-87-5	1,2-Dichloropropane	ND	4140	4070	98	4230	102	4	70-130/30
124-48-1	Dibromochloromethane	ND	4140	3790	92	4060	98	7	56-130/30
156-59-2	cis-1,2-Dichloroethylene	ND	4140	4360	105	4500	109	3	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND	4140	3800	92	3970	96	4	56-130/30
541-73-1	m-Dichlorobenzene	ND	4140	3970	96	4050	98	2	70-130/30
95-50-1	o-Dichlorobenzene	ND	4140	3990	96	4090	99	2	70-130/30
106-46-7	p-Dichlorobenzene	ND	4140	3980	96	4120	100	3	70-130/30
156-60-5	trans-1,2-Dichloroethylene	ND	4140	4330	105	4440	107	3	64-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	4140	3590	87	3770	91	5	53-130/30
100-41-4	Ethylbenzene	ND	4140	4300	104	4450	107	3	56-139/30
591-78-6	2-Hexanone	ND	4140	3400	82	3770	91	10	48-132/30
108-10-1	4-Methyl-2-pentanone	ND	4140	3670	89	4050	98	10	58-138/30
74-83-9	Methyl bromide	ND	4140	1110	27	1150	28	4	10-165/30
74-87-3	Methyl chloride	ND	4140	3150	76	3310	80	5	35-130/30
75-09-2	Methylene chloride	ND	4140	4290	104	4470	108	4	70-130/30
78-93-3	Methyl ethyl ketone	ND	4140	3760	91	3890	94	3	20-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	4140	4190	101	4380	106	4	69-141/30
100-42-5	Styrene	ND	4140	3820	92	4030	97	5	33-130/30
71-55-6	1,1,1-Trichloroethane	ND	4140	3940	95	4050	98	3	55-138/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	4140	3730	90	3890	94	4	69-130/30
79-00-5	1,1,2-Trichloroethane	ND	4140	4000	97	4270	103	7	62-134/30
127-18-4	Tetrachloroethylene	ND	4140	4250	103	4420	107	4	47-136/30
108-88-3	Toluene	ND	4140	4240	102	4360	105	3	57-144/30

5.3.1
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Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D17772-1MS	3V07560.D	1	10/07/10	DC	n/a	n/a	V3V405
D17772-1MSD	3V07561.D	1	10/07/10	DC	n/a	n/a	V3V405
D17772-1	3V07559.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17870-2, D17870-4

CAS No.	Compound	D17772-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
79-01-6	Trichloroethylene	ND	4140	4310	104	4380	106	2	70-149/30
75-01-4	Vinyl chloride	ND	4140	3310	80	3440	83	4	59-131/30
108-05-4	Vinyl Acetate	ND	4140	3580	86	3820	92	6	20-141/30
1330-20-7	Xylene (total)	ND	8280	7810	94	8090	98	4	51-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D17772-1	Limits
2037-26-5	Toluene-D8	87%	87%	89%	70-130%
460-00-4	4-Bromofluorobenzene	85%	87%	84%	70-130%
17060-07-0	1,2-Dichloroethane-D4	88%	87%	86%	70-130%

5.3.1
5

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MB	1G09320.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17870-2, D17870-4

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	330	180	ug/kg	
95-57-8	2-Chlorophenol	ND	40	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	37	30	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	37	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	40	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	130	ug/kg	
95-48-7	2-Methylphenol	ND	40	37	ug/kg	
106-44-5	4-Methylphenol	ND	40	37	ug/kg	
88-75-5	2-Nitrophenol	ND	40	37	ug/kg	
100-02-7	4-Nitrophenol	ND	70	47	ug/kg	
87-86-5	Pentachlorophenol	ND	170	100	ug/kg	
108-95-2	Phenol	ND	70	50	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	37	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	37	32	ug/kg	
83-32-9	Acenaphthene	ND	37	29	ug/kg	
208-96-8	Acenaphthylene	ND	37	33	ug/kg	
120-12-7	Anthracene	ND	37	25	ug/kg	
56-55-3	Benzo(a)anthracene	ND	37	29	ug/kg	
50-32-8	Benzo(a)pyrene	ND	37	25	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	40	37	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	37	25	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	47	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	37	31	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	100	ug/kg	
100-51-6	Benzyl Alcohol	ND	70	43	ug/kg	
91-58-7	2-Chloronaphthalene	ND	37	29	ug/kg	
106-47-8	4-Chloroaniline	ND	47	40	ug/kg	
218-01-9	Chrysene	ND	47	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	70	33	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	37	30	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	170	83	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	47	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	50	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	37	32	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	37	31	ug/kg	

Method Blank Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MB	1G09320.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17870-2, D17870-4

CAS No.	Compound	Result	RL	MDL	Units	Q
121-14-2	2,4-Dinitrotoluene	ND	60	50	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	60	50	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	70	40	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	40	30	ug/kg	
132-64-9	Dibenzofuran	ND	37	27	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	37	32	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	40	37	ug/kg	
84-66-2	Diethyl phthalate	ND	70	40	ug/kg	
131-11-3	Dimethyl phthalate	ND	70	40	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	170	100	ug/kg	
206-44-0	Fluoranthene	ND	70	37	ug/kg	
86-73-7	Fluorene	ND	40	33	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	100	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	31	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	170	100	ug/kg	
67-72-1	Hexachloroethane	ND	40	37	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	37	27	ug/kg	
78-59-1	Isophorone	ND	37	31	ug/kg	
91-57-6	2-Methylnaphthalene	ND	37	28	ug/kg	
88-74-4	2-Nitroaniline	ND	40	33	ug/kg	
99-09-2	3-Nitroaniline	ND	70	40	ug/kg	
100-01-6	4-Nitroaniline	ND	170	80	ug/kg	
91-20-3	Naphthalene	ND	70	33	ug/kg	
98-95-3	Nitrobenzene	ND	170	50	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	50	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	50	ug/kg	
85-01-8	Phenanthrene	ND	70	37	ug/kg	
129-00-0	Pyrene	ND	40	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	37	31	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
367-12-4	2-Fluorophenol	71%	10-138%
4165-62-2	Phenol-d5	74%	10-176%
118-79-6	2,4,6-Tribromophenol	52%	10-156%

Method Blank Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MB	1G09320.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17870-2, D17870-4

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	64% 10-193%
321-60-8	2-Fluorobiphenyl	65% 20-138%
1718-51-0	Terphenyl-d14	84% 17-174%

Blank Spike Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-BS	1G09321.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17870-2, D17870-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
65-85-0	Benzoic Acid	1670	604	36	10-130
95-57-8	2-Chlorophenol	1670	1380	83	29-130
59-50-7	4-Chloro-3-methyl phenol	1670	1400	84	38-133
120-83-2	2,4-Dichlorophenol	1670	1470	88	35-130
105-67-9	2,4-Dimethylphenol	1670	1060	64	31-130
51-28-5	2,4-Dinitrophenol	1670	864	52	17-141
534-52-1	4,6-Dinitro-o-cresol	1670	1180	71	24-146
95-48-7	2-Methylphenol	1670	1330	80	35-130
106-44-5	4-Methylphenol	1670	1330	80	32-130
88-75-5	2-Nitrophenol	1670	1560	94	35-130
100-02-7	4-Nitrophenol	1670	1240	74	24-141
87-86-5	Pentachlorophenol	1670	1170	70	11-136
108-95-2	Phenol	1670	1460	88	32-130
95-95-4	2,4,5-Trichlorophenol	1670	1550	93	35-133
88-06-2	2,4,6-Trichlorophenol	1670	1490	89	35-131
83-32-9	Acenaphthene	1670	1420	85	40-136
208-96-8	Acenaphthylene	1670	1420	85	42-139
120-12-7	Anthracene	1670	1410	85	40-141
56-55-3	Benzo(a)anthracene	1670	1550	93	38-143
50-32-8	Benzo(a)pyrene	1670	1480	89	39-145
205-99-2	Benzo(b)fluoranthene	1670	1560	94	38-151
191-24-2	Benzo(g,h,i)perylene	1670	1340	80	35-136
207-08-9	Benzo(k)fluoranthene	1670	1540	92	38-147
101-55-3	4-Bromophenyl phenyl ether	1670	1380	83	35-150
85-68-7	Butyl benzyl phthalate	1670	1510	91	28-169
100-51-6	Benzyl Alcohol	1670	1290	77	39-136
91-58-7	2-Chloronaphthalene	1670	1490	89	40-134
106-47-8	4-Chloroaniline	1670	1440	86	42-130
218-01-9	Chrysene	1670	1420	85	39-137
111-91-1	bis(2-Chloroethoxy)methane	1670	1420	85	38-136
111-44-4	bis(2-Chloroethyl)ether	1670	1350	81	23-130
108-60-1	bis(2-Chloroisopropyl)ether	1670	1150	69	17-145
7005-72-3	4-Chlorophenyl phenyl ether	1670	1380	83	40-138
95-50-1	1,2-Dichlorobenzene	1670	1380	83	32-130
541-73-1	1,3-Dichlorobenzene	1670	1380	83	31-130
106-46-7	1,4-Dichlorobenzene	1670	1370	82	31-130

Blank Spike Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-BS	1G09321.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17870-2, D17870-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
121-14-2	2,4-Dinitrotoluene	1670	1590	95	40-154
606-20-2	2,6-Dinitrotoluene	1670	1570	94	42-153
91-94-1	3,3'-Dichlorobenzidine	1670	1390	83	34-152
53-70-3	Dibenzo(a,h)anthracene	1670	1390	83	35-139
132-64-9	Dibenzofuran	1670	1470	88	40-134
84-74-2	Di-n-butyl phthalate	1670	1400	84	36-150
117-84-0	Di-n-octyl phthalate	1670	1590	95	28-157
84-66-2	Diethyl phthalate	1670	1380	83	39-152
131-11-3	Dimethyl phthalate	1670	1380	83	42-142
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1510	91	24-174
206-44-0	Fluoranthene	1670	1410	85	34-132
86-73-7	Fluorene	1670	1450	87	41-136
118-74-1	Hexachlorobenzene	1670	1420	85	38-145
87-68-3	Hexachlorobutadiene	1670	1430	86	34-136
77-47-4	Hexachlorocyclopentadiene	1670	444	27	14-130
67-72-1	Hexachloroethane	1670	1390	83	29-131
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1360	82	31-144
78-59-1	Isophorone	1670	1450	87	38-130
91-57-6	2-Methylnaphthalene	1670	1390	83	40-131
88-74-4	2-Nitroaniline	1670	1550	93	41-141
99-09-2	3-Nitroaniline	1670	1620	97	40-145
100-01-6	4-Nitroaniline	1670	1560	94	41-154
91-20-3	Naphthalene	1670	1390	83	36-130
98-95-3	Nitrobenzene	1670	1500	90	40-135
621-64-7	N-Nitroso-di-n-propylamine	1670	1220	73	32-137
86-30-6	N-Nitrosodiphenylamine	1670	1190	71	27-152
85-01-8	Phenanthrene	1670	1430	86	40-135
129-00-0	Pyrene	1670	1530	92	29-157
120-82-1	1,2,4-Trichlorobenzene	1670	1440	86	38-132

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	77%	10-138%
4165-62-2	Phenol-d5	78%	10-176%
118-79-6	2,4,6-Tribromophenol	84%	10-156%

Blank Spike Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-BS	1G09321.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17870-2, D17870-4

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	75%	10-193%
321-60-8	2-Fluorobiphenyl	74%	20-138%
1718-51-0	Terphenyl-d14	81%	17-174%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MS	1G09327.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
OP2637-MSD	1G09328.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
D17814-4	1G09326.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17870-2, D17870-4

CAS No.	Compound	D17814-4 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND	1710	1430	83	1320	77	8	10-141/30
95-57-8	2-Chlorophenol	ND	1710	1310	76	1340	78	2	16-136/30
59-50-7	4-Chloro-3-methyl phenol	ND	1710	1390	81	1330	78	4	17-147/30
120-83-2	2,4-Dichlorophenol	ND	1710	1350	79	1370	80	1	13-144/30
105-67-9	2,4-Dimethylphenol	ND	1710	840	49	943	55	12	10-135/30
51-28-5	2,4-Dinitrophenol	ND	1710	1240	72	1320	77	6	10-156/30
534-52-1	4,6-Dinitro-o-cresol	ND	1710	1290	75	1380	81	7	10-158/30
95-48-7	2-Methylphenol	ND	1710	1240	72	1290	75	4	10-144/30
106-44-5	4-Methylphenol	ND	1710	1260	73	1290	75	2	14-138/30
88-75-5	2-Nitrophenol	ND	1710	1410	82	1450	85	3	10-176/30
100-02-7	4-Nitrophenol	ND	1710	1180	69	1240	73	5	10-138/30
87-86-5	Pentachlorophenol	ND	1710	1270	74	1410	83	10	10-185/30
108-95-2	Phenol	ND	1710	1340	78	1370	80	2	20-129/30
95-95-4	2,4,5-Trichlorophenol	ND	1710	1470	86	1500	88	2	10-189/30
88-06-2	2,4,6-Trichlorophenol	ND	1710	1360	79	1430	84	5	10-152/30
83-32-9	Acenaphthene	ND	1710	1270	74	1320	77	4	20-151/30
208-96-8	Acenaphthylene	ND	1710	1250	73	1320	77	5	23-156/30
120-12-7	Anthracene	ND	1710	1270	74	1350	79	6	25-149/30
56-55-3	Benzo(a)anthracene	ND	1710	1450	85	1510	88	4	22-157/30
50-32-8	Benzo(a)pyrene	ND	1710	1360	79	1410	83	4	23-153/30
205-99-2	Benzo(b)fluoranthene	ND	1710	1520	89	1550	91	2	22-161/30
191-24-2	Benzo(g,h,i)perylene	ND	1710	1140	66	1230	72	8	20-158/30
207-08-9	Benzo(k)fluoranthene	ND	1710	1360	79	1400	82	3	17-161/30
101-55-3	4-Bromophenyl phenyl ether	ND	1710	1310	76	1330	78	2	10-176/30
85-68-7	Butyl benzyl phthalate	ND	1710	1630	95	1560	91	4	11-205/30
100-51-6	Benzyl Alcohol	ND	1710	1280	75	1230	72	4	13-168/30
91-58-7	2-Chloronaphthalene	ND	1710	1260	73	1350	79	7	21-149/30
106-47-8	4-Chloroaniline	ND	1710	1230	72	1210	71	2	10-143/30
218-01-9	Chrysene	ND	1710	1300	76	1360	80	5	16-159/30
111-91-1	bis(2-Chloroethoxy)methane	ND	1710	1270	74	1310	77	3	16-155/30
111-44-4	bis(2-Chloroethyl)ether	ND	1710	1250	73	1280	75	2	16-130/30
108-60-1	bis(2-Chloroisopropyl)ether	ND	1710	1110	65	1160	68	4	10-156/30
7005-72-3	4-Chlorophenyl phenyl ether	ND	1710	1310	76	1310	77	0	19-155/30
95-50-1	1,2-Dichlorobenzene	ND	1710	1270	74	1310	77	3	18-145/30
541-73-1	1,3-Dichlorobenzene	ND	1710	1280	75	1310	77	2	15-146/30
106-46-7	1,4-Dichlorobenzene	ND	1710	1270	74	1320	77	4	17-142/30

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MS	1G09327.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
OP2637-MSD	1G09328.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
D17814-4	1G09326.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17870-2, D17870-4

CAS No.	Compound	D17814-4 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
121-14-2	2,4-Dinitrotoluene	ND		1710	1520	89	1490	87	2	10-218/30
606-20-2	2,6-Dinitrotoluene	ND		1710	1440	84	1460	85	1	10-208/30
91-94-1	3,3'-Dichlorobenzidine	ND		1710	1040	61	989	58	5	10-158/30
53-70-3	Dibenzo(a,h)anthracene	ND		1710	1250	73	1320	77	5	21-154/30
132-64-9	Dibenzofuran	ND		1710	1330	78	1360	80	2	21-150/30
84-74-2	Di-n-butyl phthalate	ND		1710	1310	76	1320	77	1	22-161/30
117-84-0	Di-n-octyl phthalate	ND		1710	1580	92	1530	90	3	10-218/30
84-66-2	Diethyl phthalate	ND		1710	1290	75	1340	78	4	16-171/30
131-11-3	Dimethyl phthalate	ND		1710	1250	73	1280	75	2	10-184/30
117-81-7	bis(2-Ethylhexyl)phthalate	ND		1710	1470	86	1420	83	3	15-195/30
206-44-0	Fluoranthene	ND		1710	1180	69	1370	80	15	16-140/30
86-73-7	Fluorene	ND		1710	1370	80	1360	80	1	15-153/30
118-74-1	Hexachlorobenzene	ND		1710	1330	78	1390	81	4	22-155/30
87-68-3	Hexachlorobutadiene	ND		1710	1280	75	1330	78	4	19-143/30
77-47-4	Hexachlorocyclopentadiene	ND		1710	289	17	438	26	41* a	10-130/30
67-72-1	Hexachloroethane	ND		1710	1250	73	1310	77	5	10-180/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		1710	1210	71	1330	78	9	21-159/30
78-59-1	Isophorone	ND		1710	1330	78	1360	80	2	21-136/30
91-57-6	2-Methylnaphthalene	ND		1710	1330	78	1290	75	3	10-181/30
88-74-4	2-Nitroaniline	ND		1710	1420	83	1450	85	2	10-207/30
99-09-2	3-Nitroaniline	ND		1710	1430	83	1440	84	1	19-152/30
100-01-6	4-Nitroaniline	ND		1710	1420	83	1420	83	0	17-166/30
91-20-3	Naphthalene	36.5	J	1710	1260	71	1300	74	3	10-176/30
98-95-3	Nitrobenzene	ND		1710	1310	76	1340	78	2	16-155/30
621-64-7	N-Nitroso-di-n-propylamine	ND		1710	1190	69	1230	72	3	10-199/30
86-30-6	N-Nitrosodiphenylamine	ND		1710	1070	62	1100	64	3	12-168/30
85-01-8	Phenanthrene	ND		1710	1290	75	1380	81	7	22-152/30
129-00-0	Pyrene	38.1	J	1710	1600	91	1600	91	0	10-200/30
120-82-1	1,2,4-Trichlorobenzene	ND		1710	1290	75	1330	78	3	20-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D17814-4	Limits
367-12-4	2-Fluorophenol	70%	72%	80%	10-138%
4165-62-2	Phenol-d5	72%	75%	83%	10-176%
118-79-6	2,4,6-Tribromophenol	85%	86%	90%	10-156%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17870
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MS	1G09327.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
OP2637-MSD	1G09328.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
D17814-4	1G09326.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17870-2, D17870-4

CAS No.	Surrogate Recoveries	MS	MSD	D17814-4	Limits
4165-60-0	Nitrobenzene-d5	65%	67%	71%	10-193%
321-60-8	2-Fluorobiphenyl	61%	66%	70%	20-138%
1718-51-0	Terphenyl-d14	84%	83%	95%	17-174%

(a) High RPD due to possible sample nonhomogeneity.



10/19/10

Technical Report for

ERM-Rocky Mountain, Inc.

Project Chai

0122609

Accutest Job Number: D17813

Sampling Date: 09/28/10

Report to:

ERM-Rocky Mountain, Inc.

chris.thebo@erm.com

ATTN: Chris Thebo

Total number of pages in report: **39**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

John Hamilton
Laboratory Director

Client Service contact: Shea Greiner 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)

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Test results relate only to samples analyzed.

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Sample Summary

ERM-Rocky Mountain, Inc.

Job No: D17813

Project Chai

Project No: 0122609

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D17813-2	09/28/10	09:53 EM	09/29/10	SO	Soil	MW5:SOIL:5-7
D17813-3	09/28/10	10:43 EM	09/29/10	SO	Soil	MW5:SOIL:8-10
D17813-6	09/28/10	13:12 EM	09/29/10	SO	Soil	MW3:SOIL:9-10

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: ERM-Rocky Mountain, Inc.

Job No D17813

Site: Project Chai

Report Dat 10/12/2010 11:27:51 A

On 09/29/2010, 3 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4.3 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D17813 was assigned to the project. The lab sample IDs, client sample IDs, and dates of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix SO	Batch ID: V3V405
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Samples D17772-1MS and D17772-1MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C

Matrix SO	Batch ID: OP2637
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Samples D17814-4MS and D17814-4MSD were used as the QC samples indicated.
- The RPD for the MS and MSD recovery of Hexachlorocyclopentadiene is outside control limits for sample OP2637-MSD. High RPD due to possible sample nonhomogeneity.
- D17813-6: Dilution required due to matrix interference.
- D17813-6 for 2,4,6-Tribromophenol: Outside control limits due to dilution.

Wet Chemistry By Method SM19 2540B M

Matrix SO	Batch ID: GN6604
------------------	-------------------------

- The data for SM19 2540B M meets quality control requirements.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: MW5:SOIL:5-7	
Lab Sample ID: D17813-2	Date Sampled: 09/28/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8260B	Percent Solids: 93.0
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V07564.D	1	10/07/10	DC	n/a	n/a	V3V405
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.00 g	5.0 ml	100 ul
Run #2			

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1200	580	ug/kg	
71-43-2	Benzene	ND	58	17	ug/kg	
75-27-4	Bromodichloromethane	ND	290	120	ug/kg	
75-25-2	Bromoform	ND	290	120	ug/kg	
108-90-7	Chlorobenzene	ND	290	120	ug/kg	
75-00-3	Chloroethane	ND	290	120	ug/kg	
67-66-3	Chloroform	ND	290	58	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	1200	690	ug/kg	
75-15-0	Carbon disulfide	ND	290	120	ug/kg	
56-23-5	Carbon tetrachloride	ND	290	120	ug/kg	
75-34-3	1,1-Dichloroethane	ND	290	120	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	290	120	ug/kg	
107-06-2	1,2-Dichloroethane	ND	290	58	ug/kg	
78-87-5	1,2-Dichloropropane	ND	290	120	ug/kg	
124-48-1	Dibromochloromethane	ND	290	120	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	290	120	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	290	120	ug/kg	
541-73-1	m-Dichlorobenzene	ND	290	120	ug/kg	
95-50-1	o-Dichlorobenzene	ND	290	120	ug/kg	
106-46-7	p-Dichlorobenzene	ND	290	120	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	290	120	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	290	120	ug/kg	
100-41-4	Ethylbenzene	507	120	23	ug/kg	
591-78-6	2-Hexanone	ND	1200	170	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	1200	170	ug/kg	
74-83-9	Methyl bromide	ND	290	120	ug/kg	
74-87-3	Methyl chloride	ND	290	120	ug/kg	
75-09-2	Methylene chloride	ND	290	120	ug/kg	
78-93-3	Methyl ethyl ketone	ND	1200	230	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	290	170	ug/kg	
100-42-5	Styrene	ND	290	120	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	290	58	ug/kg	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW5:SOIL:5-7	
Lab Sample ID: D17813-2	Date Sampled: 09/28/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8260B	Percent Solids: 93.0
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	580	120	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	290	120	ug/kg	
127-18-4	Tetrachloroethylene	ND	290	120	ug/kg	
108-88-3	Toluene	ND	120	58	ug/kg	
79-01-6	Trichloroethylene	ND	290	58	ug/kg	
75-01-4	Vinyl chloride	ND	290	120	ug/kg	
108-05-4	Vinyl Acetate	ND	1200	460	ug/kg	
1330-20-7	Xylene (total)	2480	120	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	91%		70-130%
460-00-4	4-Bromofluorobenzene	126%		70-130%
17060-07-0	1,2-Dichloroethane-D4	86%		70-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW5:SOIL:5-7	
Lab Sample ID: D17813-2	Date Sampled: 09/28/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8270C SW846 3540C	Percent Solids: 93.0
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G09345.D	20	10/11/10	TMB	10/07/10	OP2637	E1G296
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	7100	3900	ug/kg	
95-57-8	2-Chlorophenol	ND	860	790	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	790	640	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	790	720	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	860	790	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	3600	2700	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	3600	2700	ug/kg	
95-48-7	2-Methylphenol	ND	860	790	ug/kg	
106-44-5	4-Methylphenol	ND	860	790	ug/kg	
88-75-5	2-Nitrophenol	ND	860	790	ug/kg	
100-02-7	4-Nitrophenol	ND	1500	1000	ug/kg	
87-86-5	Pentachlorophenol	ND	3600	2100	ug/kg	
108-95-2	Phenol	ND	1500	1100	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	790	670	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	790	690	ug/kg	
83-32-9	Acenaphthene	43700	790	620	ug/kg	
208-96-8	Acenaphthylene	1370	790	720	ug/kg	
120-12-7	Anthracene	15700	790	540	ug/kg	
56-55-3	Benzo(a)anthracene	10500	790	620	ug/kg	
50-32-8	Benzo(a)pyrene	7560	790	540	ug/kg	
205-99-2	Benzo(b)fluoranthene	3730	860	790	ug/kg	
191-24-2	Benzo(g,h,i)perylene	2660	790	540	ug/kg	
207-08-9	Benzo(k)fluoranthene	4540	1000	860	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	790	670	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	3600	2100	ug/kg	
100-51-6	Benzyl Alcohol	ND	1500	930	ug/kg	
91-58-7	2-Chloronaphthalene	ND	790	620	ug/kg	
106-47-8	4-Chloroaniline	ND	1000	860	ug/kg	
218-01-9	Chrysene	8570	1000	860	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	1500	710	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	790	640	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	3600	1800	ug/kg	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW5:SOIL:5-7	Date Sampled:	09/28/10
Lab Sample ID:	D17813-2	Date Received:	09/29/10
Matrix:	SO - Soil	Percent Solids:	93.0
Method:	SW846 8270C SW846 3540C		
Project:	Project Chai		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	1000	860	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1100	860	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	790	690	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	790	670	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	1300	1100	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	1300	1100	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	1500	860	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	860	640	ug/kg	
132-64-9	Dibenzofuran	1490	790	580	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	790	690	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	860	790	ug/kg	
84-66-2	Diethyl phthalate	ND	1500	860	ug/kg	
131-11-3	Dimethyl phthalate	ND	1500	860	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	3600	2100	ug/kg	
206-44-0	Fluoranthene	21500	1500	790	ug/kg	
86-73-7	Fluorene	20700	860	720	ug/kg	
118-74-1	Hexachlorobenzene	ND	3600	2100	ug/kg	
87-68-3	Hexachlorobutadiene	ND	790	670	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	3600	2100	ug/kg	
67-72-1	Hexachloroethane	ND	860	790	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	2730	790	580	ug/kg	
78-59-1	Isophorone	ND	790	670	ug/kg	
91-57-6	2-Methylnaphthalene	52800	790	600	ug/kg	
88-74-4	2-Nitroaniline	ND	860	720	ug/kg	
99-09-2	3-Nitroaniline	ND	1500	860	ug/kg	
100-01-6	4-Nitroaniline	ND	3600	1700	ug/kg	
91-20-3	Naphthalene	91800	1500	720	ug/kg	
98-95-3	Nitrobenzene	ND	3600	1100	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	3600	1100	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	3600	1100	ug/kg	
85-01-8	Phenanthrene	58300	1500	790	ug/kg	
129-00-0	Pyrene	39900	860	790	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	790	670	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	93%		10-138%
4165-62-2	Phenol-d5	117%		10-176%
118-79-6	2,4,6-Tribromophenol	109%		10-156%
4165-60-0	Nitrobenzene-d5	95%		10-193%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

3.1
3

Client Sample ID: MW5:SOIL:5-7	Date Sampled: 09/28/10
Lab Sample ID: D17813-2	Date Received: 09/29/10
Matrix: SO - Soil	Percent Solids: 93.0
Method: SW846 8270C SW846 3540C	
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	87%		20-138%
1718-51-0	Terphenyl-d14	106%		17-174%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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3

Client Sample ID: MW5:SOIL:8-10	
Lab Sample ID: D17813-3	Date Sampled: 09/28/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8260B	Percent Solids: 95.4
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V07565.D	1	10/07/10	DC	n/a	n/a	V3V405
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.00 g	5.0 ml	100 ul
Run #2			

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1100	550	ug/kg	
71-43-2	Benzene	ND	55	16	ug/kg	
75-27-4	Bromodichloromethane	ND	270	110	ug/kg	
75-25-2	Bromoform	ND	270	110	ug/kg	
108-90-7	Chlorobenzene	ND	270	110	ug/kg	
75-00-3	Chloroethane	ND	270	110	ug/kg	
67-66-3	Chloroform	ND	270	55	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	1100	660	ug/kg	
75-15-0	Carbon disulfide	ND	270	110	ug/kg	
56-23-5	Carbon tetrachloride	ND	270	110	ug/kg	
75-34-3	1,1-Dichloroethane	ND	270	110	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	270	110	ug/kg	
107-06-2	1,2-Dichloroethane	ND	270	55	ug/kg	
78-87-5	1,2-Dichloropropane	ND	270	110	ug/kg	
124-48-1	Dibromochloromethane	ND	270	110	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	270	110	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	270	110	ug/kg	
541-73-1	m-Dichlorobenzene	ND	270	110	ug/kg	
95-50-1	o-Dichlorobenzene	ND	270	110	ug/kg	
106-46-7	p-Dichlorobenzene	ND	270	110	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	270	110	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	270	110	ug/kg	
100-41-4	Ethylbenzene	54.2	110	22	ug/kg	J
591-78-6	2-Hexanone	ND	1100	160	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	1100	160	ug/kg	
74-83-9	Methyl bromide	ND	270	110	ug/kg	
74-87-3	Methyl chloride	ND	270	110	ug/kg	
75-09-2	Methylene chloride	ND	270	110	ug/kg	
78-93-3	Methyl ethyl ketone	ND	1100	220	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	270	160	ug/kg	
100-42-5	Styrene	ND	270	110	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	270	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW5:SOIL:8-10	
Lab Sample ID: D17813-3	Date Sampled: 09/28/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8260B	Percent Solids: 95.4
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	550	110	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	270	110	ug/kg	
127-18-4	Tetrachloroethylene	ND	270	110	ug/kg	
108-88-3	Toluene	ND	110	55	ug/kg	
79-01-6	Trichloroethylene	ND	270	55	ug/kg	
75-01-4	Vinyl chloride	ND	270	110	ug/kg	
108-05-4	Vinyl Acetate	ND	1100	440	ug/kg	
1330-20-7	Xylene (total)	245	110	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	81%		70-130%
460-00-4	4-Bromofluorobenzene	107%		70-130%
17060-07-0	1,2-Dichloroethane-D4	89%		70-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW5:SOIL:8-10	
Lab Sample ID: D17813-3	Date Sampled: 09/28/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8270C SW846 3540C	Percent Solids: 95.4
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G09346.D	20	10/11/10	TMB	10/07/10	OP2637	E1G296
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	6900	3800	ug/kg	
95-57-8	2-Chlorophenol	ND	840	770	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	770	630	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	770	700	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	840	770	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	3500	2700	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	3500	2700	ug/kg	
95-48-7	2-Methylphenol	ND	840	770	ug/kg	
106-44-5	4-Methylphenol	ND	840	770	ug/kg	
88-75-5	2-Nitrophenol	ND	840	770	ug/kg	
100-02-7	4-Nitrophenol	ND	1500	980	ug/kg	
87-86-5	Pentachlorophenol	ND	3500	2100	ug/kg	
108-95-2	Phenol	ND	1500	1000	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	770	650	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	770	670	ug/kg	
83-32-9	Acenaphthene	8850	770	610	ug/kg	
208-96-8	Acenaphthylene	ND	770	700	ug/kg	
120-12-7	Anthracene	3630	770	520	ug/kg	
56-55-3	Benzo(a)anthracene	3100	770	610	ug/kg	
50-32-8	Benzo(a)pyrene	2190	770	520	ug/kg	
205-99-2	Benzo(b)fluoranthene	1230	840	770	ug/kg	
191-24-2	Benzo(g,h,i)perylene	1010	770	520	ug/kg	
207-08-9	Benzo(k)fluoranthene	1670	980	840	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	770	650	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	3500	2100	ug/kg	
100-51-6	Benzyl Alcohol	ND	1500	910	ug/kg	
91-58-7	2-Chloronaphthalene	ND	770	610	ug/kg	
106-47-8	4-Chloroaniline	ND	980	840	ug/kg	
218-01-9	Chrysene	2730	980	840	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	1500	690	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	770	630	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	3500	1700	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW5:SOIL:8-10	Date Sampled:	09/28/10
Lab Sample ID:	D17813-3	Date Received:	09/29/10
Matrix:	SO - Soil	Percent Solids:	95.4
Method:	SW846 8270C SW846 3540C		
Project:	Project Chai		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	980	840	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1000	840	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	770	670	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	770	650	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	1300	1000	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	1300	1000	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	1500	840	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	840	630	ug/kg	
132-64-9	Dibenzofuran	ND	770	570	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	770	670	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	840	770	ug/kg	
84-66-2	Diethyl phthalate	ND	1500	840	ug/kg	
131-11-3	Dimethyl phthalate	ND	1500	840	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	3500	2100	ug/kg	
206-44-0	Fluoranthene	5950	1500	770	ug/kg	
86-73-7	Fluorene	4860	840	700	ug/kg	
118-74-1	Hexachlorobenzene	ND	3500	2100	ug/kg	
87-68-3	Hexachlorobutadiene	ND	770	650	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	3500	2100	ug/kg	
67-72-1	Hexachloroethane	ND	840	770	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1070	770	570	ug/kg	
78-59-1	Isophorone	ND	770	650	ug/kg	
91-57-6	2-Methylnaphthalene	6440	770	590	ug/kg	
88-74-4	2-Nitroaniline	ND	840	700	ug/kg	
99-09-2	3-Nitroaniline	ND	1500	840	ug/kg	
100-01-6	4-Nitroaniline	ND	3500	1700	ug/kg	
91-20-3	Naphthalene	10800	1500	700	ug/kg	
98-95-3	Nitrobenzene	ND	3500	1000	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	3500	1000	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	3500	1000	ug/kg	
85-01-8	Phenanthrene	14300	1500	770	ug/kg	
129-00-0	Pyrene	9680	840	770	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	770	650	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	76%		10-138%
4165-62-2	Phenol-d5	84%		10-176%
118-79-6	2,4,6-Tribromophenol	108%		10-156%
4165-60-0	Nitrobenzene-d5	75%		10-193%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW5:SOIL:8-10	
Lab Sample ID: D17813-3	Date Sampled: 09/28/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8270C SW846 3540C	Percent Solids: 95.4
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	79%		20-138%
1718-51-0	Terphenyl-d14	101%		17-174%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW3:SOIL:9-10	
Lab Sample ID: D17813-6	Date Sampled: 09/28/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8260B	Percent Solids: 97.8
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V07566.D	1	10/07/10	DC	n/a	n/a	V3V405
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.00 g	5.0 ml	100 ul
Run #2			

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1000	520	ug/kg	
71-43-2	Benzene	ND	52	16	ug/kg	
75-27-4	Bromodichloromethane	ND	260	100	ug/kg	
75-25-2	Bromoform	ND	260	100	ug/kg	
108-90-7	Chlorobenzene	ND	260	100	ug/kg	
75-00-3	Chloroethane	ND	260	100	ug/kg	
67-66-3	Chloroform	ND	260	52	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	1000	630	ug/kg	
75-15-0	Carbon disulfide	ND	260	100	ug/kg	
56-23-5	Carbon tetrachloride	ND	260	100	ug/kg	
75-34-3	1,1-Dichloroethane	ND	260	100	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	260	100	ug/kg	
107-06-2	1,2-Dichloroethane	ND	260	52	ug/kg	
78-87-5	1,2-Dichloropropane	ND	260	100	ug/kg	
124-48-1	Dibromochloromethane	ND	260	100	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	260	100	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	260	100	ug/kg	
541-73-1	m-Dichlorobenzene	ND	260	100	ug/kg	
95-50-1	o-Dichlorobenzene	ND	260	100	ug/kg	
106-46-7	p-Dichlorobenzene	ND	260	100	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	260	100	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	260	100	ug/kg	
100-41-4	Ethylbenzene	ND	100	21	ug/kg	
591-78-6	2-Hexanone	ND	1000	160	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	1000	160	ug/kg	
74-83-9	Methyl bromide	ND	260	100	ug/kg	
74-87-3	Methyl chloride	ND	260	100	ug/kg	
75-09-2	Methylene chloride	ND	260	100	ug/kg	
78-93-3	Methyl ethyl ketone	ND	1000	210	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	260	160	ug/kg	
100-42-5	Styrene	ND	260	100	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	260	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW3:SOIL:9-10	
Lab Sample ID: D17813-6	Date Sampled: 09/28/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8260B	Percent Solids: 97.8
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	520	100	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	260	100	ug/kg	
127-18-4	Tetrachloroethylene	ND	260	100	ug/kg	
108-88-3	Toluene	ND	100	52	ug/kg	
79-01-6	Trichloroethylene	ND	260	52	ug/kg	
75-01-4	Vinyl chloride	ND	260	100	ug/kg	
108-05-4	Vinyl Acetate	ND	1000	420	ug/kg	
1330-20-7	Xylene (total)	ND	100	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	85%		70-130%
460-00-4	4-Bromofluorobenzene	87%		70-130%
17060-07-0	1,2-Dichloroethane-D4	87%		70-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW3:SOIL:9-10	
Lab Sample ID: D17813-6	Date Sampled: 09/28/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8270C SW846 3540C	Percent Solids: 97.8
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G09375.D	2	10/13/10	TMB	10/07/10	OP2637	E1G298
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	670	370	ug/kg	
95-57-8	2-Chlorophenol	ND	82	75	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	75	61	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	75	68	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	82	75	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	340	260	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	340	260	ug/kg	
95-48-7	2-Methylphenol	ND	82	75	ug/kg	
106-44-5	4-Methylphenol	ND	82	75	ug/kg	
88-75-5	2-Nitrophenol	ND	82	75	ug/kg	
100-02-7	4-Nitrophenol	ND	140	95	ug/kg	
87-86-5	Pentachlorophenol	ND	340	200	ug/kg	
108-95-2	Phenol	ND	140	100	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	75	63	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	75	65	ug/kg	
83-32-9	Acenaphthene	ND	75	59	ug/kg	
208-96-8	Acenaphthylene	105	75	68	ug/kg	
120-12-7	Anthracene	ND	75	51	ug/kg	
56-55-3	Benzo(a)anthracene	751	75	59	ug/kg	
50-32-8	Benzo(a)pyrene	924	75	51	ug/kg	
205-99-2	Benzo(b)fluoranthene	660	82	75	ug/kg	
191-24-2	Benzo(g,h,i)perylene	950	75	51	ug/kg	
207-08-9	Benzo(k)fluoranthene	729	95	82	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	75	63	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	340	200	ug/kg	
100-51-6	Benzyl Alcohol	ND	140	89	ug/kg	
91-58-7	2-Chloronaphthalene	ND	75	59	ug/kg	
106-47-8	4-Chloroaniline	ND	95	82	ug/kg	
218-01-9	Chrysene	821	95	82	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	140	67	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	75	61	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	340	170	ug/kg	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW3:SOIL:9-10	Date Sampled:	09/28/10
Lab Sample ID:	D17813-6	Date Received:	09/29/10
Matrix:	SO - Soil	Percent Solids:	97.8
Method:	SW846 8270C SW846 3540C		
Project:	Project Chai		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	95	82	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	100	82	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	75	65	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	75	63	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	120	100	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	120	100	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	140	82	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	179	82	61	ug/kg	
132-64-9	Dibenzofuran	ND	75	55	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	75	65	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	82	75	ug/kg	
84-66-2	Diethyl phthalate	ND	140	82	ug/kg	
131-11-3	Dimethyl phthalate	ND	140	82	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	340	200	ug/kg	
206-44-0	Fluoranthene	647	140	75	ug/kg	
86-73-7	Fluorene	ND	82	68	ug/kg	
118-74-1	Hexachlorobenzene	ND	340	200	ug/kg	
87-68-3	Hexachlorobutadiene	ND	75	63	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	340	200	ug/kg	
67-72-1	Hexachloroethane	ND	82	75	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	796	75	55	ug/kg	
78-59-1	Isophorone	ND	75	63	ug/kg	
91-57-6	2-Methylnaphthalene	ND	75	57	ug/kg	
88-74-4	2-Nitroaniline	ND	82	68	ug/kg	
99-09-2	3-Nitroaniline	ND	140	82	ug/kg	
100-01-6	4-Nitroaniline	ND	340	160	ug/kg	
91-20-3	Naphthalene	ND	140	68	ug/kg	
98-95-3	Nitrobenzene	ND	340	100	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	340	100	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	340	100	ug/kg	
85-01-8	Phenanthrene	281	140	75	ug/kg	
129-00-0	Pyrene	2090	82	75	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	75	63	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	85%		10-138%
4165-62-2	Phenol-d5	95%		10-176%
118-79-6	2,4,6-Tribromophenol	69%		10-156%
4165-60-0	Nitrobenzene-d5	68%		10-193%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis



Client Sample ID: MW3:SOIL:9-10	
Lab Sample ID: D17813-6	Date Sampled: 09/28/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8270C SW846 3540C	Percent Solids: 97.8
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	72%		20-138%
1718-51-0	Terphenyl-d14	116%		17-174%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

4036 Youngfield Street, Wheat Ridge, Colorado 80033
TEL: 303-425-6021; 877-737-4521 FAX: 303-425-6854
www.accutest.com

D17813

PAGE ___ OF ___

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)												Matrix Codes																																																																																																																																																																
Company Name ERM		Project Name Project Chai		<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"> VOC's (8260) + MTBE EM 9/17 SVOC's (8270) </div> <div style="text-align: center;"> 9/22/10 </div> </div>												EW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rase Blank TB - Trip Blank																																																																																																																																																																
Street Address 6455 S. Yosemite, Suite 900		Street 1770 18TH St																																																																																																																																																																														
City State Zip Greenwood Village, CO 80111		City State Boulder, CO																																																																																																																																																																														
Project Contact Chris Thebo E-mail: christhebo@erm.com		Project # 0122609																																																																																																																																																																														
Phone # (303) 741-5050 Fax # (303) 743-2102		Client Purchase Order #																																																																																																																																																																														
Sampler(s) Name(s) Eric Moore Phone # 720.253.5320		Project Manager Chris Thebo		<table border="1"> <thead> <tr> <th rowspan="2">Field ID / Point of Collection</th> <th rowspan="2">MEQHD/Vial #</th> <th rowspan="2">Date</th> <th rowspan="2">Time</th> <th rowspan="2">Sampled by</th> <th rowspan="2">Matrix</th> <th rowspan="2"># of bottles</th> <th colspan="10">Number of preserved Bottles</th> <th rowspan="2">LAB USE ONLY</th> </tr> <tr> <th>HCl</th> <th>NH₄Cl</th> <th>HNO₃</th> <th>H₂SO₄</th> <th>NONE</th> <th>D/Water</th> <th>MEDH</th> <th>ENCORE</th> <th>H</th> <th>H*</th> </tr> </thead> <tbody> <tr> <td>MW5: SOIL: 2-5</td> <td></td> <td>9/22/10</td> <td>0913</td> <td>EM</td> <td>Soil</td> <td>2</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td></td> </tr> <tr> <td>MW5: SOIL: 5-7</td> <td></td> <td></td> <td>0953</td> <td></td> <td></td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>01</td> </tr> <tr> <td>MW5: SOIL: 8-10</td> <td></td> <td></td> <td>1043</td> <td></td> <td></td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>02</td> </tr> <tr> <td>MW3: SOIL: 0-1</td> <td></td> <td></td> <td>1249</td> <td></td> <td></td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>03</td> </tr> <tr> <td>MW3: SOIL: 5-6</td> <td></td> <td></td> <td>1302</td> <td></td> <td></td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>04</td> </tr> <tr> <td>MW3: SOIL: 9-10</td> <td></td> <td></td> <td>1312</td> <td></td> <td></td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>05</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>06</td> </tr> </tbody> </table>												Field ID / Point of Collection	MEQHD/Vial #	Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles										LAB USE ONLY	HCl	NH ₄ Cl	HNO ₃	H ₂ SO ₄	NONE	D/Water	MEDH	ENCORE	H	H*	MW5: SOIL: 2-5		9/22/10	0913	EM	Soil	2													MW5: SOIL: 5-7			0953															01	MW5: SOIL: 8-10			1043															02	MW3: SOIL: 0-1			1249															03	MW3: SOIL: 5-6			1302															04	MW3: SOIL: 9-10			1312															05																			06
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GC/MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V405-MB1	3V07557.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17813-2, D17813-3, D17813-6

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1000	500	ug/kg	
71-43-2	Benzene	ND	50	15	ug/kg	
75-27-4	Bromodichloromethane	ND	250	100	ug/kg	
75-25-2	Bromoform	ND	250	100	ug/kg	
108-90-7	Chlorobenzene	ND	250	100	ug/kg	
75-00-3	Chloroethane	ND	250	100	ug/kg	
67-66-3	Chloroform	ND	250	50	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	1000	600	ug/kg	
75-15-0	Carbon disulfide	ND	250	100	ug/kg	
56-23-5	Carbon tetrachloride	ND	250	100	ug/kg	
75-34-3	1,1-Dichloroethane	ND	250	100	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	250	100	ug/kg	
107-06-2	1,2-Dichloroethane	ND	250	50	ug/kg	
78-87-5	1,2-Dichloropropane	ND	250	100	ug/kg	
124-48-1	Dibromochloromethane	ND	250	100	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	250	100	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	250	100	ug/kg	
541-73-1	m-Dichlorobenzene	ND	250	100	ug/kg	
95-50-1	o-Dichlorobenzene	ND	250	100	ug/kg	
106-46-7	p-Dichlorobenzene	ND	250	100	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	250	100	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	250	100	ug/kg	
100-41-4	Ethylbenzene	ND	100	20	ug/kg	
591-78-6	2-Hexanone	ND	1000	150	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	1000	150	ug/kg	
74-83-9	Methyl bromide	ND	250	100	ug/kg	
74-87-3	Methyl chloride	ND	250	100	ug/kg	
75-09-2	Methylene chloride	ND	250	100	ug/kg	
78-93-3	Methyl ethyl ketone	ND	1000	200	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	250	150	ug/kg	
100-42-5	Styrene	ND	250	100	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	250	50	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	500	100	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	250	100	ug/kg	
127-18-4	Tetrachloroethylene	ND	250	100	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	

Method Blank Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V405-MB1	3V07557.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17813-2, D17813-3, D17813-6

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	250	50	ug/kg	
75-01-4	Vinyl chloride	ND	250	100	ug/kg	
108-05-4	Vinyl Acetate	ND	1000	400	ug/kg	
1330-20-7	Xylene (total)	ND	100	35	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	87% 70-130%
460-00-4	4-Bromofluorobenzene	82% 70-130%
17060-07-0	1,2-Dichloroethane-D4	85% 70-130%

Blank Spike Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V405-BS1	3V07558.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17813-2, D17813-3, D17813-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	50	28.2	56	34-130
71-43-2	Benzene	50	51.1	102	68-130
75-27-4	Bromodichloromethane	50	46.8	94	65-133
75-25-2	Bromoform	50	40.1	80	55-130
108-90-7	Chlorobenzene	50	52.6	105	70-130
75-00-3	Chloroethane	50	54.2	108	67-130
67-66-3	Chloroform	50	52.7	105	70-130
110-75-8	2-Chloroethyl vinyl ether	50	44.4	89	20-177
75-15-0	Carbon disulfide	50	51.2	102	23-130
56-23-5	Carbon tetrachloride	50	51.3	103	62-130
75-34-3	1,1-Dichloroethane	50	53.0	106	70-130
75-35-4	1,1-Dichloroethylene	50	52.8	106	70-130
107-06-2	1,2-Dichloroethane	50	48.0	96	70-130
78-87-5	1,2-Dichloropropane	50	50.4	101	70-130
124-48-1	Dibromochloromethane	50	49.7	99	65-130
156-59-2	cis-1,2-Dichloroethylene	50	53.3	107	70-130
10061-01-5	cis-1,3-Dichloropropene	50	47.4	95	66-130
541-73-1	m-Dichlorobenzene	50	49.2	98	70-130
95-50-1	o-Dichlorobenzene	50	49.8	100	70-130
106-46-7	p-Dichlorobenzene	50	49.0	98	70-130
156-60-5	trans-1,2-Dichloroethylene	50	53.1	106	70-130
10061-02-6	trans-1,3-Dichloropropene	50	44.0	88	70-130
100-41-4	Ethylbenzene	50	53.1	106	70-130
591-78-6	2-Hexanone	50	38.2	76	46-130
108-10-1	4-Methyl-2-pentanone	50	43.1	86	58-130
74-83-9	Methyl bromide	50	55.3	111	40-145
74-87-3	Methyl chloride	50	38.8	78	42-130
75-09-2	Methylene chloride	50	51.7	103	70-130
78-93-3	Methyl ethyl ketone	50	42.5	85	21-130
1634-04-4	Methyl Tert Butyl Ether	50	48.7	97	67-150
100-42-5	Styrene	50	47.7	95	38-130
71-55-6	1,1,1-Trichloroethane	50	47.9	96	68-130
79-34-5	1,1,2,2-Tetrachloroethane	50	45.9	92	70-130
79-00-5	1,1,2-Trichloroethane	50	49.5	99	70-130
127-18-4	Tetrachloroethylene	50	52.2	104	70-130
108-88-3	Toluene	50	52.2	104	70-130

Blank Spike Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V405-BS1	3V07558.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17813-2, D17813-3, D17813-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
79-01-6	Trichloroethylene	50	52.8	106	70-130
75-01-4	Vinyl chloride	50	39.8	80	55-130
108-05-4	Vinyl Acetate	50	42.8	86	54-130
1330-20-7	Xylene (total)	100	97.8	98	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	87%	70-130%
460-00-4	4-Bromofluorobenzene	84%	70-130%
17060-07-0	1,2-Dichloroethane-D4	86%	70-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D17772-1MS	3V07560.D	1	10/07/10	DC	n/a	n/a	V3V405
D17772-1MSD	3V07561.D	1	10/07/10	DC	n/a	n/a	V3V405
D17772-1	3V07559.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17813-2, D17813-3, D17813-6

CAS No.	Compound	D17772-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	4140	3170	77	3400	82	7	34-130/30
71-43-2	Benzene	ND	4140	4140	100	4270	103	3	55-140/30
75-27-4	Bromodichloromethane	ND	4140	3560	86	3830	93	7	50-146/30
75-25-2	Bromoform	ND	4140	3140	76	3420	83	9	56-130/30
108-90-7	Chlorobenzene	ND	4140	4260	103	4410	107	3	66-130/30
75-00-3	Chloroethane	ND	4140	4560	110	4770	115	5	62-130/30
67-66-3	Chloroform	ND	4140	4290	104	4450	107	4	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	4140	3710	90	3920	95	6	20-162/30
75-15-0	Carbon disulfide	ND	4140	4030	97	4170	101	3	19-130/30
56-23-5	Carbon tetrachloride	ND	4140	4070	98	4230	102	4	54-141/30
75-34-3	1,1-Dichloroethane	ND	4140	4320	104	4530	109	5	70-130/30
75-35-4	1,1-Dichloroethylene	ND	4140	4310	104	4510	109	5	70-140/30
107-06-2	1,2-Dichloroethane	ND	4140	4050	98	4270	103	5	68-130/30
78-87-5	1,2-Dichloropropane	ND	4140	4070	98	4230	102	4	70-130/30
124-48-1	Dibromochloromethane	ND	4140	3790	92	4060	98	7	56-130/30
156-59-2	cis-1,2-Dichloroethylene	ND	4140	4360	105	4500	109	3	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND	4140	3800	92	3970	96	4	56-130/30
541-73-1	m-Dichlorobenzene	ND	4140	3970	96	4050	98	2	70-130/30
95-50-1	o-Dichlorobenzene	ND	4140	3990	96	4090	99	2	70-130/30
106-46-7	p-Dichlorobenzene	ND	4140	3980	96	4120	100	3	70-130/30
156-60-5	trans-1,2-Dichloroethylene	ND	4140	4330	105	4440	107	3	64-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	4140	3590	87	3770	91	5	53-130/30
100-41-4	Ethylbenzene	ND	4140	4300	104	4450	107	3	56-139/30
591-78-6	2-Hexanone	ND	4140	3400	82	3770	91	10	48-132/30
108-10-1	4-Methyl-2-pentanone	ND	4140	3670	89	4050	98	10	58-138/30
74-83-9	Methyl bromide	ND	4140	1110	27	1150	28	4	10-165/30
74-87-3	Methyl chloride	ND	4140	3150	76	3310	80	5	35-130/30
75-09-2	Methylene chloride	ND	4140	4290	104	4470	108	4	70-130/30
78-93-3	Methyl ethyl ketone	ND	4140	3760	91	3890	94	3	20-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	4140	4190	101	4380	106	4	69-141/30
100-42-5	Styrene	ND	4140	3820	92	4030	97	5	33-130/30
71-55-6	1,1,1-Trichloroethane	ND	4140	3940	95	4050	98	3	55-138/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	4140	3730	90	3890	94	4	69-130/30
79-00-5	1,1,2-Trichloroethane	ND	4140	4000	97	4270	103	7	62-134/30
127-18-4	Tetrachloroethylene	ND	4140	4250	103	4420	107	4	47-136/30
108-88-3	Toluene	ND	4140	4240	102	4360	105	3	57-144/30

5.3.1
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Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D17772-1MS	3V07560.D	1	10/07/10	DC	n/a	n/a	V3V405
D17772-1MSD	3V07561.D	1	10/07/10	DC	n/a	n/a	V3V405
D17772-1	3V07559.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17813-2, D17813-3, D17813-6

CAS No.	Compound	D17772-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
79-01-6	Trichloroethylene	ND	4140	4310	104	4380	106	2	70-149/30
75-01-4	Vinyl chloride	ND	4140	3310	80	3440	83	4	59-131/30
108-05-4	Vinyl Acetate	ND	4140	3580	86	3820	92	6	20-141/30
1330-20-7	Xylene (total)	ND	8280	7810	94	8090	98	4	51-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D17772-1	Limits
2037-26-5	Toluene-D8	87%	87%	89%	70-130%
460-00-4	4-Bromofluorobenzene	85%	87%	84%	70-130%
17060-07-0	1,2-Dichloroethane-D4	88%	87%	86%	70-130%

5.3.1
5

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MB	1G09320.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17813-2, D17813-3, D17813-6

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	330	180	ug/kg	
95-57-8	2-Chlorophenol	ND	40	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	37	30	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	37	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	40	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	130	ug/kg	
95-48-7	2-Methylphenol	ND	40	37	ug/kg	
106-44-5	4-Methylphenol	ND	40	37	ug/kg	
88-75-5	2-Nitrophenol	ND	40	37	ug/kg	
100-02-7	4-Nitrophenol	ND	70	47	ug/kg	
87-86-5	Pentachlorophenol	ND	170	100	ug/kg	
108-95-2	Phenol	ND	70	50	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	37	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	37	32	ug/kg	
83-32-9	Acenaphthene	ND	37	29	ug/kg	
208-96-8	Acenaphthylene	ND	37	33	ug/kg	
120-12-7	Anthracene	ND	37	25	ug/kg	
56-55-3	Benzo(a)anthracene	ND	37	29	ug/kg	
50-32-8	Benzo(a)pyrene	ND	37	25	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	40	37	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	37	25	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	47	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	37	31	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	100	ug/kg	
100-51-6	Benzyl Alcohol	ND	70	43	ug/kg	
91-58-7	2-Chloronaphthalene	ND	37	29	ug/kg	
106-47-8	4-Chloroaniline	ND	47	40	ug/kg	
218-01-9	Chrysene	ND	47	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	70	33	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	37	30	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	170	83	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	47	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	50	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	37	32	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	37	31	ug/kg	

Method Blank Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MB	1G09320.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17813-2, D17813-3, D17813-6

CAS No.	Compound	Result	RL	MDL	Units	Q
121-14-2	2,4-Dinitrotoluene	ND	60	50	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	60	50	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	70	40	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	40	30	ug/kg	
132-64-9	Dibenzofuran	ND	37	27	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	37	32	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	40	37	ug/kg	
84-66-2	Diethyl phthalate	ND	70	40	ug/kg	
131-11-3	Dimethyl phthalate	ND	70	40	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	170	100	ug/kg	
206-44-0	Fluoranthene	ND	70	37	ug/kg	
86-73-7	Fluorene	ND	40	33	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	100	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	31	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	170	100	ug/kg	
67-72-1	Hexachloroethane	ND	40	37	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	37	27	ug/kg	
78-59-1	Isophorone	ND	37	31	ug/kg	
91-57-6	2-Methylnaphthalene	ND	37	28	ug/kg	
88-74-4	2-Nitroaniline	ND	40	33	ug/kg	
99-09-2	3-Nitroaniline	ND	70	40	ug/kg	
100-01-6	4-Nitroaniline	ND	170	80	ug/kg	
91-20-3	Naphthalene	ND	70	33	ug/kg	
98-95-3	Nitrobenzene	ND	170	50	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	50	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	50	ug/kg	
85-01-8	Phenanthrene	ND	70	37	ug/kg	
129-00-0	Pyrene	ND	40	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	37	31	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
367-12-4	2-Fluorophenol	71%	10-138%
4165-62-2	Phenol-d5	74%	10-176%
118-79-6	2,4,6-Tribromophenol	52%	10-156%

Method Blank Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MB	1G09320.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17813-2, D17813-3, D17813-6

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	64% 10-193%
321-60-8	2-Fluorobiphenyl	65% 20-138%
1718-51-0	Terphenyl-d14	84% 17-174%

Blank Spike Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-BS	1G09321.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17813-2, D17813-3, D17813-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
65-85-0	Benzoic Acid	1670	604	36	10-130
95-57-8	2-Chlorophenol	1670	1380	83	29-130
59-50-7	4-Chloro-3-methyl phenol	1670	1400	84	38-133
120-83-2	2,4-Dichlorophenol	1670	1470	88	35-130
105-67-9	2,4-Dimethylphenol	1670	1060	64	31-130
51-28-5	2,4-Dinitrophenol	1670	864	52	17-141
534-52-1	4,6-Dinitro-o-cresol	1670	1180	71	24-146
95-48-7	2-Methylphenol	1670	1330	80	35-130
106-44-5	4-Methylphenol	1670	1330	80	32-130
88-75-5	2-Nitrophenol	1670	1560	94	35-130
100-02-7	4-Nitrophenol	1670	1240	74	24-141
87-86-5	Pentachlorophenol	1670	1170	70	11-136
108-95-2	Phenol	1670	1460	88	32-130
95-95-4	2,4,5-Trichlorophenol	1670	1550	93	35-133
88-06-2	2,4,6-Trichlorophenol	1670	1490	89	35-131
83-32-9	Acenaphthene	1670	1420	85	40-136
208-96-8	Acenaphthylene	1670	1420	85	42-139
120-12-7	Anthracene	1670	1410	85	40-141
56-55-3	Benzo(a)anthracene	1670	1550	93	38-143
50-32-8	Benzo(a)pyrene	1670	1480	89	39-145
205-99-2	Benzo(b)fluoranthene	1670	1560	94	38-151
191-24-2	Benzo(g,h,i)perylene	1670	1340	80	35-136
207-08-9	Benzo(k)fluoranthene	1670	1540	92	38-147
101-55-3	4-Bromophenyl phenyl ether	1670	1380	83	35-150
85-68-7	Butyl benzyl phthalate	1670	1510	91	28-169
100-51-6	Benzyl Alcohol	1670	1290	77	39-136
91-58-7	2-Chloronaphthalene	1670	1490	89	40-134
106-47-8	4-Chloroaniline	1670	1440	86	42-130
218-01-9	Chrysene	1670	1420	85	39-137
111-91-1	bis(2-Chloroethoxy)methane	1670	1420	85	38-136
111-44-4	bis(2-Chloroethyl)ether	1670	1350	81	23-130
108-60-1	bis(2-Chloroisopropyl)ether	1670	1150	69	17-145
7005-72-3	4-Chlorophenyl phenyl ether	1670	1380	83	40-138
95-50-1	1,2-Dichlorobenzene	1670	1380	83	32-130
541-73-1	1,3-Dichlorobenzene	1670	1380	83	31-130
106-46-7	1,4-Dichlorobenzene	1670	1370	82	31-130

Blank Spike Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-BS	1G09321.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17813-2, D17813-3, D17813-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
121-14-2	2,4-Dinitrotoluene	1670	1590	95	40-154
606-20-2	2,6-Dinitrotoluene	1670	1570	94	42-153
91-94-1	3,3'-Dichlorobenzidine	1670	1390	83	34-152
53-70-3	Dibenzo(a,h)anthracene	1670	1390	83	35-139
132-64-9	Dibenzofuran	1670	1470	88	40-134
84-74-2	Di-n-butyl phthalate	1670	1400	84	36-150
117-84-0	Di-n-octyl phthalate	1670	1590	95	28-157
84-66-2	Diethyl phthalate	1670	1380	83	39-152
131-11-3	Dimethyl phthalate	1670	1380	83	42-142
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1510	91	24-174
206-44-0	Fluoranthene	1670	1410	85	34-132
86-73-7	Fluorene	1670	1450	87	41-136
118-74-1	Hexachlorobenzene	1670	1420	85	38-145
87-68-3	Hexachlorobutadiene	1670	1430	86	34-136
77-47-4	Hexachlorocyclopentadiene	1670	444	27	14-130
67-72-1	Hexachloroethane	1670	1390	83	29-131
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1360	82	31-144
78-59-1	Isophorone	1670	1450	87	38-130
91-57-6	2-Methylnaphthalene	1670	1390	83	40-131
88-74-4	2-Nitroaniline	1670	1550	93	41-141
99-09-2	3-Nitroaniline	1670	1620	97	40-145
100-01-6	4-Nitroaniline	1670	1560	94	41-154
91-20-3	Naphthalene	1670	1390	83	36-130
98-95-3	Nitrobenzene	1670	1500	90	40-135
621-64-7	N-Nitroso-di-n-propylamine	1670	1220	73	32-137
86-30-6	N-Nitrosodiphenylamine	1670	1190	71	27-152
85-01-8	Phenanthrene	1670	1430	86	40-135
129-00-0	Pyrene	1670	1530	92	29-157
120-82-1	1,2,4-Trichlorobenzene	1670	1440	86	38-132

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	77%	10-138%
4165-62-2	Phenol-d5	78%	10-176%
118-79-6	2,4,6-Tribromophenol	84%	10-156%

Blank Spike Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-BS	1G09321.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17813-2, D17813-3, D17813-6

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	75%	10-193%
321-60-8	2-Fluorobiphenyl	74%	20-138%
1718-51-0	Terphenyl-d14	81%	17-174%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MS	1G09327.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
OP2637-MSD	1G09328.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
D17814-4	1G09326.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17813-2, D17813-3, D17813-6

CAS No.	Compound	D17814-4 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND		1710	1430	83	1320	77	8	10-141/30
95-57-8	2-Chlorophenol	ND		1710	1310	76	1340	78	2	16-136/30
59-50-7	4-Chloro-3-methyl phenol	ND		1710	1390	81	1330	78	4	17-147/30
120-83-2	2,4-Dichlorophenol	ND		1710	1350	79	1370	80	1	13-144/30
105-67-9	2,4-Dimethylphenol	ND		1710	840	49	943	55	12	10-135/30
51-28-5	2,4-Dinitrophenol	ND		1710	1240	72	1320	77	6	10-156/30
534-52-1	4,6-Dinitro-o-cresol	ND		1710	1290	75	1380	81	7	10-158/30
95-48-7	2-Methylphenol	ND		1710	1240	72	1290	75	4	10-144/30
106-44-5	4-Methylphenol	ND		1710	1260	73	1290	75	2	14-138/30
88-75-5	2-Nitrophenol	ND		1710	1410	82	1450	85	3	10-176/30
100-02-7	4-Nitrophenol	ND		1710	1180	69	1240	73	5	10-138/30
87-86-5	Pentachlorophenol	ND		1710	1270	74	1410	83	10	10-185/30
108-95-2	Phenol	ND		1710	1340	78	1370	80	2	20-129/30
95-95-4	2,4,5-Trichlorophenol	ND		1710	1470	86	1500	88	2	10-189/30
88-06-2	2,4,6-Trichlorophenol	ND		1710	1360	79	1430	84	5	10-152/30
83-32-9	Acenaphthene	ND		1710	1270	74	1320	77	4	20-151/30
208-96-8	Acenaphthylene	ND		1710	1250	73	1320	77	5	23-156/30
120-12-7	Anthracene	ND		1710	1270	74	1350	79	6	25-149/30
56-55-3	Benzo(a)anthracene	ND		1710	1450	85	1510	88	4	22-157/30
50-32-8	Benzo(a)pyrene	ND		1710	1360	79	1410	83	4	23-153/30
205-99-2	Benzo(b)fluoranthene	ND		1710	1520	89	1550	91	2	22-161/30
191-24-2	Benzo(g,h,i)perylene	ND		1710	1140	66	1230	72	8	20-158/30
207-08-9	Benzo(k)fluoranthene	ND		1710	1360	79	1400	82	3	17-161/30
101-55-3	4-Bromophenyl phenyl ether	ND		1710	1310	76	1330	78	2	10-176/30
85-68-7	Butyl benzyl phthalate	ND		1710	1630	95	1560	91	4	11-205/30
100-51-6	Benzyl Alcohol	ND		1710	1280	75	1230	72	4	13-168/30
91-58-7	2-Chloronaphthalene	ND		1710	1260	73	1350	79	7	21-149/30
106-47-8	4-Chloroaniline	ND		1710	1230	72	1210	71	2	10-143/30
218-01-9	Chrysene	ND		1710	1300	76	1360	80	5	16-159/30
111-91-1	bis(2-Chloroethoxy)methane	ND		1710	1270	74	1310	77	3	16-155/30
111-44-4	bis(2-Chloroethyl)ether	ND		1710	1250	73	1280	75	2	16-130/30
108-60-1	bis(2-Chloroisopropyl)ether	ND		1710	1110	65	1160	68	4	10-156/30
7005-72-3	4-Chlorophenyl phenyl ether	ND		1710	1310	76	1310	77	0	19-155/30
95-50-1	1,2-Dichlorobenzene	ND		1710	1270	74	1310	77	3	18-145/30
541-73-1	1,3-Dichlorobenzene	ND		1710	1280	75	1310	77	2	15-146/30
106-46-7	1,4-Dichlorobenzene	ND		1710	1270	74	1320	77	4	17-142/30

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MS	1G09327.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
OP2637-MSD	1G09328.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
D17814-4	1G09326.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17813-2, D17813-3, D17813-6

CAS No.	Compound	D17814-4 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
121-14-2	2,4-Dinitrotoluene	ND		1710	1520	89	1490	87	2	10-218/30
606-20-2	2,6-Dinitrotoluene	ND		1710	1440	84	1460	85	1	10-208/30
91-94-1	3,3'-Dichlorobenzidine	ND		1710	1040	61	989	58	5	10-158/30
53-70-3	Dibenzo(a,h)anthracene	ND		1710	1250	73	1320	77	5	21-154/30
132-64-9	Dibenzofuran	ND		1710	1330	78	1360	80	2	21-150/30
84-74-2	Di-n-butyl phthalate	ND		1710	1310	76	1320	77	1	22-161/30
117-84-0	Di-n-octyl phthalate	ND		1710	1580	92	1530	90	3	10-218/30
84-66-2	Diethyl phthalate	ND		1710	1290	75	1340	78	4	16-171/30
131-11-3	Dimethyl phthalate	ND		1710	1250	73	1280	75	2	10-184/30
117-81-7	bis(2-Ethylhexyl)phthalate	ND		1710	1470	86	1420	83	3	15-195/30
206-44-0	Fluoranthene	ND		1710	1180	69	1370	80	15	16-140/30
86-73-7	Fluorene	ND		1710	1370	80	1360	80	1	15-153/30
118-74-1	Hexachlorobenzene	ND		1710	1330	78	1390	81	4	22-155/30
87-68-3	Hexachlorobutadiene	ND		1710	1280	75	1330	78	4	19-143/30
77-47-4	Hexachlorocyclopentadiene	ND		1710	289	17	438	26	41* a	10-130/30
67-72-1	Hexachloroethane	ND		1710	1250	73	1310	77	5	10-180/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		1710	1210	71	1330	78	9	21-159/30
78-59-1	Isophorone	ND		1710	1330	78	1360	80	2	21-136/30
91-57-6	2-Methylnaphthalene	ND		1710	1330	78	1290	75	3	10-181/30
88-74-4	2-Nitroaniline	ND		1710	1420	83	1450	85	2	10-207/30
99-09-2	3-Nitroaniline	ND		1710	1430	83	1440	84	1	19-152/30
100-01-6	4-Nitroaniline	ND		1710	1420	83	1420	83	0	17-166/30
91-20-3	Naphthalene	36.5	J	1710	1260	71	1300	74	3	10-176/30
98-95-3	Nitrobenzene	ND		1710	1310	76	1340	78	2	16-155/30
621-64-7	N-Nitroso-di-n-propylamine	ND		1710	1190	69	1230	72	3	10-199/30
86-30-6	N-Nitrosodiphenylamine	ND		1710	1070	62	1100	64	3	12-168/30
85-01-8	Phenanthrene	ND		1710	1290	75	1380	81	7	22-152/30
129-00-0	Pyrene	38.1	J	1710	1600	91	1600	91	0	10-200/30
120-82-1	1,2,4-Trichlorobenzene	ND		1710	1290	75	1330	78	3	20-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D17814-4	Limits
367-12-4	2-Fluorophenol	70%	72%	80%	10-138%
4165-62-2	Phenol-d5	72%	75%	83%	10-176%
118-79-6	2,4,6-Tribromophenol	85%	86%	90%	10-156%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17813
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MS	1G09327.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
OP2637-MSD	1G09328.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
D17814-4	1G09326.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17813-2, D17813-3, D17813-6

CAS No.	Surrogate Recoveries	MS	MSD	D17814-4	Limits
4165-60-0	Nitrobenzene-d5	65%	67%	71%	10-193%
321-60-8	2-Fluorobiphenyl	61%	66%	70%	20-138%
1718-51-0	Terphenyl-d14	84%	83%	95%	17-174%

(a) High RPD due to possible sample nonhomogeneity.



10/11/10

Technical Report for

ERM-Rocky Mountain, Inc.

Project Chai

Project/ PO# 0122609

Accutest Job Number: D17814

Sampling Date: 09/29/10

Report to:

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Total number of pages in report: **34**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

John Hamilton
Laboratory Director

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Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)

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Sample Summary

ERM-Rocky Mountain, Inc.

Job No: D17814

Project Chai

Project No: Project/ PO# 0122609

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D17814-2	09/29/10	07:28 EM	09/29/10	SO	Soil	MW4:SOIL:5-7
D17814-4	09/29/10	09:08 EM	09/29/10	SO	Soil	MW6:SOIL:5-7

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: ERM-Rocky Mountain, Inc.

Job No D17814

Site: Project Chai

Report Dat 10/11/2010 2:09:09 PM

On 09/29/2010, 2 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4.3 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D17814 was assigned to the project. The lab sample IDs, client sample IDs, and dates of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix SO

Batch ID: V3V405

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Samples D17772-1MS and D17772-1MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C

Matrix SO

Batch ID: OP2637

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Samples D17814-4MS and D17814-4MSD were used as the QC samples indicated.
- The RPD for the MS and MSD recoveries of Hexachlorocyclopentadiene are outside control limits for sample OP2637-MSD. High RPD due to possible sample nonhomogeneity.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN6604

- The data for SM19 2540B M meets quality control requirements.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: MW4:SOIL:5-7	
Lab Sample ID: D17814-2	Date Sampled: 09/29/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8260B	Percent Solids: 93.6
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V07562.D	1	10/07/10	DC	n/a	n/a	V3V405
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.00 g	5.0 ml	100 ul
Run #2			

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1100	570	ug/kg	
71-43-2	Benzene	ND	57	17	ug/kg	
75-27-4	Bromodichloromethane	ND	280	110	ug/kg	
75-25-2	Bromoform	ND	280	110	ug/kg	
108-90-7	Chlorobenzene	ND	280	110	ug/kg	
75-00-3	Chloroethane	ND	280	110	ug/kg	
67-66-3	Chloroform	ND	280	57	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	1100	680	ug/kg	
75-15-0	Carbon disulfide	ND	280	110	ug/kg	
56-23-5	Carbon tetrachloride	ND	280	110	ug/kg	
75-34-3	1,1-Dichloroethane	ND	280	110	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	280	110	ug/kg	
107-06-2	1,2-Dichloroethane	ND	280	57	ug/kg	
78-87-5	1,2-Dichloropropane	ND	280	110	ug/kg	
124-48-1	Dibromochloromethane	ND	280	110	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	280	110	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	280	110	ug/kg	
541-73-1	m-Dichlorobenzene	ND	280	110	ug/kg	
95-50-1	o-Dichlorobenzene	ND	280	110	ug/kg	
106-46-7	p-Dichlorobenzene	ND	280	110	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	280	110	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	280	110	ug/kg	
100-41-4	Ethylbenzene	ND	110	23	ug/kg	
591-78-6	2-Hexanone	ND	1100	170	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	1100	170	ug/kg	
74-83-9	Methyl bromide	ND	280	110	ug/kg	
74-87-3	Methyl chloride	ND	280	110	ug/kg	
75-09-2	Methylene chloride	ND	280	110	ug/kg	
78-93-3	Methyl ethyl ketone	ND	1100	230	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	280	170	ug/kg	
100-42-5	Styrene	ND	280	110	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	280	57	ug/kg	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW4:SOIL:5-7	
Lab Sample ID: D17814-2	Date Sampled: 09/29/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8260B	Percent Solids: 93.6
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	570	110	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	280	110	ug/kg	
127-18-4	Tetrachloroethylene	ND	280	110	ug/kg	
108-88-3	Toluene	ND	110	57	ug/kg	
79-01-6	Trichloroethylene	ND	280	57	ug/kg	
75-01-4	Vinyl chloride	ND	280	110	ug/kg	
108-05-4	Vinyl Acetate	ND	1100	450	ug/kg	
1330-20-7	Xylene (total)	ND	110	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	87%		70-130%
460-00-4	4-Bromofluorobenzene	87%		70-130%
17060-07-0	1,2-Dichloroethane-D4	85%		70-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW4:SOIL:5-7	
Lab Sample ID: D17814-2	Date Sampled: 09/29/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8270C SW846 3540C	Percent Solids: 93.6
Project: Project Chai	

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	43	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	53	43	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	39	34	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	39	33	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	64	53	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	64	53	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	75	43	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	43	32	ug/kg	
132-64-9	Dibenzofuran	ND	39	29	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	39	34	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	43	39	ug/kg	
84-66-2	Diethyl phthalate	ND	75	43	ug/kg	
131-11-3	Dimethyl phthalate	ND	75	43	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	180	110	ug/kg	
206-44-0	Fluoranthene	ND	75	39	ug/kg	
86-73-7	Fluorene	ND	43	36	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	110	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	33	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	110	ug/kg	
67-72-1	Hexachloroethane	ND	43	39	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	39	29	ug/kg	
78-59-1	Isophorone	ND	39	33	ug/kg	
91-57-6	2-Methylnaphthalene	ND	39	30	ug/kg	
88-74-4	2-Nitroaniline	ND	43	36	ug/kg	
99-09-2	3-Nitroaniline	ND	75	43	ug/kg	
100-01-6	4-Nitroaniline	ND	180	85	ug/kg	
91-20-3	Naphthalene	ND	75	36	ug/kg	
98-95-3	Nitrobenzene	ND	180	53	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	53	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	53	ug/kg	
85-01-8	Phenanthrene	ND	75	39	ug/kg	
129-00-0	Pyrene	ND	43	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	39	33	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	66%		10-138%
4165-62-2	Phenol-d5	71%		10-176%
118-79-6	2,4,6-Tribromophenol	59%		10-156%
4165-60-0	Nitrobenzene-d5	65%		10-193%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: MW4:SOIL:5-7	
Lab Sample ID: D17814-2	Date Sampled: 09/29/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8270C SW846 3540C	Percent Solids: 93.6
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	64%		20-138%
1718-51-0	Terphenyl-d14	78%		17-174%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW6:SOIL:5-7	
Lab Sample ID: D17814-4	Date Sampled: 09/29/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8260B	Percent Solids: 97.1
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V07563.D	1	10/07/10	DC	n/a	n/a	V3V405
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.00 g	5.0 ml	100 ul
Run #2			

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1100	530	ug/kg	
71-43-2	Benzene	ND	53	16	ug/kg	
75-27-4	Bromodichloromethane	ND	260	110	ug/kg	
75-25-2	Bromoform	ND	260	110	ug/kg	
108-90-7	Chlorobenzene	ND	260	110	ug/kg	
75-00-3	Chloroethane	ND	260	110	ug/kg	
67-66-3	Chloroform	ND	260	53	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	1100	640	ug/kg	
75-15-0	Carbon disulfide	ND	260	110	ug/kg	
56-23-5	Carbon tetrachloride	ND	260	110	ug/kg	
75-34-3	1,1-Dichloroethane	ND	260	110	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	260	110	ug/kg	
107-06-2	1,2-Dichloroethane	ND	260	53	ug/kg	
78-87-5	1,2-Dichloropropane	ND	260	110	ug/kg	
124-48-1	Dibromochloromethane	ND	260	110	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	260	110	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	260	110	ug/kg	
541-73-1	m-Dichlorobenzene	ND	260	110	ug/kg	
95-50-1	o-Dichlorobenzene	ND	260	110	ug/kg	
106-46-7	p-Dichlorobenzene	ND	260	110	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	260	110	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	260	110	ug/kg	
100-41-4	Ethylbenzene	ND	110	21	ug/kg	
591-78-6	2-Hexanone	ND	1100	160	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	1100	160	ug/kg	
74-83-9	Methyl bromide	ND	260	110	ug/kg	
74-87-3	Methyl chloride	ND	260	110	ug/kg	
75-09-2	Methylene chloride	ND	260	110	ug/kg	
78-93-3	Methyl ethyl ketone	ND	1100	210	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	260	160	ug/kg	
100-42-5	Styrene	ND	260	110	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	260	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW6:SOIL:5-7	
Lab Sample ID: D17814-4	Date Sampled: 09/29/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8260B	Percent Solids: 97.1
Project: Project Chai	

VOA HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-34-5	1,1,2,2-Tetrachloroethane	ND	530	110	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	260	110	ug/kg	
127-18-4	Tetrachloroethylene	ND	260	110	ug/kg	
108-88-3	Toluene	ND	110	53	ug/kg	
79-01-6	Trichloroethylene	ND	260	53	ug/kg	
75-01-4	Vinyl chloride	ND	260	110	ug/kg	
108-05-4	Vinyl Acetate	ND	1100	420	ug/kg	
1330-20-7	Xylene (total)	ND	110	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	87%		70-130%
460-00-4	4-Bromofluorobenzene	86%		70-130%
17060-07-0	1,2-Dichloroethane-D4	83%		70-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW6:SOIL:5-7	
Lab Sample ID: D17814-4	Date Sampled: 09/29/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8270C SW846 3540C	Percent Solids: 97.1
Project: Project Chai	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G09326.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	340	190	ug/kg	
95-57-8	2-Chlorophenol	ND	41	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	38	31	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	38	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	41	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	130	ug/kg	
95-48-7	2-Methylphenol	ND	41	38	ug/kg	
106-44-5	4-Methylphenol	ND	41	38	ug/kg	
88-75-5	2-Nitrophenol	ND	41	38	ug/kg	
100-02-7	4-Nitrophenol	ND	72	48	ug/kg	
87-86-5	Pentachlorophenol	ND	170	100	ug/kg	
108-95-2	Phenol	ND	72	51	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	38	32	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	38	33	ug/kg	
83-32-9	Acenaphthene	ND	38	30	ug/kg	
208-96-8	Acenaphthylene	ND	38	34	ug/kg	
120-12-7	Anthracene	ND	38	26	ug/kg	
56-55-3	Benzo(a)anthracene	ND	38	30	ug/kg	
50-32-8	Benzo(a)pyrene	ND	38	26	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	41	38	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	38	26	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	48	41	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	38	32	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	100	ug/kg	
100-51-6	Benzyl Alcohol	ND	72	45	ug/kg	
91-58-7	2-Chloronaphthalene	ND	38	30	ug/kg	
106-47-8	4-Chloroaniline	ND	48	41	ug/kg	
218-01-9	Chrysene	ND	48	41	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	72	34	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	38	31	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	170	86	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW6:SOIL:5-7	Date Sampled:	09/29/10
Lab Sample ID:	D17814-4	Date Received:	09/29/10
Matrix:	SO - Soil	Percent Solids:	97.1
Method:	SW846 8270C SW846 3540C		
Project:	Project Chai		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	48	41	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	51	41	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	38	33	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	38	32	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	62	51	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	62	51	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	72	41	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	41	31	ug/kg	
132-64-9	Dibenzofuran	ND	38	28	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	38	33	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	41	38	ug/kg	
84-66-2	Diethyl phthalate	ND	72	41	ug/kg	
131-11-3	Dimethyl phthalate	ND	72	41	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	170	100	ug/kg	
206-44-0	Fluoranthene	ND	72	38	ug/kg	
86-73-7	Fluorene	ND	41	34	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	100	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	32	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	170	100	ug/kg	
67-72-1	Hexachloroethane	ND	41	38	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	38	28	ug/kg	
78-59-1	Isophorone	ND	38	32	ug/kg	
91-57-6	2-Methylnaphthalene	ND	38	29	ug/kg	
88-74-4	2-Nitroaniline	ND	41	34	ug/kg	
99-09-2	3-Nitroaniline	ND	72	41	ug/kg	
100-01-6	4-Nitroaniline	ND	170	82	ug/kg	
91-20-3	Naphthalene	36.5	72	34	ug/kg	J
98-95-3	Nitrobenzene	ND	170	51	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	51	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	51	ug/kg	
85-01-8	Phenanthrene	ND	72	38	ug/kg	
129-00-0	Pyrene	38.1	41	38	ug/kg	J
120-82-1	1,2,4-Trichlorobenzene	ND	38	32	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	80%		10-138%
4165-62-2	Phenol-d5	83%		10-176%
118-79-6	2,4,6-Tribromophenol	90%		10-156%
4165-60-0	Nitrobenzene-d5	71%		10-193%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW6:SOIL:5-7	
Lab Sample ID: D17814-4	Date Sampled: 09/29/10
Matrix: SO - Soil	Date Received: 09/29/10
Method: SW846 8270C SW846 3540C	Percent Solids: 97.1
Project: Project Chai	

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	70%		20-138%
1718-51-0	Terphenyl-d14	95%		17-174%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)										Matrix Codes
Company Name ERM		Project Name Project Chai		<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"> VOC (8260) + MTBE SVOC (8270) </div> <div style="text-align: center;"> 9/29/10 </div> </div>										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment CI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank
Street Address 6455 S. Yosemite Drive, Suite 900		Street 1770 13TH St												
City Greenwood Village CO 80111		City Boulder, CO		Billing Information (if different from Report to)										LAB USE ONLY
Project Contact Chris Thebo		Project # 0122609		Street Address										
Phone # (303) 741-5050		Fax # (303) 773-2624		City State Zip										
Sampler(s) Name(s) Eric Moate		Project Manager Chris Thebo		Attention:										
Turnaround Time (Business days)		Data Deliverable Information		Comments / Special Instructions										
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> UST Analysis 3-5 Days <input type="checkbox"/> 6-9 Day RUSH <input type="checkbox"/> 3-5 Day RUSH <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY		Approved By (Accutest PM): / Date: _____ _____		<input type="checkbox"/> Level 1 <input type="checkbox"/> Level 2 <input type="checkbox"/> Level 3 <input type="checkbox"/> Level 4 Level 1 = Results Only Level 2 = Results + QC Summary + Case Narrative Level 3 = Results + QC Summary + Partial Raw data Level 4 = Full Deliverable										<input type="checkbox"/> PDF <input type="checkbox"/> EDD Format <input type="checkbox"/> Other
Emergency & Rush T/A data available VIA Lablink		Sample Custody must be documented below each time samples change possession, including courier delivery.												
Relinquished by Sampler: 1		Date Time: 9/29/10 1613		Received By: 1		Date Time: 9/29/10 17:13		Relinquished By: 2		Date Time:		Received By: 2		
Relinquished by: 3		Date Time:		Received By: 3		Date Time:		Relinquished By: 4		Date Time:		Received By: 4		
Relinquished by: 5		Date Time:		Received By: 5		Date Time:		Custody Seal #		<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact		Preserved where applicable <input checked="" type="checkbox"/> On Ice Cooler Temp. 4.38		

D17814: Chain of Custody

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GC/MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V405-MB1	3V07557.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17814-2, D17814-4

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1000	500	ug/kg	
71-43-2	Benzene	ND	50	15	ug/kg	
75-27-4	Bromodichloromethane	ND	250	100	ug/kg	
75-25-2	Bromoform	ND	250	100	ug/kg	
108-90-7	Chlorobenzene	ND	250	100	ug/kg	
75-00-3	Chloroethane	ND	250	100	ug/kg	
67-66-3	Chloroform	ND	250	50	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	1000	600	ug/kg	
75-15-0	Carbon disulfide	ND	250	100	ug/kg	
56-23-5	Carbon tetrachloride	ND	250	100	ug/kg	
75-34-3	1,1-Dichloroethane	ND	250	100	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	250	100	ug/kg	
107-06-2	1,2-Dichloroethane	ND	250	50	ug/kg	
78-87-5	1,2-Dichloropropane	ND	250	100	ug/kg	
124-48-1	Dibromochloromethane	ND	250	100	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	250	100	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	250	100	ug/kg	
541-73-1	m-Dichlorobenzene	ND	250	100	ug/kg	
95-50-1	o-Dichlorobenzene	ND	250	100	ug/kg	
106-46-7	p-Dichlorobenzene	ND	250	100	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	250	100	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	250	100	ug/kg	
100-41-4	Ethylbenzene	ND	100	20	ug/kg	
591-78-6	2-Hexanone	ND	1000	150	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	1000	150	ug/kg	
74-83-9	Methyl bromide	ND	250	100	ug/kg	
74-87-3	Methyl chloride	ND	250	100	ug/kg	
75-09-2	Methylene chloride	ND	250	100	ug/kg	
78-93-3	Methyl ethyl ketone	ND	1000	200	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	250	150	ug/kg	
100-42-5	Styrene	ND	250	100	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	250	50	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	500	100	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	250	100	ug/kg	
127-18-4	Tetrachloroethylene	ND	250	100	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	

Method Blank Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V405-MB1	3V07557.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17814-2, D17814-4

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	250	50	ug/kg	
75-01-4	Vinyl chloride	ND	250	100	ug/kg	
108-05-4	Vinyl Acetate	ND	1000	400	ug/kg	
1330-20-7	Xylene (total)	ND	100	35	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
2037-26-5	Toluene-D8	87%	70-130%
460-00-4	4-Bromofluorobenzene	82%	70-130%
17060-07-0	1,2-Dichloroethane-D4	85%	70-130%

Blank Spike Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V405-BS1	3V07558.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17814-2, D17814-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	50	28.2	56	34-130
71-43-2	Benzene	50	51.1	102	68-130
75-27-4	Bromodichloromethane	50	46.8	94	65-133
75-25-2	Bromoform	50	40.1	80	55-130
108-90-7	Chlorobenzene	50	52.6	105	70-130
75-00-3	Chloroethane	50	54.2	108	67-130
67-66-3	Chloroform	50	52.7	105	70-130
110-75-8	2-Chloroethyl vinyl ether	50	44.4	89	20-177
75-15-0	Carbon disulfide	50	51.2	102	23-130
56-23-5	Carbon tetrachloride	50	51.3	103	62-130
75-34-3	1,1-Dichloroethane	50	53.0	106	70-130
75-35-4	1,1-Dichloroethylene	50	52.8	106	70-130
107-06-2	1,2-Dichloroethane	50	48.0	96	70-130
78-87-5	1,2-Dichloropropane	50	50.4	101	70-130
124-48-1	Dibromochloromethane	50	49.7	99	65-130
156-59-2	cis-1,2-Dichloroethylene	50	53.3	107	70-130
10061-01-5	cis-1,3-Dichloropropene	50	47.4	95	66-130
541-73-1	m-Dichlorobenzene	50	49.2	98	70-130
95-50-1	o-Dichlorobenzene	50	49.8	100	70-130
106-46-7	p-Dichlorobenzene	50	49.0	98	70-130
156-60-5	trans-1,2-Dichloroethylene	50	53.1	106	70-130
10061-02-6	trans-1,3-Dichloropropene	50	44.0	88	70-130
100-41-4	Ethylbenzene	50	53.1	106	70-130
591-78-6	2-Hexanone	50	38.2	76	46-130
108-10-1	4-Methyl-2-pentanone	50	43.1	86	58-130
74-83-9	Methyl bromide	50	55.3	111	40-145
74-87-3	Methyl chloride	50	38.8	78	42-130
75-09-2	Methylene chloride	50	51.7	103	70-130
78-93-3	Methyl ethyl ketone	50	42.5	85	21-130
1634-04-4	Methyl Tert Butyl Ether	50	48.7	97	67-150
100-42-5	Styrene	50	47.7	95	38-130
71-55-6	1,1,1-Trichloroethane	50	47.9	96	68-130
79-34-5	1,1,2,2-Tetrachloroethane	50	45.9	92	70-130
79-00-5	1,1,2-Trichloroethane	50	49.5	99	70-130
127-18-4	Tetrachloroethylene	50	52.2	104	70-130
108-88-3	Toluene	50	52.2	104	70-130

Blank Spike Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V405-BS1	3V07558.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17814-2, D17814-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
79-01-6	Trichloroethylene	50	52.8	106	70-130
75-01-4	Vinyl chloride	50	39.8	80	55-130
108-05-4	Vinyl Acetate	50	42.8	86	54-130
1330-20-7	Xylene (total)	100	97.8	98	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	87%	70-130%
460-00-4	4-Bromofluorobenzene	84%	70-130%
17060-07-0	1,2-Dichloroethane-D4	86%	70-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D17772-1MS	3V07560.D	1	10/07/10	DC	n/a	n/a	V3V405
D17772-1MSD	3V07561.D	1	10/07/10	DC	n/a	n/a	V3V405
D17772-1	3V07559.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17814-2, D17814-4

CAS No.	Compound	D17772-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND	4140	3170	77	3400	82	7	34-130/30
71-43-2	Benzene	ND	4140	4140	100	4270	103	3	55-140/30
75-27-4	Bromodichloromethane	ND	4140	3560	86	3830	93	7	50-146/30
75-25-2	Bromoform	ND	4140	3140	76	3420	83	9	56-130/30
108-90-7	Chlorobenzene	ND	4140	4260	103	4410	107	3	66-130/30
75-00-3	Chloroethane	ND	4140	4560	110	4770	115	5	62-130/30
67-66-3	Chloroform	ND	4140	4290	104	4450	107	4	70-130/30
110-75-8	2-Chloroethyl vinyl ether	ND	4140	3710	90	3920	95	6	20-162/30
75-15-0	Carbon disulfide	ND	4140	4030	97	4170	101	3	19-130/30
56-23-5	Carbon tetrachloride	ND	4140	4070	98	4230	102	4	54-141/30
75-34-3	1,1-Dichloroethane	ND	4140	4320	104	4530	109	5	70-130/30
75-35-4	1,1-Dichloroethylene	ND	4140	4310	104	4510	109	5	70-140/30
107-06-2	1,2-Dichloroethane	ND	4140	4050	98	4270	103	5	68-130/30
78-87-5	1,2-Dichloropropane	ND	4140	4070	98	4230	102	4	70-130/30
124-48-1	Dibromochloromethane	ND	4140	3790	92	4060	98	7	56-130/30
156-59-2	cis-1,2-Dichloroethylene	ND	4140	4360	105	4500	109	3	70-130/30
10061-01-5	cis-1,3-Dichloropropene	ND	4140	3800	92	3970	96	4	56-130/30
541-73-1	m-Dichlorobenzene	ND	4140	3970	96	4050	98	2	70-130/30
95-50-1	o-Dichlorobenzene	ND	4140	3990	96	4090	99	2	70-130/30
106-46-7	p-Dichlorobenzene	ND	4140	3980	96	4120	100	3	70-130/30
156-60-5	trans-1,2-Dichloroethylene	ND	4140	4330	105	4440	107	3	64-130/30
10061-02-6	trans-1,3-Dichloropropene	ND	4140	3590	87	3770	91	5	53-130/30
100-41-4	Ethylbenzene	ND	4140	4300	104	4450	107	3	56-139/30
591-78-6	2-Hexanone	ND	4140	3400	82	3770	91	10	48-132/30
108-10-1	4-Methyl-2-pentanone	ND	4140	3670	89	4050	98	10	58-138/30
74-83-9	Methyl bromide	ND	4140	1110	27	1150	28	4	10-165/30
74-87-3	Methyl chloride	ND	4140	3150	76	3310	80	5	35-130/30
75-09-2	Methylene chloride	ND	4140	4290	104	4470	108	4	70-130/30
78-93-3	Methyl ethyl ketone	ND	4140	3760	91	3890	94	3	20-130/30
1634-04-4	Methyl Tert Butyl Ether	ND	4140	4190	101	4380	106	4	69-141/30
100-42-5	Styrene	ND	4140	3820	92	4030	97	5	33-130/30
71-55-6	1,1,1-Trichloroethane	ND	4140	3940	95	4050	98	3	55-138/30
79-34-5	1,1,2,2-Tetrachloroethane	ND	4140	3730	90	3890	94	4	69-130/30
79-00-5	1,1,2-Trichloroethane	ND	4140	4000	97	4270	103	7	62-134/30
127-18-4	Tetrachloroethylene	ND	4140	4250	103	4420	107	4	47-136/30
108-88-3	Toluene	ND	4140	4240	102	4360	105	3	57-144/30

5.3.1
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Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D17772-1MS	3V07560.D	1	10/07/10	DC	n/a	n/a	V3V405
D17772-1MSD	3V07561.D	1	10/07/10	DC	n/a	n/a	V3V405
D17772-1	3V07559.D	1	10/07/10	DC	n/a	n/a	V3V405

The QC reported here applies to the following samples:

Method: SW846 8260B

D17814-2, D17814-4

CAS No.	Compound	D17772-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
79-01-6	Trichloroethylene	ND	4140	4310	104	4380	106	2	70-149/30
75-01-4	Vinyl chloride	ND	4140	3310	80	3440	83	4	59-131/30
108-05-4	Vinyl Acetate	ND	4140	3580	86	3820	92	6	20-141/30
1330-20-7	Xylene (total)	ND	8280	7810	94	8090	98	4	51-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D17772-1	Limits
2037-26-5	Toluene-D8	87%	87%	89%	70-130%
460-00-4	4-Bromofluorobenzene	85%	87%	84%	70-130%
17060-07-0	1,2-Dichloroethane-D4	88%	87%	86%	70-130%

5.3.1
5

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MB	1G09320.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17814-2, D17814-4

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	330	180	ug/kg	
95-57-8	2-Chlorophenol	ND	40	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	37	30	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	37	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	40	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	130	ug/kg	
95-48-7	2-Methylphenol	ND	40	37	ug/kg	
106-44-5	4-Methylphenol	ND	40	37	ug/kg	
88-75-5	2-Nitrophenol	ND	40	37	ug/kg	
100-02-7	4-Nitrophenol	ND	70	47	ug/kg	
87-86-5	Pentachlorophenol	ND	170	100	ug/kg	
108-95-2	Phenol	ND	70	50	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	37	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	37	32	ug/kg	
83-32-9	Acenaphthene	ND	37	29	ug/kg	
208-96-8	Acenaphthylene	ND	37	33	ug/kg	
120-12-7	Anthracene	ND	37	25	ug/kg	
56-55-3	Benzo(a)anthracene	ND	37	29	ug/kg	
50-32-8	Benzo(a)pyrene	ND	37	25	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	40	37	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	37	25	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	47	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	37	31	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	100	ug/kg	
100-51-6	Benzyl Alcohol	ND	70	43	ug/kg	
91-58-7	2-Chloronaphthalene	ND	37	29	ug/kg	
106-47-8	4-Chloroaniline	ND	47	40	ug/kg	
218-01-9	Chrysene	ND	47	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	70	33	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	37	30	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	170	83	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	47	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	50	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	37	32	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	37	31	ug/kg	

Method Blank Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MB	1G09320.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17814-2, D17814-4

CAS No.	Compound	Result	RL	MDL	Units	Q
121-14-2	2,4-Dinitrotoluene	ND	60	50	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	60	50	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	70	40	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	40	30	ug/kg	
132-64-9	Dibenzofuran	ND	37	27	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	37	32	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	40	37	ug/kg	
84-66-2	Diethyl phthalate	ND	70	40	ug/kg	
131-11-3	Dimethyl phthalate	ND	70	40	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	170	100	ug/kg	
206-44-0	Fluoranthene	ND	70	37	ug/kg	
86-73-7	Fluorene	ND	40	33	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	100	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	31	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	170	100	ug/kg	
67-72-1	Hexachloroethane	ND	40	37	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	37	27	ug/kg	
78-59-1	Isophorone	ND	37	31	ug/kg	
91-57-6	2-Methylnaphthalene	ND	37	28	ug/kg	
88-74-4	2-Nitroaniline	ND	40	33	ug/kg	
99-09-2	3-Nitroaniline	ND	70	40	ug/kg	
100-01-6	4-Nitroaniline	ND	170	80	ug/kg	
91-20-3	Naphthalene	ND	70	33	ug/kg	
98-95-3	Nitrobenzene	ND	170	50	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	50	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	50	ug/kg	
85-01-8	Phenanthrene	ND	70	37	ug/kg	
129-00-0	Pyrene	ND	40	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	37	31	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
367-12-4	2-Fluorophenol	71%	10-138%
4165-62-2	Phenol-d5	74%	10-176%
118-79-6	2,4,6-Tribromophenol	52%	10-156%

Method Blank Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MB	1G09320.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17814-2, D17814-4

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	64% 10-193%
321-60-8	2-Fluorobiphenyl	65% 20-138%
1718-51-0	Terphenyl-d14	84% 17-174%

Blank Spike Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-BS	1G09321.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17814-2, D17814-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
65-85-0	Benzoic Acid	1670	604	36	10-130
95-57-8	2-Chlorophenol	1670	1380	83	29-130
59-50-7	4-Chloro-3-methyl phenol	1670	1400	84	38-133
120-83-2	2,4-Dichlorophenol	1670	1470	88	35-130
105-67-9	2,4-Dimethylphenol	1670	1060	64	31-130
51-28-5	2,4-Dinitrophenol	1670	864	52	17-141
534-52-1	4,6-Dinitro-o-cresol	1670	1180	71	24-146
95-48-7	2-Methylphenol	1670	1330	80	35-130
106-44-5	4-Methylphenol	1670	1330	80	32-130
88-75-5	2-Nitrophenol	1670	1560	94	35-130
100-02-7	4-Nitrophenol	1670	1240	74	24-141
87-86-5	Pentachlorophenol	1670	1170	70	11-136
108-95-2	Phenol	1670	1460	88	32-130
95-95-4	2,4,5-Trichlorophenol	1670	1550	93	35-133
88-06-2	2,4,6-Trichlorophenol	1670	1490	89	35-131
83-32-9	Acenaphthene	1670	1420	85	40-136
208-96-8	Acenaphthylene	1670	1420	85	42-139
120-12-7	Anthracene	1670	1410	85	40-141
56-55-3	Benzo(a)anthracene	1670	1550	93	38-143
50-32-8	Benzo(a)pyrene	1670	1480	89	39-145
205-99-2	Benzo(b)fluoranthene	1670	1560	94	38-151
191-24-2	Benzo(g,h,i)perylene	1670	1340	80	35-136
207-08-9	Benzo(k)fluoranthene	1670	1540	92	38-147
101-55-3	4-Bromophenyl phenyl ether	1670	1380	83	35-150
85-68-7	Butyl benzyl phthalate	1670	1510	91	28-169
100-51-6	Benzyl Alcohol	1670	1290	77	39-136
91-58-7	2-Chloronaphthalene	1670	1490	89	40-134
106-47-8	4-Chloroaniline	1670	1440	86	42-130
218-01-9	Chrysene	1670	1420	85	39-137
111-91-1	bis(2-Chloroethoxy)methane	1670	1420	85	38-136
111-44-4	bis(2-Chloroethyl)ether	1670	1350	81	23-130
108-60-1	bis(2-Chloroisopropyl)ether	1670	1150	69	17-145
7005-72-3	4-Chlorophenyl phenyl ether	1670	1380	83	40-138
95-50-1	1,2-Dichlorobenzene	1670	1380	83	32-130
541-73-1	1,3-Dichlorobenzene	1670	1380	83	31-130
106-46-7	1,4-Dichlorobenzene	1670	1370	82	31-130

Blank Spike Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-BS	1G09321.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17814-2, D17814-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
121-14-2	2,4-Dinitrotoluene	1670	1590	95	40-154
606-20-2	2,6-Dinitrotoluene	1670	1570	94	42-153
91-94-1	3,3'-Dichlorobenzidine	1670	1390	83	34-152
53-70-3	Dibenzo(a,h)anthracene	1670	1390	83	35-139
132-64-9	Dibenzofuran	1670	1470	88	40-134
84-74-2	Di-n-butyl phthalate	1670	1400	84	36-150
117-84-0	Di-n-octyl phthalate	1670	1590	95	28-157
84-66-2	Diethyl phthalate	1670	1380	83	39-152
131-11-3	Dimethyl phthalate	1670	1380	83	42-142
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1510	91	24-174
206-44-0	Fluoranthene	1670	1410	85	34-132
86-73-7	Fluorene	1670	1450	87	41-136
118-74-1	Hexachlorobenzene	1670	1420	85	38-145
87-68-3	Hexachlorobutadiene	1670	1430	86	34-136
77-47-4	Hexachlorocyclopentadiene	1670	444	27	14-130
67-72-1	Hexachloroethane	1670	1390	83	29-131
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1360	82	31-144
78-59-1	Isophorone	1670	1450	87	38-130
91-57-6	2-Methylnaphthalene	1670	1390	83	40-131
88-74-4	2-Nitroaniline	1670	1550	93	41-141
99-09-2	3-Nitroaniline	1670	1620	97	40-145
100-01-6	4-Nitroaniline	1670	1560	94	41-154
91-20-3	Naphthalene	1670	1390	83	36-130
98-95-3	Nitrobenzene	1670	1500	90	40-135
621-64-7	N-Nitroso-di-n-propylamine	1670	1220	73	32-137
86-30-6	N-Nitrosodiphenylamine	1670	1190	71	27-152
85-01-8	Phenanthrene	1670	1430	86	40-135
129-00-0	Pyrene	1670	1530	92	29-157
120-82-1	1,2,4-Trichlorobenzene	1670	1440	86	38-132

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	77%	10-138%
4165-62-2	Phenol-d5	78%	10-176%
118-79-6	2,4,6-Tribromophenol	84%	10-156%

Blank Spike Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-BS	1G09321.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17814-2, D17814-4

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	75%	10-193%
321-60-8	2-Fluorobiphenyl	74%	20-138%
1718-51-0	Terphenyl-d14	81%	17-174%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MS	1G09327.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
OP2637-MSD	1G09328.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
D17814-4	1G09326.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17814-2, D17814-4

CAS No.	Compound	D17814-4 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND		1710	1430	83	1320	77	8	10-141/30
95-57-8	2-Chlorophenol	ND		1710	1310	76	1340	78	2	16-136/30
59-50-7	4-Chloro-3-methyl phenol	ND		1710	1390	81	1330	78	4	17-147/30
120-83-2	2,4-Dichlorophenol	ND		1710	1350	79	1370	80	1	13-144/30
105-67-9	2,4-Dimethylphenol	ND		1710	840	49	943	55	12	10-135/30
51-28-5	2,4-Dinitrophenol	ND		1710	1240	72	1320	77	6	10-156/30
534-52-1	4,6-Dinitro-o-cresol	ND		1710	1290	75	1380	81	7	10-158/30
95-48-7	2-Methylphenol	ND		1710	1240	72	1290	75	4	10-144/30
106-44-5	4-Methylphenol	ND		1710	1260	73	1290	75	2	14-138/30
88-75-5	2-Nitrophenol	ND		1710	1410	82	1450	85	3	10-176/30
100-02-7	4-Nitrophenol	ND		1710	1180	69	1240	73	5	10-138/30
87-86-5	Pentachlorophenol	ND		1710	1270	74	1410	83	10	10-185/30
108-95-2	Phenol	ND		1710	1340	78	1370	80	2	20-129/30
95-95-4	2,4,5-Trichlorophenol	ND		1710	1470	86	1500	88	2	10-189/30
88-06-2	2,4,6-Trichlorophenol	ND		1710	1360	79	1430	84	5	10-152/30
83-32-9	Acenaphthene	ND		1710	1270	74	1320	77	4	20-151/30
208-96-8	Acenaphthylene	ND		1710	1250	73	1320	77	5	23-156/30
120-12-7	Anthracene	ND		1710	1270	74	1350	79	6	25-149/30
56-55-3	Benzo(a)anthracene	ND		1710	1450	85	1510	88	4	22-157/30
50-32-8	Benzo(a)pyrene	ND		1710	1360	79	1410	83	4	23-153/30
205-99-2	Benzo(b)fluoranthene	ND		1710	1520	89	1550	91	2	22-161/30
191-24-2	Benzo(g,h,i)perylene	ND		1710	1140	66	1230	72	8	20-158/30
207-08-9	Benzo(k)fluoranthene	ND		1710	1360	79	1400	82	3	17-161/30
101-55-3	4-Bromophenyl phenyl ether	ND		1710	1310	76	1330	78	2	10-176/30
85-68-7	Butyl benzyl phthalate	ND		1710	1630	95	1560	91	4	11-205/30
100-51-6	Benzyl Alcohol	ND		1710	1280	75	1230	72	4	13-168/30
91-58-7	2-Chloronaphthalene	ND		1710	1260	73	1350	79	7	21-149/30
106-47-8	4-Chloroaniline	ND		1710	1230	72	1210	71	2	10-143/30
218-01-9	Chrysene	ND		1710	1300	76	1360	80	5	16-159/30
111-91-1	bis(2-Chloroethoxy)methane	ND		1710	1270	74	1310	77	3	16-155/30
111-44-4	bis(2-Chloroethyl)ether	ND		1710	1250	73	1280	75	2	16-130/30
108-60-1	bis(2-Chloroisopropyl)ether	ND		1710	1110	65	1160	68	4	10-156/30
7005-72-3	4-Chlorophenyl phenyl ether	ND		1710	1310	76	1310	77	0	19-155/30
95-50-1	1,2-Dichlorobenzene	ND		1710	1270	74	1310	77	3	18-145/30
541-73-1	1,3-Dichlorobenzene	ND		1710	1280	75	1310	77	2	15-146/30
106-46-7	1,4-Dichlorobenzene	ND		1710	1270	74	1320	77	4	17-142/30

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MS	1G09327.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
OP2637-MSD	1G09328.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
D17814-4	1G09326.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17814-2, D17814-4

CAS No.	Compound	D17814-4 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
121-14-2	2,4-Dinitrotoluene	ND		1710	1520	89	1490	87	2	10-218/30
606-20-2	2,6-Dinitrotoluene	ND		1710	1440	84	1460	85	1	10-208/30
91-94-1	3,3'-Dichlorobenzidine	ND		1710	1040	61	989	58	5	10-158/30
53-70-3	Dibenzo(a,h)anthracene	ND		1710	1250	73	1320	77	5	21-154/30
132-64-9	Dibenzofuran	ND		1710	1330	78	1360	80	2	21-150/30
84-74-2	Di-n-butyl phthalate	ND		1710	1310	76	1320	77	1	22-161/30
117-84-0	Di-n-octyl phthalate	ND		1710	1580	92	1530	90	3	10-218/30
84-66-2	Diethyl phthalate	ND		1710	1290	75	1340	78	4	16-171/30
131-11-3	Dimethyl phthalate	ND		1710	1250	73	1280	75	2	10-184/30
117-81-7	bis(2-Ethylhexyl)phthalate	ND		1710	1470	86	1420	83	3	15-195/30
206-44-0	Fluoranthene	ND		1710	1180	69	1370	80	15	16-140/30
86-73-7	Fluorene	ND		1710	1370	80	1360	80	1	15-153/30
118-74-1	Hexachlorobenzene	ND		1710	1330	78	1390	81	4	22-155/30
87-68-3	Hexachlorobutadiene	ND		1710	1280	75	1330	78	4	19-143/30
77-47-4	Hexachlorocyclopentadiene	ND		1710	289	17	438	26	41* a	10-130/30
67-72-1	Hexachloroethane	ND		1710	1250	73	1310	77	5	10-180/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		1710	1210	71	1330	78	9	21-159/30
78-59-1	Isophorone	ND		1710	1330	78	1360	80	2	21-136/30
91-57-6	2-Methylnaphthalene	ND		1710	1330	78	1290	75	3	10-181/30
88-74-4	2-Nitroaniline	ND		1710	1420	83	1450	85	2	10-207/30
99-09-2	3-Nitroaniline	ND		1710	1430	83	1440	84	1	19-152/30
100-01-6	4-Nitroaniline	ND		1710	1420	83	1420	83	0	17-166/30
91-20-3	Naphthalene	36.5	J	1710	1260	71	1300	74	3	10-176/30
98-95-3	Nitrobenzene	ND		1710	1310	76	1340	78	2	16-155/30
621-64-7	N-Nitroso-di-n-propylamine	ND		1710	1190	69	1230	72	3	10-199/30
86-30-6	N-Nitrosodiphenylamine	ND		1710	1070	62	1100	64	3	12-168/30
85-01-8	Phenanthrene	ND		1710	1290	75	1380	81	7	22-152/30
129-00-0	Pyrene	38.1	J	1710	1600	91	1600	91	0	10-200/30
120-82-1	1,2,4-Trichlorobenzene	ND		1710	1290	75	1330	78	3	20-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D17814-4	Limits
367-12-4	2-Fluorophenol	70%	72%	80%	10-138%
4165-62-2	Phenol-d5	72%	75%	83%	10-176%
118-79-6	2,4,6-Tribromophenol	85%	86%	90%	10-156%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D17814
Account: ERMCOGV ERM-Rocky Mountain, Inc.
Project: Project Chai

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2637-MS	1G09327.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
OP2637-MSD	1G09328.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295
D17814-4	1G09326.D	1	10/09/10	TMB	10/07/10	OP2637	E1G295

The QC reported here applies to the following samples:

Method: SW846 8270C

D17814-2, D17814-4

CAS No.	Surrogate Recoveries	MS	MSD	D17814-4	Limits
4165-60-0	Nitrobenzene-d5	65%	67%	71%	10-193%
321-60-8	2-Fluorobiphenyl	61%	66%	70%	20-138%
1718-51-0	Terphenyl-d14	84%	83%	95%	17-174%

(a) High RPD due to possible sample nonhomogeneity.

Appendix E
ERM Manufactured Gas Plant
Site Services Statement of
Qualifications



Statement of Qualifications

Manufactured Gas Plant Site Services

2011

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Contents



Why ERM

Manufacturing Gas Plant (MGP)

- **Services**
- **Experience**

Why ERM?



Breadth of Expertise

ERM delivers a breadth of technical talent to address the full spectrum of the investigation and remediation process, including site characterization, risk assessment, remedial engineering, design, and full construction management capabilities. ERM has a significant presence in the US, providing 63 offices to support projects nationwide. Our geographic distribution translates to lower project costs, and better project strategy and execution compared to our competitors with a more limited geographic presence.

Dedicated Construction Management Professionals



ERM implements design and construction projects on a turnkey basis using a team of experienced design and construction management

professionals. ERM specializes in helping our clients safely and cost-effectively design and implement solutions to challenging remediation and pollution control problems. Our ultimate goal is to bring closure to these challenging problems as expeditiously as possible so our clients can reduce environmental liabilities and focus on their core business.

Demonstrated MGP Site Experience



restoration of MGP sites were developed through our staff's years of combined experience at sites across the US.

Our ERM MGP team has performed well over 100 investigations and 75 remedial actions at MGP sites throughout the US. Our unique skills for the investigation, remediation, and

Leader in Remedial Technology



oxidation and thermal technologies, including steam and electric heating methods, and biological treatment associated with in-situ and ex-situ soil and ground water remediation. Notably, ERM's Dr. Richard Brown leads an in-house technical assessment team on the comparative benefit of in situ oxidants, including hydrogen peroxide, ozone, permanganate, and sodium persulfate, for MGP residuals.

ERM's Remedial Technology Group (RTG) offers nationally recognized experts in the treatment of recalcitrants (i.e., coal tar) using conventional and innovative

Extensive Experience with Applying Risk-Based Remedies

ERM consistently focuses on risk-based remedies. Our philosophy centers on the need to gain sufficient information to design the appropriate remedial measures needed to mitigate risk. ERM's risk assessment routinely emphasizes the use of site-specific analyses rather than deferring to state or federal default exposure scenarios. Our expertise includes the application of vapor intrusion models and assessment to evaluate realistic exposures to volatiles (typically benzene, trimethylbenzene, and naphthalene) that may originate from MGP residuals.

Strong Sediment Assessment and Remediation Experience

ERM's team of scientists and engineers are experienced in all phases of sediment assessment and remediation. ERM offers demonstrated experience in addressing surface water and sediment issues that may arise during MGP projects, including forensics used to identify the source of coal tar and other non-aqueous petroleum products, and sediment transport modeling to develop a strong risk-based approach to support monitored natural attenuation or in situ capping versus dredging.

Manufactured Gas Plant Environmental Services



ERM has supported our electric and gas utility clients in a variety of environmental roles for over 30 years.

Our commitment to the Energy Industry has included retaining and attracting recognized experts in the investigation, remediation, closure, and re-development of former MGP sites, human health and ecologic risk assessment, air compliance and permitting, due diligence, land use management and planning, and mergers and acquisitions.

ERM's MGP team has the unique characteristic of experience in all aspects of investigation, risk evaluation, remediation, and construction management, providing true turnkey services to our MGP clients. This turnkey capability greatly facilitates the success of the project because our project managers and construction and remedial specialists are fully integrated throughout all phases of the project. ERM focuses on long-term remedial goals, future property use and potential redevelopment, and closure endpoints to provide remedial strategies that balance our clients potential cost, time, and future risk.

Experience has shaped our staff's specialized knowledge in the subtle intricacies of MGP sites, including:

- Historical gas generation methods, evolution, and types of wastes produced from each gas manufacturing process;

- The most likely areas of impact and constituents of concern;
- Focus on potential regulatory changes and or changes to analytical methods;
- Human health and ecologic risk, and transport mechanisms associated with MGP constituents;
- Most cost-effective remedial methods and innovative technologies for treating MGP wastes and affected environmental media;
- The need for creative remedial solutions considering the inactive nature of the sites and the significant public/private infrastructure built in and around these sites; and
- Implementation nuances of remedial actions (e.g., ambient air monitoring, emission/odor control, coordination with public and private parties, and • integrating redevelopment with remediation).

Our ERM MGP team has worked on more than 150 MGP sites in over 22 states. Our MGP experts have performed over 100 investigations and 75 remedial actions at MGP sites throughout the US.

ERM has successfully completed remediation, assessment, and redevelopment projects at former MGP sites, supporting clients in tasks such as:

- Site investigation/characterization
- Designing and implementing remedial solutions
- Ecological risk assessments
- Financial risk analysis
- Human health risk assessments
- Construction management
- Real estate portfolio evaluation
- Regulatory strategy
- Design and implement innovative technologies to achieve site closure
- Remedial technology development
- Brownfields redevelopment
- Sediment assessment and site restoration

Another example of our commitment to the comprehensive understanding of the MGP business is through internal communication.

ERM performs monthly conference calls among our MGP staff throughout the US and abroad. This provides updates on new and innovative investigation and remedial options, as well as sharing information on challenges experienced by our clients and our solutions to those challenges.

ERM offers a wide range of services designed to help our clients efficiently manage the multitude of issues surrounding their involvement in former MGP sites.

Investigation/Delineation



ERM has significant experience in the investigation and delineation of former MGP sites. Our MGP staff have conducted over 100 investigations at numerous project sites throughout the US and abroad.

A key component to the development of our investigation approach is the understanding of past and future land use. Our understanding of your future land use allows us to better focus the investigation to collect data for delineation as well as future risk and or remedial evaluations, minimizing cost and optimizing your project schedule. Sites are not investigated solely to delineate the nature and extent of impacts, but also to focus on collecting information needed for remedial design and closure. This approach streamlines the project schedule and keeps the team focused on your ultimate goal, site closure.

Our geologists and hydrogeologists continuously evaluate and test innovative investigation methods to supplement our use of long-standing investigation methods to help you meet your site goals while balancing cost, data needs, time, and special site needs. Our staff's MGP investigation experience includes work in bedrock formations, all ranges of soil matrix, a broad range of other contributing contaminants, as well as sediment and wetlands investigations and remediation.

ERM's data management and graphics specialists can quickly and effectively analyze site data and produce a visualization of site geology, contaminant distribution, plume migration, and potential remediation volumes.

ERM employs advanced data management and analysis tools, such as:

- Environmental Visualization Systems
- GIS data management
- Analytic element ground water modeling



3-D Visualization of Contaminated Soil

Turnkey Remedial Options

ERM construction professionals include engineers, construction managers, geologists, and field supervisors to support the preparation of remedial designs, perform constructability reviews, implement remedial designs on a turnkey basis, and provide full-time, on-site construction oversight and management of contractors. By utilizing our extensive in-house expertise, we are able to streamline our approach to prepare designs that are both effective and cost-efficient.

Our application of remedial technologies can include combinations of risk-based approaches to ensure protection of public health and the environment, containment technologies, and conventional remedial methods.

ERM is a leader in the design and implementation of innovative remedial technologies that can move you towards closure on your most challenging MGP site.

Members of ERM's Remedial Technology Group are recognized experts in treatment of recalcitrants utilizing oxidation technologies, thermal treatment technologies including the use of steam and electric heating methods, and biologic treatment associated with attenuation of MGP constituents. We have longstanding relationships with the Gas Technology Institute (GTI) and the Electric Power Research Institute (EPRI) to access current data and information about industry research at MGP sites. For example, on behalf of one of our clients, ERM has worked with GTI to evaluate the viability of innovative technologies and provided input to GTI technology reports. ERM regularly attends and presents at EPRI and GTI conferences on MGP site remediation as well as other issues that affect the Utility Industry. This constant interaction and our working relationship with both GTI and EPRI help us to remain current with the latest technologies and remediation issues in the industry.

Some of the advanced remedial technologies ERM has employed include:

- In situ chemical oxidation (ozone, permanganate, peroxide)
- In situ thermal methods (steam and electric heat)
- Phytoremediation
- Electrokinetics
- Natural attenuation
- Surfactants
- Reactor walls
- Sparge walls
- Enhanced degradation through the use of energetics (sonication, heating through radio frequency or six-phase heating)
- Hydrolysis
- Bioremediation
- Anaerobic bioremediation

Sediment Assessment and Remediation

ERM's team of scientists and engineers are experienced in all phases of sediment assessment and remediation. ERM offers demonstrated experience in addressing surface water and sediment issues that may arise during MGP projects, including forensics used to identify the source of coal tar and other non-aqueous petroleum products, and sediment transport modeling to develop a strong risk-based approach to support monitored natural attenuation or in situ capping versus dredging.

Risk Assessment

ERM's risk experts have utilized site-specific, risk-based approaches to MGP sites that efficiently screen site data to identify potentially unacceptable exposures during current and future property uses, and quickly identify institutional or engineering controls that may be needed to mitigate current exposures or eliminate potential future exposure. ERM's staff of biologists, toxicologists, ecotoxicologists, chemists, hydrogeologists, and engineers has extensive experience with federal risk assessment requirements for CERCLA, RCRA, CAA, and state-specific programs.

ERM utilizes the latest computerized data management tools including Geographic Information Systems (GIS) and Environmental Visualization Systems (EVS) to analyze site data and display the analyses clearly and concisely for regulators and the public. When the data indicate that further quantitative analyses of risks are appropriate, ERM's advanced exposure modeling capabilities can be used to simulate the migration and natural attenuation of contaminants to determine realistic current and future exposure concentrations, as well as to assess the effectiveness of possible exposure controls, in situ treatment, or contaminant removal.

In addition to traditional risk assessment activities ERM has extensive experience in the performance of Ecological Risk Assessments in a wide variety of habitats ranging from the northern forests to the Everglades, from the eastern Appalachian to the Hogback Mountains of the southwest, and along both the east and west coastlines. ERM's staff of ecotoxicologists, fisheries and wildlife biologists, ecologists,

wetland scientists, chemists, hydrogeologists, modelers, and engineers makes up a multi-disciplinary team experienced in integrated assessments. This combination of experience and expertise enables ERM to provide a realistic characterization of potential risks associated with your sites.

ERM is committed to supporting our energy clients to ensure we provide our best project team regardless of your site location.

Regulatory Issues

With over 100 offices in 39 countries we have local staff with local knowledge to help our clients achieve the best outcome available regardless of the regulatory context. ERM offers clients the benefit of our intimate knowledge of local regulatory programs. The staff throughout ERM's global network deals with local regulations in their region on a daily basis and are experienced with local policies and procedures. Our staff has local, regional, and federal experience to support your project sites within CERCLA, state lead programs, and voluntary programs. ERM takes advantage of the increased receptiveness by regulators to risk arguments and works with our clients to achieve your goals in the most cost effective and timely manner possible.

In addition to our local staff ERM has regional and national experts experienced in the special needs of MGP site investigations, risk assessments, redevelopments, remediation, and closure.

Community Relations



As part of the investigation or remedial solutions at MGP sites, ERM can assist clients with community relations activities. ERM can help inform the public and enhance corporate image

by developing a practical and consistent communications approach in dealing with environmental groups, elected officials, regulators, community leaders, and the general public. Through our community relations services ERM supports proactive communication with key stakeholders, satisfies public participation requirements, and can provide specialized support to public relations efforts with on-staff experts in hydrogeology, fate and transport, environmental and ecologic risk, toxicology, as well as remediation and redevelopment.

Business Issues

In addition to assisting our clients with the technical and regulatory issues associated with MGP sites, ERM also offers a range of services including merger and acquisition support, cost recovery support, and Brownfields redevelopment, planning, and design to assist with the financial and business issues faced by our energy clients.

Mergers and Acquisition Support

With merger and acquisition transaction activity occurring throughout the energy industry, substantial liabilities may be transferred between companies during transactions. By combining ERM's MGP experience with our transaction services, our professionals can identify and define the potential liabilities associated with any number of former MGP sites. Companies often have limited financial and management resources to deal with the staggering potential costs and schedule of activities at several sites simultaneously. ERM can help site managers apply risk management and probabilistic cost assessment tools to focus their resources to maximize liability reduction and value creation.

Business Challenges for MGP Site Managers

- Protect and enhance shareholder value through proactive management of the Company's real estate portfolio
- Enhance earnings by finding more cost-effective solutions to remediation liabilities
- Protect and enhance corporate image through responsible communication and management of liabilities and risk

ERM can assist our energy clients in:

- *Pre-Acquisition Due Diligence* – ERM reviews all characteristics of a site and applies our knowledge and experience of local regulatory programs to identify potential site concerns. Through our network of offices, ERM can assemble a team that can provide local expertise and meet the schedule constraints of large multi-state or international transactions.
- *Remediation Cost/Reserve Analysis* – ERM applies our substantial worldwide site remediation experience and utilizes probabilistic cost analysis tools to develop realistic estimates for remediation costs.
- *Property Portfolio Strategy* – ERM reviews property portfolios to prioritize liability management efforts and identify sites with the greatest potential for favorable redevelopment results. ERM also reviews sites to identify potential cost reductions, develops alternative strategies, and obtains more reasonable outcomes through working with regulators.
- *Partnerships* – ERM provides creative and cost-effective solutions for clients involving Brownfields and stakeholder-driven strategies.

Cost Recovery

Within our environmental litigation and claims support services ERM's multidisciplinary staff can assist clients by providing expert testimony and reports; developing negotiation strategies; reviewing, cataloguing, and organizing documents; conducting environmental forensics; defending construction claims; conducting dispute resolution; and assisting with insurance recovery. ERM has also assisted several potentially responsible party (PRP) committees, as well as individual PRPs, with cost allocation and cost recovery issues at CERCLA sites.

ERM's organizational structure facilitates the assembly of a team to support litigation that is tailored to the client's needs and the scope of the litigation. ERM can also effectively use environmental forensic capabilities to analyze issues relevant to questions of policy coverage.

When a client is faced with a construction claim, ERM provides claims and dispute resolution services that range from claim avoidance techniques to managing the resolution process. Our objective is to resolve the conflict at a fair price while keeping the client's objectives in mind.

Brownfields Redevelopment



Brownfields programs allow businesses with abandoned, idled, or underused industrial and commercial facilities to reduce remediation costs without jeopardizing public

health and the environment; balance cleanup investment with realistic property reuse; restore or increase property value; match risk and resources; and reevaluate and potentially reduce financial liabilities.

An increasing number of energy companies are exploring the concept of outsourcing management of their former MGP sites by divesting them to "Brownfields" developers. ERM is experienced in all aspects of Brownfields redevelopment projects with the experience and the experts to support your planning and execution of these challenging projects.

ERM Experience

Representative North America Project Experience



Former MGP Sites

UPRR Intermodal Yard, Oakland, California

ERM personnel provided a broad range of environmental services at six former MGP sites during redevelopment of the intermodal yard in Oakland. The services provided included development of master workplan, conducting site investigations, evaluating remedial options, sampling soil and groundwater, and implementing remedial actions and providing regulatory interactions.

Following the master work plan development, which defined investigative needs and remedial goals, the remedial actions were performed on a case-by-case basis.

Former MGP Site

PG&E, Eureka, California

ERM provided workplan, soil/ground water investigation services, bench-testing, remedial action workplan development, construction plans/specification development, construction oversight and agency negotiations for site impacted with Bunker C oil, lampblack, and other petroleum (tar-like) wastes.

ERM successfully negotiated RWQCB's acceptance of the recommended remedial alternative (site capping with limited soil removal and ground water monitoring). This remedy was consistent with the intended use of the property (parking and small equipment maintenance) and resulted in a cost savings of approximately \$700,000 in comparison to an "excavation and disposal" approach.

After completion of the remedial action, ERM prepared a final report that has been accepted by North Coast RWQCB to obtain site closure.

Former Manufactured Gas Plant Site

San Diego, California



ERM personnel were responsible for the design and performance of an investigation of a former MGP site covering nine city blocks in downtown San Diego. Following performance of the investigation, ERM compiled feasibility analysis and cost comparisons for remedial options, and provided technical support on site for the execution of the site excavation. The selected remedial option included extensive shoring, dewatering, water treatment, off-site thermal treatment (with on-site staging), and soil conditioning and debris segregation. The site remedial excavation removed an estimated 50,000 cubic yards of PAH-impacted soil for treatment off site by thermal desorption. Project completed in preparation for the construction of Qualcomm Field.

Former MGP Site

Sempra Energy, Los Angeles, California

The Sempra Energy Utilities former MGP site in Los Angeles, California was pilot-tested to treat vadose and saturated zone soils impacted by PAHs, VOCs and dicyclopentadiene (DCPD). Of particular concern at this site is DCPD, which has an extremely low odor threshold ($\sim 3\mu\text{g}/\text{cm}^3$). In general, these compounds have low solubility and are recalcitrant, therefore, relatively difficult and expensive to treat using standard extraction-based, in situ technologies.

Ozone was pulsed into 12 injection points during the pilot test to promote direct ozonation and enhanced aerobic biodegradation of the contaminants in the pilot test area. Direct comparison of results from paired soil borings and geostatistical analysis by kriging both indicated that soil mass was reduced by approximately 2,000 pounds of the target compounds (82 percent of total estimated mass) were removed (primarily through the oxidation process) during the 3-month pilot study.

Former MGP Site Remediation

Laclede Gas Company, Shrewsbury, Missouri

Staff at ERM conducted removal of coal tar residuals from a below-ground tar well and a tar separator at this Missouri location for the Laclede Gas Company. The tar well consisted of a concrete pit that was 14 feet long, 11 feet wide and 12 feet deep. The tar separator consisted of a concrete pit that was 42 feet long, 8 feet wide, and 12 feet deep. Typical for MGP sites, working space was limited because of newer development surrounding the former MGP operations.

Therefore, experience with site management and operation of construction equipment was critical to the success of the project. In this case, care was required for excavation because the tar separator was located between two buildings along an alleyway with underground and overhead utilities. The tar well and tar separator were accurately located on the site, and the coal tar residuals were excavated. The residuals were conditioned on-site for moisture control using a solidifying agent in a 90-day accumulation unit. These materials were then placed in roll-off containers and staged on-site until approved for disposal. Once excavation activities were completed, the underground structures were backfilled and capped. Additional project activities included site clearing, bank stabilization and restoration, and revegetation.

Former MGP Site Remediation Springfield, Illinois



ERM is performing complex remediation at a former MGP site located in Springfield, Illinois.

The site is two blocks north of the state capital building, and surrounded by other

operating businesses in the downtown area. Following requirements of the Illinois EPA's Site Remediation Program, ERM conducted multiple phases of investigation, including the use of test pits to locate buried MGP structures, direct push technology (DPT) and hollow-stem auger borings in shallow glacial sediments, and core drilling of the underlying bedrock to determine the magnitude and extent

of residual coal tar wastes that underlie parking lots, city streets, and adjacent buildings. Unique to this project is the fact that all investigative work had to be performed at night so that local businesses and governmental agencies were not disrupted during normal hours of operation. Following building demolition, remediation was initiated at the site under a sprung structure which includes shoring operations, excavation and removal of coal tar wastes, backfilling and site restoration.

Former MGP Site Remediation Keokuk, Iowa

ERM was selected to perform the cleanup of a former MGP



site located in Keokuk, Iowa by a Midwest utility company. At this location, part of a bank and adjacent parking were built over the gas holders and other MGP structures where

residual coal tars were present in the subsurface. ERM served as Construction Manager for the remediation project, which was conducted under a sprung structure in order to control emissions during cleanup because the site was located in the downtown area, and so that work could continue during the winter months. Over a period of six months, several thousand cubic yards of coal tar-impacted materials were excavated and removed from the site, and disposed at an approved landfill. Following backfilling and site restoration, the drive-up area for the bank that had to be removed during remediation was rebuilt, and is in full operation. All work for this multi-million dollar cleanup was performed with oversight and approval by the Iowa Department of Natural Resources.

Former MGP Site Remediation Hoopeston, Illinois



ERM served as Construction Manager for the remediation of coal tar wastes at a former MGP site located in Hoopeston, Illinois. Project work for this Midwest utility company

began with the demolition of a utilities service building located on the site, followed by the construction of a temporary equipment and vehicle storage facility on an adjacent part of the property. In addition, a main sewer line had to be relocated in order to reach underlying waste materials. Excavation began in gas holder areas, and continued across the site for an estimated six months until all of the source materials were excavated, removed, and transported off site for disposal at an approved landfill. Once coal tar residuals have been removed, the site will be restored and used as part of the utility company's local service center. This site is enrolled in the Illinois EPA's Site Remediation Program with the goal of obtaining a No Further Remediation letter.

Former MGP Site Taylorville, Illinois

ERM personnel performed a detailed site characterization and remedial design at the former MGP site in Taylorville, Illinois. Based on the characterization activities, MGP-related impacts were identified in soil and groundwater both on and off the site. Removal of MGP residuals and impacted soil on and off the site was initiated in January of 1987. The site was listed on the National Priorities List (NPL) in 1990 based on its "score" via the USEPA's Hazard Ranking System.

Groundwater flow and contaminant transport modeling was conducted by ERM personnel to assess the impact of soil removal activities, assess groundwater recovery scenarios, determine the movement of contaminants in the subsurface, and to optimize the location of proposed recovery wells. The groundwater flow model indicated that a pumping rate of

200 to 500 gallons per minute would be needed to contain and recover impacted groundwater on the site.

Based on the results of the modeling, a remediation system was designed to recover and treat impacted groundwater. The fully-automated remediation system consists of two 10 foot diameter carbon units, chemical adjustments to prevent precipitation of metals and scale in the carbon units, and bag filters for removal of particulates. ERM personnel provided design flow rates and construction specifications of the extraction wells. Based on the modeling conducted by ERM personnel, a consideration of the design was to provide groundwater extraction without dewatering a near by small residential lake located immediately downgradient of the extraction system. The system was design to allow the treated water to be diverted to the lake, preventing dewatering of the lake as well as gaining the endorsement of area residents.

The project is ongoing, and has included many different activities including litigation support, domestic well sampling, construction of a community water supply to replace domestic wells, risk assessment, biota sampling, sediment sampling, air monitoring, and community relations. ERM is currently conducting quarterly monitoring of groundwater quality on the site.

MGP Program I Multiple Clients and Sites

ERM personnel were instrumental in developing MGP programs that provided services to multiple utility clients throughout the Midwest. The program approach to MGP management emphasized that the objective of site characterization is the closure endpoint. The site was not characterized for the sake of meeting minimal requirements, but characterize for the purpose of obtaining information applicable to site closure. The program's investigative and remedial design strategies focused on site closure as the goal. This approach not only streamlined the overall project schedule it ensured that the project focus remained on the goal of closure, rather than allowing the project to falter on a specific task.

This approach was possible because of our in-house ability to self-perform virtually all aspects of a project. The program team consisted of professional geologist, engineers, and remediation experts. Field services were provided by remedial project managers, site superintendent, equipment operators and technicians.

Having “In-House” remediation resources allowed program personnel to identify and resolve potential constructability, feasibility, and cost issues during remedial design and overall project scheme. Unlike commonly utilized “teaming” arrangements or “construction management” scenarios in which a “give and take” approach is required between the teaming partners so that both parties benefit from the arrangement, ERM personnel developed an approach that could focus on the project, its needs, and Client’s goals.

Some key highlights of the program included:

- Managing site closure using risk-based evaluation techniques;
- “Turn-Key” capability, which allowed us to minimize our efforts and streamline the process from site characterization to remedial design to remediation;
- Remediation projects were conducted within sprung structures at sites in Illinois and Missouri;
- Remediation and restoration of creek beds and banks at sites in Illinois and Missouri; and
- Dedicated staff of technical and construction professionals.

MGP Site Remediation Sioux City, Iowa



ERM personnel directed the design and implementation of soil remedial actions related to a former MGP site in Sioux City, Iowa. The project work scope include the excavation, on-site

conditioning, off-site transportation and thermal treatment of soils, and restoration of the utility site using the thermally treated soils and import materials. Approximately 45,000 tons of impacted soils were excavated and thermally treated on this project. A unique feature of this project included providing an engineering design to allow the excavation of site soils within an approximately 70 foot diameter holder to over 20 feet below grade. This project was completed on a fast track restoration schedule, with completion ahead of schedule and under budget.

MGP Program Management 24 Sites, Illinois

From 1996 to 2003, ERM personnel in conjunction with a client developed a turn-key teaming arrangement to manage potential risks at AmerenIP’s 24 former manufactured gas plants (MGP) in southern Illinois. The concept of this program was to minimize up-front investigative activities, remove the source of potential contamination, and use Illinois’s Tiered Approach to Cleanup Objective (TACO) to evaluate and minimize potential risk to human health and the environment. The client is responsible for community relations and agency interactions. ERM personnel work as an extension of the client and were responsible for technical, engineering, and remedial aspects of the program. ERM personnel structured this program into three components: Pre-Interim Remedial Measures (Pre-IRM), Interim Remedial Measures (IRM), and Post-Interim Remedial Measures (Post-IRM).

Pre-Interim Remedial Measures (Pre-IRM)

The Pre-IRM activities included the development of the site history, evaluation of existing data, performance of preliminary investigative activities, development of remedial approaches, preparation of IRM and air monitoring work plans (includes site specific air modeling) and IRM budgets.

Interim Remedial Measures (IRM)

The IRM activities include the removal, rendering, and disposal of source material. Included in the IRM activities are the excavation and disposal of non-hazardous special waste, dewatering and treatment of liquids, rendering source material using blending materials, material handling (in some instances screening to meet size requirements), backfill, and site restoration. Disposal includes landfills and co-burning facility (burning of the source materials with coal in a utility boiler). As part of the IRM activities perimeter air monitoring and sampling was performed, field activities were documented, and following completion of the field activities, a project completion report was compiled.

Post-Interim Remedial Measures (Post-IRM)

The Post-IRM activities include developing an approach that minimized potential risks to human health and the environment as defined by the Illinois' TACO program. At a minimum, this includes preparation of the Site Investigation Report (SIR), Remedial Objectives Report (ROR), and Remedial Action Plan (RAP).

Some key highlights of the program included:

- Program budgets and schedules;
- Dedicated Team responsible for technical and construction performance;
- Ability to rapidly respond to changes in program priorities;
- Construction Activities were directed and self-performed;
- Coordination of construction activities with air perimeter monitoring activities;

- Source Removal and on-site soil stabilization at 13 from 1996 to 2002;
- Conducting site investigations in accordance the Illinois Environmental Protection Agency (IEPA) Site Restoration Program (SRP) utilizing TACO;
- Preparation of the SIR; ROR; and RAP;
- establishing a cost database used for benchmarking program costs;
- Periodic preparation and updating of cost projections for the closure for the 24 MGP sites.

Former MGP Site

CERCLA Site, Dubuque, Iowa

ERM personnel were responsible for the performance of the excavation, conditioning, and treatment of PAH contaminated soil on-site, as well as the design, installation, and operation of a full scale ozone injection system for groundwater treatment. The design of the ozone system included performance of pilot testing, followed by a fast track design build schedule (providing only 90 days from start to operation). The ozone sparge system was an application of an innovative technology to provide in-situ treatment of PAH impacts associated with DNAPL, dissolved phase, and adsorbed phase contaminants within a semi-confined aquifer. The treatment system was designed, constructed, and started on a 90-day fast track schedule to meet client and USEPA deadlines.

The system was installed within the EPA schedule and client budget to achieve the EPA milestone.

Former MGP Site Waterloo, Iowa



ERM personnel were responsible for the excavation, conditioning, and treatment of PAH-impacted soils encountered on-site. The work scope included conducting the site

assessment, directing an initial screening of remedial alternatives, and developing construction specifications and engineering design plans for treating soil and groundwater associated with the site excavation. Construction activities included conducting test trenching, pilot testing, and subsequent series of excavations. Approximately 38,000 tons of excavated material was processed for final treatment via co-burning in a utility boiler.

Former MGP Site Confidential Client, Gloversville, New York



ERM personnel provided technical direction and support for the implementation of soil remedial actions related to a former MGP site in New York State. The work scope

included performance of all excavation and stabilization activities within a temporary structure, off-site thermal treatment, treatment options evaluation, and off-site disposal.

Former Manufactured Gas Plant Sites Central Illinois

ERM personnel were involved with nine (9) MGP sites in Illinois. As part of these activities, ERM personnel visited each of the sites to conduct Phase 1 assessments. At each site, soil borings were conducted to determine if the subsurface portion of former structures were present and, if so, whether MGP residuals may be present. Soil borings were also completed on the outside of structures encountered to assess the possible extent of MGP impacts, if present. Information

on local hydrogeology, migration pathways, and potential receptors were also determined during the investigations. Data was input to the U.S. Air Force Hazard Assessment Rating Methodology (HARM) model to help CIPS prioritize possible risk associated with each site. Based on the results of the investigations, CIPS was able to establish internal criteria for investigation and remediation of the sites.

Former MGP Sites Confidential Client, 29 utility sites in Iowa, Michigan, Kansas, and Missouri

ERM staff performed a review of available Phase I and Phase II investigation data and developed a ranking of the 29 former MGP sites for potential risk or liability to the client. The ranking included the development of work scopes for each site for future investigation or remedial action, and development of related costs. In addition, the feasibility of remedial actions for given sites were reviewed and applied to develop a risk based ranking for each site and associated estimated costs. The work activities included ranking, work scope development, investigation and remedial cost estimating, and schedule development for this fast track acquisition.

Propane Gas Storage Facility Laclede Gas Company, St. Louis, Missouri



From 2001 thru 2004, ERM performed annual ground water monitoring at the seven gas cavern monitoring wells for propane in accordance with the standard conditions of the

facility's National Pollution Discharge Elimination System (NPDES) permit issued by the Missouri DNR. ERM also prepared a report of the sampling activities for use by Laclede Gas Company in their annual submittal to the Missouri DNR verifying compliance with their NPDES permit. In 2003, in conjunction with these activities, ERM also performed a well headspace sampling event using Summa canisters to collect air samples for laboratory

analysis, to determine if propane was present in the headspace of the seven cavern monitoring wells above the static water surface.

Former MGP Sites

Program Management 20 sites Iowa and Illinois

ERM personnel provided a broad range of environmental services to support a Midwest utility company. This MGP program targeted the investigation, restoration, and closure of 20 former MGP sites in Iowa and Illinois. The services provided included generating compliance documents, conducting site investigations, evaluating remedial options, operating and maintaining in-situ groundwater treatment systems, sampling soil and groundwater, developing work plans, and implementing remedial actions for soil and groundwater.

Support to this client program includes evaluating liabilities, ranking sites, and optimizing their environmental program with an emphasis toward obtaining site closures for both CERCLA and State Lead project sites.

Investigations

The typical investigation for this client included a historic site survey and data search, title search, door-to-door receptor survey of adjacent property owners, summary of historic investigation data, collection of current environmental data, and comparison to compliance guidelines. The activities performed include compiling investigation work plans (including Quality Assurance Project Plans, Sampling and Analysis Plans, Field Sampling Plans, and Health and Safety Plans), preparing compliance documents, meeting with regulatory agencies and company representatives, installing monitoring wells, collecting soil and groundwater samples, performing hydrogeologic tests, and analyzing site investigation data.

Following the investigation, work plans were prepared that defined all elements of the excavation activities, including site control, permitting, site preparation, demolition, transportation and disposal, backfill, and reporting. Following approval of the work plan, the construction phase of the activities was implemented.

Studies and Designs



Work activities included providing support to this client in the performance of bench-scale and pilot-scale treatability testing to evaluate remedial options for ex-situ and in-situ remedial alternatives for soil

and groundwater treatment at multiple project sites. Our staff has participated in the design and implementation of soil remedial options for this client utilizing excavation, off-site thermal treatment, chemical thermal treatment, co-burning at power plant boilers, and in-situ oxidation. Remedial options designed and implemented for groundwater treatment have included extraction, DNAPL and LNAPL recovery, in situ treatment utilizing air sparge and soil vapor extraction, and in-situ oxidation via ozone sparging.

In addition to the design and development of remedial options, our staff have directed field activities at numerous soil removal actions at numerous sites, conducted field pilot scale testing, installed in situ treatment systems, including drilling, well and subsurface infrastructure installation, equipment installation, and control system setup. Activities have included developing bid specifications, supporting regulatory and public interface, providing oversight and management of construction activities, and generating removal action summary reports for regulatory submittal.

Former Manufactured Gas Plant Sites

Confidential Midwest Utility, Illinois



ERM personnel were involved in the late 1980s with approximately 30 MGP sites in Illinois formerly operated by a utility and their predecessors. As part of these activities, ERM

personnel visited each of the sites to conduct Phase 1 assessments. The goals of these activities were to determine if indications of existing MGP structures or MGP impacts were present and to help our client prioritize possible investigation and remediation. Limited subsurface investigations were conducted at a number of the sites based on the results of the Phase 1 assessments.

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