REPORT

SECOND BIANNUAL GROUNDWATER MONITORING REPORT (FORM 1216)

October 2014 Event

Lovington 66
PSTB Facility #1489
503 S. Main Street
Lovington, New Mexico

Submitted To: NMED-PSTB
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

On Behalf of: Jack Walstad Oil Company
c/o Robert Murrell
2317 Tuttington Circle
Oklahoma City, OK 73170

Submitted By: Golder Associates Inc.
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1 Copy – Jack Walstad Oil Company
2 Copies – Golder Associates Inc.

October 23, 2014

130-2645

Golder Associates

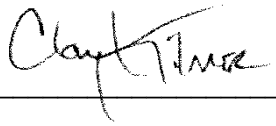
COVER PAGE

Form 1216
First Biannual Groundwater Monitoring Report

Site:	Lovington 66
Responsible Party:	Jack Walstad Oil Company Inc., Robert C. Murrell
Responsible Party Mailing Address:	2317 Tuttington Circle Oklahoma City, OK 73170
Facility ID:	1489
Release ID:	1182
Site Address:	424 S. Main St., Lovington, NM
Author/Consulting Company:	Golder Associates Inc.
Date of Report:	October 23, 2014
Date of Confirmation of Release:	December 5, 1991

STATEMENT OF FAMILIARITY

I, the undersigned, am personally familiar with the information submitted in this report and the attached documents and attest that it is complete and true to the best of my knowledge.

Signature:  Date: October 23, 2014

Name: Clay Kilmer
Affiliation: Golder Associates Inc.
Title: Project Manager

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1.0 INTRODUCTION

On behalf of Jack Walstad Oil Company, Golder Associates Inc. (Golder) has completed the second biannual groundwater monitoring event at the former Lovington 66 site. The monitoring event was completed in accordance with the *Work Plan for Semi-Annual Monitoring and Quarterly Free Product Recovery, Lovington 66 Site (LUST ID1182), Lovington, New Mexico* dated October 24, 2013. This work plan satisfies the requirements stated in the New Mexico Administrative Code, Title 20, Chapter 5, Section 12 and the New Mexico Environment Department (NMED) Petroleum Storage Tank Bureau (PSTB) Guidelines for Corrective Action (GCA). The work plan was approved by the NMED PSTB on November 13, 2013 under work plan identification number (WPID #) 16915. This is the second deliverable under WPID #16915, and is identified as deliverable ID 16915-2.

The former Lovington 66 Site is located at 424 South Main Street, Lovington, New Mexico (**Figure 1**). This site is bounded by Highway 83/Avenue D on the south, and Main Street on the east. Avenue C is north of the site, and west of the site is commercial property. Southeast of the site is an Allsup's convenience store and self-service gasoline station (Allsup's #109), which is also a leaking underground storage tank site. A self-service gasoline station is located south of the site. The original Lovington 66 building has been demolished, and presently a McDonald's restaurant is located on the property. The former Lovington 66 was located on the southern portion of the property that now is the parking lot for McDonald's. The Lovington 66 dissolved phase plume has migrated southeast across the intersection of Main and Avenue D and is commingled with the Allsup's #109 site dissolved phase plume.

On October 7, 2014 fluid levels were measured in 17 Lovington 66 monitoring wells (W-1, W-2, W-3, W-5, W-7, W-8, W-9, W-11, W-12, W-13, W-14, W-15, W-16, W-18, W-19, W-20, and W-21), and in 1 well on the Allsup's #109 site (MW-1). Groundwater samples were collected from 9 Lovington 66 monitoring wells (W-5, W-8, W-9, W-11, W-14, W-16, W-19, W-20, and W-21) and analyzed for volatile organic compounds (VOCs), including benzene, toluene, ethylbenzene, and xylenes (BTEX), ethylene dichloride (EDC), methyl tertiary butyl ether (MTBE), and total naphthalenes by Environmental Protection Agency (EPA) Method 8260. In addition, pH, specific conductance, dissolved oxygen (DO), and temperature were measured in the field. The following sections provide a detailed summary of the results of the second biannual monitoring event.

2.0 ACTIVITIES PERFORMED DURING THIS PERIOD

This section provides a brief description of previous corrective action activities conducted at the site, and monitoring activities performed during this monitoring period.

2.1 Brief Description of Remediation System and Date Installed

A remediation system has not been installed at this site. Previous corrective action activities that have occurred at the site include the following:

- July 1991 – AEI Tank, Inc. (AEI) conducted a site assessment that included seven soil borings advanced within the underground storage tank (UST) backfill or UST perimeter, and five borings in or near product pipe trenches. Hydrocarbon contamination was observed.
- November 1991 – AEI removed five USTs that contained diesel, unleaded fuels, and used oil, as well as the associated product piping and fuel dispensers. Hydrocarbon contamination was observed in the location of the dispensers and the location of the diesel tank. It was determined that a release likely occurred from overfilling the USTs and from the dispensers and product lines (a large section of product piping had been replaced).
- November and December 1991 – AEI excavated approximately 600 cubic yards of contaminated soil from product line trenches, dispenser islands and tank excavations.
- December 1991 – AEI attempted to delineate the vertical extent of contamination by installing one soil boring. The location of this soil boring was never documented. During the drilling of the boring auger refusal was encountered at 40 feet below ground surface (bgs).
- February 1992 – AEI installed one groundwater monitoring well. Groundwater sample results indicated that groundwater contamination was present above New Mexico Water Quality Control Commission (NMWQCC) standards.
- March 1992 – AEI installed two additional monitor wells to determine the extent of dissolved phase hydrocarbon contamination. Both wells had dissolved phase hydrocarbon concentrations well above NMWQCC standards.
- June 1992 – Billings & Associates, Inc (BAI) completed an Interim Hydrogeologic Investigation Report (On-site). During this investigation six soil borings (B-4 through B-9) were advanced at the site to a depth of 40 feet bgs. Heated headspace measurements above action levels were present in all borings except B-8. Non-Aqueous Phase Liquid (NAPL) was present in the three monitor wells installed by AEI. Three additional monitor wells W-4, W-5, and W-6 were installed. The three new wells exceeded NMWQCC standards.
- September 1993 – BAI completed a 2nd Interim Hydrogeologic Investigation Report. During this investigation free product recovery efforts commenced using BAI's Product Recovery Filter system. In addition six new monitor wells (W-7 through W-12) and vertical extent well V-1, were installed.
- June 1993 – BAI submitted the 3rd Interim Hydrogeologic Investigation Report. Five wells (W-13 through W-17) were installed to delineate the dissolved phase plume. NAPL was present in vertical extent well V-1, which Billings attributed to leaking well casing.
- August 2006 – Golder sampled the Lovington 66 wells as part of an investigation conducted at the Allsup's #109 site located downgradient from the Lovington 66 site.

- November 2007 – Golder completed a Continued Secondary Investigation in which three downgradient wells (W-19, W-20, and W-21) were installed and a NAPL bail down test was completed on wells W-2 and W-3. The downgradient extent of contamination was delineated.
- August 2008 – Golder completed four quarters of groundwater monitoring at the Lovington 66 site.
- February 2009 – Golder completed the first biannual monitoring event and associated quarterly product recovery from wells W-1, W-2, W-3, and V-1. The site data for the First Biannual Groundwater Monitoring Report was completed in January, 2009.
- August 2009 – Golder completed the second biannual monitoring event and associated quarterly product recovery from wells W-1, W-2 and W-3. The site data for the second Biannual Groundwater Monitoring Report was completed in July, 2009.
- February 2014 – Golder completed the first biannual monitoring event and associated quarterly product recovery from wells W-1, W-2, W-3, and V-1. The site data for the First Biannual Groundwater Monitoring Report was completed in January 2014.
- October 2014 – Golder completed the second biannual monitoring event and associated quarterly product recovery from wells W-1, W-2 and W-3. The site data for the second Biannual Groundwater Monitoring Report was completed in October 2014.

2.2 Description of Activities Performed to Keep System Operating Properly

No active remediation activities have been completed at the site.

2.3 Monitoring Activities Performed

2.3.1 NAPL Gauging, Recovery and Disposal

NAPL remains in three of the Lovington 66 monitor wells (W-1, W-2, and W-3) and was also present in well V-1 up until this well was decommissioned in September 2008. Golder subcontracted CMB Environmental (CMB) to gauge NAPL and to hand bail NAPL from wells W-1, W-2 and W-3 on a quarterly basis as part of the semi-annual monitoring and quarterly free product recovery project scope. The first quarterly NAPL bailing event was conducted as part of the first biannual groundwater monitoring event. **Table 1** contains a summary of the NAPL thicknesses measured in each well before and after bailing during the bailing events conducted in 2008 and 2009, February 2014, as well as the current event conducted October 15, 2014. A total of approximately 17.5 gallons of NAPL was recovered from the wells during the combined 2008 and 2009 events. Approximately 28 gallons of NAPL were recovered from wells W-1, W-2 and W-3 during the NAPL recovery event conducted on February 12, 2014. During the October 15, 2014 event, approximately 57 gallons of NAPL were recovered. The NAPL and highly contaminated groundwater that were recovered during NAPL bailing at the site on October 15, 2014 were transported to the Gandy Marley disposal facility in Roswell; a copy of the documentation of disposal is included in **Appendix A.**

Cumulative water level and NAPL thickness data for the monitoring wells in the Lovington 66 site network, as well as the Allsup's No. 109 site network are included in **Table 2**. Hydrographs showing water levels and NAPL thickness trends in selected wells are included in **Appendix B**.

2.3.2 Groundwater Gauging and Sampling Activities

The second biannual groundwater monitoring event under WPID # 16915-2 was conducted on October 7, 2014. Prior to collecting groundwater samples, fluid levels in all existing Lovington 66 wells (except W-10), and in the Allsup's #109 well MW-1 were measured with an electronic water level meter or interface probe. Well W-10 is located in the middle of Main Street and it was determined that it was unsafe to measure fluid levels in this well. Due to major pavement rework at the Allsup's #109 site, wells MW-2 and MW-3 on that site could not be measured. Well MW-2 was determined to have been destroyed; MW-3 was found to be intact, but the vault's bolts had been occluded with new concrete and the well could not be entered.

Table 2 provides a summary of the groundwater level and NAPL measurements collected from the monitoring wells. A potentiometric surface map was prepared using the collected data and is included in **Figure 2**. Hydrographs for selected site monitor wells are provided in **Appendix B**.

Nine Lovington 66 monitoring wells (W-5, W-8, W-9, W-11, W-14, W-16, W-19, W-20, and W-21) were purged and sampled with disposable polyethylene bailers following the measurement of fluid levels in the wells. The wells were sampled from least to most contaminated where possible to minimize cross-contamination. All equipment was decontaminated between wells with an Alconox™ solution to prevent cross-contamination. Purge water was ground discharged in accordance with Section 1.7.2 of the GCA. Sampling was accomplished by carefully pouring groundwater from new disposable bailers into the sample containers.

Golder's contractor, CMB collected groundwater samples from site wells using bailers. CMB measured field parameters of produced water during purging and prior to sampling. The multiparameter meter was calibrated and/or checked against standards in accordance with manufacturer's specifications prior to use. Specific conductance, DO, pH, and temperature were recorded on monitoring well sampling field forms. Monitoring well sampling field forms are provided in **Appendix C**.

Sample containers, preservatives, analytical methods, and holding times employed for this project are specified in **Table 3**. Samples for VOC analysis were collected such that no headspace air existed in the sample vial. All samples were preserved in accordance with method requirements, then immediately cooled to 4 °C with ice and delivered under chain-of-custody to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico. The analytical laboratory report is provided in **Appendix D**.

2.3.3 Groundwater Sampling Results

The laboratory analytical results for the second biannual monitoring event are summarized in **Table 4**. The following are observations from this data:

- The dissolved phase hydrocarbon concentrations were at or above NMWQCC standards in four of the nine monitor wells sampled.
- The highest benzene concentration observed was 31,000 µg/L in monitor well W-14.
- Well W-8 had BTEX, MTBE, EDC, and total naphthalenes at concentrations above standards.
- Well W-9 had benzene, ethyl-benzene, xylenes, MTBE, EDC, and total naphthalenes at concentrations above standards.
- Well W-11 had benzene, ethyl-benzene, MTBE, and EDC at concentrations above standard.
- Well W-14 had BTEX, MTBE, and total naphthalenes at concentrations above standards.
- Well W-19 had EDC at a concentration above standard.
- Wells W-5, W-16, W-20 and W-21 had non detected concentrations, or concentrations below NMWQCC standards for all compounds analyzed.

2.4 System Performance and Effectiveness

No system has been installed at the site.

2.5 Statement Verifying Containment of Release

The Lovington 66 dissolved phase plume has migrated southeast across the intersection of Avenue D and Main Street to Avenue E southeast of the site. The NAPL plume appears to have migrated beneath the intersection of Avenue D and Main Street with dissolved phase concentrations observed in well W-14 near NAPL levels. The downgradient extent of the dissolved phase plume appears to be upgradient of wells W-20 and W-21. Cumulative dissolved VOC data from downgradient wells W-9 and W-19 indicate that the dissolved phase plume is mobile to the southeast.

3.0 SUMMARY AND CONCLUSIONS

This section summarizes the results of the second biannual monitoring event and includes a brief discussion of water level and contaminant concentration trends at the Lovington 66 site. Additionally, recommendations for future site activities are provided in this section.

3.1 Discussion of any Trends or Changes Noted in Analytical Results or Site Conditions

Depth to shallow groundwater at the site is approximately 57 feet. Groundwater and NAPL level measurements made during the October 7, 2014 site visit, as well as cumulative groundwater gauging data for the period of record at the site, are included in **Table 2**. These measurements were used to prepare hydrographs and NAPL thickness histories for selected wells which are included in **Appendix B**. The hydrographs indicate that groundwater levels rose as much as 3 feet between summer 1992 when wells were initially installed and approximately the end of 2007. Since early 2008, groundwater levels have declined more than 3.5 feet at the site.

Water level elevation measurements collected during the October 7, 2014 site visit were used to prepare the water table gradient map included in **Figure 2**. The overall direction of groundwater flow is southeasterly and the hydraulic gradient is approximately 0.0047 foot per foot. This is consistent with earlier assessments of groundwater gradient magnitude and direction at the site.

NAPL has consistently been detected in wells W-1, W-2 and W-3 throughout the period of record; NAPL has not been detected in any other Walstad site wells, or in any of the Allsup's site wells. NAPL thicknesses measured in wells W-1, W-2 and W-3 have varied from less than one inch in July 2009 to as much as 7.00 feet measured during the January 21, 2014 site visit. The NAPL thicknesses shown on the hydrographs in **Appendix B**. The NAPL thickness increased substantially from July 2009 to January 2014, approximately 3 feet to 7 feet. The October 2014 monitoring shows that NAPL thickness increased by almost 4 feet in W-1 but remained approximately the same in W-2 and W-3. Low water levels are correlated with greatest NAPL thickness; high water levels correlate to thin NAPL accumulation.

The distribution of dissolved phase organic contaminants determined from analytical data from samples collected on October 7, 2014 is shown on the map in **Figure 3**. Dissolved concentration historical trends are shown in the plots included in **Appendix E**. The dissolved phase benzene concentrations in wells W-8 and W-14 were approximately 2-4 orders of magnitude greater than the NMWQCC standard of 10 μg/L. The distribution of benzene in the groundwater is shown on **Figure 4**. Dissolved fuel concentrations are generally increasing within the downgradient plume in the areas of wells W-14, W-9 and W-19.

A significant spike in the concentration of benzene was detected in samples collected from side-gradient well W-16 between August 2006 and January 2009. A similarly-timed spike in MTBE concentration was noted in samples collected from side-gradient well W-11. These spikes may be associated with mobilization of adsorbed contaminants occurring during the period when groundwater levels rose and peaked during approximately the same time frame. MTBE concentrations have remained relatively unchanged since the January 2014 monitoring. Distribution of MTBE in groundwater is shown on **Figure 5**. EDC concentrations from the October 2014 monitoring remain relatively unchanged from the October 2014 monitoring event is shown on **Figure 6**. Additionally, the monitored natural attenuation (MNA) parameters of temperature and DO are shown on **Figure 7**.

3.2 Ongoing Assessment of Remediation System

No active remediation system has been installed at the site.

3.3 Recommendations

Based on the results of the first biannual groundwater monitoring event, we conclude that the adsorbed, separate and dissolved phase fuel mass in place at the site has not changed significantly since the site was placed into regulatory enforcement in 1991. Separate phase fuel appears to be relatively stable; however, dissolved phase contaminants are mobile downgradient to the southeast and toward a new municipal well that was installed in 2011 and is located approximately 2,800 feet downgradient of the site. We recommend that the site be considered for investigation of feasibility for implementation of active remediation. We also recommend that biannual groundwater monitoring and quarterly NAPL recovery (via hand bailing) continue at the site.

TABLES

Table 1: Summary of NAPL Recovery
Lovington 66, Lovington, New Mexico

Monitor Well	Date Recovered	Prior to Bailing			Post Bailing			Total NAPL Recovered[1]
		Depth To NAPL (feet)	Depth to Water (feet)	NAPL Thickness (feet)	Depth to NAPL (feet)	Depth to Water (feet)	NAPL Thickness (feet)	
W-1	3-Sep-08	54.69	58.52	3.83	-	57.22	0.00	6.00
	27-Jan-09	54.69	58.22	3.53	-	56.25	0.00	6.00
	12-May-09	54.85	57.78	2.93	-	56.62	0.00	1.90
	10-Jul-09	55.33	56.99	1.66	-	56.69	0.00	1.08
	12-Feb-14	57.30	60.08	2.78	-	57.88	0.00	8.50
	9-Jun-14	57.72	64.31	6.59	-	59.85	0.00	4.18
	15-Oct-14	57.91	64.55	6.64	-	60.20	0.00	20.05
W-2	3-Sep-08	54.50	54.94	0.44	-	55.52	0.00	0.25
	27-Jan-09	54.48	54.81	0.33	-	55.55	0.00	0.25
	12-May-09	54.50	54.83	0.33	-	55.64	0.00	0.21
	10-Jul-09	54.68	54.96	0.28	-	55.50	0.00	0.18
	12-Feb-14	56.25	63.26	7.01	-	58.60	0.00	9.75
	9-Jun-14	56.67	63.64	6.97	-	58.87	0.00	9.15
	15-Oct-14	56.87	63.85	6.98	-	59.42	0.00	15.85
W-3	3-Sep-08	54.60	54.81	0.21	-	55.57	0.00	0.25
	27-Jan-09	54.56	54.69	0.13	-	55.52	0.00	0.25
	12-May-09	54.58	54.68	0.10	-	55.54	0.00	0.07
	10-Jul-09	54.78	54.85	0.07	-	55.64	0.00	0.05
	12-Feb-14	56.36	63.03	6.67	-	58.05	0.00	9.75
	9-Jun-14	56.78	63.43	6.65	-	59.07	0.00	9.30
	15-Oct-14	56.96	63.70	6.74	-	60.02	0.00	21.10
V-1	3-Sep-08	53.92	58.45	4.53	-	55.20	0.00	1.00
Cumulative Total NAPL Recovered at the Site[1]								**125.11**

Notes:

Data by Clayton M. Barnhill

NAPL - Non Aqueous Phase Liquid

[1] Measured in gallons - quantity is estimated.

All NAPL recovered is temporarily stored in a 55 gallon drum on-site.

2nd Biannual NAPL Bailing Event

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Table 2: Summary of Fluid Gauging Data
Lovington 66, Lovington, New Mexico

Monitor Well	Date Measured	Northing[1]	Easting[1]	Casing Elevation[2]	Depth to Product[3]	Product Thickness[4]	Depth to Water[3]	Groundwater Elevation[2]
Allsup's # 109								
MW-1	6-Aug-2005	708392.73	843467.49	3909.74			55.07	3854.67
	8-Aug-2006						54.36	3855.38
	7-Nov-2007						53.93	3855.81
	12-May-2008						54.36	3855.38
	7-Aug-2008						54.86	3854.88
	28-Jan-2009						54.91	3854.83
	10-Jul-2009						55.12	3854.62
	12-Feb-2014						58.47	3851.27
	7-Oct-2014						58.86	3850.88
MW-2	6-Aug-2005	708398.53	843584.18	3910.05			55.74	3854.31
	8-Aug-2006						55.04	3855.01
	7-Nov-2007						54.58	3855.47
	12-May-2008						55.05	3855.00
	7-Aug-2008						55.54	3854.51
	28-Jan-2009						55.56	3854.49
	10-Jul-2009						55.79	3854.26
	12-Feb-2014	Well Destroyed -- covered by new cement (parking lot)						
MW-3	6-Aug-2005	708484.61	843518.13	3910.14			55.33	3854.81
	8-Aug-2006						54.65	3855.49
	7-Nov-2007						54.22	3855.92
	13-May-2008						54.76	3855.38
	7-Aug-2008						55.15	3854.99
	28-Jan-2009						55.16	3854.98
	10-Jul-2009						55.42	3854.72
	12-Feb-2014	Bolts on vault are cemented in place						
Walstad 66								
V-1	29-Aug-1992	708614.74	843348.54	99.37			56.68	42.69
	25-May-1993						56.74	42.63
	8-Aug-2006			3910.67	53.32	4.59	57.91	3852.76
	7-Nov-2007				53.01	4.58	57.59	3853.08
	13-Feb-2008				53.01	4.57	57.58	3853.09
	13-May-2008				53.41	4.57	57.98	3852.69
	7-Aug-2008				53.75	4.55	58.30	3852.37
		Well Plugged & Abandoned						

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Table 2: Summary of Fluid Gauging Data
Lovington 66, Lovington, New Mexico

Monitor Well	Date Measured	Northing[1]	Easting[1]	Casing Elevation[2]	Depth to Product[3]	Product Thickness[4]	Depth to Water[3]	Groundwater Elevation[2]
W-1	12-Feb-1992	708649.18	843347.81	3911.33	0.125" of NAPL Present			
	8-Jun-1992				>30" of NAPL Present			
	24-Jun-1992				>30" of NAPL Present			
	24-May-1993				NAPL Present			
	28-Aug-1993				NAPL Present			
	8-Aug-2006				54.23	3.15	57.38	3856.31
	7-Nov-2007				53.91	3.11	57.02	3856.64
	13-Feb-2008				53.89	3.16	57.05	3856.65
	13-May-2008				54.25	3.37	57.62	3856.24
	7-Aug-2008				54.96	3.31	58.27	3855.54
	28-Jan-2009				55.39	0.31	55.70	3855.86
	10-Jul-2009				55.69	0.09	55.78	3855.62
	21-Jan-2014				57.30	2.78	60.08	3853.34
	7-Oct-2014				57.91	6.64	64.55	3851.76
W-2	13-Mar-1992	708625.02	843381.13	3910.19	0.125" of NAPL Present			
	8-Jun-1992				>30" of NAPL Present			
	24-Jun-1992				>30" of NAPL Present			
	28-Aug-1992				NAPL Present			
	24-May-1993				NAPL Present			
	8-Aug-2006				53.21	5.34	58.55	3855.65
	7-Nov-2007				52.88	3.32	56.20	3856.48
	13-Feb-2008				53.57	0.31	53.88	3856.54
	13-May-2008				53.98	0.38	54.36	3856.12
	7-Aug-2008				54.34	0.44	54.78	3855.74
	28-Jan-2009				54.44	0.03	54.47	3855.74
	10-Jul-2009				54.69	0.11	54.8	3855.47
	21-Jan-2014				56.23	7.00	63.23	3852.21
	7-Oct-2014				56.87	6.98	63.85	3851.58
W-3	13-Mar-1992	708597.90	843348.60	3910.29	0.125" of NAPL Present			
	8-Jun-1992				>30" of NAPL Present			
	24-Jun-1992				>30" of NAPL Present			
	28-Aug-1992				NAPL Present			
	24-May-1993				NAPL Present			
	8-Aug-2006				53.30	3.20	56.50	3856.19
	7-Nov-2007				53.01	3.03	56.04	3856.52
	13-Feb-2008				53.65	0.13	53.78	3856.61
	13-May-2008				54.44	0.21	54.65	3855.80
	7-Aug-2008				54.08	0.18	54.26	3856.17
	28-Jan-2009				54.50	0.06	54.56	3855.78
	10-Jul-2009				54.75	0.02	54.77	3855.54
	21-Jan-2014				56.36	6.66	63.02	3852.27
	7-Oct-2014				56.96	6.74	63.70	3851.65
W-4	24-Jun-1992			99.62			57.04	42.58
	28-Aug-1992						56.69	42.93
	25-May-1993						56.48	43.14
	8-Aug-2006	Well Destroyed						

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Table 2: Summary of Fluid Gauging Data
Lovington 66, Lovington, New Mexico

Monitor Well	Date Measured	Northing[1]	Easting[1]	Casing Elevation[2]	Depth to Product[3]	Product Thickness[4]	Depth to Water[3]	Groundwater Elevation[2]
W-5	24-Jun-1992	708759.72	843252.39	100.41			57.59	3854.12
	28-Aug-1992						57.24	3854.47
	26-May-1993						57.02	3854.69
	8-Aug-2006			3911.71			54.88	3856.83
	7-Nov-2007						54.61	3857.10
	13-Feb-2008						54.63	3857.08
	12-May-2008						54.87	3856.84
	7-Aug-2008						55.36	3856.35
	28-Jan-2009						55.36	3856.35
	9-Jul-2009						55.54	3856.17
	21-Jan-2014						58.51	3853.20
	7-Oct-2014						59.24	3852.47
W-6	24-Jun-1992			99.48			56.97	42.51
	28-Aug-1992						56.64	42.84
	26-May-1993						56.49	42.99
	8-Aug-2006	Well Destroyed						
W-7	28-Aug-1992	708911.67	843120.56	100.07			56.29	3854.59
	25-May-1993						55.96	3854.92
	8-Aug-2006			3911.35			53.74	3857.14
	7-Nov-2007						53.48	3857.40
	12-Feb-2008	708910.73	843120.52	3910.88			53.33	3857.55
	12-May-2008						53.55	3857.33
	6-Aug-2008						53.97	3856.91
	28-Jan-2009						54.11	3856.77
	9-Jul-2009						54.23	3856.65
	21-Jan-2014						57.05	3853.83
	7-Oct-2014						57.92	3852.96
W-8	28-Aug-1992	708389.76	843640.62	98.69			57.24	3852.68
	25-May-1993						57.20	3852.72
	8-Aug-2006			3909.92			55.11	3854.81
	7-Nov-2007						54.65	3855.27
	13-Feb-2008						54.79	3855.13
	12-May-2008						55.14	3854.78
	7-Aug-2008						55.64	3854.28
	28-Jan-2009						55.67	3854.25
	9-Jul-2009						55.82	3854.10
	21-Jan-2014						59.33	3850.59
	7-Oct-2014						59.84	3850.08

Table 2: Summary of Fluid Gauging Data
Lovington 66, Lovington, New Mexico

Monitor Well	Date Measured	Northing[1]	Easting[1]	Casing Elevation[2]	Depth to Product[3]	Product Thickness[4]	Depth to Water[3]	Groundwater Elevation[2]
W-9	28-Aug-1992	708267.18	843790.26	97.47			56.76	3851.96
	25-May-1993						56.74	3851.98
	8-Aug-2006			3908.72			54.66	3854.06
	7-Nov-2007						54.12	3854.60
	13-Feb-2008						54.31	3854.41
	12-May-2008						54.68	3854.04
	7-Aug-2008						55.18	3853.54
	28-Jan-2009						55.19	3853.53
	9-Jul-2009						55.35	3853.37
	21-Jan-2014						59.01	3849.71
	7-Oct-2014						59.50	3849.22
W-10	28-Aug-1992	708254.54	843452.92	97.85			56.18	41.67
	26-May-1993						55.80	42.05
	8-Aug-2006			3908.89			53.79	3855.10
	13-Feb-2008	Unable to gauge well due to traffic constraints						
	12-May-2008	Unable to gauge well due to traffic constraints						
	7-Aug-2008	Unable to gauge well due to traffic constraints						
	28-Jan-2009	Unable to gauge well due to traffic constraints						
	9-Jul-2009	Unable to gauge well due to traffic constraints						
	21-Jan-2014	No access to well, well vault broken						
	7-Oct-2014	No access to well, well vault broken						
W-11	28-Aug-1992	708600.95	843650.96	98.66			56.82	3853.14
	26-May-1993						56.85	3853.11
	8-Aug-2006			3909.96			54.70	3855.26
	7-Nov-2007						54.26	3855.70
	13-Feb-2008						54.41	3855.55
	12-May-2008						54.71	3855.25
	6-Aug-2008						55.14	3854.82
	28-Jan-2009						55.26	3854.70
	9-Jul-2009						55.46	3854.50
	21-Jan-2014						58.80	3851.16
	7-Oct-2014						59.41	3850.55
W-12	29-Aug-1992	708435.38	843045.85	99.34			56.28	3854.31
	26-May-1993						55.96	3854.63
	8-Aug-2006			3910.59			53.55	3857.04
	7-Nov-2007						53.72	3856.87
	12-Feb-2008						53.29	3857.30
	12-May-2008						54.05	3856.54
	6-Aug-2008						54.50	3856.09
	28-Jan-2009						54.09	3856.50
	9-Jul-2009						54.23	3856.36
	21-Jan-2014						57.81	3852.78
	7-Oct-2014						58.07	3852.52

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Table 2: Summary of Fluid Gauging Data
Lovington 66, Lovington, New Mexico

Monitor Well	Date Measured	Northing[1]	Easting[1]	Casing Elevation[2]	Depth to Product[3]	Product Thickness[4]	Depth to Water[3]	Groundwater Elevation[2]
W-13	29-Aug-1992	708915.13	843525.37	99.07			56.36	3854.00
	26-May-1993						56.25	3854.11
	8-Aug-2006			3910.36			54.01	3856.35
	7-Nov-2007						53.70	3856.66
	12-Feb-2008						53.80	3856.56
	12-May-2008						54.08	3856.28
	6-Aug-2008						54.50	3855.86
	28-Jan-2009						54.66	3855.70
	9-Jul-2009						54.74	3855.62
	21-Jan-2014						57.87	3852.49
	7-Oct-2014						58.67	3851.69
W-14	26-May-1993	708504.99	843463.76	98.54			56.26	3853.47
	8-Aug-2006			3909.73			54.15	3855.58
	7-Nov-2007						53.72	3856.01
	13-Feb-2008						53.80	3855.93
	13-May-2008						54.24	3855.49
	7-Aug-2008						54.65	3855.08
	28-Jan-2009						54.67	3855.06
	10-Jul-2009						54.90	3854.83
	21-Jan-2014						58.15	3851.58
	7-Oct-2014						58.65	3851.08
W-15	26-May-1993	708195.85	843053.51	98.49			55.40	3854.00
	8-Aug-2006						53.41	3855.99
	7-Nov-2007			3909.71			53.11	3856.29
	12-Feb-2008	708221.99	843030.65	3909.40			53.02	3856.38
	12-May-2008						53.27	3856.13
	6-Aug-2008						53.71	3855.69
	28-Jan-2009						53.82	3855.58
	9-Jul-2009						53.91	3855.49
	21-Jan-2014						57.09	3852.31
	7-Oct-2014						56.53	3852.87
W-16	26-May-1993	708153.28	843364.45	97.44			55.52	3853.15
	8-Aug-2006			3908.67			53.49	3855.18
	7-Nov-2007						53.06	3855.61
	13-Feb-2008						53.20	3855.47
	12-May-2008						53.52	3855.15
	7-Aug-2008						54.03	3854.64
	28-Jan-2009						53.52	3855.15
	9-Jul-2009						54.23	3854.44
	21-Jan-2014						57.61	3851.06
	7-Oct-2014						57.84	3850.83
W-17	26-May-1993			96.94			56.86	40.08
	8-Aug-2006	Well Destroyed						

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Table 2: Summary of Fluid Gauging Data
Lovington 66, Lovington, New Mexico

Monitor Well	Date Measured	Northing[1]	Easting[1]	Casing Elevation[2]	Depth to Product[3]	Product Thickness[4]	Depth to Water[3]	Groundwater Elevation[2]
W-18	26-May-1993	708698.11	843818.96	98.26			56.79	3852.59
	8-Aug-2006						54.60	3854.78
	7-Nov-2007			3909.50			54.19	3855.19
	12-Feb-2008	708697.21	843818.98	3909.38			54.13	3854.54
	12-May-2008						54.65	3854.02
	6-Aug-2008						54.90	3853.77
	28-Jan-2009						55.04	3853.63
	9-Jul-2009						55.14	3853.53
	21-Jan-2014						58.60	3850.07
	7-Oct-2014						59.26	3849.41
W-19	7-Nov-2007	708148.94	843934.18	3908.36			54.23	3854.13
	13-Feb-2008						54.51	3853.85
	12-May-2008						54.88	3853.48
	6-Aug-2008						55.31	3853.05
	28-Jan-2009						55.36	3853.00
	9-Jul-2009						55.48	3852.88
	21-Jan-2014						59.27	3849.09
	7-Oct-2014						59.78	3848.58
W-20	7-Nov-2007	707780.85	844187.25	3907.45			54.29	3853.16
	13-Feb-2008						54.69	3852.76
	12-May-2008						55.09	3852.36
	6-Aug-2008						55.53	3851.92
	28-Jan-2009						55.54	3851.91
	9-Jul-2009						55.60	3851.85
	21-Jan-2014						59.80	3847.65
	7-Oct-2014						60.32	3847.13
W-21	7-Nov-2007	707988.79	843841.61	3908.49			54.19	3854.30
	13-Feb-2008						54.45	3854.04
	12-May-2008						54.81	3853.68
	6-Aug-2008						55.23	3853.26
	28-Jan-2009						55.32	3853.17
	9-Jul-2009						55.39	3853.10
	21-Jan-2014						59.22	3849.27
	7-Oct-2014						59.74	3848.75

Note:
[1] Horizontal control to NM State Plane Coordinates Central NAD83 Grid Coordinates (in feet)
[2] Vertical Control to NAVD88 Datum in feet above mean sea level
[3] Measured in feet below the top of casing at survey point on north side of well
[4] Measured in feet

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Table 3: Summary of Sample Analytical and Quality Control Requirements
Lovington 66, Lovington, New Mexico

Target Analytes	Matrix	Analytical Method	Sample Container	Preservative	Holding Time
VOCs	Water	EPA 8260	3 x 40- mL glass vials	Mercuric Chloride; Cool to 4°C	14 days

Notes:
EPA = U.S. Environmental Protection Agency

Table 4: Summary of Groundwater Sample Results
Volatile Organic Compounds
Lovington 66, Lovington, New Mexico

Monitor Well	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	EDB	EDC	Total Naphthalenes
W-2	13-Mar-92	29,878	28,953	3,874	13,109	5,921	NA	NA	NA
W-3	13-Mar-92	10,493	8,961	1,253	5,320	5,150	NA	NA	NA
W-4	24-Jun-92	200	53	21	40	<5.0	NA	NA	NA
	28-Aug-92	1,400	430	95	300	<2.5	NA	NA	NA
	25-May-93	2,500	980	310	470	<63	NA	NA	NA
W-5	24-Jun-92	470	250	41	290	<10	NA	NA	NA
	28-Aug-92	850	400	58	450	3.3	NA	NA	NA
	9-Aug-06	2.0	<1.0	3.7	<3.0	22	<1.0	<1.0	<2.0
	7-Nov-07	45	8.5	29	15	170	<1.0	<1.0	4.9
	13-Feb-08	26	1.1	24	<1.5	140	<1.0	<1.0	4.5
	12-May-08	16	<1.0	7.6	<1.5	65	<1.0	<1.0	<2.0
	7-Aug-08	5.2	<1.0	3.7	<1.5	39	<1.0	<1.0	<2.0
	28-Jan-09	<1.0	<1.0	<1.0	<1.5	18	<1.0	<1.0	<2.0
	9-Jul-09	<1.0	<1.0	<1.0	<1.5	21	<1.0	<1.0	<2.0
	21-Jan-14	8.5	1.0	2.7	2.5	3.8	<1.0	<1.0	<2.0
	7-Oct-14	8.5	<2.0	<2.0	<3.0	2.5	<2.0	<2.0	<4.0
W-6	24-Jun-92	1,400	1,200	48	500	<25	NA	NA	NA
	28-Aug-92	3,000	2,700	93	860	<2.5	NA	NA	NA
W-7	28-Aug-92	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NA
	25-May-93	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NA
	8-Aug-06	<1.0	<1.0	<1.0	<3.0	<1.5	<1.0	<1.0	<2.0
	7-Nov-07	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
W-8	28-Aug-92	8,000	9,500	690	5,200	<2.5	NA	NA	NA
	25-May-93	12,000	8,300	1,500	8,800	<250	NA	NA	NA
	4-Aug-05	27,000	35,000	3,800	18,000	3,700	1,100	4,300	622
	9-Aug-06	21,000	29,000	2,600	13,000	6,300	<500	3,700	1,100
	7-Nov-07	20,000	27,000	3,200	15,000	5,900	440	4,100	770
	13-Feb-08	27,000	39,000	4,800	16,000	8,600	670	4,000	1,350
	12-May-08	19,000	22,000	1,800	8,000	4,900	250	2,100	400
	7-Aug-08	20,000	24,000	2,400	11,000	8,600	270	2,900	670
	28-Jan-09	19,000	26,000	2,500	11,000	9,800	290	3,000	570
	9-Jul-09	18,000	26,000	2,400	11,000	13,000	230	2,300	500
	21-Jan-14	14,000	8,800	2,300	7,900	25,000	<100	610	610
	7-Oct-14	14,000	7,000	2,400	7,600	28,000	<100	440	590
W-9	28-Aug-92	130	8.2	16	140	<2.5	NA	NA	NA
	25-May-93	100	6.3	2.5	170	<5.0	NA	NA	NA
	4-Aug-05	4,300	180	850	830	<1.0	<0.01	320	28.5
	9-Aug-06	6,700	560	1,200	1,400	<150	<100	650	250
	7-Nov-07	6,500	120	620	450	<10	<10	360	51
	13-Feb-08	7,500	130	910	590	<10	<10	450	129
	12-May-08	3,000	63	800	360	<10	<10	480	228
	7-Aug-08	5,100	<100	830	300	<100	<100	520	<200
	28-Jan-09	4,800	<10	370	380	<10	<10	580	120
	9-Jul-09	6,400	<5	1,100	460	<5	<5	570	139
	21-Jan-14	7,500	<10	1,200	250	100	<10	910	180
	7-Oct-14	8,000	<50	1,200	210	150	<50	960	180

Table 4: Summary of Groundwater Sample Results
Volatile Organic Compounds
Lovington 66, Lovington, New Mexico

Monitor Well	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	EDB	EDC	Total Naphthalenes
W-10*	28-Aug-92	1,100	11.0	120	440	<2.5	NA	NA	NA
	4-Aug-05	940	2.6	930	140	2,400	0.11	48	27.1
	9-Aug-06	420	<1.0	31	<3.0	22	<1.0	12	121
W-11	28-Aug-92	770	13	13	280	<2.5	NA	NA	NA
	9-Aug-06	5.0	<1.0	62	44	88	<1.0	33	<2.0
	7-Nov-07	18	<1.0	38	13	540	<1.0	35	<2.0
	13-Feb-08	3.2	<1.0	41	5.1	540	<1.0	37	<2.0
	12-May-08	3.0	<1.0	31	3.7	740	<1.0	36	<2.0
	6-Aug-08	3.2	<1.0	28	2.5	610	<1.0	38	<2.0
	28-Jan-09	<1.0	<1.0	40	5.7	160	<1.0	44	<2.0
	9-Jul-09	<1.0	<1.0	34	7.2	160	<1.0	44	<2.0
	21-Jan-14	5.4	<1.0	25	1.8	44	<1.0	51	<2.0
	7-Oct-14	90	<5.0	150	<7.5	11	<5.0	57	<10
W-12	29-Aug-92	87	6.1	2.6	180	<2.5	NA	NA	NA
	8-Aug-06	<1.0	<1.0	<1.0	<3.0	<1.5	<1.0	<1.0	<2.0
W-13	29-Aug-92	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NA
	8-Aug-06	<1.0	<1.0	<1.0	<3.0	<1.5	<1.0	<1.0	<2.0
W-14	26-May-93	6,600	4,300	1,200	4,000	<125	NA	NA	NA
	5-Aug-05	27,000	26,000	4,900	9,500	7,600	3.3	120	413
	9-Aug-06	25,000	23,000	4,000	9,500	4,700	<500	<500	1,200
	13-Feb-08	30,000	23,000	4,900	13,000	4,400	<50	210	1,270
	13-May-08	14,000	6,500	2,800	6,300	2,400	<10	170	1,001
	7-Aug-08	26,000	20,000	4,400	11,000	3,700	<100	160	840
	28-Jan-09	24,000	19,000	2,200	8,700	3,200	<100	150	640
	10-Jul-09	26,000	24,000	4,000	11,000	2,600	<50	160	590
	21-Jan-14	28,000	27,000	4,000	12,000	1,700	<100	120	730
	7-Oct-14	31,000	31,000	4,200	11,000	1,600	<200	<200	700
W-15	26-May-93	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NA
	8-Aug-06	<1.0	<1.0	<1.0	<3.0	<1.5	<1.0	<1.0	<2.0
W-16	26-May-93	52	<0.5	7.9	15	<2.5	NA	NA	NA
	8-Aug-06	1.3	14	2.9	<3	<1.5	<1.0	<1.0	<2.0
	7-Nov-07	640	<1.0	22	12	55	<1.0	23	363
	13-Feb-08	630	<1.0	12	8.6	47	<1.0	17	342
	12-May-08	690	<1.0	12	3.6	60	<1.0	21	327
	7-Aug-08	790	<1.0	5.4	<1.5	59	<1.0	17	352
	28-Jan-09	170	<1.0	<1.0	<1.5	39	<1.0	13	120
	9-Jul-09	35	<1.0	1.3	<1.5	11	<1.0	3.8	14.5
	21-Jan-14	<1.0	<1.0	<1.0	<1.5	4.3	<1.0	<1.0	<2.0
	7-Oct-14	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
W-17	26-May-93	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NA
W-18	26-May-93	1.6	1.8	<0.5	2.0	<2.5	NA	NA	NA
	8-Aug-06	<1.0	<1.0	<1.0	<3.0	<1.5	<1.0	<1.0	<2.0

Table 4: Summary of Groundwater Sample Results
Volatile Organic Compounds
Lovington 66, Lovington, New Mexico

Monitor Well	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	EDB	EDC	Total Naphthalenes
W-19	8-Nov-07	4.3	<1.0	<1.0	<1.5	<1.5	<1.0	23	<2.0
	13-Feb-08	2.4	<1.0	<1.0	<1.5	<1.5	<1.0	10	<2.0
	12-May-08	1.6	<1.0	<1.0	<1.5	<1.0	<1.0	9.2	<2.0
	6-Aug-08	2.4	<1.0	<1.0	<1.5	<1.0	<1.0	19	<2.0
	28-Jan-09	3.8	<1.0	<1.0	<1.5	<1.0	<1.0	37	<2.0
	9-Jul-09	3.4	<1.0	<1.0	<1.5	<1.0	<1.0	37	<2.0
	21-Jan-14	4.9	<1.0	<1.0	<1.5	<1.0	<1.0	59	<2.0
	7-Oct-14	6.9	<2.0	<2.0	<3.0	<2.0	<2.0	100	<4.0
W-20	8-Nov-07	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	13-Feb-08	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	12-May-08	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	6-Aug-08	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	28-Jan-09	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	9-Jul-09	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	21-Jan-14	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	7-Oct-14	<2.0	<2.0	<2.0	<3.0	<2.0	<2.0	<2.0	<4.0
W-21	8-Nov-07	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	12-Feb-08	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	12-May-08	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	6-Aug-08	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	28-Jan-09	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	9-Jul-09	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	21-Jan-14	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	7-Oct-14	<2.0	<2.0	<2.0	<3.0	<2.0	<2.0	<2.0	<4.0
V-1	29-Aug-92	250	680	240	810	<2.5	NA	NA	NA
	25-May-93	5,000	14,000	3,000	10,000	600	NA	NA	NA

Notes:
All concentrations in micrograms per liter (parts per billion)
MTBE = Methyl tertiary butyl ether
EDB = Ethylene dibromide
EDC = Ethylene dichloride
NA = Not Analyzed
2nd Semiannual Monitoring Event Data

LEGEND

W-11	LOVINGTON 66 MONITORING WELL
SB-2/MW-2	ALLSUP'S SOIL BORING/MONITORING WELL
SB-4	ALLSUP'S SOIL BORING

0 60 120
SCALE FEET

CLIENT
JACK WALSTAD OIL COMPANY, INC

PROJECT
WALSTAD 66
424 SOUTH MAIN
LOVINGTON, NEW MEXICO

TITLE
SITE MAP

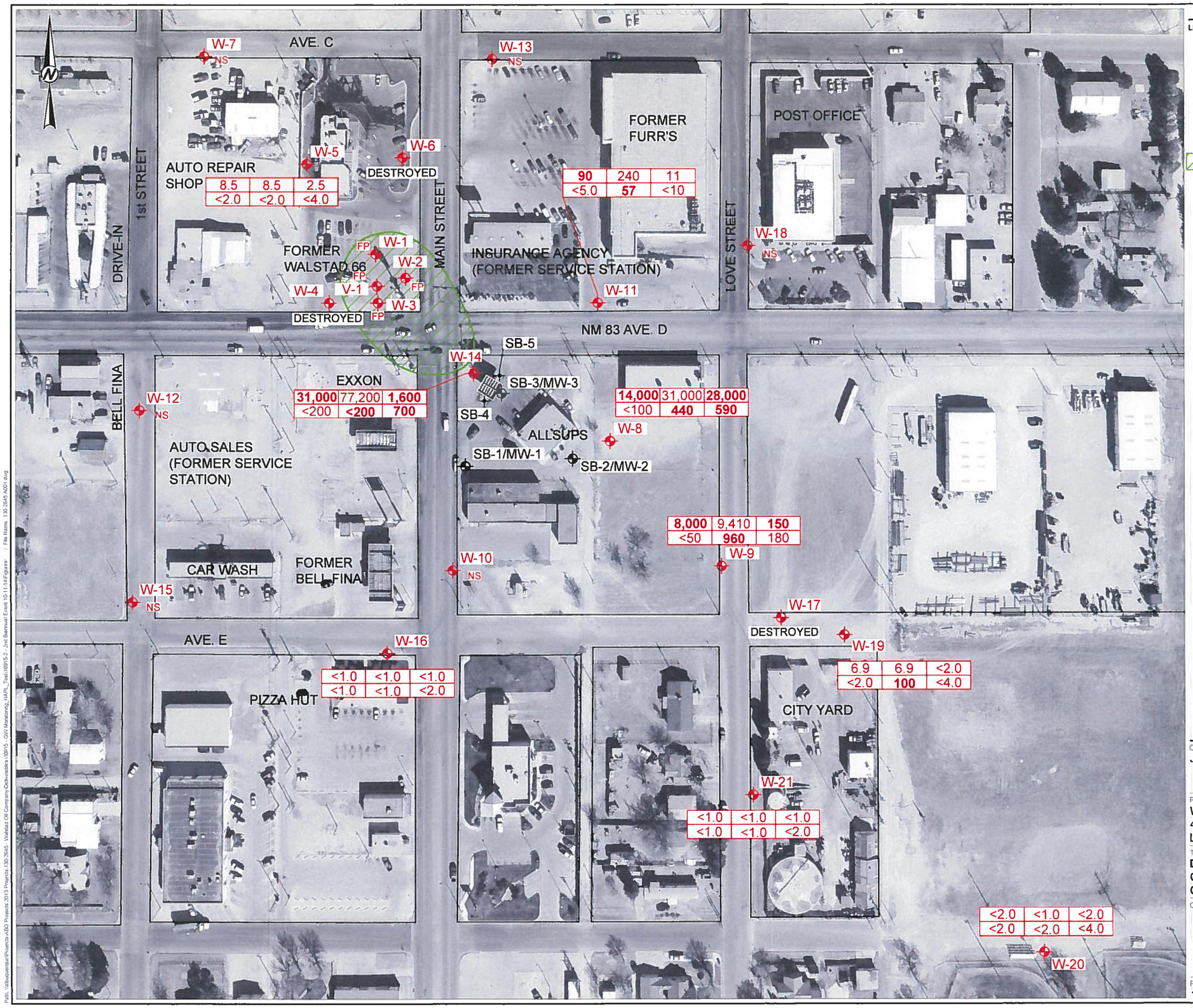
CONSULTANT
Golder Associates

YYYY-MM-DD	2014-10-17
PREPARED	PDC
DESIGN	PDC
REVIEW	PDC
APPROVED	CM

PROJECT No	PHASE	Rev	FIGURE
130-2645	2	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

Path: \\albuquerque\Projects\ASG Projects\2013 Projects\130-2645 - Walstad Oil Company\Deliverables\1)SIS - GW Monitoring\1)APL_Text\1)SIS-2 - 2nd Biannual Event 10-11 14\Figures\ | File Name: 130-2645-A001.dwg



LEGEND

W-1	LOVINGTON 66 MONITORING WELL
SB-1/MW-1	ALLSUP'S SOIL BORING/MONITORING WELL
SB-1	ALLSUP'S SOIL BORING
	ESTIMATED EXTENT OF NAPL
NS	NOT SAMPLED

LOVINGTON 66

BENZENE	BTEX	MTBE
EDB	EDC	TOTAL NAPHTHALENE

ALL CONCENTRATIONS ARE (µg/L (ppb)

BOLD INDICATES THAT CONCENTRATION EXCEEDS NMWQCC GROUNDWATER STANDARD OR EIB STANDARD

0 60 120
SCALE FEET

CLIENT
JACK WALSTAD OIL COMPANY, INC

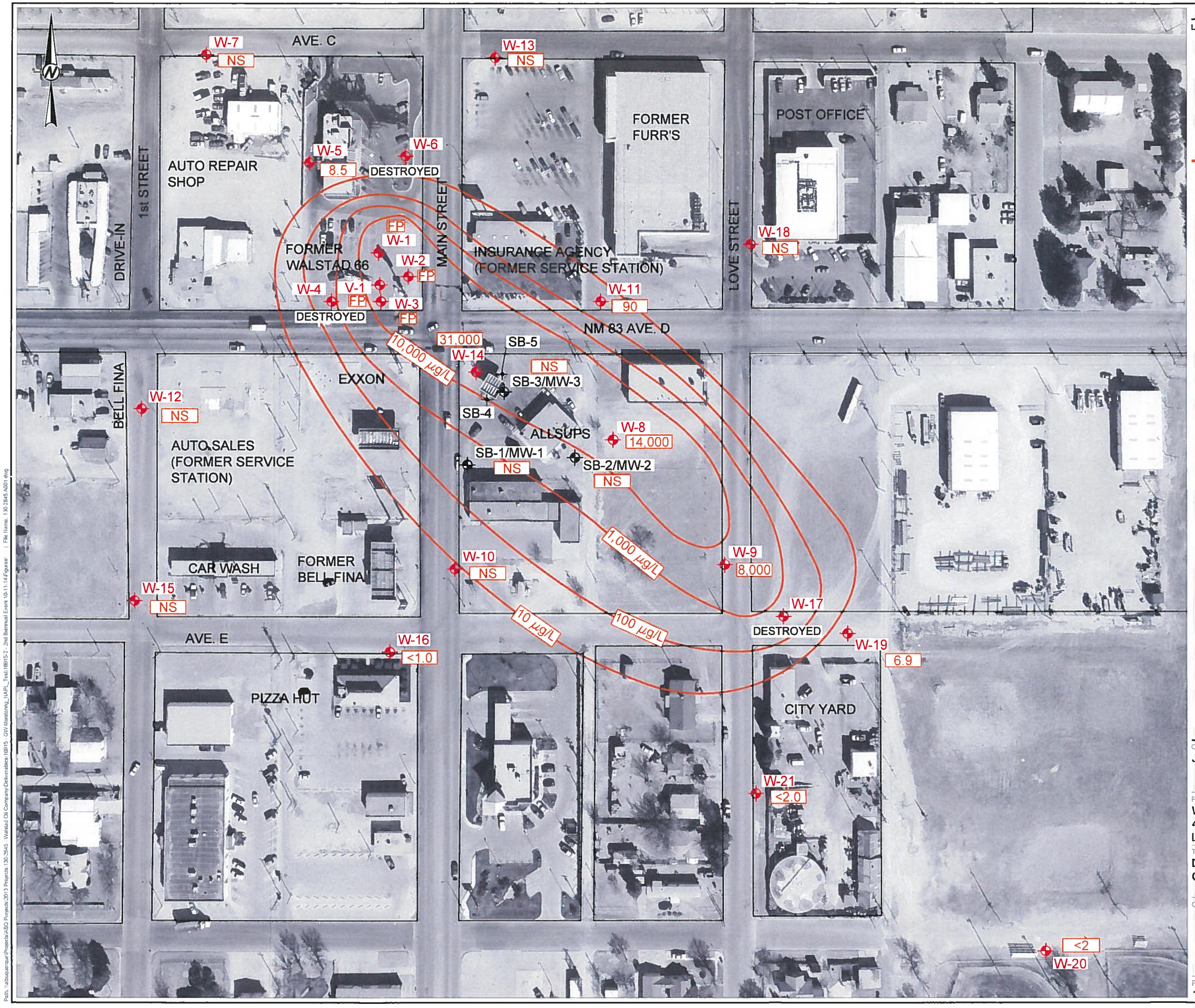
PROJECT
WALSTAD 66
424 SOUTH MAIN
LOVINGTON, NEW MEXICO

TITLE
DISTRIBUTION OF ORGANIC CONTAMINANTS IN GROUNDWATER OCTOBER 2014

CONSULTANT
Golder Associates

YYYY-MM-DD	2014-10-17
PREPARED	PDC
DESIGN	PDC
REVIEW	PDC
APPROVED	CM

PROJECT No	PHASE	Rev	FIGURE
130-2645	2	0	3



LEGEND

W-1	LOVINGTON 66 MONITORING WELL
SB-1/MW-1	ALLSUP'S SOIL BORING/MONITORING WELL
SB-1	ALLSUP'S SOIL BORING
10 µg/L	BENZENE CONCENTRATION CONTOUR MICROGRAMS PER LITER
FP	FREE PRODUCT
NS	NOT SAMPLED

0 60 120
SCALE FEET

CLIENT
JACK WALSTAD OIL COMPANY, INC

PROJECT
WALSTAD 66
424 SOUTH MAIN
LOVINGTON, NEW MEXICO

TITLE
DISTRIBUTION OF BENZENE IN GROUNDWATER
OCTOBER 2014

CONSULTANT
Golder Associates

YYYY-MM-DD	2014-10-17
PREPARED	PDC
DESIGN	PDC
REVIEW	PDC
APPROVED	CM

PROJECT No.	PHASE	Rev	FIGURE
130-2645	2	0	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANSI B

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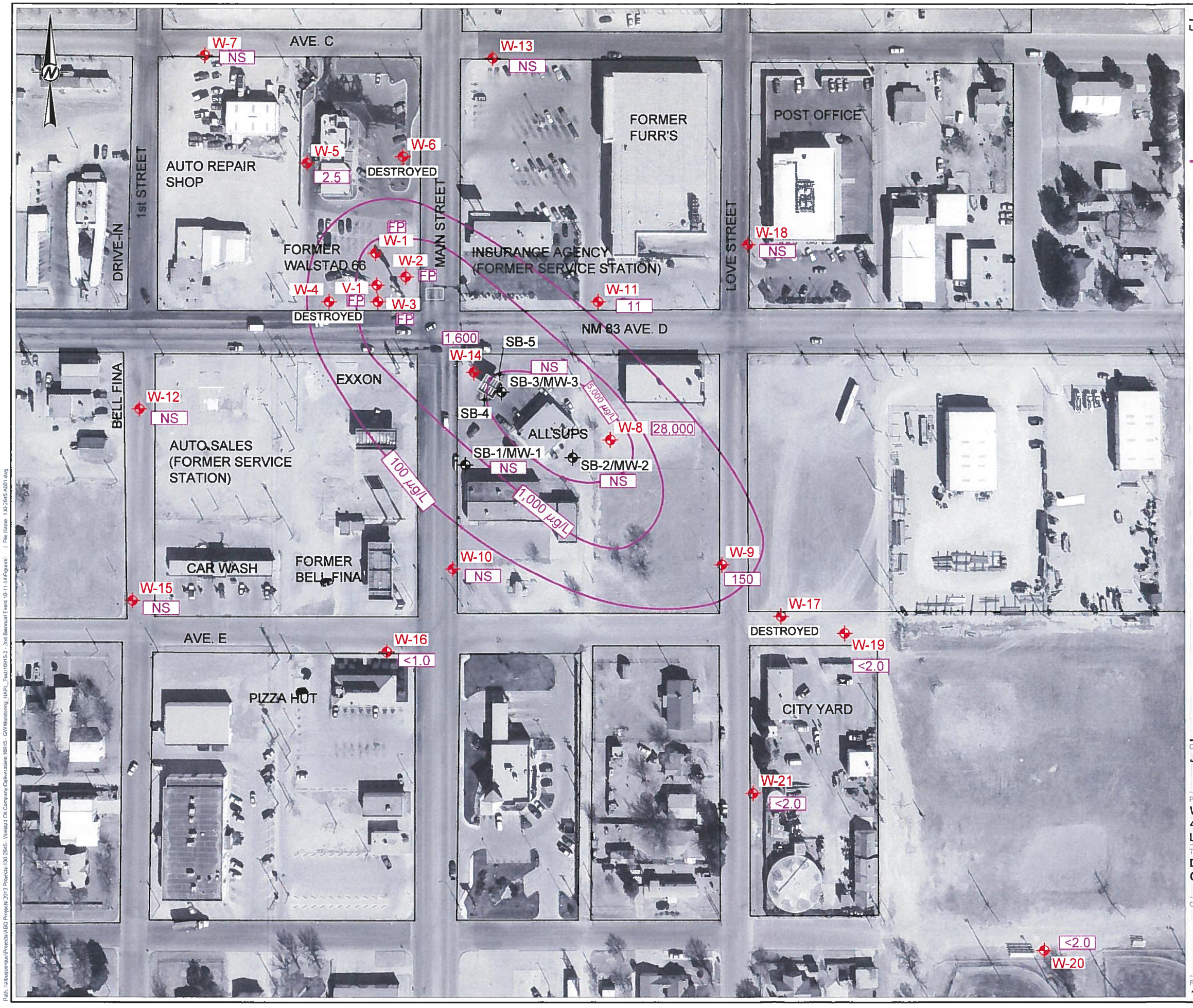


LEGEND

W-1	LOVINGTON 66 MONITORING WELL
SB-1/MW-1	ALLSUP'S SOIL BORING/MONITORING WELL
SB-1	ALLSUP'S SOIL BORING
100 µg/L	MTBE CONCENTRATION CONTOUR MICROGRAMS PER LITER
FP	FREE PRODUCT
NS	NOT SAMPLED

0 60 120
SCALE FEET

CLIENT
JACK WALSTAD OIL COMPANY, INC

PROJECT
WALSTAD 66
424 SOUTH MAIN
LOVINGTON, NEW MEXICO

TITLE
DISTRIBUTION OF MTBE IN GROUNDWATER
OCTOBER 2014

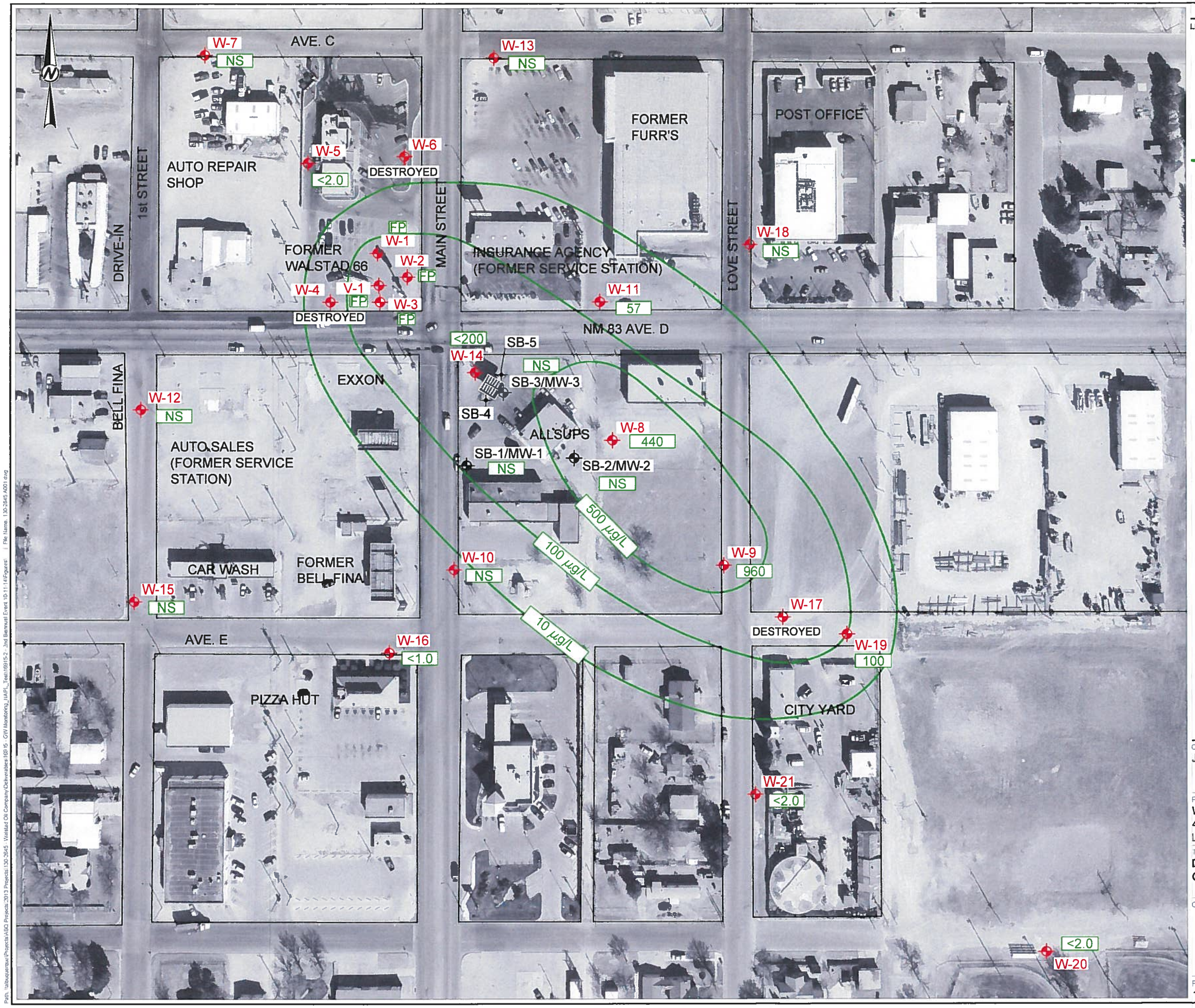
CONSULTANT
Golder Associates

YYYY-MM-DD	2014-10-17
PREPARED	PDC
DESIGN	PDC
REVIEW	PDC
APPROVED	CM

PROJECT No	PHASE	Rev	FIGURE
130-2645	2	0	5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

Path: Albuquerque\Projects\ABQ Projects 2013 Projects\130-2645 - Walstad Oil Company\Deliverables\16915 - GW Monitoring_IAPL_Twp\16915-2 - 2nd Semiannual Event 10-11-14\Figures\ File Name: 130-2645-A001.dwg



LEGEND

W-1	LOVINGTON 66 MONITORING WELL
SB-1/MW-1	ALLSUP'S SOIL BORING/MONITORING WELL
SB-1	ALLSUP'S SOIL BORING
10 µg/L	EDC CONCENTRATION CONTOUR MICROGRAMS PER LITER
FP	FREE PRODUCT
NS	NOT SAMPLED

0 60 120
SCALE FEET

CLIENT
JACK WALSTAD OIL COMPANY, INC

PROJECT
WALSTAD 66
424 SOUTH MAIN
LOVINGTON, NEW MEXICO

TITLE
DISTRIBUTION OF EDC IN GROUNDWATER
OCTOBER 2014

CONSULTANT
Golder Associates

YYYY-MM-DD	2014-10-17
PREPARED	PDC
DESIGN	PDC
REVIEW	PDC
APPROVED	CM

PROJECT No	PHASE	Rev	FIGURE:
130-2645	2	0	6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

Path: \\albuquerque\Projects\ABQ Projects\2013 Projects\130-2645 - Walstad Oil Company\Deliverables\FIG 6 - GW Monitoring_JAN\PL_Text\15915-2 - 2nd Biannual Event 10-11-14\Figures\ | File Name: 130-2645-A001.dwg

LEGEND

W-1	LOVINGTON 66 MONITORING WELL
SB-1/MW-1	ALLSUP'S SOIL BORING/MONITORING WELL
SB-1	ALLSUP'S SOIL BORING
2 mg/L	DISSOLVED OXYGEN CONCENTRATION CONTOUR MILLIGRAMS PER LITER
FP	FREE PRODUCT
NS	NOT SAMPLED

DO	TEMP

DISSOLVED OXYGEN (DO) CONCENTRATIONS ARE IN MILLIGRAMS PER LITER

TEMPERATURE (TEMP) VALUES ARE IN DEGREES CELSIUS

0 60 120
SCALE FEET

CLIENT
JACK WALSTAD OIL COMPANY, INC

PROJECT
WALSTAD 66
424 SOUTH MAIN
LOVINGTON, NEW MEXICO

TITLE
DISTRIBUTION OF MNA PARAMETERS IN GROUNDWATER OCTOBER 2014

CONSULTANT
Golder Associates

YYYY-MM-DD	2014-10-17
PREPARED	PDC
DESIGN	PDC
REVIEW	PDC
APPROVED	CM

PROJECT No	PHASE	Rev	FIGURE
130-2645	2	0	7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

Path: \\Golder\active\Projects\ABQ Projects\2013 Projects\130-2645 - Walstad Oil Company\Deliverables\16915 - GW Monitoring_NAPL_Tech\16915-2 - 2nd Biannual Event 10-11-14\Figures\ File Name: 130-2645-A001.dwg

APPENDIX A
NAPL DISPOSAL MANIFEST

N.M.E.D. - DP-1041

Gandy Marley, Inc.
P.O. BOX 1658 • ROSWELL, NM 88202

LOAD INSPECTION FORM No. 16330

Date of Receipt: 10/15/14 Time of Receipt: 16:17 AM PM Cell Placement: UST-6

Quantity: 1036 Gallons T/CY: ——— Description: MONITOR WELL PURGE H2O
Golder Walsh Lovington 66

Name/Address of Generator: Golder & Associates 5200 Oakland NA Ave NE Suite C Albuquerque NM 87113

Origin of Materials (if different): _____

Transporter Name: CMS Environmental SCC ID No. _____

Name of Laboratory Performing Sample Analysis: Hall Environmental Analysis Lab (ON FILE)

TCLP (EPA Method 1311) _____ BTEX ✓ MTBE _____ TPH _____ Non-Hazardous ✓ Exempt _____

Verification of No Free Liquids ✓ Paint Filter Liquids Test Performed _____

Verification of Property Completed Manifest _____ Generator Manifest Number 16330

As a condition to Gandy Marley, Inc's acceptance of the materials shipped as represented on this Load Inspection Form, Generator represents and warrants that the waste material shipped herewith is exempt from the Resource Conservation and Recovery Act of 1976, as amended from time to time, 40 U.S.C Section 6901, et seq., The New Mexico Health and Safety Code, section 391.001, et seq., and regulations related thereto, OR has been characterized as non-hazardous material by virtue of appropriate laboratory analysis done in accordance with EPA-approved testing methods.

Further, as a condition to Gandy Marley, Inc's acceptance of the materials shipped as represented on this Load Inspection Form, Transporter represents and warrants that only the material delivered by Generator to Transporter to Gandy Marley, Inc.'s facility for disposal.

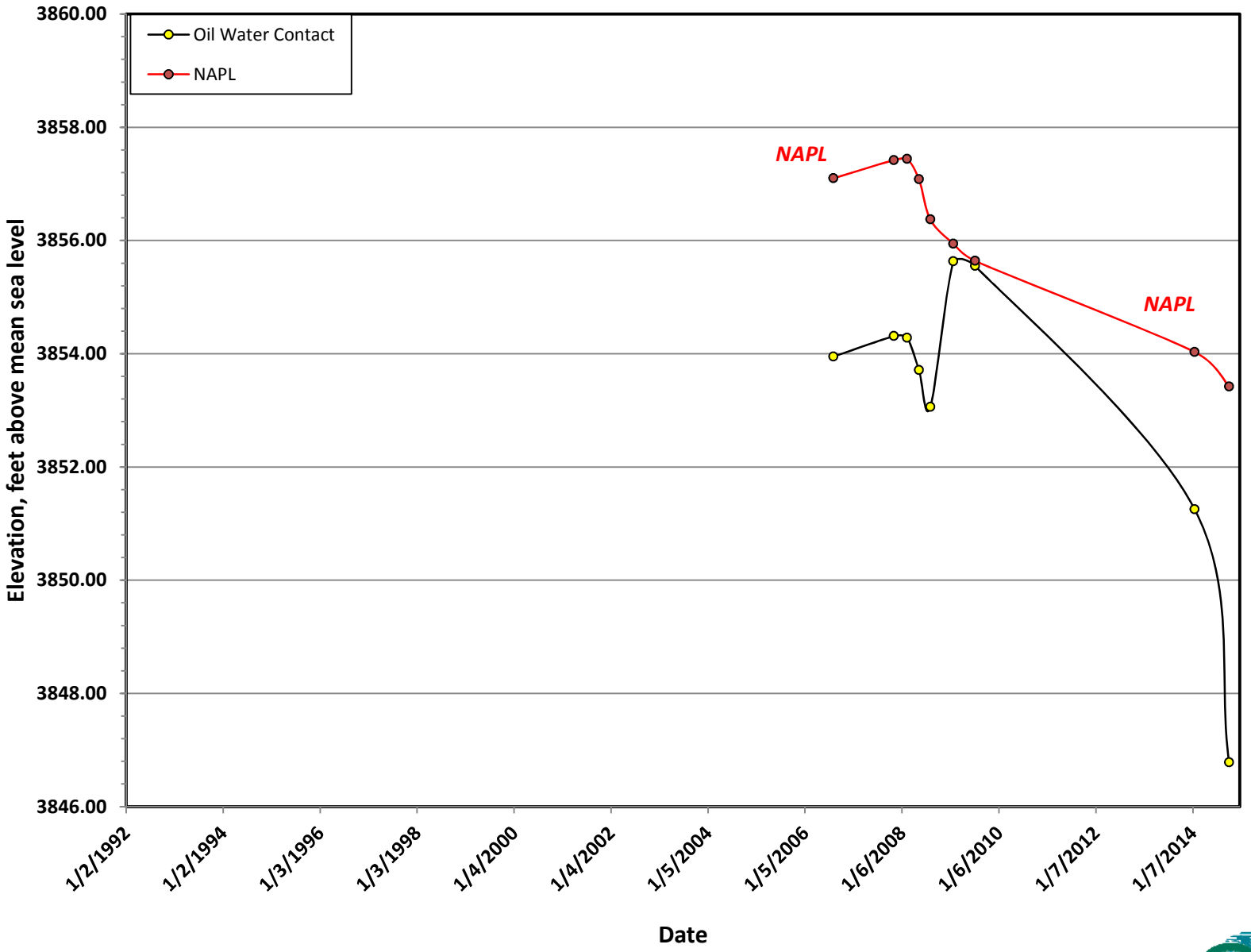
THIS WILL CERTIFY that the above Transporter loaded the material as represented on this Load Inspection Form at the above described location, and that it was tendered by the above described Generator. THIS WILL CERTIFY that no additional materials were added to this load, and that the material was delivered without incident.

Transporter: Clayton Bush Jr. _____
Print Name Signature

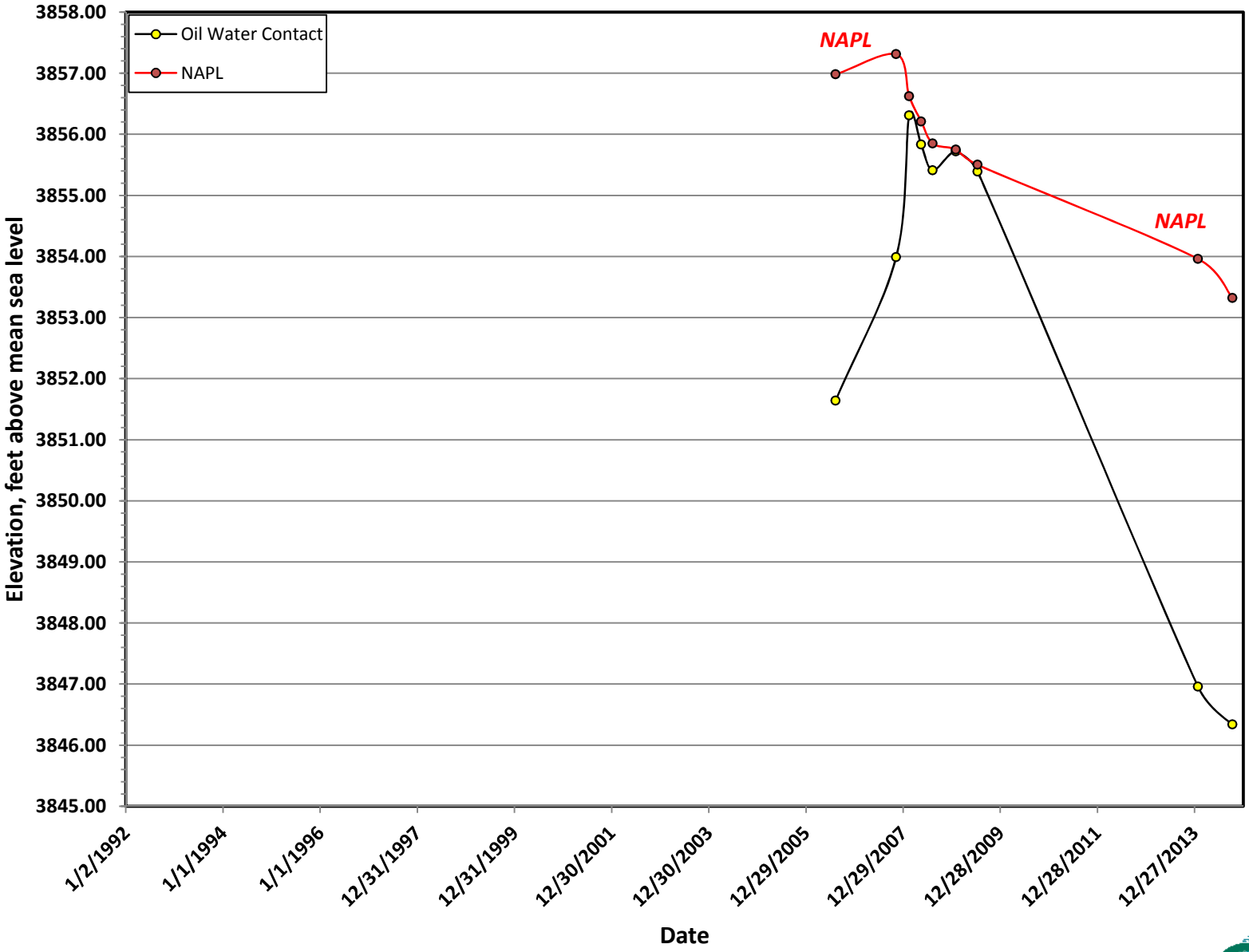
GMI Employee: J. Tatum _____
Print Name Signature

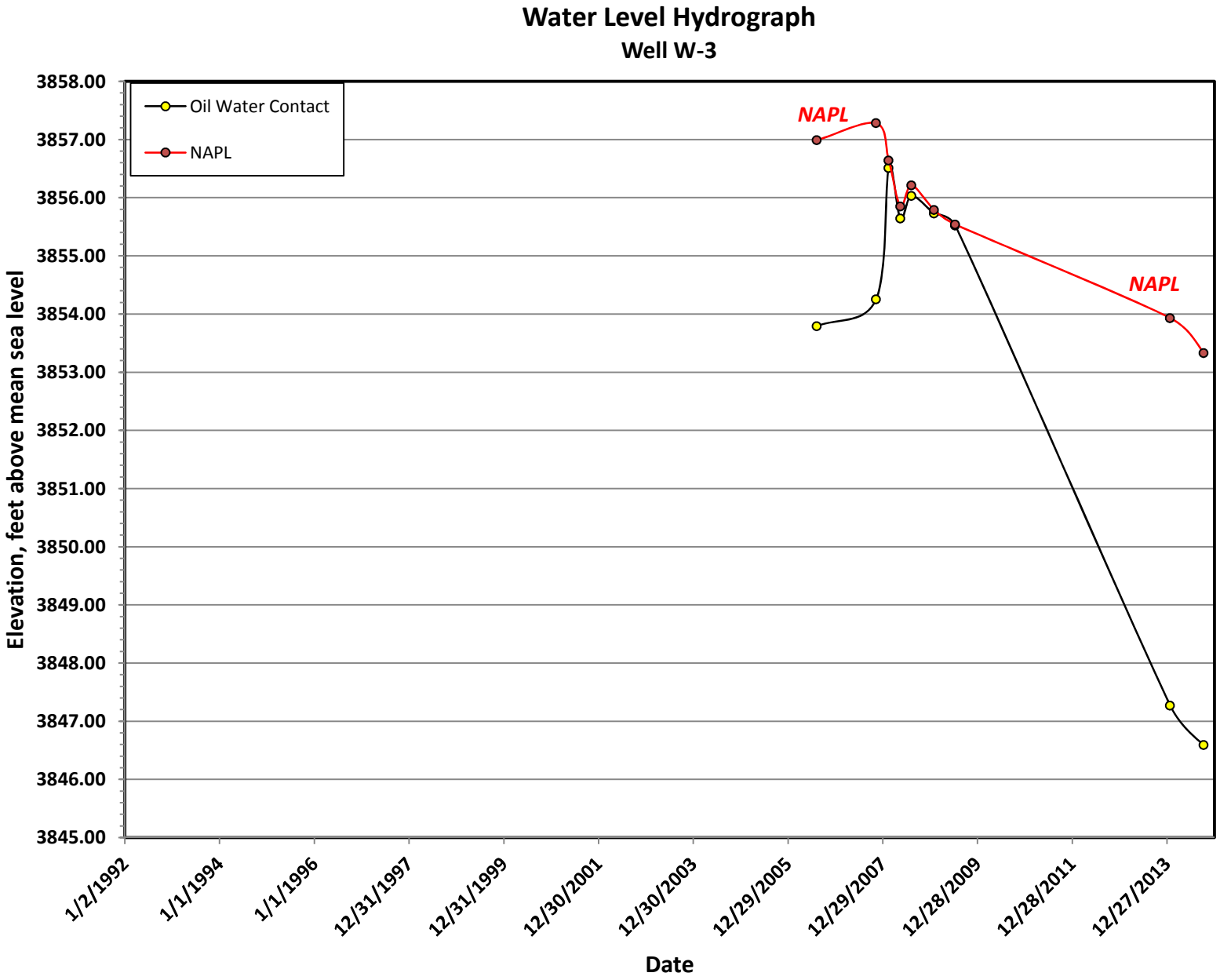
APPENDIX B
HYDROGRAPHS

Water Level Hydrograph
Well W-1

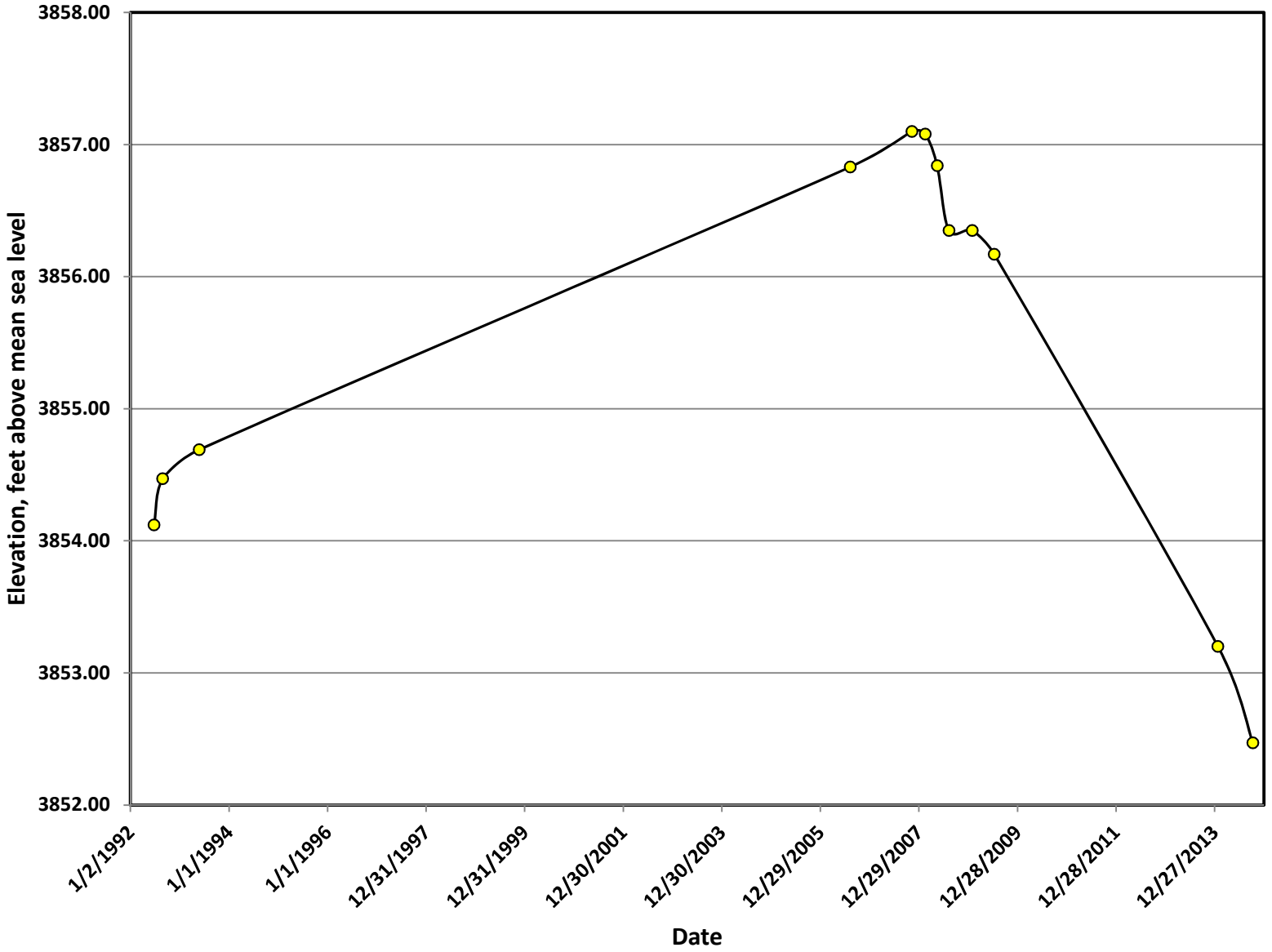


Water Level Hydrograph
Well W-2

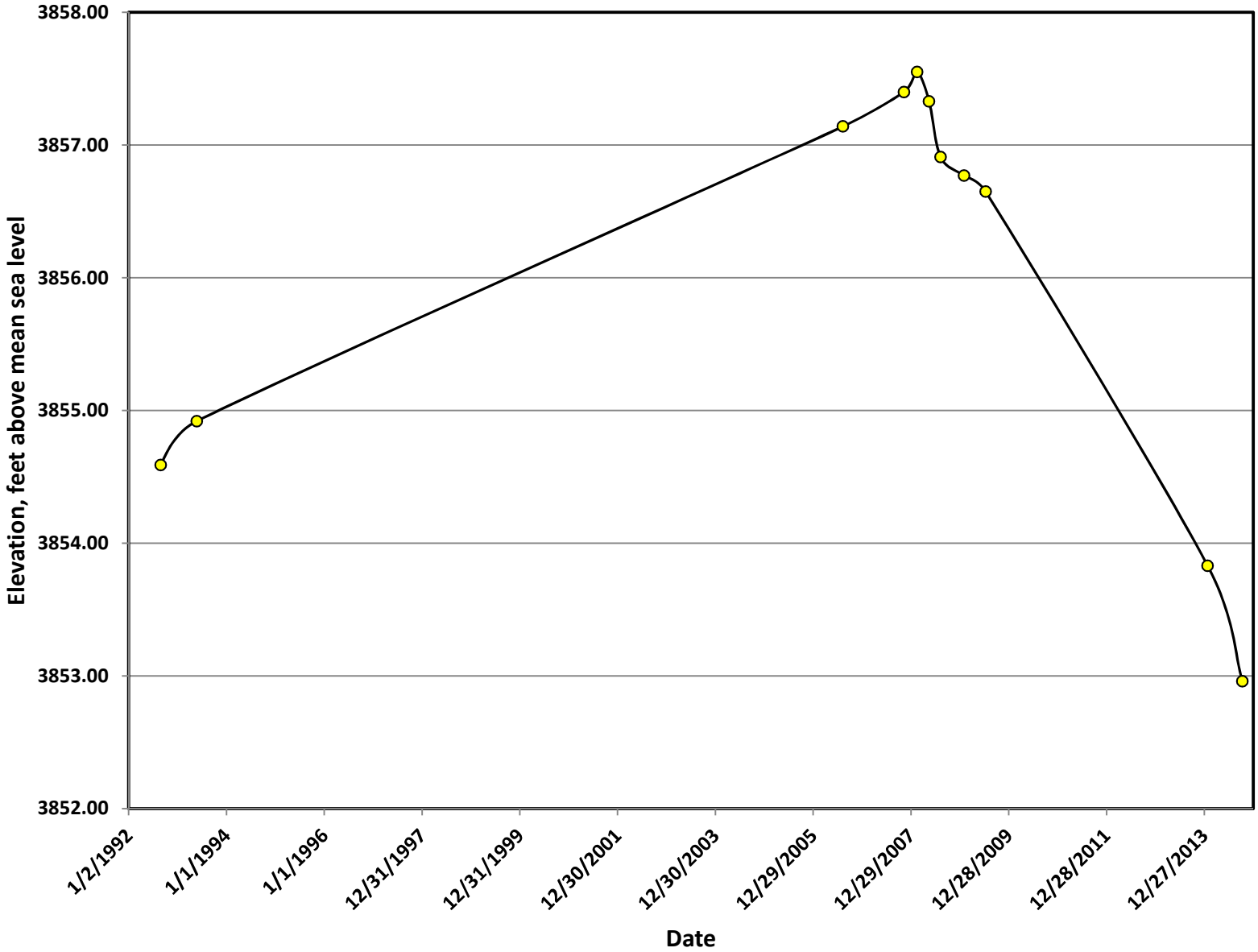



Water Level Hydrograph
Well W-3
Oil Water Contact
NAPL
NAPL
NAPL
Elevation, feet above mean sea level
3858.00
3857.00
3856.00
3855.00
3854.00
3853.00
3852.00
3851.00
3850.00
3849.00
3848.00
3847.00
3846.00
3845.00
1/2/1992
1/1/1994
1/1/1996
12/31/1997
12/31/1999
12/30/2001
12/30/2003
12/29/2005
12/29/2007
12/28/2009
12/28/2011
12/27/2013
Date

Water Level Hydrograph
Well W-5

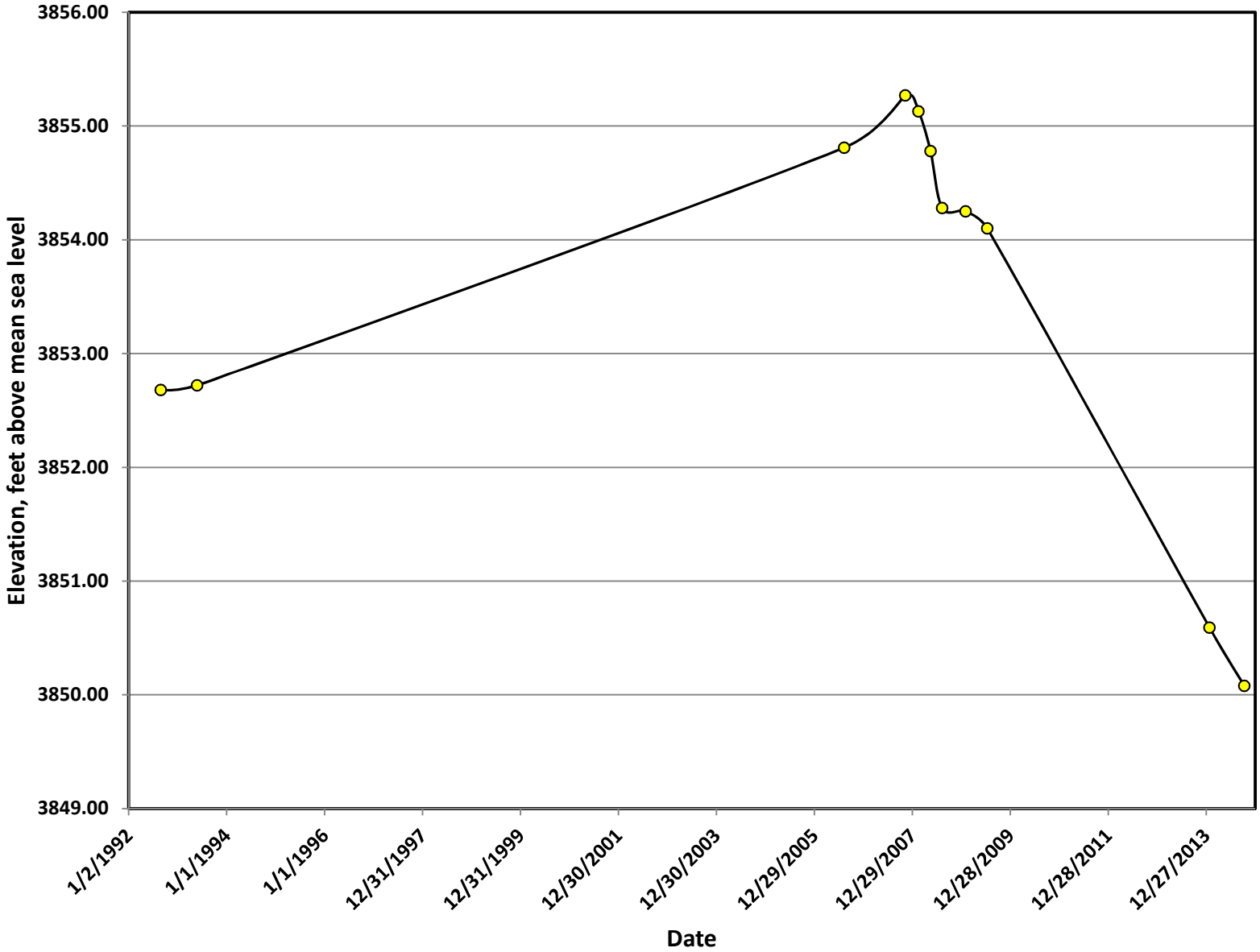


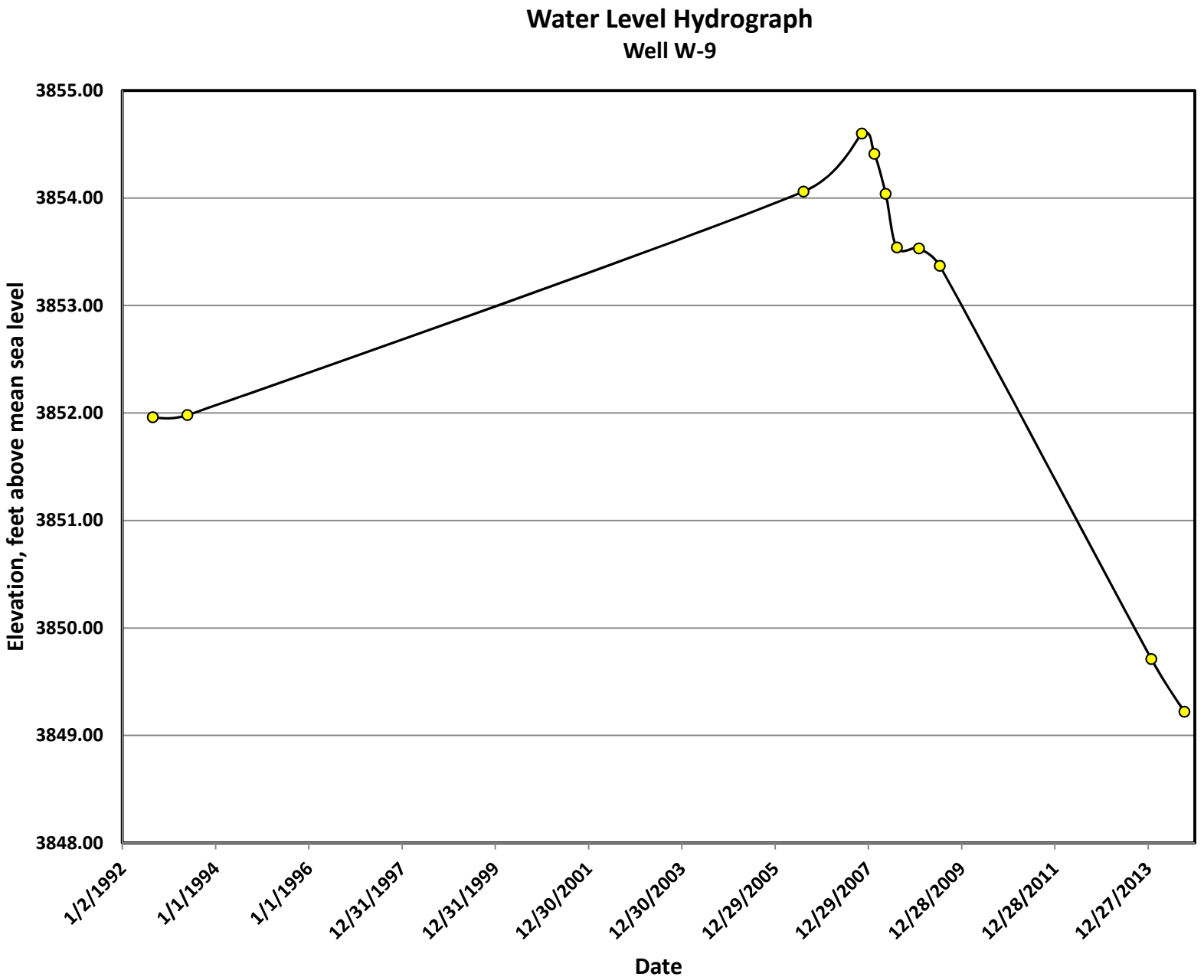
Water Level Hydrograph
Well W-7



Golder Associates

Water Level Hydrograph
Well W-8




Water Level Hydrograph
Well W-9
Elevation, feet above mean sea level
3855.00
3854.00
3853.00
3852.00
3851.00
3850.00
3849.00
3848.00
1/2/1992
1/1/1994
1/1/1996
12/31/1997
12/31/1999
12/30/2001
12/30/2003
12/29/2005
12/29/2007
12/28/2009
12/28/2011
12/27/2013
Date

APPENDIX C
FIELD FORMS

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well: ☒ MW ☐ Production ☐ Other _____	Type of Data: ☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	Well No. W-5, Sheet 1 of 1 Sheets
1. Project: GW Monitoring 2014	2. Project Location: Walstad Lovington 66, 424 South Main, Lovington, NM	3. Date: 10/07/14
4. Technician: CM Barnhill, PG		
7. Method: Pumping Surging Air Lift (Bailing) Other	8. Manufacturer's Designation of Rig: DSR-2001	9. Location of Well (Site, Description): Monitor well W-5

Water Levels

Initial	Final	Final + 24 Hours
Date: 10/07/14 Time: 13:48	Date: 10/07/14 Time: 14:02	Date: Time:
10. Total Depth of Well (from TOC): 64.75'	15. Total Depth of Well (from TOC): /	20. Total Depth of Well (from TOC)
11. Water Level (from TOC): 59.24'	16. Water Level (from TOC): 59.92'	21. Water Level (from TOC)

12. Water Column Height: 5.51'	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes: 2.64 Gallons
13. Well Diameter: 2" SCH 40 PVC MW	(2")	(0.16)	0.1534	18. 5 Well Volumes: 4.40 Gallons
14. Well Volume (gal) (s) w.e. height): 0.88	4"	0.65	0.5972	19. Purge Volume: 2.75 Gallons
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or (Bailer): 1.8" PVC Disposible Bailer, Tip, Twine

Final Field Analysis

23. Total Amount of Water Removed	24. Was Well Pumped Dry?	25. Was water added to well?	26. Was the Groundwater Sampled (Yes) No
2.75 Gallons	Yes (No)	(No) Yes If yes, source:	If yes, what was the sample number & Date: Sampling Personnel? W-5, 10/07/14 CM Barnhill @ 14:03 x 40mL VOA's/HgCl

27. Final Parameters — Photo Roll #, #260

Time	Temp C	Conductivity	pH	NTUs	WL	Removed	Flow Rate	Observations
13:59	18.32	2.191 ms/cm	6.64	Turbid Fine Silt	59.92'	2.75	0.25/Bail	Turbid Fine Silt

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear Initially – then Turbid Fine Silt Slight HC odor

29. Purgewater disposal method: On Ground Surface

Sampling / Development Parameters

Time	Temp C	Conductivity ms/cm	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
13:53	19.36	1.952	6.65	Clear Slight odor	59.24'	Initial parameters	1.40	0.25	-1.7/10.2
13:55	18.57	2.124	6.66	Turbid Fine Silt	—	/	1.39	0.25	-4.3/10.8
13:57	18.46	2.102	6.64	" " "	—	2.0	1.29	0.25	-1.9/1.6
13:59	18.32	2.191	6.64	" " "	59.92'	2.75	2.02	0.25	-2.6/3.8

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: Christopher M. Barnhill PG — Date: 10/07/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well ☒ MW ☐ Production ☐ Other _____	Type of Data ☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	Well No. W-8 Sheet 1 of 1 Sheets
1. Project GW Monitoring 2014	2. Project Location Walstad Lovington 66 424 South Main Lovington, NM	3. Date 10/07/2014
4. Technician CM Barnhill, PG		
7. Method Pumping Surging Air Lift (Bailing) Other	8. Manufacturer's Designation of Rig DSR-2001	9. Location of Well (Site, Description) Monitor well W-8

Water Levels

Initial	Final	Final + 24 Hours
Date: 10/07/14 Time: 13:23	Date: 10/07/14 Time: 13:40	Date: Time:
10. Total Depth of Well (from TOC) 65.23'	15. Total Depth of Well (from TOC) /	20. Total Depth of Well (from TOC) /
11. Water Level (from TOC) 59.84'	16. Water Level (from TOC) 60.52'	21. Water Level (from TOC) /

12. Water Column Height 5.39'	Nom Dia / x = gal/ft: Sch 40 / Sch 80 2" 0.16 0.1534 4" 0.65 0.5972 6" 1.47 1.3540 8" 2.61 2.3720	17. 3 Well Volumes 2.587 Gallons	22. Size and Type of Pump or Bailer 1.5" PVC Disposable Bailer, Tie, Twine
13. Well Diameter 2" Sch 40 PVC MW		18. 5 Well Volumes 4.31 Gallons	
14. Well Volume (gal) (s) w.e. height) 0.862		19. Purge Volume 2.75 Gallons	

Final Field Analysis

23. Total Amount of Water Removed 2.75 Gallons	24. Was Well Pumped Dry? Yes (No)	25. Was water added to well? (No) Yes If yes, source:	26. Was the Groundwater Sampled (Yes) No If yes, what was the sample number & Date: Sampling Personnel? W-8, 10/07/14 CM Barnhill @ 13:37 3x40mL VOA's 1 HCl

27. Final Parameters

Time	Temp C	Conductivity (ms/cm)	pH	NTUs	WL	Removed	Flow Rate	Observations	Photo Roll #,
13:36	18.37	1.475	6.62	GRAY Black	60.52'	2.75 bbl	0.25 Bbl	gray Black H2O Strong HC odor	8261

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear to GRAY Black H2O - Strong HC odor

29. Purgewater disposal method: ON GROUND Surface

Sampling / Development Parameters

Time	Temp C	Conductivity (ms/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
13:30	18.97	1.441	6.70	@ clear gray Black strong	59.84'	Initial parameters	1.53	0.25	-6.2/15.9
13:32	18.51	1.467	6.66	" " "	—	1	1.47	0.25	-3.2/15.0
13:34	18.45	1.469	6.64	" " "	—	2	4.24	0.25	-2.0/-1.0
13:36	18.37	1.475	6.62	" " "	60.52'	2.75	2.48	0.25	-0.9/-17.0

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: [signature] PG — Date: 10/07/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well ☒ MW ☐ Production ☐ Other _____	Type of Data ☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	Well No. W-9 Sheet 1 of 1 Sheets
1. Project GW Monitoring 2014	2. Project Location Walstad Lovington 66 424 South Main	3. Date 10/07/14
4. Technician CM Barnhill, PG	Lovington, NM	
7. Method Pumping Surging Air Lift (Bailing) Other	8. Manufacturer's Designation of Rig DSR-2001	9. Location of Well (Site, Description) Monitor Well W-9

Water Levels

Initial	Final	Final + 24 Hours
Date: 10/07/14 Time: 12:56	Date: 10/07/14 Time: 13:11	Date: / Time:
10. Total Depth of Well (from TOC) 64.85'	15. Total Depth of Well (from TOC) /	20. Total Depth of Well (from TOC) /
11. Water Level (from TOC) 59.50'	16. Water Level (from TOC) 59.90'	21. Water Level (from TOC) /

12. Water Column Height 5.35'	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes 2.56 Gallons
13. Well Diameter 2" SCH 40 PVC MW	2"	0.16	0.1534	18. 5 Well Volumes 4.28 Gallons
14. Well Volume (gal) (s) w.e. height) 0.856	4"	0.65	0.5972	19. Purge Volume 2.75 Gallons
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or Bailer: 1.8" PVC Disposable Bailer, Tie, Twine

Final Field Analysis

23. Total Amount of Water Removed 2.75 Gallons	24. Was Well Pumped Dry? Yes (No)	25. Was water added to well? (No) Yes If yes, source:	26. Was the Groundwater Sampled? (Yes) No If yes, what was the sample number & Date: Sampling Personnel? W-9, 10/07/14 CM Barnhill @13:09 3x40 mL VOA's/HgCl2

27. Final Parameters

Photo Roll #, 8260

Time	Temp C	Conductivity (mS/cm)	pH	NTUs	WL	Removed	Flow Rate	Observations
13:08	18.08	1.405	6.61	Clear Strong odor	59.90	2.75 Gallons	0.25/Bail	Clear/H Strong odor

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear H2O with strong HC odor

29. Purgewater disposal method: ON Ground Surface

Sampling / Development Parameters

Time	Temp C	Conductivity (mS/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
13:02	19.17	1.352	6.69	Clear Strong odor	59.50'	Initial parameters	1.54	0.25	-4.8/-16.2
13:03	18.57	1.366	6.67	" " "	—	1	2.05	0.25	-3.5/-15.1
13:05	18.17	1.395	6.63	" " "	—	2	2.47	0.25	-1.8/-20.4
13:06	18.08	1.408	6.61	" " "	59.90'	2.75	1.42	0.25	-0.6/-37.4

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: Clifton M Barnhill PG

Date: 10/07/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well: ☒ MW ☐ Production ☐ Other _____	Type of Data: ☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	Well No. W-11, Sheet 1 of 1 Sheets
1. Project: GW Monitoring 2014	2. Project Location: Walstad Lovington 66, 424 South Main, Lovington, NM	3. Date: 10/07/2014
4. Technician: CM Barnhill, PE		
7. Method: Pumping Surging Air Lift (Bailing) Other	8. Manufacturer's Designation of Rig: DSR-2001	9. Location of Well (Site, Description): Monitor well W-11

Water Levels

Initial	Final	Final + 24 Hours
Date: 10/07/14 Time: 14:24	Date: 10/07/14 Time: 14:40	Date: Time:
10. Total Depth of Well (from TOC): 65.11'	15. Total Depth of Well (from TOC): /	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 59.41'	16. Water Level (from TOC): 59.91'	21. Water Level (from TOC):

12. Water Column Height: 5.7'	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes: 2.73 Gallons
13. Well Diameter: 2" SCH 40 PVC MW	(2")	0.16	0.1534	18. 5 Well Volumes: 4.56 Gallons
14. Well Volume (gal) (s) w.e. height: 0.91	4"	0.65	0.5972	19. Purge Volume: 2.75 gallons
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or (Bailer): 1.5" PVC Disposable Bailer, T-p, Twine

Final Field Analysis

23. Total Amount of Water Removed: 2.75 gallons	24. Was Well Pumped Dry? Yes (No)	25. Was water added to well? (No) Yes If yes, source:	26. Was the Groundwater Sampled (Yes) No. If yes, what was the sample number & Date: W-11, 10/07/14. Sampling Personnel? CM Barnhill, PE @ 14:31. 3 x 40mL VOA's HCl $260

27. Final Parameters

Time	Temp C	Conductivity (mS/cm)	pH	NTUs	WL	Removed	Flow Rate	Photo Roll #, Observations
14:35	19.12	1.481	6.57	GRAY Black	59.91'	2.75 Gal.	0.25/Bail	GRAY Black Strong HC odor

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: GRAY - Black H2O with strong HC odor

29. Purgewater disposal method: ON Ground Surface

Sampling / Development Parameters

Time	Temp C	Conductivity (mS/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
14:31	20.04	1.559	6.68	Clear/GRAY strong odor	59.41'	Initial parameters	1.23	0.25	-39/-87.6
14:32	19.73	1.489	6.61	" " "	—	1	1.34	0.25	-1.1/-69.7
14:34	19.25	1.495	6.59	" " "	—	2.0	1.61	0.25	0.7/-44.5
14:35	19.12	1.481	6.57	" " "	59.91'	2.75	1.30	0.21	1.4/-47.4

(1) Note volume and physical character of sediments removed
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: [signature] PE — Date: 10/07/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well: ☒ MW ☐ Production ☐ Other _____	Type of Data: ☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	Well No. W-14, Sheet 1 of 1 Sheets
1. Project: GW Monitoring 2014	2. Project Location: Golden Walstad 66 Lovington, 424 South Main Lovington, NM	3. Date: 10/07/2014
4. Technician: CM Barnhill, PG		
7. Method: Pumping Surging Air Lift (Bailing) Other	8. Manufacturer's Designation of Rig: DSK-2001	9. Location of Well (Site, Description): Monitor well W-14

Water Levels

Initial	Final	Final + 24 Hours
Date: 10/07/14 Time: 14:46	Date: 10/07/14 Time: 15:03	Date: Time:
10. Total Depth of Well (from TOC): 64.57'	15. Total Depth of Well (from TOC): /	20. Total Depth of Well (from TOC): /
11. Water Level (from TOC): 58.65'	16. Water Level (from TOC): 58.86'	21. Water Level (from TOC): /

12. Water Column Height: 5.92'	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes: 2.84 Gallons
13. Well Diameter: 2" SCH 40 PVC MW	2"	0.16	0.1534	18. 5 Well Volumes: 4.73 Gallons
14. Well Volume (gal) (s) w.e. height): 0.947	4"	0.65	0.5972	19. Purge Volume: 3 Gallons
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or (Bailer): 1.8" PVC Disposable Bailer, Tip, Twine

Final Field Analysis

23. Total Amount of Water Removed	24. Was Well Pumped Dry?	25. Was water added to well?	26. Was the Groundwater Sampled?
3 Gallons	Yes (No)	(No) Yes	(Yes) No
		If yes, source:	If yes, what was the sample number & Date; Sampling Personnel? W-14, 10/07/14 CM Barnhill @ 1500 3x40mL vials/HCl

27. Final Parameters — Photo Roll #, $260

Time	Temp C	Conductivity (ms/cm)	pH	NTUs	WL	Removed	Flow Rate	Observations
14:59	19.31	1.623	6.50	gray/Blue Strong odor	58.86	3 Gallons	0.25/Bail	Strong HC Odor GRAY/Black

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: GRAY Black Strong HC Odor.

29. Purgewater disposal method: ON Ground Surface

Sampling / Development Parameters

Time	Temp C	Conductivity (ms/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
14:53	19.64	1.700	6.55	Clear Gray/Blue	58.65'	Initial parameters	1.08	0.25	2.9/-76.8
14:55	19.51	1.741	6.52	Strong HC odor	—	1	1.57	0.25	4.6/-53.2
14:57	19.17	1.650	6.51	" " "	—	2	1.50	0.25	5.0/-42.4
14:59	19.31	1.623	6.50	" " "	58.86'	3	1.81	0.25	4.9/-39.2

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: [signature] PG — Date: 10/07/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well ☒ MW ☐ Production ☐ Other _____	Type of Data ☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	Well No. W-16 Sheet 1 of 1 Sheets
1. Project GW Monitoring 2014	2. Project Location Golden Walstad Lovington 66 424 South Main Lovington, NM	3. Date 10/07/2014
4. Technician CM Barnhill, PE		
7. Method Pumping Surging Air Lift (Bailing) Other	8. Manufacturer's Designation of Rig DSR-2001	9. Location of Well (Site, Description) Monitor Well W-16

Water Levels

Initial	Final	Final + 24 Hours
Date: 10/07/14 Time: 15:24	Date: 10/07/14 Time: 15:46	Date: Time:
10. Total Depth of Well (from TOC) 64.91'	15. Total Depth of Well (from TOC)	20. Total Depth of Well (from TOC)
11. Water Level (from TOC) 57.84'	16. Water Level (from TOC) 57.89'	21. Water Level (from TOC)

12. Water Column Height 7.07'	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes 3.39 Gallons
13. Well Diameter 2" Sch 40 PVC MW	2"	0.16	0.1534	18. 5 Well Volumes 5.65 Gallons
14. Well Volume (gal) (s) w.e. height) 1.13	4"	0.65	0.5972	19. Purge Volume 3.50 Gallons
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or Bailer: 1.8" PVC Disposable Bailer, Tip, Twine

Final Field Analysis

23. Total Amount of Water Removed 3.5 Gallons	24. Was Well Pumped Dry? Yes (No)	25. Was water added to well? (No) Yes If yes, source:	26. Was the Groundwater Sampled (Yes) No If yes, what was the sample number & Date: Sampling Personnel? W-16, 10/07/14 CM Barnhill @ 15:40 3x40mL VOA's/HCl $260

27. Final Parameters

Time	Temp C	Conductivity mg/cm	pH	NTUs	WL	Removed	Flow Rate	Photo Roll #, Observations
15:37	18.42	2.342	6.49	gray Black	57.89	3.5 Gallons	0.25/Bail	gray Black Slight odor

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: GRAY Black - slight HC odor -

29. Purgewater disposal method: ON Ground Surface

Sampling / Development Parameters

Time	Temp C	Conductivity mg/cm	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
15:29	19.93	2.174	6.67	GRAY/Black to clear	57.84'	initial parameters	1.64	0.25	-1.9/-92.1
15:31	18.94	2.315	6.59	slight odor	—	1	2.13	0.25	0.7/-79.3
15:35	18.62	2.340	6.52	" " "	—	2	2.12	0.25	4.7/-71.0
15:36	18.73	2.332	6.50	" " "	—	3	2.48	0.25	4.9/-84.1
15:37	18.42	2.342	6.49	" " "	57.89	3.5	1.43	0.25	5.7/-78.7

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: [signature] PE — Date: 10/07/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well ☒ MW ☐ Production ☐ Other _____	Type of Data ☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	Well No. W-19 Sheet 1 of 1 Sheets
1. Project GW Monitoring 2014	2. Project Location Wallstad Lovington NM 424 South Main	3. Date 10/07/14
4. Technician CM Barnhill, PE	Lovington, NM	
7. Method Pumping Surging Air Lift Bailing Other	8. Manufacturer's Designation of Rig DSR-2001	9. Location of Well (Site, Description) Monitor Well W-19

Water Levels

Initial	Final	Final + 24 Hours
Date: 10/07/14 Time: 12:30	Date: 10/07/14 Time: 12:46	Date: Time:
10. Total Depth of Well (from TOC) 65.28'	15. Total Depth of Well (from TOC) /	20. Total Depth of Well (from TOC)
11. Water Level (from TOC) 59.78'	16. Water Level (from TOC) 59.99'	21. Water Level (from TOC)

12. Water Column Height 5.5'	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes 2.64 Gallons
13. Well Diameter 2" Sch 40 PVC MW	2"	0.16	0.1534	18. 5 Well Volumes 4.4 Gallons
14. Well Volume (gal) (s) w.e. height) 0.88	4"	0.65	0.5972	19. Purge Volume 2.5 Gallons
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or Bailer: 1.5" PVC Disposable Bailer, Tip, Twine

Final Field Analysis

23. Total Amount of Water Removed 2.5 Gallons	24. Was Well Pumped Dry? Yes (No)	25. Was water added to well? (No) Yes If yes, source:	26. Was the Groundwater Sampled (Yes) No If yes, what was the sample number & Date: Sampling Personnel? W-19, 10/07/14 CM Barnhill @ 12:3 3x40mL VOA's HCl #3 Photo Roll #, 8260

27. Final Parameters

Time	Temp C	Conductivity mS/cm	pH	NTUs	WL	Removed	Flow Rate	Observations
12:42	17.91	1.341	6.51	Turbid Fine Silt	59.99'	2.50 gal	0.25/Bail	Turbid Strong Odor

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear Initially - Turbid Fine Silt — strong HC Odor.

29. Purgewater disposal method: ON Ground Surface

Sampling / Development Parameters

Time	Temp C	Conductivity mS/cm	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
12:36	18.81	1.307	6.65	Odor H2O	59.78'	Initial parameters	2.27	0.25	-1.5/-70.5
12:38	18.21	1.329	6.56	Turbid Fine Silt	—	1	3.36	0.25	2.6/-33.7
12:40	18.14	1.335	6.53	" " "	—	2.0	2.50	0.25	3.2/-189.3
12:42	17.91	1.341	6.51	" " "	59.99'	2.75	2.52	0.25	4.4/-181.6

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: Clayton McBall PE — Date: 10/07/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well: ☒ MW ☐ Production ☐ Other _____
Type of Data: ☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____
Well No. W-20 Sheet 1 of 1 Sheets

1. Project	2. Project Location	3. Date
GW Monitoring 2014	Walstad Lovington 66 424 South Main Lovington, NM	10/07/2014
4. Technician: CM Barnhill, PG		
7. Method: Pumping Surging Air Lift (Bailing) Other	8. Manufacturer's Designation of Rig: DSR-2001	9. Location of Well (Site, Description): Monitor Well W-20

Water Levels

Initial	Final	Final + 24 Hours
Date: 10/07/14 Time: 11:15	Date: 10/07/14 Time: 11:32	Date: Time:
10. Total Depth of Well (from TOC): 65.20'	15. Total Depth of Well (from TOC):	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 60.32'	16. Water Level (from TOC): 59.37	21. Water Level (from TOC):

12. Water Column Height: 4.88'	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes: 2.346 Gallons
13. Well Diameter: 2" Sch 40 PVC MW	2"	0.16	0.1534	18. 5 Well Volumes: 3.90 Gallons
14. Well Volume (gal) (s) w.e. height): 0.75	4"	0.65	0.5972	19. Purge Volume
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or (Bailer): 1.5" Disposable PVC Bailer, T.P. Twine

Final Field Analysis

23. Total Amount of Water Removed	24. Was Well Pumped Dry?	25. Was water added to well?	26. Was the Groundwater Sampled?
2.5 Gallons	Yes (No)	(No) Yes If yes, source:	(Yes) No If yes, what was the sample number & Date: W-20, 10/07/14 Sampling Personnel? CM Barnhill @ 11:28 3 x 40 ml VOAs

27. Final Parameters

Time	Temp C	Conductivity (ms/cm)	pH	NTUs	WL	Removed	Flow Rate	Observations
11:26	16.71	1.108	6.96	Turbid Fine Silt	59.37'	2.5 Gallons	0.25/Bail	Turbid Fine Silt

Photo Roll #, Hyde 5260

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear Initial Bail - Then Turbid Fine Silt No odor.

29. Purgewater disposal method: On Ground Surface

Sampling / Development Parameters

Time	Temp C	Conductivity (ms/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
11:21	18.36	1.007	6.53	Clear No odor	60.32	Initial parameters	7.05	0.25	-1.8/194.8
11:22	17.49	1.059	6.83	Turbid Fine Silt	—	1.0	6.51	0.25	-11.4/185.9
11:24	16.77	1.091	6.91	" " "	—	2.0	6.18	0.25	-15.3/183.2
11:26	16.71	1.108	6.96	" " "	59.37'	2.5	5.29	0.25	-17.8/185.9

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: [signature] PG Date: 10/07/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well ☒ MW ☐ Production ☐ Other _____	Type of Data ☐ Development ☑ Sampling ☐ Pump Test ☐ Other _____	Well No. W-21 Sheet 1 of 1 Sheets
1. Project GW Monitoring 2014	2. Project Location Wolstad Lovington 66 424 South Main Lovington, NM	3. Date 10/07/2014
4. Technician CM Barnhill, PG		
7. Method Pumping Surging Air Lift Bailing Other	8. Manufacturer's Designation of Rig PSR-2001	9. Location of Well (Site, Description) Monitor Well W-21

Water Levels

Initial	Final	Final + 24 Hours
Date: 10/07/14 Time: 11:48	Date: 10/07/14 Time: 12:07	Date: Time:
10. Total Depth of Well (from TOC) ~~68.85~~ 64.85'	15. Total Depth of Well (from TOC) /	20. Total Depth of Well (from TOC)
11. Water Level (from TOC) 59.74 ~~DTW~~ MOD	16. Water Level (from TOC) 59.87	21. Water Level (from TOC)

12. Water Column Height 5.11	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes 2.45 Gallons
13. Well Diameter 2" Sch 40 PVC MW	(2")	0.16	0.1534	18. 5 Well Volumes 4.08 Gallons
14. Well Volume (gal) (s) w.e. height) 0.817	4"	0.65	0.5972	19. Purge Volume 2.5 Gallons
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or ~~Bailer~~: 1.8" PVC Disposable Bailer, T.O. Twine

Final Field Analysis

23. Total Amount of Water Removed 2.5 Gallons	24. Was Well Pumped Dry? Yes (No)	25. Was water added to well? (No) Yes If yes, source:	26. Was the Groundwater Sampled (Yes) No If yes, what was the sample number & Date: Sampling Personnel? W-21, 10/07/14 CM Barnhill @ 12:05 3x40mL VOAs / HgCl2

27. Final Parameters — Photo Roll #, 6260

Time	Temp C	Conductivity (mg/cm)	pH	NTUs	WL	Removed	Flow Rate	Observations
12:02	17.60	1.313	6.78	TURBID FINE SILT	59.87	2.5 Gallons	0.25 / Bail	TURBID FINE SILT

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear Initially - then TURBID FINE SILT No odor

29. Purgewater disposal method: ON GROUND Surface

Sampling / Development Parameters

Time	Temp C	Conductivity (mg/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
11:56	18.20	1.352	6.90	Clear H2O	59.74	Initial parameters	7.69	0.25	-14.3 / 184.8
11:59	17.80	1.353	6.92	TURBID FINE SILT	—	1.0	6.89	0.25	-9.7 / 189.1
12:00	17.72	1.320	6.92	" " "	—	2.0	6.34	0.25	-14.2 / 191.4
12:02	17.60	1.313	6.78	" " "	59.87	2.5	5.79	0.25	-8.2 / 195.8

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: [signature] PG — Date: 10/07/14

APPENDIX D
ANALYTICAL LABORATORY REPORTS

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 15, 2014

Clay Kilmer

Golder Associates
5200 Pasadena, NE Suite C
Albuquerque, NM 87113
TEL: (505) 821-3043
FAX (505) 821-5273

RE: Walstad Lovington 66 OrderNo.: 1410485

Dear Clay Kilmer:

Hall Environmental Analysis Laboratory received 10 sample(s) on 10/9/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-20
Project: Walstad Lovington 66
Collection Date: 10/7/2014 11:28:00 AM
Lab ID: 1410485-001
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Toluene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Ethylbenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Methyl tert-butyl ether (MTBE)	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,2,4-Trimethylbenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,3,5-Trimethylbenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,2-Dichloroethane (EDC)	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,2-Dibromoethane (EDB)	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Naphthalene	ND	4.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1-Methylnaphthalene	ND	8.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
2-Methylnaphthalene	ND	8.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Acetone	ND	20		µg/L	2	10/13/2014 8:36:53 PM	R21877
Bromobenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Bromodichloromethane	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Bromoform	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Bromomethane	ND	6.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
2-Butanone	ND	20		µg/L	2	10/13/2014 8:36:53 PM	R21877
Carbon disulfide	ND	20		µg/L	2	10/13/2014 8:36:53 PM	R21877
Carbon Tetrachloride	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Chlorobenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Chloroethane	ND	4.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Chloroform	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Chloromethane	ND	6.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
2-Chlorotoluene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
4-Chlorotoluene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
cis-1,2-DCE	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
cis-1,3-Dichloropropene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,2-Dibromo-3-chloropropane	ND	4.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Dibromochloromethane	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Dibromomethane	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,2-Dichlorobenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,3-Dichlorobenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,4-Dichlorobenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Dichlorodifluoromethane	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,1-Dichloroethane	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,1-Dichloroethene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,2-Dichloropropane	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,3-Dichloropropane	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
2,2-Dichloropropane	ND	4.0		µg/L	2	10/13/2014 8:36:53 PM	R21877

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-20
Project: Walstad Lovington 66
Collection Date: 10/7/2014 11:28:00 AM
Lab ID: 1410485-001
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,1-Dichloropropene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Hexachlorobutadiene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
2-Hexanone	ND	20		µg/L	2	10/13/2014 8:36:53 PM	R21877
Isopropylbenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
4-Isopropyltoluene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
4-Methyl-2-pentanone	ND	20		µg/L	2	10/13/2014 8:36:53 PM	R21877
Methylene Chloride	ND	6.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
n-Butylbenzene	ND	6.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
n-Propylbenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
sec-Butylbenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Styrene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
tert-Butylbenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,1,1,2-Tetrachloroethane	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,1,2,2-Tetrachloroethane	ND	4.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Tetrachloroethene (PCE)	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
trans-1,2-DCE	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
trans-1,3-Dichloropropene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,2,3-Trichlorobenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,2,4-Trichlorobenzene	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,1,1-Trichloroethane	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,1,2-Trichloroethane	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Trichloroethene (TCE)	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Trichlorofluoromethane	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
1,2,3-Trichloropropane	ND	4.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Vinyl chloride	ND	2.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Xylenes, Total	ND	3.0		µg/L	2	10/13/2014 8:36:53 PM	R21877
Surr: 1,2-Dichloroethane-d4	80.1	70-130		%REC	2	10/13/2014 8:36:53 PM	R21877
Surr: 4-Bromofluorobenzene	91.4	70-130		%REC	2	10/13/2014 8:36:53 PM	R21877
Surr: Dibromofluoromethane	97.5	70-130		%REC	2	10/13/2014 8:36:53 PM	R21877
Surr: Toluene-d8	94.6	70-130		%REC	2	10/13/2014 8:36:53 PM	R21877

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-21
Project: Walstad Lovington 66
Collection Date: 10/7/2014 12:05:00 PM
Lab ID: 1410485-002
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
Benzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Toluene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Ethylbenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Methyl tert-butyl ether (MTBE)	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,2,4-Trimethylbenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,3,5-Trimethylbenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,2-Dichloroethane (EDC)	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,2-Dibromoethane (EDB)	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Naphthalene	ND	4.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1-Methylnaphthalene	ND	8.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
2-Methylnaphthalene	ND	8.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Acetone	ND	20		µg/L	2	10/13/2014 10:00:50 PM	R21877
Bromobenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Bromodichloromethane	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Bromoform	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Bromomethane	ND	6.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
2-Butanone	ND	20		µg/L	2	10/13/2014 10:00:50 PM	R21877
Carbon disulfide	ND	20		µg/L	2	10/13/2014 10:00:50 PM	R21877
Carbon Tetrachloride	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Chlorobenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Chloroethane	ND	4.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Chloroform	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Chloromethane	ND	6.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
2-Chlorotoluene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
4-Chlorotoluene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
cis-1,2-DCE	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
cis-1,3-Dichloropropene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,2-Dibromo-3-chloropropane	ND	4.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Dibromochloromethane	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Dibromomethane	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,2-Dichlorobenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,3-Dichlorobenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,4-Dichlorobenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Dichlorodifluoromethane	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,1-Dichloroethane	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,1-Dichloroethene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,2-Dichloropropane	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,3-Dichloropropane	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
2,2-Dichloropropane	ND	4.0		µg/L	2	10/13/2014 10:00:50 PM	R21877

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-21
Project: Walstad Lovington 66
Collection Date: 10/7/2014 12:05:00 PM
Lab ID: 1410485-002
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **RAA**	
1,1-Dichloropropene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Hexachlorobutadiene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
2-Hexanone	ND	20		µg/L	2	10/13/2014 10:00:50 PM	R21877
Isopropylbenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
4-Isopropyltoluene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
4-Methyl-2-pentanone	ND	20		µg/L	2	10/13/2014 10:00:50 PM	R21877
Methylene Chloride	ND	6.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
n-Butylbenzene	ND	6.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
n-Propylbenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
sec-Butylbenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Styrene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
tert-Butylbenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,1,1,2-Tetrachloroethane	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,1,2,2-Tetrachloroethane	ND	4.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Tetrachloroethene (PCE)	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
trans-1,2-DCE	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
trans-1,3-Dichloropropene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,2,3-Trichlorobenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,2,4-Trichlorobenzene	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,1,1-Trichloroethane	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,1,2-Trichloroethane	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Trichloroethene (TCE)	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Trichlorofluoromethane	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
1,2,3-Trichloropropane	ND	4.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Vinyl chloride	ND	2.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Xylenes, Total	ND	3.0		µg/L	2	10/13/2014 10:00:50 PM	R21877
Surr: 1,2-Dichloroethane-d4	92.0	70-130		%REC	2	10/13/2014 10:00:50 PM	R21877
Surr: 4-Bromofluorobenzene	87.1	70-130		%REC	2	10/13/2014 10:00:50 PM	R21877
Surr: Dibromofluoromethane	107	70-130		%REC	2	10/13/2014 10:00:50 PM	R21877
Surr: Toluene-d8	84.5	70-130		%REC	2	10/13/2014 10:00:50 PM	R21877

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-19
Project: Walstad Lovington 66
Collection Date: 10/7/2014 12:43:00 PM
Lab ID: 1410485-003
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	6.9	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Toluene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Ethylbenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Methyl tert-butyl ether (MTBE)	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,2,4-Trimethylbenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,3,5-Trimethylbenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,2-Dichloroethane (EDC)	100	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,2-Dibromoethane (EDB)	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Naphthalene	ND	4.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1-Methylnaphthalene	ND	8.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
2-Methylnaphthalene	ND	8.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Acetone	ND	20		µg/L	2	10/14/2014 11:59:34 AM	R21896
Bromobenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Bromodichloromethane	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Bromoform	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Bromomethane	ND	6.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
2-Butanone	ND	20		µg/L	2	10/14/2014 11:59:34 AM	R21896
Carbon disulfide	ND	20		µg/L	2	10/14/2014 11:59:34 AM	R21896
Carbon Tetrachloride	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Chlorobenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Chloroethane	ND	4.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Chloroform	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Chloromethane	ND	6.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
2-Chlorotoluene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
4-Chlorotoluene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
cis-1,2-DCE	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
cis-1,3-Dichloropropene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,2-Dibromo-3-chloropropane	ND	4.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Dibromochloromethane	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Dibromomethane	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,2-Dichlorobenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,3-Dichlorobenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,4-Dichlorobenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Dichlorodifluoromethane	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,1-Dichloroethane	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,1-Dichloroethene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,2-Dichloropropane	7.7	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,3-Dichloropropane	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
2,2-Dichloropropane	ND	4.0		µg/L	2	10/14/2014 11:59:34 AM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-19
Project: Walstad Lovington 66
Collection Date: 10/7/2014 12:43:00 PM
Lab ID: 1410485-003
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Hexachlorobutadiene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
2-Hexanone	ND	20		µg/L	2	10/14/2014 11:59:34 AM	R21896
Isopropylbenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
4-Isopropyltoluene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
4-Methyl-2-pentanone	ND	20		µg/L	2	10/14/2014 11:59:34 AM	R21896
Methylene Chloride	ND	6.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
n-Butylbenzene	ND	6.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
n-Propylbenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
sec-Butylbenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Styrene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
tert-Butylbenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,1,1,2-Tetrachloroethane	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,1,2,2-Tetrachloroethane	ND	4.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Tetrachloroethene (PCE)	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
trans-1,2-DCE	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
trans-1,3-Dichloropropene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,2,3-Trichlorobenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,2,4-Trichlorobenzene	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,1,1-Trichloroethane	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,1,2-Trichloroethane	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Trichloroethene (TCE)	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Trichlorofluoromethane	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
1,2,3-Trichloropropane	ND	4.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Vinyl chloride	ND	2.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Xylenes, Total	ND	3.0		µg/L	2	10/14/2014 11:59:34 AM	R21896
Surr: 1,2-Dichloroethane-d4	90.1	70-130		%REC	2	10/14/2014 11:59:34 AM	R21896
Surr: 4-Bromofluorobenzene	108	70-130		%REC	2	10/14/2014 11:59:34 AM	R21896
Surr: Dibromofluoromethane	103	70-130		%REC	2	10/14/2014 11:59:34 AM	R21896
Surr: Toluene-d8	89.7	70-130		%REC	2	10/14/2014 11:59:34 AM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-9
Project: Walstad Lovington 66
Collection Date: 10/7/2014 1:09:00 PM
Lab ID: 1410485-004
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	8000	500		µg/L	500	10/14/2014 12:27:35 PM	R21896
Toluene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Ethylbenzene	1200	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Methyl tert-butyl ether (MTBE)	150	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,2,4-Trimethylbenzene	420	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,3,5-Trimethylbenzene	210	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,2-Dichloroethane (EDC)	960	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,2-Dibromoethane (EDB)	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Naphthalene	180	100		µg/L	50	10/14/2014 12:55:51 PM	R21896
1-Methylnaphthalene	ND	200		µg/L	50	10/14/2014 12:55:51 PM	R21896
2-Methylnaphthalene	ND	200		µg/L	50	10/14/2014 12:55:51 PM	R21896
Acetone	ND	500		µg/L	50	10/14/2014 12:55:51 PM	R21896
Bromobenzene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Bromodichloromethane	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Bromoform	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Bromomethane	ND	150		µg/L	50	10/14/2014 12:55:51 PM	R21896
2-Butanone	ND	500		µg/L	50	10/14/2014 12:55:51 PM	R21896
Carbon disulfide	ND	500		µg/L	50	10/14/2014 12:55:51 PM	R21896
Carbon Tetrachloride	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Chlorobenzene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Chloroethane	ND	100		µg/L	50	10/14/2014 12:55:51 PM	R21896
Chloroform	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Chloromethane	ND	150		µg/L	50	10/14/2014 12:55:51 PM	R21896
2-Chlorotoluene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
4-Chlorotoluene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
cis-1,2-DCE	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
cis-1,3-Dichloropropene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,2-Dibromo-3-chloropropane	ND	100		µg/L	50	10/14/2014 12:55:51 PM	R21896
Dibromochloromethane	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Dibromomethane	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,2-Dichlorobenzene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,3-Dichlorobenzene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,4-Dichlorobenzene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Dichlorodifluoromethane	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,1-Dichloroethane	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,1-Dichloroethene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,2-Dichloropropane	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,3-Dichloropropane	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
2,2-Dichloropropane	ND	100		µg/L	50	10/14/2014 12:55:51 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-9
Project: Walstad Lovington 66
Collection Date: 10/7/2014 1:09:00 PM
Lab ID: 1410485-004
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Hexachlorobutadiene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
2-Hexanone	ND	500		µg/L	50	10/14/2014 12:55:51 PM	R21896
Isopropylbenzene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
4-Isopropyltoluene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
4-Methyl-2-pentanone	ND	500		µg/L	50	10/14/2014 12:55:51 PM	R21896
Methylene Chloride	ND	150		µg/L	50	10/14/2014 12:55:51 PM	R21896
n-Butylbenzene	ND	150		µg/L	50	10/14/2014 12:55:51 PM	R21896
n-Propylbenzene	130	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
sec-Butylbenzene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Styrene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
tert-Butylbenzene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,1,1,2-Tetrachloroethane	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,1,2,2-Tetrachloroethane	ND	100		µg/L	50	10/14/2014 12:55:51 PM	R21896
Tetrachloroethene (PCE)	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
trans-1,2-DCE	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
trans-1,3-Dichloropropene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,2,3-Trichlorobenzene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,2,4-Trichlorobenzene	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,1,1-Trichloroethane	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,1,2-Trichloroethane	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Trichloroethene (TCE)	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Trichlorofluoromethane	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
1,2,3-Trichloropropane	ND	100		µg/L	50	10/14/2014 12:55:51 PM	R21896
Vinyl chloride	ND	50		µg/L	50	10/14/2014 12:55:51 PM	R21896
Xylenes, Total	210	75		µg/L	50	10/14/2014 12:55:51 PM	R21896
Surr: 1,2-Dichloroethane-d4	96.7	70-130		%REC	50	10/14/2014 12:55:51 PM	R21896
Surr: 4-Bromofluorobenzene	97.2	70-130		%REC	50	10/14/2014 12:55:51 PM	R21896
Surr: Dibromofluoromethane	106	70-130		%REC	50	10/14/2014 12:55:51 PM	R21896
Surr: Toluene-d8	90.9	70-130		%REC	50	10/14/2014 12:55:51 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-8
Project: Walstad Lovington 66
Collection Date: 10/7/2014 1:37:00 PM
Lab ID: 1410485-005
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	14000	1000		µg/L	1E	10/14/2014 2:49:25 PM	R21896
Toluene	7000	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Ethylbenzene	2400	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Methyl tert-butyl ether (MTBE)	28000	1000		µg/L	1E	10/14/2014 2:49:25 PM	R21896
1,2,4-Trimethylbenzene	2100	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,3,5-Trimethylbenzene	550	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,2-Dichloroethane (EDC)	440	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,2-Dibromoethane (EDB)	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Naphthalene	590	200		µg/L	100	10/14/2014 3:17:38 PM	R21896
1-Methylnaphthalene	ND	400		µg/L	100	10/14/2014 3:17:38 PM	R21896
2-Methylnaphthalene	ND	400		µg/L	100	10/14/2014 3:17:38 PM	R21896
Acetone	ND	1000		µg/L	100	10/14/2014 3:17:38 PM	R21896
Bromobenzene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Bromodichloromethane	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Bromoform	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Bromomethane	ND	300		µg/L	100	10/14/2014 3:17:38 PM	R21896
2-Butanone	ND	1000		µg/L	100	10/14/2014 3:17:38 PM	R21896
Carbon disulfide	ND	1000		µg/L	100	10/14/2014 3:17:38 PM	R21896
Carbon Tetrachloride	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Chlorobenzene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Chloroethane	ND	200		µg/L	100	10/14/2014 3:17:38 PM	R21896
Chloroform	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Chloromethane	ND	300		µg/L	100	10/14/2014 3:17:38 PM	R21896
2-Chlorotoluene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
4-Chlorotoluene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
cis-1,2-DCE	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
cis-1,3-Dichloropropene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,2-Dibromo-3-chloropropane	ND	200		µg/L	100	10/14/2014 3:17:38 PM	R21896
Dibromochloromethane	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Dibromomethane	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,2-Dichlorobenzene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,3-Dichlorobenzene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,4-Dichlorobenzene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Dichlorodifluoromethane	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,1-Dichloroethane	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,1-Dichloroethene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,2-Dichloropropane	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,3-Dichloropropane	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
2,2-Dichloropropane	ND	200		µg/L	100	10/14/2014 3:17:38 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-8
Project: Walstad Lovington 66
Collection Date: 10/7/2014 1:37:00 PM
Lab ID: 1410485-005
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Hexachlorobutadiene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
2-Hexanone	ND	1000		µg/L	100	10/14/2014 3:17:38 PM	R21896
Isopropylbenzene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
4-Isopropyltoluene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
4-Methyl-2-pentanone	ND	1000		µg/L	100	10/14/2014 3:17:38 PM	R21896
Methylene Chloride	ND	300		µg/L	100	10/14/2014 3:17:38 PM	R21896
n-Butylbenzene	ND	300		µg/L	100	10/14/2014 3:17:38 PM	R21896
n-Propylbenzene	240	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
sec-Butylbenzene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Styrene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
tert-Butylbenzene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,1,1,2-Tetrachloroethane	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,1,2,2-Tetrachloroethane	ND	200		µg/L	100	10/14/2014 3:17:38 PM	R21896
Tetrachloroethene (PCE)	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
trans-1,2-DCE	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
trans-1,3-Dichloropropene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,2,3-Trichlorobenzene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,2,4-Trichlorobenzene	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,1,1-Trichloroethane	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,1,2-Trichloroethane	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Trichloroethene (TCE)	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Trichlorofluoromethane	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
1,2,3-Trichloropropane	ND	200		µg/L	100	10/14/2014 3:17:38 PM	R21896
Vinyl chloride	ND	100		µg/L	100	10/14/2014 3:17:38 PM	R21896
Xylenes, Total	7600	150		µg/L	100	10/14/2014 3:17:38 PM	R21896
Surr: 1,2-Dichloroethane-d4	94.4	70-130		%REC	100	10/14/2014 3:17:38 PM	R21896
Surr: 4-Bromofluorobenzene	105	70-130		%REC	100	10/14/2014 3:17:38 PM	R21896
Surr: Dibromofluoromethane	111	70-130		%REC	100	10/14/2014 3:17:38 PM	R21896
Surr: Toluene-d8	91.2	70-130		%REC	100	10/14/2014 3:17:38 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-5
Project: Walstad Lovington 66
Collection Date: 10/7/2014 2:00:00 PM
Lab ID: 1410485-006
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	8.5	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Toluene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Ethylbenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Methyl tert-butyl ether (MTBE)	2.5	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,2,4-Trimethylbenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,3,5-Trimethylbenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,2-Dichloroethane (EDC)	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,2-Dibromoethane (EDB)	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Naphthalene	ND	4.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1-Methylnaphthalene	ND	8.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
2-Methylnaphthalene	ND	8.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Acetone	ND	20		µg/L	2	10/14/2014 3:45:52 PM	R21896
Bromobenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Bromodichloromethane	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Bromoform	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Bromomethane	ND	6.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
2-Butanone	ND	20		µg/L	2	10/14/2014 3:45:52 PM	R21896
Carbon disulfide	ND	20		µg/L	2	10/14/2014 3:45:52 PM	R21896
Carbon Tetrachloride	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Chlorobenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Chloroethane	ND	4.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Chloroform	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Chloromethane	ND	6.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
2-Chlorotoluene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
4-Chlorotoluene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
cis-1,2-DCE	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
cis-1,3-Dichloropropene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,2-Dibromo-3-chloropropane	ND	4.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Dibromochloromethane	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Dibromomethane	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,2-Dichlorobenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,3-Dichlorobenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,4-Dichlorobenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Dichlorodifluoromethane	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,1-Dichloroethane	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,1-Dichloroethene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,2-Dichloropropane	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,3-Dichloropropane	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
2,2-Dichloropropane	ND	4.0		µg/L	2	10/14/2014 3:45:52 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-5
Project: Walstad Lovington 66
Collection Date: 10/7/2014 2:00:00 PM
Lab ID: 1410485-006
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Hexachlorobutadiene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
2-Hexanone	ND	20		µg/L	2	10/14/2014 3:45:52 PM	R21896
Isopropylbenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
4-Isopropyltoluene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
4-Methyl-2-pentanone	ND	20		µg/L	2	10/14/2014 3:45:52 PM	R21896
Methylene Chloride	ND	6.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
n-Butylbenzene	ND	6.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
n-Propylbenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
sec-Butylbenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Styrene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
tert-Butylbenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,1,1,2-Tetrachloroethane	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,1,2,2-Tetrachloroethane	ND	4.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Tetrachloroethene (PCE)	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
trans-1,2-DCE	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
trans-1,3-Dichloropropene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,2,3-Trichlorobenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,2,4-Trichlorobenzene	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,1,1-Trichloroethane	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,1,2-Trichloroethane	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Trichloroethene (TCE)	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Trichlorofluoromethane	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
1,2,3-Trichloropropane	ND	4.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Vinyl chloride	ND	2.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Xylenes, Total	ND	3.0		µg/L	2	10/14/2014 3:45:52 PM	R21896
Surr: 1,2-Dichloroethane-d4	90.4	70-130		%REC	2	10/14/2014 3:45:52 PM	R21896
Surr: 4-Bromofluorobenzene	97.4	70-130		%REC	2	10/14/2014 3:45:52 PM	R21896
Surr: Dibromofluoromethane	106	70-130		%REC	2	10/14/2014 3:45:52 PM	R21896
Surr: Toluene-d8	88.9	70-130		%REC	2	10/14/2014 3:45:52 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-11
Project: Walstad Lovington 66
Collection Date: 10/7/2014 2:37:00 PM
Lab ID: 1410485-007
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	90	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Toluene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Ethylbenzene	150	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Methyl tert-butyl ether (MTBE)	11	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,2,4-Trimethylbenzene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,3,5-Trimethylbenzene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,2-Dichloroethane (EDC)	57	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,2-Dibromoethane (EDB)	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Naphthalene	ND	10		µg/L	5	10/14/2014 4:14:07 PM	R21896
1-Methylnaphthalene	ND	20		µg/L	5	10/14/2014 4:14:07 PM	R21896
2-Methylnaphthalene	ND	20		µg/L	5	10/14/2014 4:14:07 PM	R21896
Acetone	ND	50		µg/L	5	10/14/2014 4:14:07 PM	R21896
Bromobenzene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Bromodichloromethane	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Bromoform	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Bromomethane	ND	15		µg/L	5	10/14/2014 4:14:07 PM	R21896
2-Butanone	ND	50		µg/L	5	10/14/2014 4:14:07 PM	R21896
Carbon disulfide	ND	50		µg/L	5	10/14/2014 4:14:07 PM	R21896
Carbon Tetrachloride	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Chlorobenzene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Chloroethane	ND	10		µg/L	5	10/14/2014 4:14:07 PM	R21896
Chloroform	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Chloromethane	ND	15		µg/L	5	10/14/2014 4:14:07 PM	R21896
2-Chlorotoluene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
4-Chlorotoluene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
cis-1,2-DCE	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
cis-1,3-Dichloropropene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,2-Dibromo-3-chloropropane	ND	10		µg/L	5	10/14/2014 4:14:07 PM	R21896
Dibromochloromethane	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Dibromomethane	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,2-Dichlorobenzene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,3-Dichlorobenzene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,4-Dichlorobenzene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Dichlorodifluoromethane	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,1-Dichloroethane	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,1-Dichloroethene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,2-Dichloropropane	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,3-Dichloropropane	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
2,2-Dichloropropane	ND	10		µg/L	5	10/14/2014 4:14:07 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-11
Project: Walstad Lovington 66
Collection Date: 10/7/2014 2:37:00 PM
Lab ID: 1410485-007
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Hexachlorobutadiene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
2-Hexanone	ND	50		µg/L	5	10/14/2014 4:14:07 PM	R21896
Isopropylbenzene	29	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
4-Isopropyltoluene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
4-Methyl-2-pentanone	ND	50		µg/L	5	10/14/2014 4:14:07 PM	R21896
Methylene Chloride	ND	15		µg/L	5	10/14/2014 4:14:07 PM	R21896
n-Butylbenzene	ND	15		µg/L	5	10/14/2014 4:14:07 PM	R21896
n-Propylbenzene	31	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
sec-Butylbenzene	12	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Styrene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
tert-Butylbenzene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,1,2,2-Tetrachloroethane	ND	10		µg/L	5	10/14/2014 4:14:07 PM	R21896
Tetrachloroethene (PCE)	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
trans-1,2-DCE	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
trans-1,3-Dichloropropene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,2,3-Trichlorobenzene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,2,4-Trichlorobenzene	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,1,1-Trichloroethane	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,1,2-Trichloroethane	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Trichloroethene (TCE)	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Trichlorofluoromethane	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
1,2,3-Trichloropropane	ND	10		µg/L	5	10/14/2014 4:14:07 PM	R21896
Vinyl chloride	ND	5.0		µg/L	5	10/14/2014 4:14:07 PM	R21896
Xylenes, Total	ND	7.5		µg/L	5	10/14/2014 4:14:07 PM	R21896
Surr: 1,2-Dichloroethane-d4	91.1	70-130		%REC	5	10/14/2014 4:14:07 PM	R21896
Surr: 4-Bromofluorobenzene	110	70-130		%REC	5	10/14/2014 4:14:07 PM	R21896
Surr: Dibromofluoromethane	106	70-130		%REC	5	10/14/2014 4:14:07 PM	R21896
Surr: Toluene-d8	82.2	70-130		%REC	5	10/14/2014 4:14:07 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-14
Project: Walstad Lovington 66
Collection Date: 10/7/2014 3:00:00 PM
Lab ID: 1410485-008
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	31000	2000		µg/L	2E	10/14/2014 4:42:11 PM	R21896
Toluene	31000	2000		µg/L	2E	10/14/2014 4:42:11 PM	R21896
Ethylbenzene	4200	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Methyl tert-butyl ether (MTBE)	1600	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,2,4-Trimethylbenzene	1600	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,3,5-Trimethylbenzene	410	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,2-Dichloroethane (EDC)	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,2-Dibromoethane (EDB)	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Naphthalene	700	400		µg/L	200	10/14/2014 5:10:12 PM	R21896
1-Methylnaphthalene	ND	800		µg/L	200	10/14/2014 5:10:12 PM	R21896
2-Methylnaphthalene	ND	800		µg/L	200	10/14/2014 5:10:12 PM	R21896
Acetone	ND	2000		µg/L	200	10/14/2014 5:10:12 PM	R21896
Bromobenzene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Bromodichloromethane	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Bromoform	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Bromomethane	ND	600		µg/L	200	10/14/2014 5:10:12 PM	R21896
2-Butanone	ND	2000		µg/L	200	10/14/2014 5:10:12 PM	R21896
Carbon disulfide	ND	2000		µg/L	200	10/14/2014 5:10:12 PM	R21896
Carbon Tetrachloride	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Chlorobenzene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Chloroethane	ND	400		µg/L	200	10/14/2014 5:10:12 PM	R21896
Chloroform	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Chloromethane	ND	600		µg/L	200	10/14/2014 5:10:12 PM	R21896
2-Chlorotoluene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
4-Chlorotoluene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
cis-1,2-DCE	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
cis-1,3-Dichloropropene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,2-Dibromo-3-chloropropane	ND	400		µg/L	200	10/14/2014 5:10:12 PM	R21896
Dibromochloromethane	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Dibromomethane	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,2-Dichlorobenzene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,3-Dichlorobenzene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,4-Dichlorobenzene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Dichlorodifluoromethane	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,1-Dichloroethane	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,1-Dichloroethene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,2-Dichloropropane	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,3-Dichloropropane	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
2,2-Dichloropropane	ND	400		µg/L	200	10/14/2014 5:10:12 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-14
Project: Walstad Lovington 66
Collection Date: 10/7/2014 3:00:00 PM
Lab ID: 1410485-008
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Hexachlorobutadiene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
2-Hexanone	ND	2000		µg/L	200	10/14/2014 5:10:12 PM	R21896
Isopropylbenzene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
4-Isopropyltoluene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
4-Methyl-2-pentanone	ND	2000		µg/L	200	10/14/2014 5:10:12 PM	R21896
Methylene Chloride	ND	600		µg/L	200	10/14/2014 5:10:12 PM	R21896
n-Butylbenzene	ND	600		µg/L	200	10/14/2014 5:10:12 PM	R21896
n-Propylbenzene	300	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
sec-Butylbenzene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Styrene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
tert-Butylbenzene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,1,1,2-Tetrachloroethane	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,1,2,2-Tetrachloroethane	ND	400		µg/L	200	10/14/2014 5:10:12 PM	R21896
Tetrachloroethene (PCE)	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
trans-1,2-DCE	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
trans-1,3-Dichloropropene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,2,3-Trichlorobenzene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,2,4-Trichlorobenzene	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,1,1-Trichloroethane	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,1,2-Trichloroethane	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Trichloroethene (TCE)	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Trichlorofluoromethane	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
1,2,3-Trichloropropane	ND	400		µg/L	200	10/14/2014 5:10:12 PM	R21896
Vinyl chloride	ND	200		µg/L	200	10/14/2014 5:10:12 PM	R21896
Xylenes, Total	11000	300		µg/L	200	10/14/2014 5:10:12 PM	R21896
Surr: 1,2-Dichloroethane-d4	83.4	70-130		%REC	200	10/14/2014 5:10:12 PM	R21896
Surr: 4-Bromofluorobenzene	101	70-130		%REC	200	10/14/2014 5:10:12 PM	R21896
Surr: Dibromofluoromethane	107	70-130		%REC	200	10/14/2014 5:10:12 PM	R21896
Surr: Toluene-d8	90.2	70-130		%REC	200	10/14/2014 5:10:12 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-16
Project: Walstad Lovington 66
Collection Date: 10/7/2014 3:40:00 PM
Lab ID: 1410485-009
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Toluene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Ethylbenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Naphthalene	ND	2.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1-Methylnaphthalene	ND	4.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
2-Methylnaphthalene	ND	4.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Acetone	ND	10		µg/L	1	10/14/2014 5:38:13 PM	R21896
Bromobenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Bromodichloromethane	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Bromoform	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Bromomethane	ND	3.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
2-Butanone	ND	10		µg/L	1	10/14/2014 5:38:13 PM	R21896
Carbon disulfide	ND	10		µg/L	1	10/14/2014 5:38:13 PM	R21896
Carbon Tetrachloride	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Chlorobenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Chloroethane	ND	2.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Chloroform	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Chloromethane	ND	3.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
2-Chlorotoluene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
4-Chlorotoluene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
cis-1,2-DCE	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Dibromochloromethane	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Dibromomethane	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,1-Dichloroethane	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,1-Dichloroethene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,2-Dichloropropane	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,3-Dichloropropane	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
2,2-Dichloropropane	ND	2.0		µg/L	1	10/14/2014 5:38:13 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-16
Project: Walstad Lovington 66
Collection Date: 10/7/2014 3:40:00 PM
Lab ID: 1410485-009
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Hexachlorobutadiene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
2-Hexanone	ND	10		µg/L	1	10/14/2014 5:38:13 PM	R21896
Isopropylbenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
4-Isopropyltoluene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
4-Methyl-2-pentanone	ND	10		µg/L	1	10/14/2014 5:38:13 PM	R21896
Methylene Chloride	ND	3.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
n-Butylbenzene	ND	3.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
n-Propylbenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
sec-Butylbenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Styrene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
tert-Butylbenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
trans-1,2-DCE	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Trichlorofluoromethane	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Vinyl chloride	ND	1.0		µg/L	1	10/14/2014 5:38:13 PM	R21896
Xylenes, Total	ND	1.5		µg/L	1	10/14/2014 5:38:13 PM	R21896
Surr: 1,2-Dichloroethane-d4	86.7	70-130		%REC	1	10/14/2014 5:38:13 PM	R21896
Surr: 4-Bromofluorobenzene	100	70-130		%REC	1	10/14/2014 5:38:13 PM	R21896
Surr: Dibromofluoromethane	102	70-130		%REC	1	10/14/2014 5:38:13 PM	R21896
Surr: Toluene-d8	84.4	70-130		%REC	1	10/14/2014 5:38:13 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: Trip Blank
Project: Walstad Lovington 66
Collection Date:
Lab ID: 1410485-010
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Toluene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Ethylbenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Naphthalene	ND	2.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1-Methylnaphthalene	ND	4.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
2-Methylnaphthalene	ND	4.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Acetone	ND	10		µg/L	1	10/14/2014 6:06:10 PM	R21896
Bromobenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Bromodichloromethane	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Bromoform	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Bromomethane	ND	3.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
2-Butanone	ND	10		µg/L	1	10/14/2014 6:06:10 PM	R21896
Carbon disulfide	ND	10		µg/L	1	10/14/2014 6:06:10 PM	R21896
Carbon Tetrachloride	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Chlorobenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Chloroethane	ND	2.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Chloroform	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Chloromethane	ND	3.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
2-Chlorotoluene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
4-Chlorotoluene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
cis-1,2-DCE	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Dibromochloromethane	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Dibromomethane	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,1-Dichloroethane	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,1-Dichloroethene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,2-Dichloropropane	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,3-Dichloropropane	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
2,2-Dichloropropane	ND	2.0		µg/L	1	10/14/2014 6:06:10 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: Trip Blank
Project: Walstad Lovington 66
Collection Date:
Lab ID: 1410485-010
Matrix: AQUEOUS
Received Date: 10/9/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Hexachlorobutadiene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
2-Hexanone	ND	10		µg/L	1	10/14/2014 6:06:10 PM	R21896
Isopropylbenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
4-Isopropyltoluene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
4-Methyl-2-pentanone	ND	10		µg/L	1	10/14/2014 6:06:10 PM	R21896
Methylene Chloride	ND	3.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
n-Butylbenzene	ND	3.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
n-Propylbenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
sec-Butylbenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Styrene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
tert-Butylbenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
trans-1,2-DCE	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Trichlorofluoromethane	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Vinyl chloride	ND	1.0		µg/L	1	10/14/2014 6:06:10 PM	R21896
Xylenes, Total	ND	1.5		µg/L	1	10/14/2014 6:06:10 PM	R21896
Surr: 1,2-Dichloroethane-d4	83.3	70-130		%REC	1	10/14/2014 6:06:10 PM	R21896
Surr: 4-Bromofluorobenzene	91.7	70-130		%REC	1	10/14/2014 6:06:10 PM	R21896
Surr: Dibromofluoromethane	103	70-130		%REC	1	10/14/2014 6:06:10 PM	R21896
Surr: Toluene-d8	97.9	70-130		%REC	1	10/14/2014 6:06:10 PM	R21896

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1410485**

15-Oct-14

Client: Golder Associates

Project: Walstad Lovington 66

Sample ID **5mL-rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R21877**	RunNo: **21877**
Prep Date:	Analysis Date: **10/13/2014**	SeqNo: **642926** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1410485**

15-Oct-14

Client: Golder Associates

Project: Walstad Lovington 66

Sample ID **5mL-rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R21877**	RunNo: **21877**
Prep Date:	Analysis Date: **10/13/2014**	SeqNo: **642926** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.3		10.00		83.1	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		104	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	9.1		10.00		90.9	70	130			

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R21877**	RunNo: **21877**
Prep Date:	Analysis Date: **10/13/2014**	SeqNo: **642928** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	108	70	130			
Toluene	18	1.0	20.00	0	92.2	80	120			
Chlorobenzene	21	1.0	20.00	0	105	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1410485**

15-Oct-14

Client: Golder Associates

Project: Walstad Lovington 66

Sample ID **100ng lcs2**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R21877**	RunNo: **21877**
Prep Date:	Analysis Date: **10/13/2014**	SeqNo: **642928** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	23	1.0	20.00	0	115	82.6	131			
Trichloroethene (TCE)	20	1.0	20.00	0	99.7	70	130			
Surr: 1,2-Dichloroethane-d4	8.7		10.00		87.0	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		94.9	70	130			
Surr: Dibromofluoromethane	11		10.00		108	70	130			
Surr: Toluene-d8	8.6		10.00		86.3	70	130			

Sample ID **1410485-001ams**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **W-20**	Batch ID: **R21877**	RunNo: **21877**
Prep Date:	Analysis Date: **10/13/2014**	SeqNo: **642930** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	42	2.0	40.00	0	104	70	130			
Toluene	36	2.0	40.00	0	90.8	70	130			
Chlorobenzene	40	2.0	40.00	0	99.8	70	130			
1,1-Dichloroethene	39	2.0	40.00	0	97.2	70	130			
Trichloroethene (TCE)	37	2.0	40.00	0	93.3	70	130			
Surr: 1,2-Dichloroethane-d4	17		20.00		83.9	70	130			
Surr: 4-Bromofluorobenzene	20		20.00		99.0	70	130			
Surr: Dibromofluoromethane	20		20.00		98.6	70	130			
Surr: Toluene-d8	18		20.00		88.0	70	130			

Sample ID **1410485-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **W-20**	Batch ID: **R21877**	RunNo: **21877**
Prep Date:	Analysis Date: **10/13/2014**	SeqNo: **642931** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	40	2.0	40.00	0	99.5	70	130	4.24	20	
Toluene	36	2.0	40.00	0	90.9	70	130	0.0583	20	
Chlorobenzene	40	2.0	40.00	0	100	70	130	0.494	20	
1,1-Dichloroethene	38	2.0	40.00	0	95.9	70	130	1.40	20	
Trichloroethene (TCE)	36	2.0	40.00	0	89.5	70	130	4.11	20	
Surr: 1,2-Dichloroethane-d4	15		20.00		76.8	70	130	0	0	
Surr: 4-Bromofluorobenzene	19		20.00		92.8	70	130	0	0	
Surr: Dibromofluoromethane	19		20.00		95.8	70	130	0	0	
Surr: Toluene-d8	17		20.00		86.0	70	130	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1410485**

15-Oct-14

Client: Golder Associates

Project: Walstad Lovington 66

Sample ID **5ml rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R21896**	RunNo: **21896**
Prep Date:	Analysis Date: **10/14/2014**	SeqNo: **643578** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1410485**

15-Oct-14

Client: Golder Associates

Project: Walstad Lovington 66

Sample ID **5ml rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R21896**	RunNo: **21896**
Prep Date:	Analysis Date: **10/14/2014**	SeqNo: **643578** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.8		10.00		87.5	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.0	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	8.8		10.00		88.3	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R21896**	RunNo: **21896**
Prep Date:	Analysis Date: **10/14/2014**	SeqNo: **643580** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	19	1.0	20.00	0	96.9	80	120			
Chlorobenzene	21	1.0	20.00	0	103	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1410485**

15-Oct-14

Client: Golder Associates

Project: Walstad Lovington 66

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R21896**	RunNo: **21896**
Prep Date:	Analysis Date: **10/14/2014**	SeqNo: **643580** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	20	1.0	20.00	0	102	82.6	131			
Trichloroethene (TCE)	21	1.0	20.00	0	106	70	130			
Surr: 1,2-Dichloroethane-d4	8.9		10.00		89.0	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.7	70	130			
Surr: Dibromofluoromethane	11		10.00		109	70	130			
Surr: Toluene-d8	9.0		10.00		89.6	70	130			

Sample ID **1410485-004ams**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **W-9**	Batch ID: **R21896**	RunNo: **21896**
Prep Date:	Analysis Date: **10/14/2014**	SeqNo: **643660** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9000	50	1000	8634	37.8	70	130			ES
Toluene	970	50	1000	19.41	95.1	70	130			
Chlorobenzene	1100	50	1000	0	110	70	130			
1,1-Dichloroethene	960	50	1000	0	96.0	70	130			
Trichloroethene (TCE)	960	50	1000	0	95.5	70	130			
Surr: 1,2-Dichloroethane-d4	490		500.0		97.8	70	130			
Surr: 4-Bromofluorobenzene	500		500.0		99.9	70	130			
Surr: Dibromofluoromethane	510		500.0		102	70	130			
Surr: Toluene-d8	460		500.0		91.1	70	130			

Sample ID **1410485-004amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **W-9**	Batch ID: **R21896**	RunNo: **21896**
Prep Date:	Analysis Date: **10/14/2014**	SeqNo: **643670** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9000	50	1000	8634	32.7	70	130	0.576	20	ES
Toluene	940	50	1000	19.41	92.4	70	130	2.84	20	
Chlorobenzene	1100	50	1000	0	107	70	130	2.93	20	
1,1-Dichloroethene	1000	50	1000	0	101	70	130	5.24	20	
Trichloroethene (TCE)	1000	50	1000	0	101	70	130	6.01	20	
Surr: 1,2-Dichloroethane-d4	520		500.0		105	70	130	0	0	
Surr: 4-Bromofluorobenzene	530		500.0		105	70	130	0	0	
Surr: Dibromofluoromethane	550		500.0		110	70	130	0	0	
Surr: Toluene-d8	440		500.0		88.6	70	130	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Golder Assoc | Work Order Number: 1410485 | RcptNo: 1

Received by/date: AG 10/09/14

Logged By: Anne Thorne 10/9/2014 9:45:00 AM

Completed By: Anne Thorne 10/9/2014

Reviewed By: 10/09/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	UPS		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.3	Good	Yes			

Chain-of-Custody Record

Client: Golder Associates, Inc.
ATTN: Clay Kilmer
Mailing Address: 5200 Pasadena Ave NE, Suite C
Albuquerque, NM 87113
Phone #: 505.821.3043
email or Fax#: Clay_Kilmer@golder.com
QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: Golder Associates WALSTAD Lovington 66
Project #: WALSTAD 66 Lovington NM 4th Quarter Monitoring 2014
Project Manager: Clay Kilmer
Sampler: CM Barnhill, PE
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1410485
9/07/14	11:28	H2O	W-20	3x40mL VOAs	HgCl2	-001
	12:05		W-21			-002
	12:43		W-19			-003
	13:09		W-9			-004
	13:37		W-8			-005
	14:00		W-5			-006
	14:37		W-11			-007
	1500		W-14			-008
	15:40		W-16			-009
			Trip Blank	2x40mL VOAs	HgCl2	-010

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)						Air Bubbles (Y or N)
									X							Y

Date	Time	Relinquished by:	Received by:	Date	Time
9/08/14	1530				
				10/09/14	0945

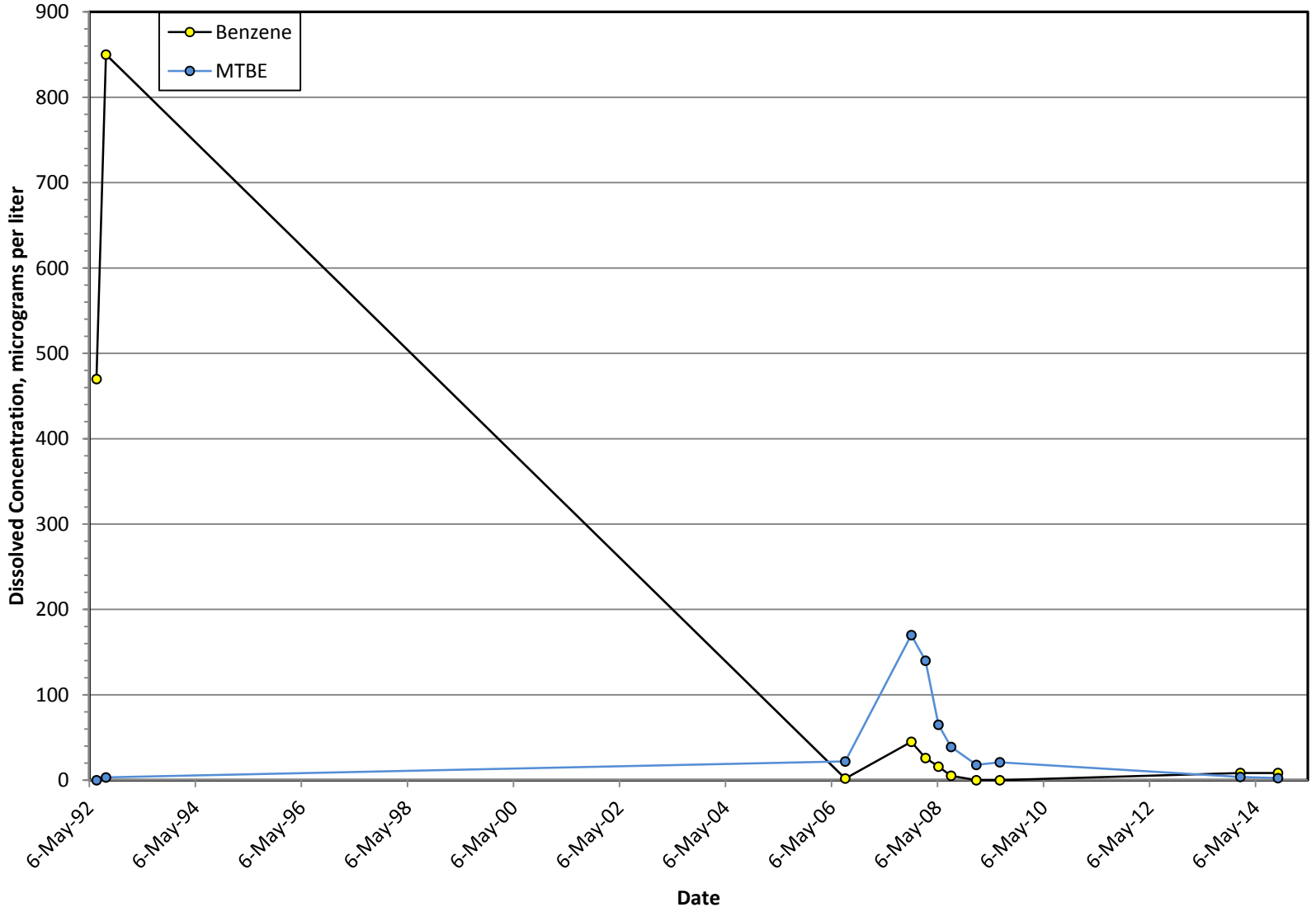
Remarks: Any Questions Please Call Clay Kilmer @ 505.821.3043

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

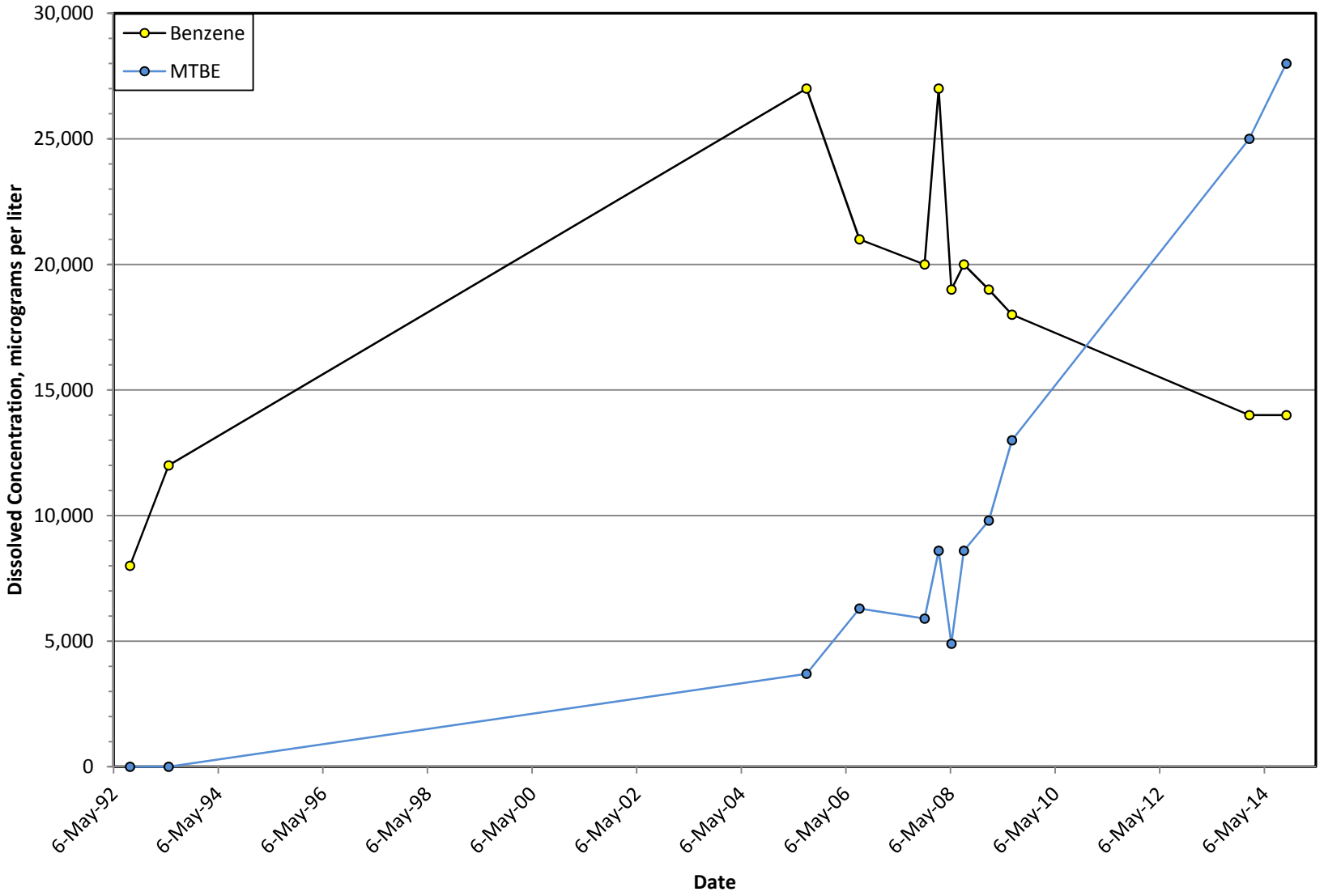
APPENDIX E
CONCENTRATION TREND PLOTS

Well W-5

Dissolved VOC Trend

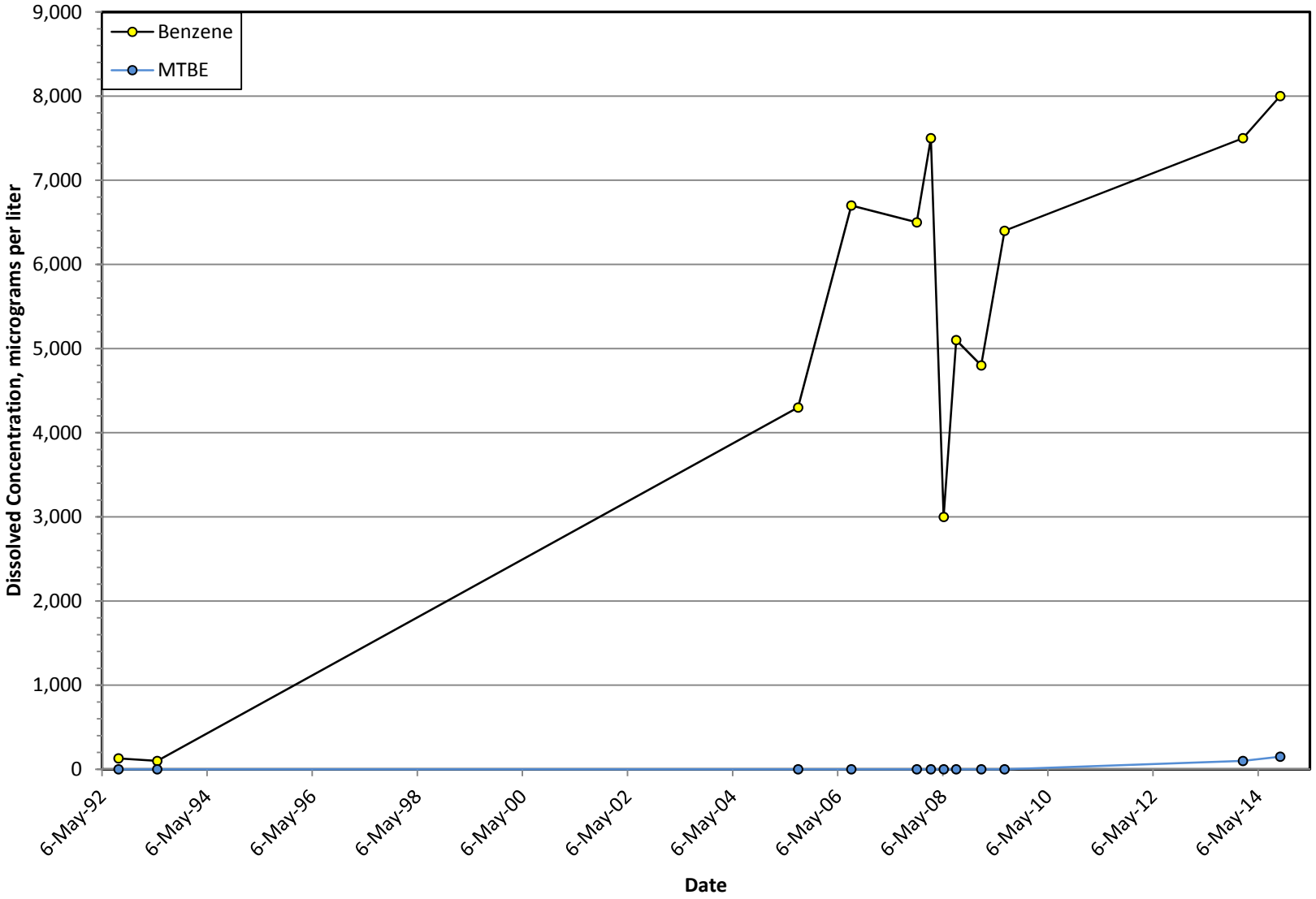


Well W-8
Dissolved VOC Trend

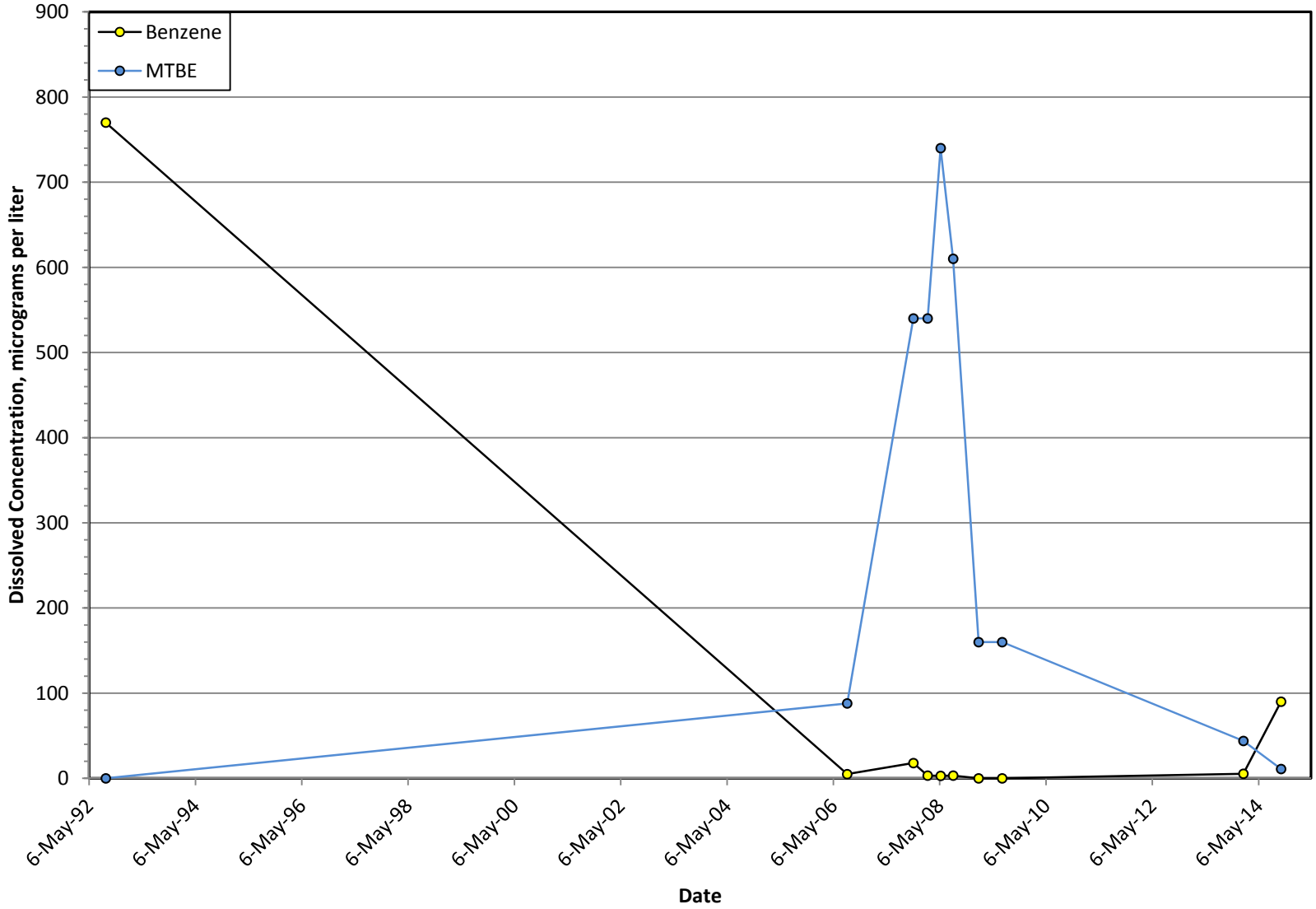


Well W-9

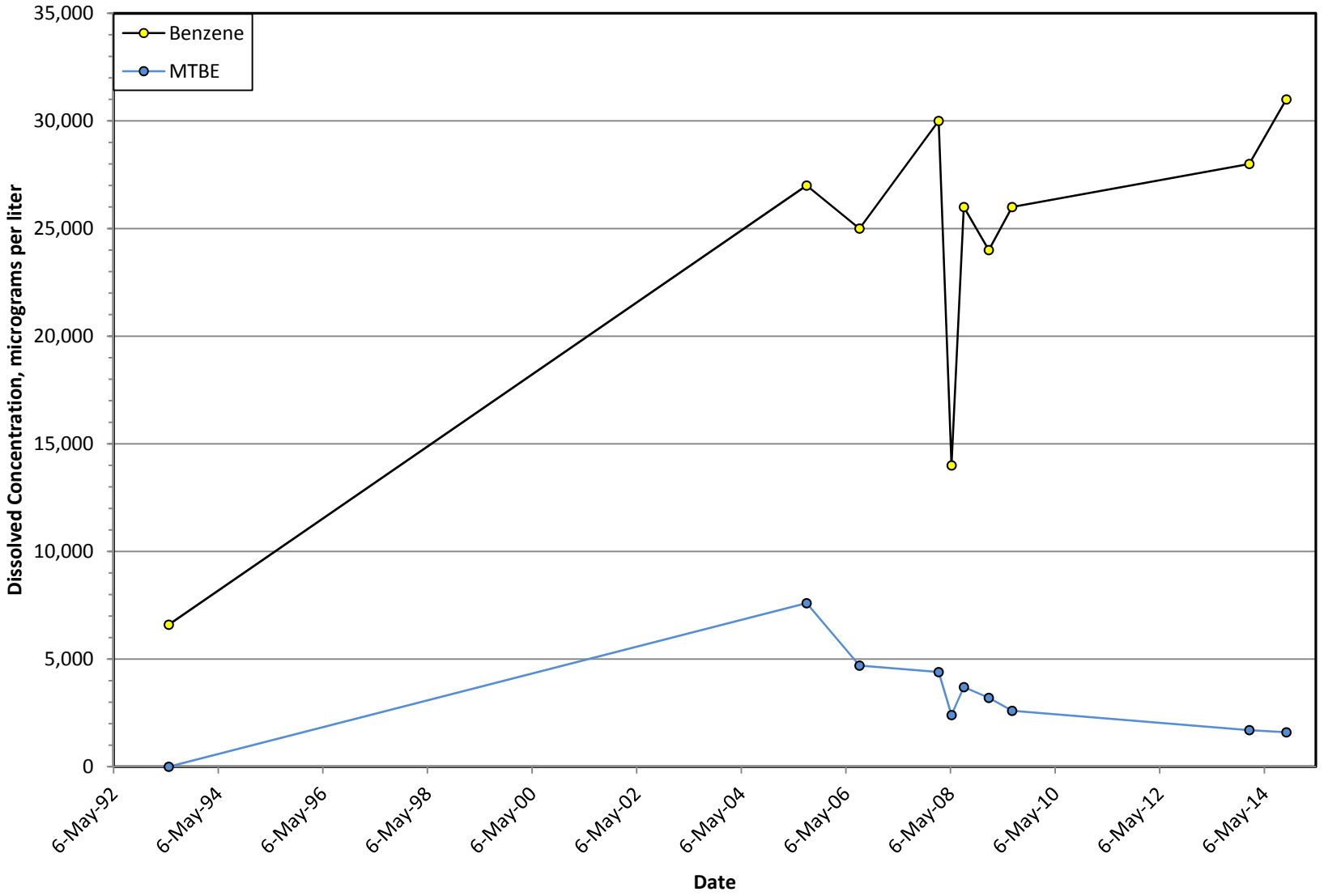
Dissolved VOC Trend



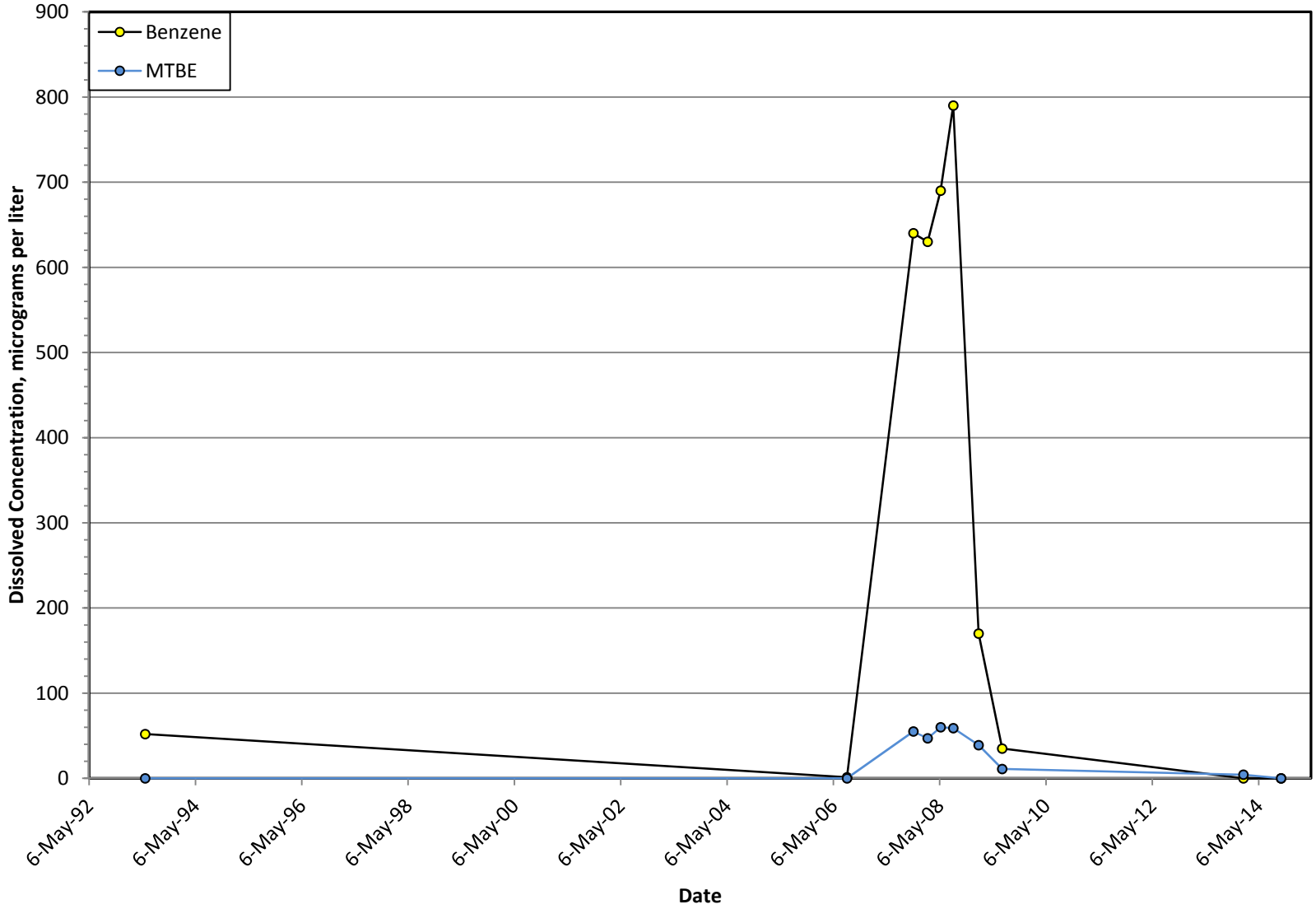
Well W-11
Dissolved VOC Trend



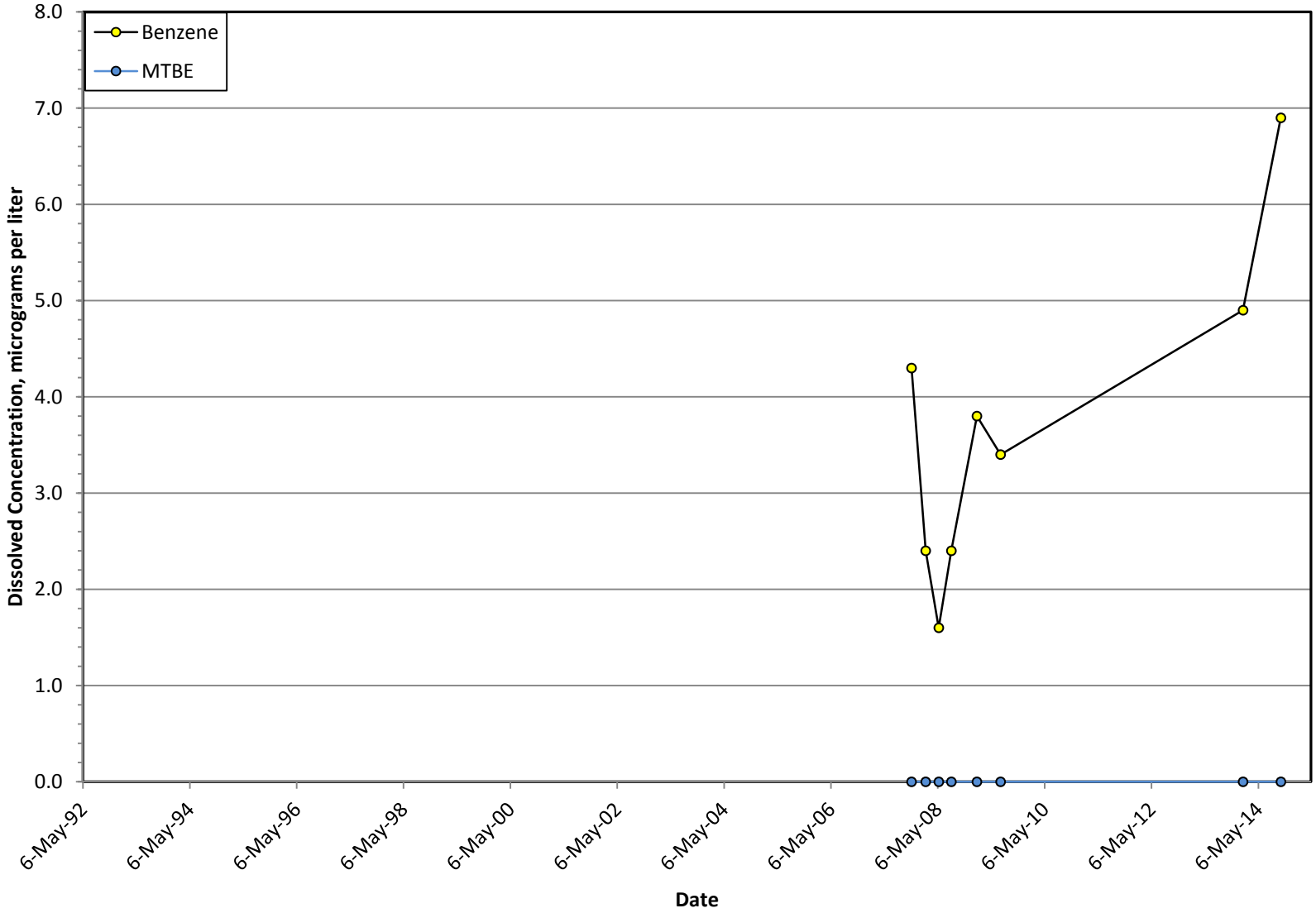
Well W-14
Dissolved VOC Trend



Well W-16
Dissolved VOC Trend

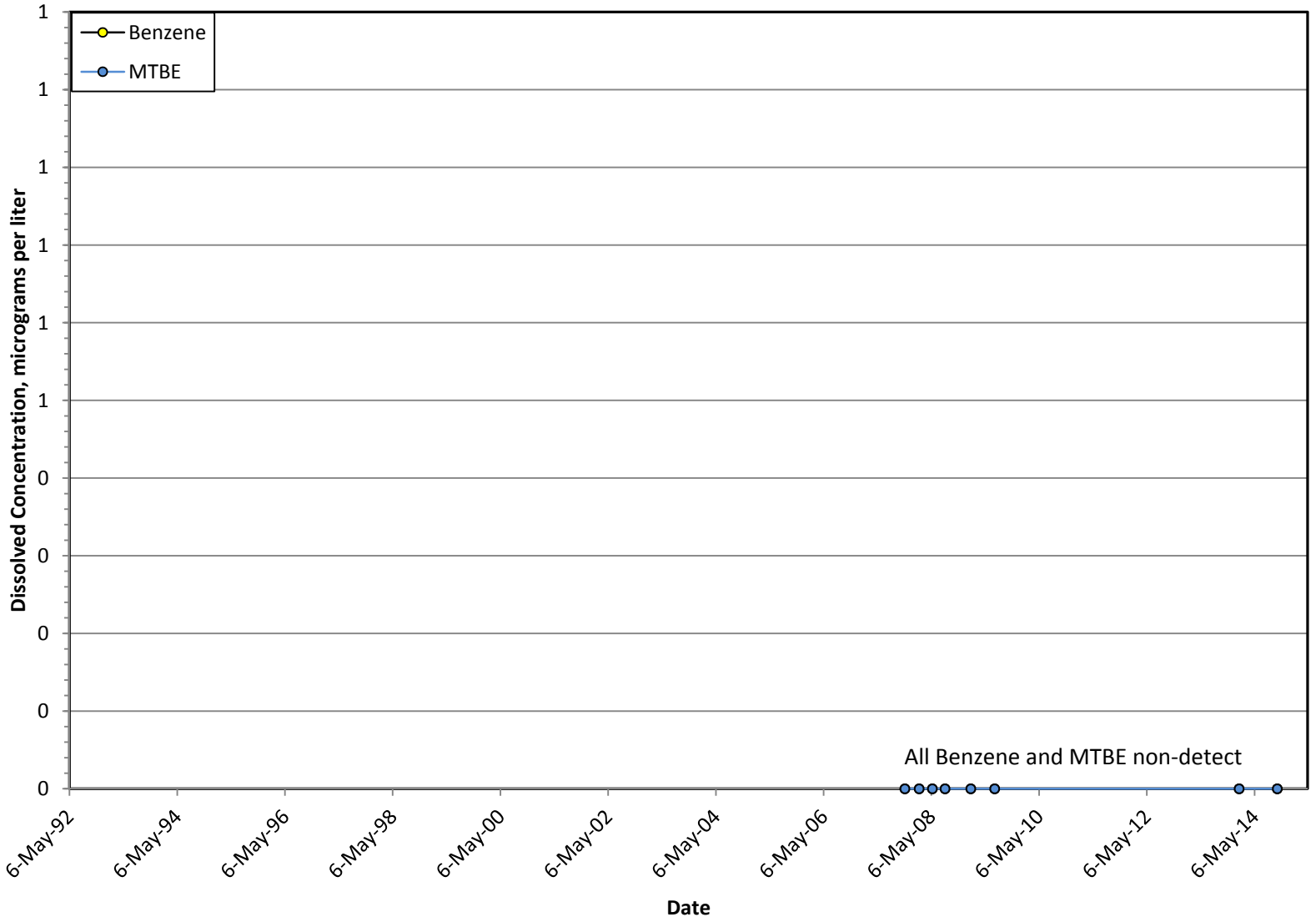


Well W-19
Dissolved VOC Trend



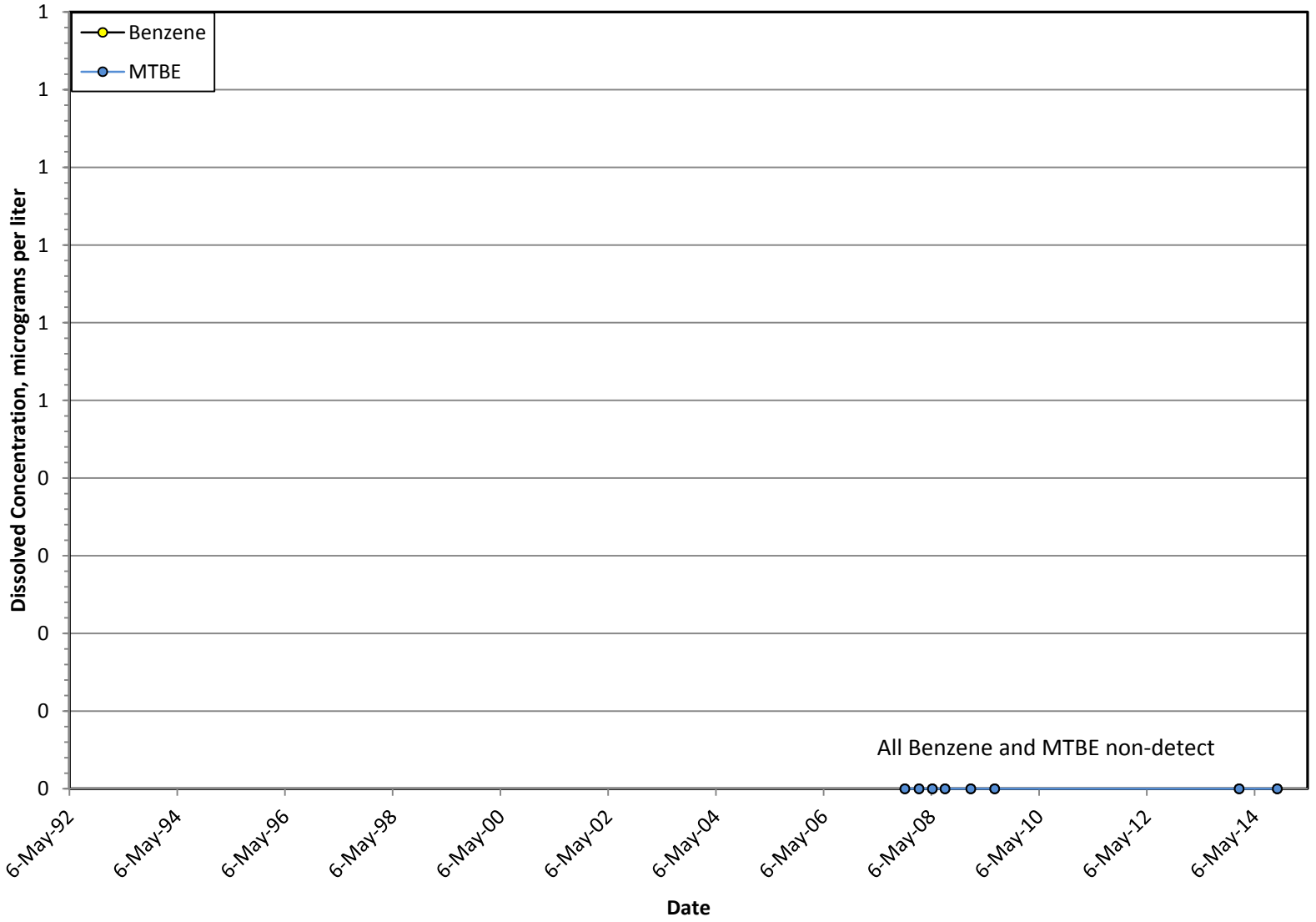
Well W-20

Dissolved VOC Trend



Well W-21

Dissolved VOC Trend



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Golder Associates

Engineering Earth's Development, Preserving Earth's Integrity