

**WELL INSTALLATION AND
GROUND WATER MONITORING REPORT
for**

**SHAMROCK #63
3624 CERRILLOS ROAD
SANTA FE, NEW MEXICO**

DELIVERABLE ID #17104-1

July 17, 2014

Prepared for:

Polk Oil Company
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Prepared by:

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the diesel fuel dispensing island. Soil samples were collected from two (2) borings that were advanced in the area of the former UST nest in December 2006 which showed impacts to soil at depths up to 75 feet below ground surface (bgs). Five (5) ground water monitoring wells have been installed to date and nine (9) ground water monitoring events have been conducted at the site, most recently in April 2013.

SUMMARY OF FIELD ACTIVITIES

Well Installation and Development

Three (3) new ground water monitoring wells (MW-6, MW-7 and MW-8) were installed at the Shamrock 63 site in accordance with the approved work plan. Personnel from Basin, DBS&A and Rodgers Environmental met for an on-site safety meeting on the morning of May 12, 2014 during which the Site Safety and Health Plan was reviewed by all personnel. Shortly after the safety meeting concluded, drilling activities commenced at the location of monitoring well MW-6 using a mobile drilling rig supplied by Rodgers. Drilling and construction of monitoring wells MW-6, MW-7 and MW-8 was accomplished between May 12 and May 16, 2014.

The soil borings for the monitoring wells were advanced using a hollow stem auger drilling system. The location of the new monitoring wells, which were constructed with 2-inch diameter PVC, are shown along with the five (5) existing on-site monitoring wells in Figure 2, Site Map. The soil borings for the monitoring wells were advanced to a total depth of ninety (90) feet below ground surface (bgs). Soil samples were collected using a continuous core system and down-hole split spoon sampler. Soil samples were evaluated at five (5) foot intervals in the field using the heated headspace methodology. Excess soil cuttings generated from the installation of monitoring wells MW-6, MW-7 and MW-8 were drummed characterized and properly disposed of. The soil cuttings composite analytical data, transportation and disposal manifest are attached in Appendix A.

After the soil borings were advanced to their total depths, the borings were completed as ground water monitoring wells. The well casing materials consist of 2-inch diameter PVC (Schedule 40). The well screen is 20 feet long, 2-inch diameter PVC (Schedule 40) with 0.020-inch slots. The gravel pack around the well screen extends from 2.0 feet above the top of the screen to the bottom of the soil boring in each well and consists of #10/20 silica sand. A hydrated bentonite pellet well seal having a thickness of 2.0 feet was installed above the gravel pack in each well. The surface completions of monitoring wells consist of an 8-inch diameter cast iron and steel vault with a traffic-rated, bolt-down protective cast iron cover encased in concrete around the top of each PVC well casing.

The depth to water in new monitoring wells upon completion were approximately 82.0 feet bgs. After installation of the wells, they were developed by surging and bailing using disposable high-density polyethylene (HDPE) bailers. Approximately 15.0 gallons of ground water were removed from each well by hand bailing.

The ground water monitoring well installation methods employed at the Shamrock 63 site are included with this report in Appendix B, Standard Operating Procedures. Soil boring logs, monitoring well construction schematic drawings and well permits for new monitoring wells are included with this report in Appendix C.

Soil Sample Collection

A total of thirty-nine (39) soil samples were collected at five-foot intervals from the soil borings advanced for the installation of monitoring wells MW-6, MW-7 and MW-8. All of the soil samples were screened in the field using the heated headspace methodology. Nine (9) of the thirty-nine (39) samples collected (three (3) soil samples from each soil boring) were prepared using the methanol extraction method and submitted along with chain-of-custody documentation to TestAmerica, Inc. in Nashville, Tennessee for analysis of volatile organic compounds (VOCs) in accordance with EPA Method 8260B.

Descriptions of the heated headspace screening and soil sample collection using methanol extraction methods employed at the Shamrock 63 site are included with this report in Appendix B, Standard Operating Procedures.

Monitoring Well Survey

After monitoring wells MW-6, MW-7 and MW-8 were successfully installed, they were surveyed by Surveying Control, Inc. of Albuquerque, New Mexico with respect to state plane coordinates and mean sea level (NAVD88). A copy of the certified survey document is included with this report in Appendix D.

Ground Water Sampling

DBS&A personnel measured the depth to ground water in all eight (8) of the on-site monitoring wells associated with the Shamrock 63 facility during the current monitoring event. DBS&A personnel collected ground water samples from seven (7) of the facility monitoring wells on May 27, 2014 in accordance with the approved work plan. A ground water sample was not collected from MW-6 due to the presence of 0.83 feet of LNAPL measured in the well. Ground water samples collected for laboratory analysis were measured for water quality field parameters and submitted with chain-of-custody documentation to TestAmerica, Inc. in Nashville, Tennessee. The samples were analyzed at the laboratory for concentrations of volatile organic compounds (VOCs) in accordance with EPA Method 8260B. Ground water sampling methods employed during the current quarterly monitoring event are included in Appendix B, Standard Operating Procedures.

SOIL AND GROUND WATER MONITORING ANALYTICAL RESULTS

Soil Sample Analytical Results

The field screening and laboratory analytical results for all nine (9) soil samples collected during the monitoring well installation activities and submitted for laboratory analysis are summarized in Table 1, Summary of Soil Sampling Analytical Results. The complete results of laboratory analytical testing are included in Appendix E, Laboratory Analytical Reports.

Heated headspace readings recorded from on-site evaluation of the thirty-nine (39) soil samples collected from the soil borings for monitoring wells MW-6, MW-7 and MW-8 are shown in the boring logs. Readings from MW-6 were over the NMED-PSTB action level of 100 ppm in all sampled tested while the results from MW-7 and MW-8 showed little to no organic vapor readings.

A summary of the results of laboratory analyses of soil samples collected from MW-6, MW-7 and MW-8 is given in Table 1, Summary of Soil Analytical Results, and depicted in Figure 3, Soil Analytical Map. The following contaminants of concern (COCs) were detected in concentrations that exceed NMED Tier 1 RBSLs configure 13 standards for soil in samples collected during the current event:

- Benzene was detected inn the soil samples collected from monitoring wells MW-6 at 19-21 feet (2.86 mg/Kg) and MW-6 at 24-26 feet (1.66 mg/Kg).
- Toluene was detected in the soil sample collected from monitoring well MW-6 at 19-21 feet (39.4 mg/Kg).

Ground Water Levels

Ground water elevation measurements collected during the current semi-annual monitoring event are summarized in Table 2, Ground Water Elevations and Field Parameter Data. The measured depths to ground water below the tops of the monitoring well casings varied between 79.73 feet (MW-4) and 82.23 feet (MW-7).

Ground water surface elevation contours generated using data collected during the current semi-annual monitoring event are depicted in Figure 4, Ground Water Contour Map. Ground water elevation data collected during the current monitoring event indicate that ground water is flowing to the southwest at an average hydraulic gradient of 0.009 foot per foot (ft/ft) as measured between monitoring wells MW-7 and MW-8. The presence of LNAPL in MW-6 may have a small effect on the ground water contours shown in Figure 4.

Ground Water Analytical Results

Ground water quality field parameter measurements collected during the current semi-annual monitoring event are reported in Table 2, Ground Water Elevation and Field Parameter Data. The ground water field parameter measurements collected during the current monitoring event are very similar values recorded during the previous monitoring events conducted at this facility between July 2008 and April 2013.

A summary of the results of laboratory analyses of ground water samples collected from facility monitoring wells during the current monitoring event is given in Table 3, Summary of Ground Water Sampling Analytical Results, and depicted in Figure 5, Ground Water Analytical Map. The following contaminants of concern (COCs) were detected in concentrations that exceed New Mexico Water Quality Control Commission (WQCC) and Environmental Improvement Board (EIB) standards for ground water in samples collected from facility monitoring wells during the current event:

- Benzene was detected in the ground water samples collected from monitoring wells MW-1 (3,540 µg/L), MW-2 (1,510 µg/L), MW-3 (67.1 µg/L), MW-5 (4,570 µg/L), MW-7 (2,980 µg/L) and MW-8 (66.0 µg/L).
- Toluene was detected in the ground water samples collected from monitoring wells MW-5 (6,590 µg/L) and MW-7 (3,350 µg/L).
- Ethylbenzene was detected in the ground water sample collected from monitoring well MW-5 (1,740 µg/L).
- Total xylenes were detected in the ground water samples collected from monitoring wells MW-1 (1,740 µg/L), MW-5 (7,910 µg/L) and MW-7 (5,030 µg/L).
- Methyl tert-butyl ether (MTBE) was detected in the ground water samples collected from monitoring wells MW-1 (2,340 µg/L), MW-2 (392 µg/L) and MW-3 (117 µg/L).
- Polynuclear aromatic hydrocarbons (PAHs) were detected in the ground water samples collected from monitoring wells MW-1 (299 µg/L), MW-5 (2,860 µg/L) and MW-7 (1,743 µg/L).
- 1,2-Dibromoethane (EDB) was detected in the ground water samples collected from monitoring wells MW-1 (25 µg/L) MW-5 (489 µg/L) and MW-7 (130 µg/L).
- 1,2-Dichloroethane (EDC) was detected in the ground water samples collected from monitoring wells MW-1 (166 µg/L), MW-2 (20.7 µg/L), MW-5 (1,480 µg/L) and MW-7 (610 µg/L).

The following compounds were detected in concentrations equal to or exceeding the laboratory detection limits (but less than WQCC and EIB standards) in ground water samples collected from facility monitoring wells during the current event:

- Toluene was detected in the ground water samples collected from monitoring wells MW-1 (276 µg/L), MW-2 (30.3 µg/L), MW-3 (1.02 µg/L) and MW-8 (1.62 µg/L).
- Ethylbenzene was detected in the ground water samples collected from monitoring wells MW-1 (74.1 µg/L), MW-2 (1.86 µg/L) and MW-7 (740 µg/L).
- Total xylenes were detected in the ground water samples collected from monitoring wells MW-2 (104 µg/L), MW-3 (7.31 µg/L) and MW-8 (10.0 µg/L).

- MTBE was detected in the ground water samples collected from monitoring wells MW-7 (47.6 µg/L) and MW-7 (10.1 µg/L).
- 1,2-Dichloroethane (EDC) was detected in the ground water samples collected from monitoring wells MW-3 (4.62 µg/L) and MW-8 (5.45 µg/L).
- 1,2-Dichloropropane was detected in the ground water sample collected from monitoring well MW-1 (9.07 µg/L), MW-2 (2.71 µg/L), MW-5 (18.3 µg/L) and MW-7 (14.7 µg/L).
- 2-Butanone (MEK) was detected in the ground water sample collected from monitoring well MW-1 (133 µg/L), MW-5 (94.4 µg/L) and MW-7 (7.29 µg/L).
- 2-Hexanone was detected in the ground water samples collected from monitoring wells MW-1 (44.1 µg/L), MW-5 (51.8 µg/L) and MW-7 (40.0 µg/L).
- 4-Methyl-2-pentnone (MIBK) was detected in the ground water samples collected from monitoring wells MW-1 (58.9 µg/L), MW-5 (18.6 µg/L) and MW-7 (24.6 µg/L).
- Acetone was detected in the ground water samples collected from monitoring wells MW-1 (228 µg/L), MW-5 (204 µg/L) and MW-7 (231 µg/L).
- Sec-Butylbenzene was detected in the ground water samples collected from monitoring wells MW-1 (2.10 µg/L), MW-2 (2.07 µg/L), MW-5 (5.70 µg/L) and MW-7 (7.36 µg/L).
- N-Butylbenzene was detected in the ground water samples collected from monitoring wells MW-2 (46.4 µg/L) and MW-4 (2.97 µg/L).
- Isopropylbenzene was detected in the ground water samples collected from monitoring wells MW-1 (11.5 µg/L), MW-2 (8.39 µg/L), MW-3 (2.01 µg/L) and MW-5 (25.7 µg/L) and MW-7 (22.0 µg/L).
- P-Isopropyltoluene was detected in the ground water samples collected from monitoring wells MW-1 (1.75 µg/L), MW-2 (1.61 µg/L), MW-5 (5.08 µg/L) and MW-7 (6.11 µg/L).
- N-Propylbenzene was detected in the ground water samples collected from monitoring wells MW-1 (25.1 µg/L), MW-2 (7.95 µg/L), (104 µg/L) and MW-7 (90.6 µg/L).

- 1,3,5-Trimethylbenzene was detected in the ground water samples collected from monitoring wells MW-1 (140 µg/L), MW-2 (33.4 µg/L), MW-3 (1.14 µg/L), MW-5 (1,350 µg/L) and MW-7 (345 µg/L).
- 1,2,4-Trimethylbenzene was detected in the ground water samples collected from monitoring wells MW-1 (339 µg/L), MW-2 (45.5 µg/L), MW-5 (1,760 µg/L), MW-7 (1,120 µg/L) and MW-8 (1.45 µg/L).

No other volatile organic analytes were present at concentrations equal to or exceeding the laboratory detection limits in ground water samples collected from facility monitoring wells during the current semi-annual monitoring event. The complete results of laboratory analyses are included in Appendix E, Laboratory Analytical Reports.

CONCLUSIONS AND RECOMMENDATIONS

Ground water samples were collected and depth to ground water measurements were recorded from a total of eight (8) ground water monitoring wells at the Shamrock #63 site during the current semi-annual monitoring event; five (5) pre-existing wells (MW-1, MW-2, MW-3, MW-4 and MW-5) and three (3) new wells (MW-6, MW-7 and MW-8) installed as a part of the scope of work for the current deliverable. Ground water appears to be flowing to the southeast at a very shallow gradient of 0.009 ft/ft. A plot of ground water elevations versus time is presented in Figure 6, Time Series Graph - Ground Water Elevations.

The concentrations of benzene and other COCs detected in ground water samples collected from facility monitoring wells during the current semi-annual monitoring event are significantly different than the results of analyses of the previous monitoring event conducted in April 2013. LNAPL has now been detected in the newly installed monitoring well MW-6. A plot of the concentrations of dissolved benzene detected in ground water samples collected at the Shamrock 63 site versus time is presented in Figure 7, Time Series Graph – Benzene Concentrations. The LNAPL, dissolved benzene, toluene, ethylbenzene, xylenes, MTBE, EBD, EDC and PAH plume in ground water has not been completely defined in any direction (except south) from the site.

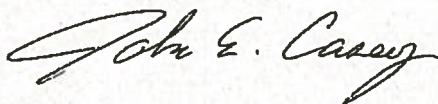
At this time we recommend that LNAPL recovery begin immediately on a monthly basis in MW-6 and ground water monitoring at the Shamrock 63 site be continued in accordance with the approved work plan. The information learned during this investigation suggest an off-site source of hydrocarbons may be coming onto this site from the northwest. All phases of the hydrocarbon plume need defined to the north, east and west at this site. The ground water monitoring event described in this report was the first of two (2) semi-annual events to be conducted at the site under the current work plan. The next semi-annual monitoring event is not yet scheduled.

A portion of the approved work plan scope of services was not performed (no ground water sample from MW-6) and the total amount of the claim for Deliverable ID #17104-1 will be reduced by \$120.00 which includes tax. Upon receipt of the deliverable acceptance letter from the NMED PSTB Project Manager, Basin will submit a claim for Deliverable ID #17104-1 in the amount of \$50,951.82, which includes New Mexico Gross Receipts Tax.

I, the undersigned, am personally familiar with the information submitted in the report referenced above and any documents referenced therein, and attest that the information submitted is true and accurate to the best of my knowledge.

If you have any questions or comments regarding this Well Installation and Semi-Annual Ground Water Monitoring Report or the Shamrock 63 site, do not hesitate to contact our office at your earliest convenience at (970) 259-2078.

Sincerely,
Basin Engineering, Inc.



John E. Casey, P. E.

Attachments:

Table 1	Summary of Soil Sampling Analytical Results
Table 2	Ground Water Elevation and Field Parameter Data
Table 3	Summary of Ground Water Sampling Analytical Results
Figure 1	Vicinity Map
Figure 2	Site Map
Figure 3	Soil Analytical Map
Figure 4	Ground Water Contour Map
Figure 5	Ground Water Analytical Map
Figure 6	Time Series Graph – Ground Water Elevations
Figure 7	Time Series Graph – Benzene Concentrations
Appendix A	Soil Analytical Data and Disposal Manifest
Appendix B	Standard Operating Procedures
Appendix C	Soil Boring Logs/Monitoring Well Schematic Drawings
Appendix D	Monitoring Well Survey
Appendix E	Laboratory Analytical Reports

cc: Bryan Neal, Polk Oil Company
Mack With, P.C.

Table 1
Summary of Soil Sampling Analytical Results

Sample ID	Sample Date	Sample Depth (feet)	Heated Headspace Readings (ppm)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xyelens (mg/Kg)	EDB ⁽²⁾ (mg/Kg)	EDC ⁽³⁾ (mg/Kg)	MTBE ⁽⁴⁾ (mg/Kg)	PAH ⁽⁵⁾ (mg/Kg)
NMED TIER 1 RBSLs⁽¹⁾			100	0.31	38.42			0.0004	0.05	0.40	
MW-6 19-21	12-May-14	19-21	3400	2.86	39.4	1.82	92.6	ND	ND	ND	208.5
MW-6 24-26	12-May-14	24-26	3100	0.19	1.87	1.25	6.63	ND	ND	ND	104.98
MW-6 79-81	12-May-14	79-81	1674	1.66	15.1	7.4	46.7	ND	ND	ND	96.06
MW-7 64-66	14-May-14	64-66	113	ND	ND	ND	ND	ND	ND	ND	ND
MW-7 54-56	14-May-14	54-56	201	ND	ND	ND	ND	ND	ND	ND	ND
MW-7 79-81	14-May-14	79-81	138	ND	ND	ND	ND	ND	ND	ND	ND
MW-8 9-11	15-May-14	09-11	89	ND	ND	ND	ND	ND	ND	ND	ND
MW-8 19-21	15-May-14	19-21	131	ND	ND	ND	ND	ND	ND	ND	ND
MW-8 79-81	15-May-14	79-81	45	ND	ND	ND	ND	ND	ND	ND	ND

Notes: (1) Risk-Based Screening Levels (Config. 13)

(2) 1,2-Dibromoethane

(3) 1,2-Dichloroethane

(4) Methyl tert-butyl ether

(5) Polynuclear Aromatic Hydrocarbons

mg/Kg = milligrams per Kilogram

ppm = parts per million

ND = Not Detected at concentrations equal to or above laboratory detection limits

NA = Not Analyzed

Values in **Bold** exceed NMED Tier 1 RBSLs

Table 2
Ground Water Depth and Field Parameter Data

Well ID	Date Measured	Total Depth (feet)	Depth to LNAPL (feet)	Depth to Water (feet)	TOC ⁽¹⁾ Elevation (feet)	Ground Water Elevation (feet)	pH	Specific Conductance (mS/cm)	Total Dissolved Solids (mg/L)	Dissolved Oxygen (mg/L)	Temperature (°F)
MW-1	16-Nov-07	94.72		79.76	6619.21	6539.45	7.47	1.402	911	1.43	60.8
	2-Jan-08	94.72		80.02	6619.21	6539.19	7.88	1.776	1,154	1.28	57.2
	16-May-08	94.72		80.08	6619.21	6539.13	7.16	1.993	1,296	1.74	60.4
	7-Aug-08	94.72		79.77	6619.21	6539.44	7.08	1.840	1,196	0.81	65.4
	22-Oct-08	94.72		79.67	6619.21	6539.54	7.17	1.883	1,224	1.27	59.3
	13-Jan-09	94.72		79.41	6620.47	6541.06	7.16	1.961	1,275	1.91	58.9
	22-Dec-10	94.72		78.17	6620.47	6542.30	7.81	1.567	1,018	2.28	59.9
	28-Jun-11	94.72		78.71	6620.47	6541.76	7.85	3.463	2,251	0.92	62.2
	15-Dec-11	94.72		79.19	6620.47	6541.28	7.25	1.451	943	1.17	56.0
	23-May-12	94.72		79.13	6620.47	6541.34	7.15	1.229	144	1.03	63.9
	24-Apr-13	94.72		80.39	6620.47	6540.08	7.18	1.550	1,245	0.60	60.3
	27-May-14	92.77		81.01	6620.48	6539.47	6.87	0.773	NM	2.52	62.5
MW-2	16-May-08	94.00		80.89	6621.53	6540.64	7.50	0.838	545	1.17	59.4
	7-Aug-08	94.00		80.62	6621.53	6540.91	7.15	0.735	476	0.77	66.2
	22-Oct-08	94.00		80.53	6621.53	6541.00	7.20	0.670	436	1.38	60.8
	13-Jan-09	94.00		80.31	6622.11	6541.80	7.38	0.643	417	2.09	53.7
	22-Dec-10	94.00		79.13	6622.11	6542.98	7.92	0.781	507	2.21	59.4
	28-Jun-11	94.00		79.63	6622.11	6542.48	7.94	1.814	1,179	0.89	62.3
	15-Dec-11	94.00		80.10	6622.11	6542.01	7.26	0.741	482	1.25	55.6
	23-May-12	94.00		80.09	6622.11	6542.02	7.33	1.772	1,119	0.96	64.3
	24-Apr-13	94.00		81.20	6622.11	6540.91	7.16	0.734	575	0.91	61.1
	27-May-14	89.32		81.83	6622.11	6540.28	7.10	0.776	NM	2.99	62.1

Table 2
Ground Water Depth and Field Parameter Data

Well ID	Date Measured	Total Depth (feet)	Depth to LNAPL (feet)	Depth to Water (feet)	TOC ⁽¹⁾ Elevation (feet)	Ground Water Elevation (feet)	pH	Specific Conductance (mS/cm)	Total Dissolved Solids (mg/L)	Dissolved Oxygen (mg/L)	Temperature (°F)
MW-3	16-May-08	90.00		80.24	6620.37	6540.13	7.84	0.741	483	1.62	58.5
	7-Aug-08	90.00		79.94	6620.37	6540.43	7.56	0.439	286	0.60	64.8
	22-Oct-08	90.00		79.83	6620.37	6540.54	7.46	0.590	384	1.11	61.3
	13-Jan-09	90.00		79.60	6620.94	6541.34	7.55	0.501	328	1.78	58.7
	22-Dec-10	90.00		78.36	6620.94	6542.58	8.02	0.745	485	2.40	58.5
	28-Jun-11	90.00		78.88	6620.94	6542.06	7.81	1.720	1,118	0.71	61.9
	15-Dec-11	90.00		79.35	6620.94	6541.59	7.36	0.714	465	0.75	56.0
	23-May-12	90.00		79.34	6620.94	6541.60	7.19	1.611	1,047	0.70	64.9
	24-Apr-13	90.00		80.57	6620.94	6540.37	7.17	0.758	424	0.92	63.1
	27-May-14	90.00		81.15	6620.94	6539.79	6.87	0.773	NM	2.73	63.3
MW-4	16-May-08	90.00		78.80	6618.94	6540.14	8.37	1.456	945	1.60	58.1
	7-Aug-08	90.00		78.51	6618.94	6540.43	7.36	1.534	997	1.23	64.3
	22-Oct-08	90.00		78.34	6618.94	6540.60	7.25	1.583	1,029	1.65	61.8
	13-Jan-09	90.00		78.16	6619.53	6541.37	7.26	1.520	988	1.90	58.3
	22-Dec-10	90.00		76.92	6619.53	6542.61	7.96	1.541	1,002	1.91	58.9
	28-Jun-11	90.00		77.43	6619.53	6542.10	7.68	3.415	2,220	1.34	62.5
	15-Dec-11	90.00		77.97	6619.53	6541.56	7.57	1.485	965	1.22	55.9
	23-May-12	90.00		78.06	6619.53	6541.47	7.14	3.011	1,958	1.39	63.6
	24-Apr-13	90.00		79.19	6619.53	6540.34	7.27	1.318	1,010	1.36	61.3
	27-May-14	88.19		79.73	6619.54	6539.81	6.66	1.133	NM	2.37	61.5

Table 2
Ground Water Depth and Field Parameter Data

Well ID	Date Measured	Total Depth (feet)	Depth to LNAPL (feet)	Depth to Water (feet)	TOC ⁽¹⁾ Elevation (feet)	Ground Water Elevation (feet)	pH	Specific Conductance (mS/cm)	Total Dissolved Solids (mg/L)	Dissolved Oxygen (mg/L)	Temperature (°F)
MW-5	15-Dec-11	90.00		79.15	6620.95	6541.80	7.58	0.560	364	1.00	57.8
	23-May-12	90.00		79.12	6620.95	6541.83	7.42	1.018	662	0.31	64.0
	24-Apr-13	90.00		80.21	6620.95	6540.74	7.35	0.437	522	2.01	62.4
	27-May-14	87.59		80.90	6620.97	6540.07	6.95	0.715	NM	1.56	61.8
MW-6	27-May-14	89.48	81.26	82.09	6621.73	6539.76	NM	NM	NM	NM	NM
MW-7	27-May-14	89.40		82.23	6622.46	6540.23	7.30	0.510	NM	2.61	61.9
MW-8	27-May-14	89.60		81.25	6619.98	6538.73	6.45	0.984	NM	1.75	61.7

Notes:

(1) Top of PVC Well Casing New Survey on June 22, 2014

mS/cm = millisiemens per centimeter

mg/L = milligrams per Liter

Table 3
Summary of Ground Water Sampling Analytical Results

Well ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE ⁽²⁾ (µg/L)	EDC ⁽³⁾ (µg/L)	EDB ⁽⁴⁾ (µg/L)	PAHs ⁽⁵⁾ (µg/L)
WQCC/EIB⁽¹⁾ Standard		10	750	750	620	100	10	0.1	30
MW-1	16-Nov-07	1,700	260	85	1,000	1,100	41	<10	131
	2-Jan-08	6,500	640	150	2,800	4,200	110	23	222
	16-May-08	6,000	660	200	3,200	4,400	160	28	285
	7-Aug-08	5,500	830	180	3,600	3,600	210	48	280
	22-Oct-08	7,200	820	230	3,700	4,700	150	29	410
	13-Jan-09	6,700	890	220	3,400	5,400	120	22	360
	22-Dec-10	4,790	380	232	3,600	2,880	<1.00	13.9	362.8
	28-Jun-11	4,790	330	177	3,340	2,610	<1.00	12.2	353
	15-Dec-11	3,900	262	147	2,400	2,360	<1.00	<0.02	257.5
	23-May-12	4,450	417	143	2,790	2,620	<1.00	12.9	226.5
	24-Apr-13	5,000	439	122	2,900	2,730	146	27.5	165
	27-May-14	3,540	276	74.1	1,740	2,340	166	25	299
MW-2	16-May-08	1,300	430	180	1,200	100	20	<10	32
	7-Aug-08	2,000	180	140	1,100	130	22	<5.0	16.7
	22-Oct-08	1,700	140	140	940	130	21	<5.0	20.0
	13-Jan-09	1,700	130	91	810	160	22	<5.0	10
	22-Dec-10	1,720	74.3	5.99	240	426	<1.00	<1.00	94.5
	28-Jun-11	1,920	84.1	4.68	280	426	<1.00	<1.00	68.1
	15-Dec-11	1,340	53.1	4.04	167	427	<1.00	<0.02	37.4
	23-May-12	1,730	57.6	5.00	194	514	<1.00	<1.00	19.3
	24-Apr-13	1,300	47.6	2.48	182	188	17.9	0.248	15.4
	27-May-14	1,510	30.3	1.86	104	392	20.7	<1.00	<25.0

Table 3
Summary of Ground Water Sampling Analytical Results

Well ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE ⁽²⁾ (µg/L)	EDC ⁽³⁾ (µg/L)	EDB ⁽⁴⁾ (µg/L)	PAHs ⁽⁵⁾ (µg/L)
WQCC/EIB⁽¹⁾ Standard		10	750	750	620	100	10	0.1	30
MW-3	16-May-08	320	7.4	ND	23	4.7	ND	<1.0	6.6
	7-Aug-08	340	12	ND	24	8.5	1.0	<1.0	ND
	22-Oct-08	300	14	ND	28	12	1.1	<1.0	ND
	13-Jan-09	290	8.1	ND	23	18	1.2	<1.0	ND
	22-Dec-10	56.1	2.12	<1.00	9.35	60.5	<1.00	<1.00	<25.0
	28-Jun-11	33.5	1.04	<1.00	5.71	64.2	<1.00	<1.00	<25.0
	15-Dec-11	49.9	1.31	<1.00	6.45	60.4	<1.00	<0.02	<25.0
	23-May-12	54.6	1.13	<1.00	7.25	64.1	<1.00	<1.00	<25.0
	24-Apr-13	112.0	2.3	<1.00	13.30	88.5	2.45	<0.0199	<25.0
	27-May-14	67.1	1.02	<1.00	7.31	117.0	4.76	<1.00	<25.0
MW-4	16-May-08	360	1.2	ND	28	5.7	11	<1.0	39.4
	7-Aug-08	350	1.9	ND	42	6.2	17	<1.0	9.4
	22-Oct-08	330	2.7	ND	52	6.5	19	<1.0	9.9
	13-Jan-09	310	1.3	ND	37	7.5	20	<1.0	ND
	22-Dec-10	10.2	<1.00	<1.00	<3.00	5.31	13.2	<1.00	<25.0
	28-Jun-11	1.12	<1.00	<1.00	<3.00	3.90	7.15	<1.00	<25.0
	15-Dec-11	<1.00	<1.00	<1.00	<3.00	18.60	6.62	<0.02	<25.0
	23-May-12	<1.00	<1.00	<1.00	<3.00	1.81	3.27	<1.00	<25.0
	24-Apr-13	<1.00	<1.00	<1.00	<3.00	1.31	3.09	<0.0199	<25.0
	27-May-14	<1.00	<1.00	<1.00	<3.00	<1.00	<1.00	<1.00	<25.0

Table 3
Summary of Ground Water Sampling Analytical Results

Well ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE ⁽²⁾ (µg/L)	EDC ⁽³⁾ (µg/L)	EDB ⁽⁴⁾ (µg/L)	PAHs ⁽⁵⁾ (µg/L)
WQCC/EIB⁽¹⁾ Standard		10	750	750	620	100	10	0.1	30
MW-5	15-Dec-11	678	2,520	1,560	10,700	<1.00	<1.00	<0.02	7,170
	23-May-12	2,920	4,090	934	4,940	<10.0	<10.0	198	1,376
	24-Apr-13	4,630	5,690	1,140	7,060	<10.0	1,250	561	1,446
	27-May-14	4,570	6,590	1,740	7,910	3.17	1,480	489	2,860
MW-6	27-May-14	NS	NS	NS	NS	NS	NS	NS	NS
MW-7	27-May-14	2,980	3,350	740	5,030	48	610	130	1,743
MW-8	27-May-14	66	1.62	<1.00	10	10.1	5.45	<1.00	<25

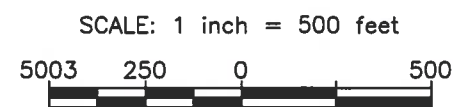
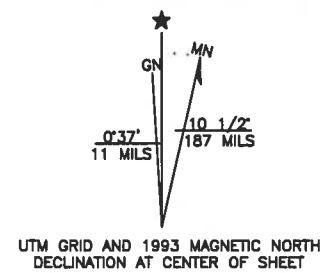
Notes:

- (1) New Mexico Water Quality Control Commission/Environmental Improvement Board
- (2) Methyl tert-butyl ether
- (3) 1,2-Dichloroethane
- (4) 1,2 Dibromoethane
- (5) Polynuclear Aromatic Hydrocarbons = naphthalene plus monomethylnaphthalenes
- µg/L = micrograms per Liter
- <1.00 = Concentration less than laboratory method detection limit
- Concentrations in **bold** exceed WQCC/EIB Standard



AGUA FRIA QUADRANGLE
NEW MEXICO—SANTA FE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

AGUA FRIA, N.MEX.
1951
REVISED 2011



CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

BASIN
ENGINEERING, INC.

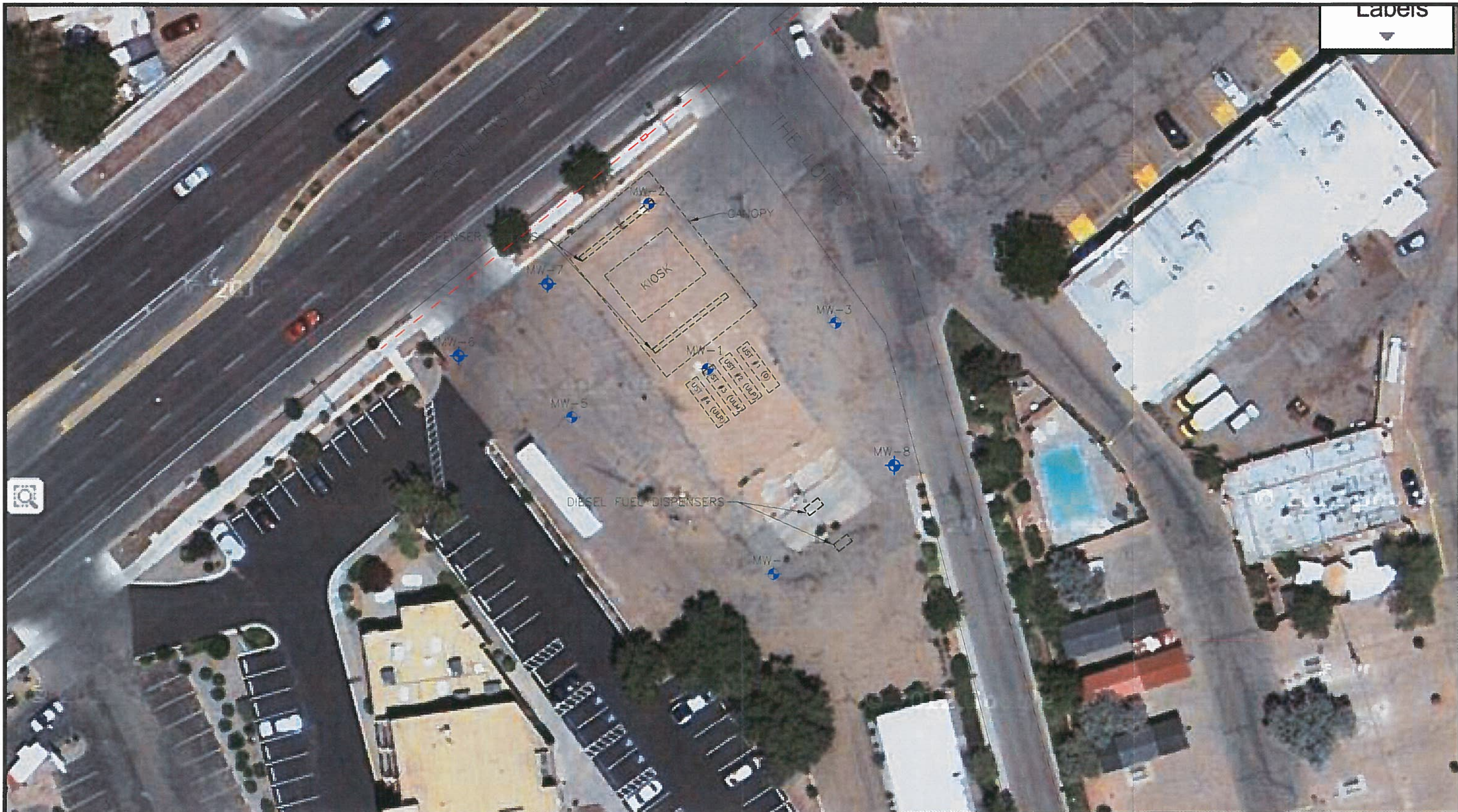
Drawn by	Date	Checked by	Date
JEC	06/27/14	JEC	

Vicinity Map
Well Install and Semi-Annual
Ground Water Monitoring Report

Polk Oil Company
Shamrock #63
3624 Cerrillos Road
Santa Fe, New Mexico

Project No.
030116

Figure No.
1



Labels
▼

N

Scale: 1 inch = 40 feet

MW-1 Monitoring Well Location and Designation

 Sanitary Sewer

 Buried Electric/Telecom

B A S I N
ENGINEERING, INC

Drawn by	Date	Checked by	Date
JEC	06/28/14	JEC	

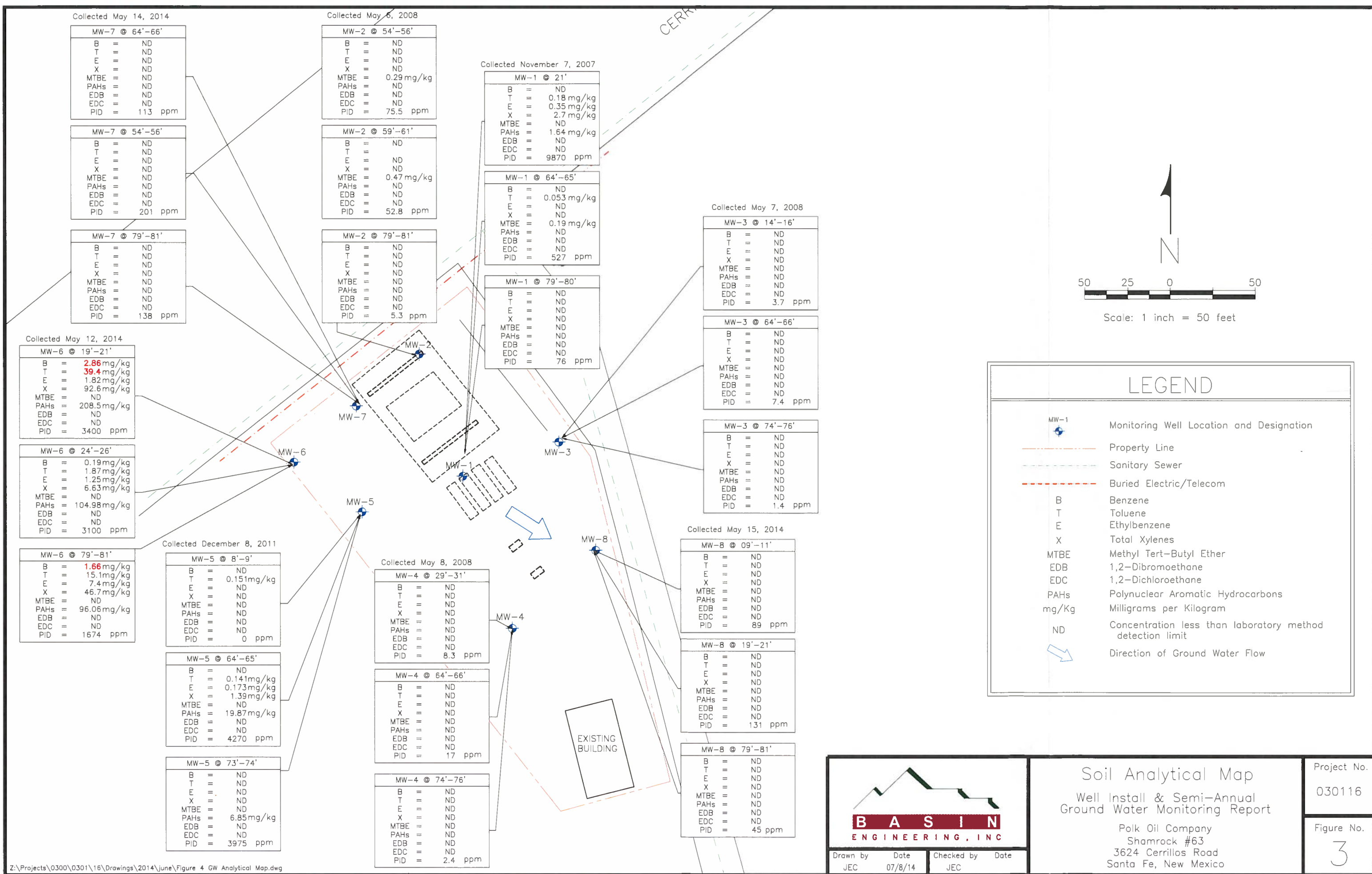
Site Map

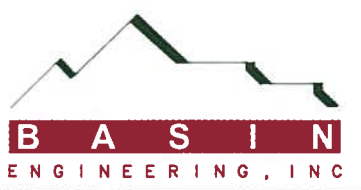
Well Install and Semi-Annual
Ground Water Monitoring Report

Polk Oil Company
Shamrock #63
3624 Cerrillos Road
Santa Fe, New Mexico

Project No.
030116

Figure No.
2





BASIN
ENGINEERING, INC

Drawn by	Date	Checked by	Date
JEC	07/8/14	JEC	

Soil Analytical Map Well Install & Semi-Annual Ground Water Monitoring Report Polk Oil Company Shamrock #63 3624 Cerrillos Road Santa Fe, New Mexico	Project No. 030116
	Figure No. 3

MW-7	
B	= 2,980 µg/L
T	= 3,350 µg/L
E	= 740 µg/L
X	= 5,030 µg/L
MTBE	= 48 µg/L
EDB	= 130 µg/L
EDC	= 610 µg/L
PAHs	= 1,743 µg/L

MW-2	
B	= 1,510 µg/L
T	= 30.3 µg/L
E	= 1.86 µg/L
X	= 104 µg/L
MTBE	= 392 µg/L
EDB	= <1.00 µg/L
EDC	= 20.7 µg/L
PAHs	= <25 µg/L

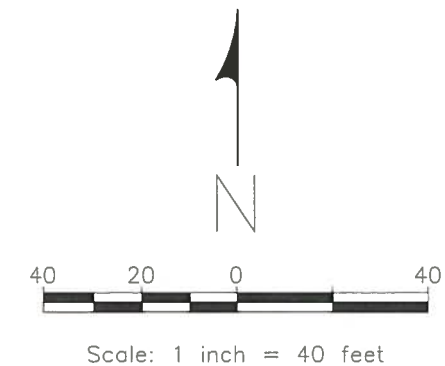
MW-3	
B	= 67.1 µg/L
T	= 1.02 µg/L
E	= <1.00 µg/L
X	= 7.31 µg/L
MTBE	= 117.0 µg/L
EDB	= <1.00 µg/L
EDC	= 4.76 µg/L
PAHs	= <25.0 µg/L

MW-8	
B	= 66 µg/L
T	= 1.62 µg/L
E	= <1.00 µg/L
X	= 10 µg/L
MTBE	= 10.1 µg/L
EDB	= <1.00 µg/L
EDC	= 5.45 µg/L
PAHs	= <25.0 µg/L

MW-1	
B	= 3,540 µg/L
T	= 276 µg/L
E	= 74.1 µg/L
X	= 1,740 µg/L
MTBE	= 2,340 µg/L
EDB	= 25 µg/L
EDC	= 166 µg/L
PAHs	= 299 µg/L

MW-5	
B	= 4,570 µg/L
T	= 6,590 µg/L
E	= 1,740 µg/L
X	= 7,910 µg/L
MTBE	= 3.17 µg/L
EDB	= 489 µg/L
EDC	= 1,480 µg/L
PAHs	= 2,860 µg/L

MW-4	
B	= <1.00 µg/L
T	= <1.00 µg/L
E	= <1.00 µg/L
X	= <3.00 µg/L
MTBE	= <1.00 µg/L
EDB	= <1.00 µg/L
EDC	= <1.00 µg/L
PAHs	= <25.0 µg/L



LEGEND

	MW-1	Monitoring Well Location and Designation
		Property Line
		Sanitary Sewer
		Buried Electric/Telecom
	B	Benzene
	T	Toluene
	E	Ethylbenzene
	X	Total Xylenes
	MTBE	Methyl Tert-Butyl Ether
	EDB	1,2-Dibromoethane
	EDC	1,2-Dichloroethane
	PAHs	Polynuclear Aromatic Hydrocarbons
	µg/L	Micrograms per Liter
	<1.00	Concentration less than laboratory method detection limit
		Direction of Ground Water Flow
Sample Collection Date: May 27, 2014		

BASIN
ENGINEERING, INC

Drawn by	Date	Checked by	Date
JEC	06/22/14	JEC	

Ground Water Analytical Map	Project No.
Well Install & Semi-Annual Ground Water Monitoring Report	030116
Polk Oil Company Shamrock #63 3624 Cerrillos Road Santa Fe, New Mexico	Figure No.
	5

Figure 6
Time Series Graph - Ground Water Elevations

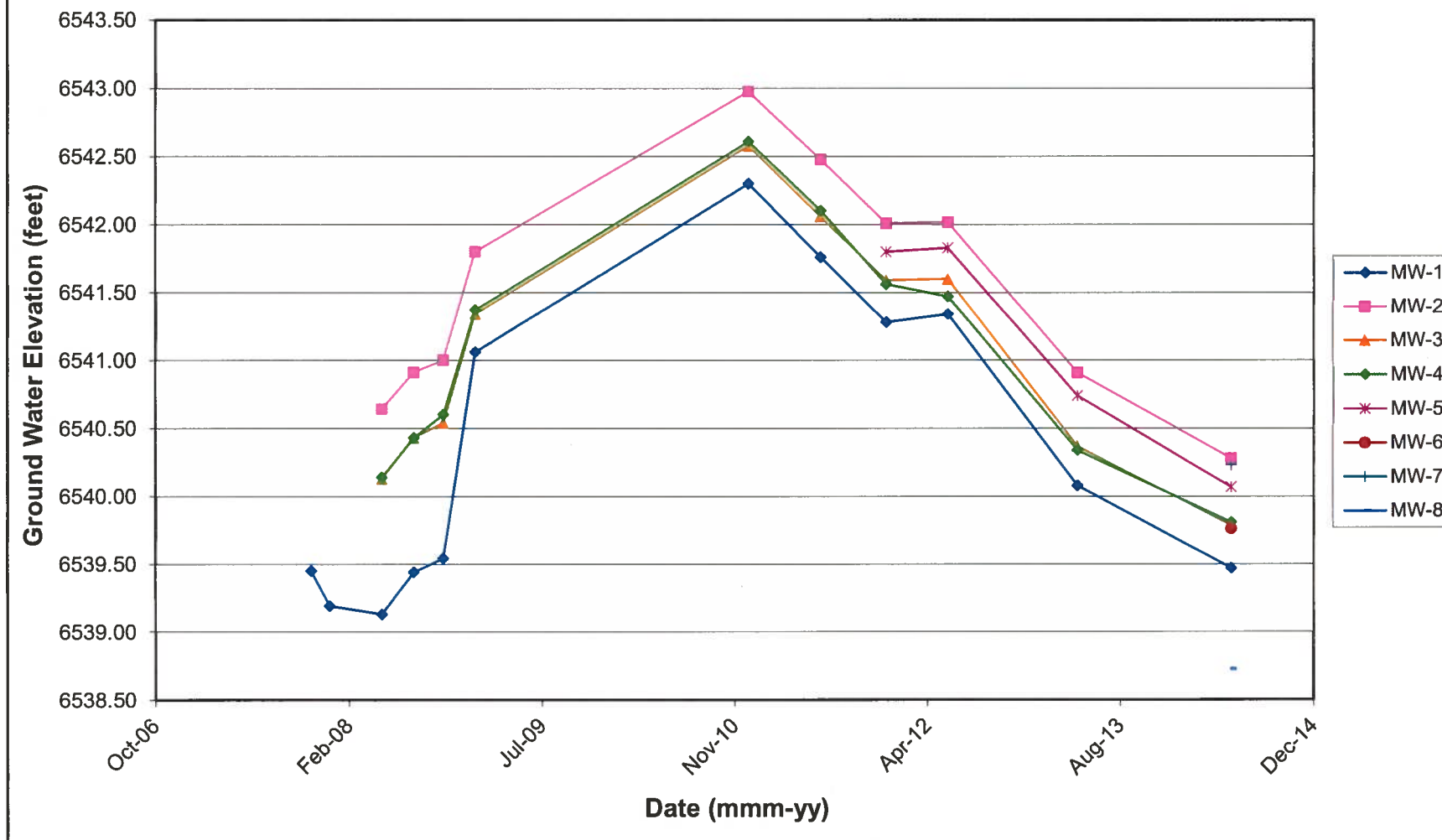
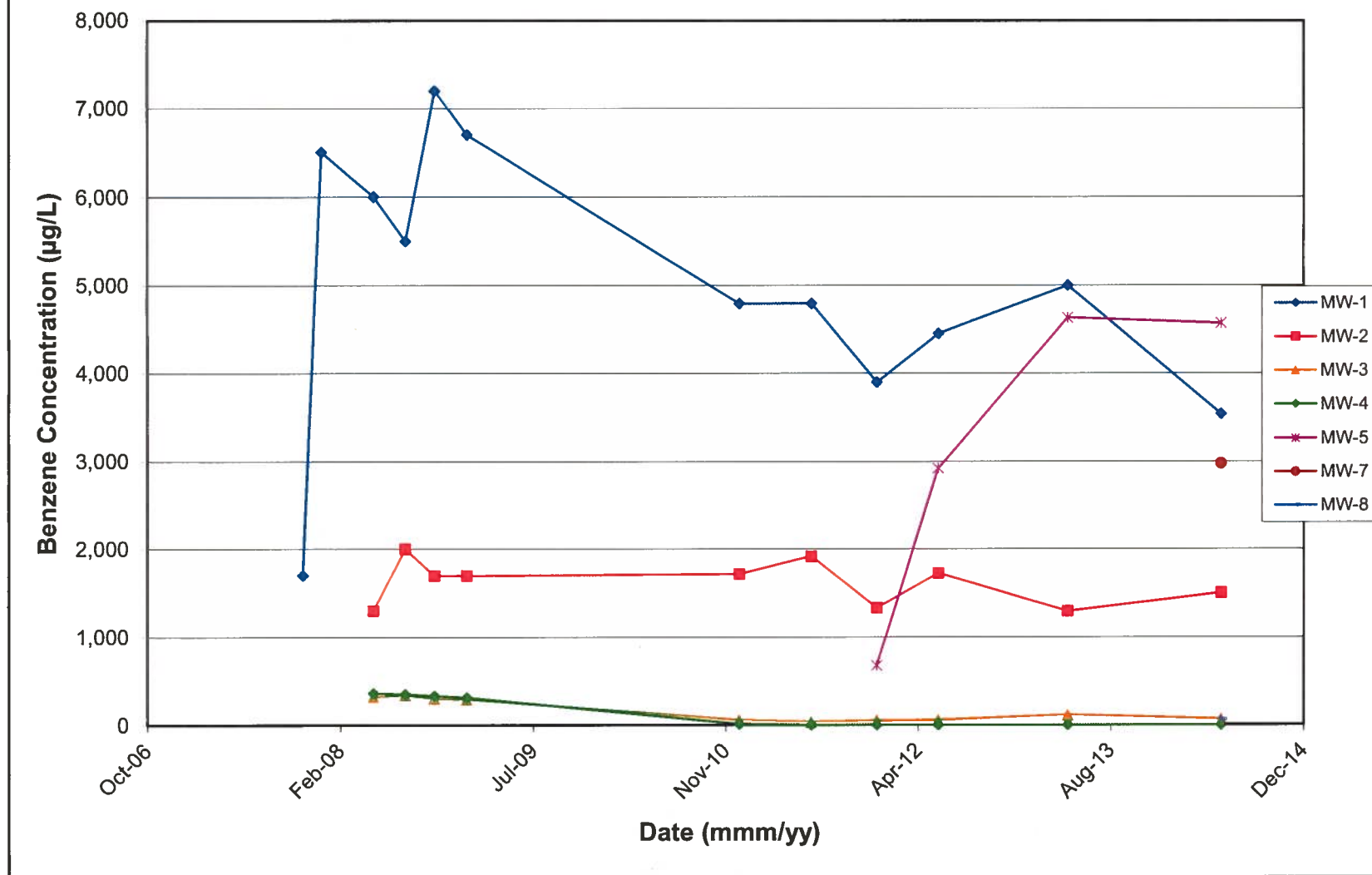


Figure 7
Time Series Graph - Benzene Concentrations





Keers Industries, Inc DBA
Special Waste Disposal
5904 Florence Ave. NE
Albuquerque, New Mexico 87113
Office 505.828.2650

MANIFEST FOR SHIPMENT TO HYDROCARBON SOIL LANDFARM FACILITY

Located 14 Mi. So. On Highway 55

from Mountainair, New Mexico

All applicable blanks MUST BE COMPLETED, Including signatures

Part I

GENERATOR

A generator must sign and keep a copy of each manifest in accordance with 20 NMAC 9.1 712 and retain a hand signed copy from the designated facility that received the soil to be remediated. Only hand signed copies are legal documents for generators.

Profile Number: _____

Project Name: SHAMROCK #63

Generator Name: POLK OIL CO.

Address: 3624 CERRILLOS RD

Address: PO BOX 3909

City/State/Zip: SANTA FE NM

City/State/Zip: DURANGO CO. 81302

Telephone: 970 259 2078

Telephone: 970-259-2078

CERTIFICATION. I hereby declare that the contents of this consignment are fully and accurately described by proper shipping name and are classified, packaged, and labeled in accordance with applicable regulations, and are in all respects in proper condition for transport by highway according to applicable international and government regulations and is not a hazardous waste as defined by 40 CFR, Part 261.

Name of Authorized Agent

Signature

Waste Generation Date

052014

Part II

CONTRACTOR

CONTENTS

Contractor Name: ENVIRO WORKS LLC

Responsible Agency: NMED GROUND WATER

Address: PO BOX 340

1190 St Francis Drive Santa Fe NM

City/State/Zip/Phone: EDGEWOOD NM 87015

Type 16 DRUMS Cu. Yds 8752

CERTIFICATION. I hereby declare that the contents of this consignment are fully and accurately described by proper shipping name and are classified, packaged, and labeled in accordance with applicable regulations, and are in all respects in proper condition for transport by highway according to applicable international and government regulations and is not a hazardous waste as defined by 40 CFR, Part 261.

Gas: 16 DRUMS
Diesel:
Oil:
Other:

Special Handling Instructions:

Waste Description

BART SHEPHERD

Signature

Diesel & Gas
Soil

Part III

TRANSPORTER

Name of Transporter #1: ENVIRO WORKS

Special Waste Hauler Permit No.: 0130134

Mailing Address: PO BOX 340

Phone No. 505-286-4291 Truck No.: T-1

Name of Transporter #2:

Special Waste Hauler Permit No.:

Mailing Address:

Phone No.

Truck No.:

The following statement must be signed by the truck driver prior to unloading at the Special Waste Disposal Hydrocarbon Soil Landfarm Facility. "I certify that no other material has been placed in this truck since the containers described in Part I of the form were loaded."

Signature of Transporter #1: [Signature]

Date Received

052014

Signature of Transporter #2:

Date Received

Part IV

DISPOSAL SITE

This is to certify that the Special Waste Disposal Hydrocarbon Soil Landfarm Facility, operating under NMED Ground Water Quality Bureau discharge permit DP-1012 has been approved for the Treatment of Hydrocarbon Contaminated Soils and has received the above indicated shipment (except for noted discrepancies)

Discrepancy
Explanation:

Active Area#

2

Cell #

1

Date
Received

052014

Authorized Signature: [Signature]

RESPONSIBLE AGENCY
New Mexico Environment Department
Ground Water Quality Bureau
1190 St. Francis Drive
Santa Fe, NM 87502

5416

WHITE: SWD PINK: NMED-Ground Water Quality Bureau YELLOW: Transporter #2 GREEN: Transporter: #1
GOLD: Generator/Contractor

PLEASE PRESS FIRMLY



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

May 16, 2014

Mike McVey

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL: (505) 822-9400
FAX (505) 822-8877

RE: Shamrock #63

OrderNo.: 1405604

Dear Mike McVey:

Hall Environmental Analysis Laboratory received 1 sample(s) on 5/14/2014 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.

Analytical Report

Lab Order 1405604

Date Reported: 5/16/2014

CLIENT: Daniel B. Stephens & Assoc.

Client Sample ID: Shamrock #63 Composite

Project: Shamrock #63

Collection Date: 5/14/2014 9:00:00 AM

Lab ID: 1405604-001

Matrix: SOIL

Received Date: 5/14/2014 1:42:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	770	100		mg/Kg	10	5/15/2014 8:49:03 AM	13155
Surr: DNOP	0	57.9-140	S	%REC	10	5/15/2014 8:49:03 AM	13155
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	200	4.9		mg/Kg	1	5/15/2014 11:17:07 AM	13175
Surr: BFB	314	80-120	S	%REC	1	5/15/2014 11:17:07 AM	13175
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	0.69	0.049		mg/Kg	1	5/15/2014 11:17:07 AM	13175
Toluene	2.5	0.049		mg/Kg	1	5/15/2014 11:17:07 AM	13175
Ethylbenzene	1.5	0.049		mg/Kg	1	5/15/2014 11:17:07 AM	13175
Xylenes, Total	8.7	0.098		mg/Kg	1	5/15/2014 11:17:07 AM	13175
Surr: 4-Bromofluorobenzene	135	80-120	S	%REC	1	5/15/2014 11:17:07 AM	13175

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#: 1405604

16-May-14

Client: Daniel B. Stephens & Assoc.

Project: Shamrock #63

Sample ID	MB-13155	SampType:	MBLK	TestCode:	EPA Method 8015D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	13155	RunNo:	18605					
Prep Date:	5/13/2014	Analysis Date:	5/15/2014	SeqNo:	537633	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	11		10.00		115	57.9	140			

Sample ID	LCS-13155	SampType:	LCS	TestCode:	EPA Method 8015D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	13155	RunNo:	18605					
Prep Date:	5/13/2014	Analysis Date:	5/15/2014	SeqNo:	537661	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	64	10	50.00	0	128	60.8	145			
Surr: DNOP	6.0		5.000		120	57.9	140			

Sample ID	MB-13180	SampType:	MBLK	TestCode:	EPA Method 8015D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	13180	RunNo:	18605					
Prep Date:	5/15/2014	Analysis Date:	5/15/2014	SeqNo:	537900	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.7		10.00		96.7	57.9	140			

Sample ID	LCS-13180	SampType:	LCS	TestCode:	EPA Method 8015D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	13180	RunNo:	18605					
Prep Date:	5/15/2014	Analysis Date:	5/15/2014	SeqNo:	537901	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.1		5.000		103	57.9	140			

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#: 1405604

16-May-14

Client: Daniel B. Stephens & Assoc.

Project: Shamrock #63

Sample ID	MB-13175	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	13175	RunNo:	18624					
Prep Date:	5/14/2014	Analysis Date:	5/15/2014	SeqNo:	538725	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	850		1000		85.3	80	120			

Sample ID	LCS-13175	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	13175	RunNo:	18624					
Prep Date:	5/14/2014	Analysis Date:	5/15/2014	SeqNo:	538726	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	90.8	71.7	134			
Surr: BFB	930		1000		93.5	80	120			

Sample ID	1405604-001AMS	SampType:	MS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	Shamrock #63 Com	Batch ID:	13175	RunNo:	18624					
Prep Date:	5/14/2014	Analysis Date:	5/15/2014	SeqNo:	538728	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	230	4.9	24.63	199.4	141	69.5	145			
Surr: BFB	3000		985.2		304	80	120			S

Sample ID	1405604-001AMSD	SampType:	MSD	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	Shamrock #63 Com	Batch ID:	13175	RunNo:	18624					
Prep Date:	5/14/2014	Analysis Date:	5/15/2014	SeqNo:	538729	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	360	4.9	24.53	199.4	640	69.5	145	41.4	20	RS
Surr: BFB	3800		981.4		386	80	120	0	0	S

Sample ID	MB-13175 MK	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	R18624	RunNo:	18624					
Prep Date:		Analysis Date:	5/15/2014	SeqNo:	538752	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	850		1000		85.3	80	120			

Sample ID	LCS-13175 MK	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	R18624	RunNo:	18624					
Prep Date:		Analysis Date:	5/15/2014	SeqNo:	538753	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	930		1000		93.5	80	120			

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#: 1405604

16-May-14

Client: Daniel B. Stephens & Assoc.

Project: Shamrock #63

Sample ID	MB-13175		SampType: MBLK	TestCode: EPA Method 8021B: Volatiles						
Client ID:	PBS		Batch ID: 13175	RunNo: 18624						
Prep Date:	5/14/2014		Analysis Date: 5/15/2014	SeqNo: 538765		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		103	80	120			

Sample ID	LCS-13175		SampType: LCS	TestCode: EPA Method 8021B: Volatiles						
Client ID:	LCSS		Batch ID: 13175	RunNo: 18624						
Prep Date:	5/14/2014		Analysis Date: 5/15/2014	SeqNo: 538766		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.2	0.050	1.000	0	119	80	120			
Toluene	1.1	0.050	1.000	0	109	80	120			
Ethylbenzene	1.1	0.050	1.000	0	106	80	120			
Xylenes, Total	3.1	0.10	3.000	0	104	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		105	80	120			

Sample ID	1405604-001AMS		SampType: MS	TestCode: EPA Method 8021B: Volatiles						
Client ID:	Shamrock #63 Com		Batch ID: 13175	RunNo: 18624						
Prep Date:	5/14/2014		Analysis Date: 5/15/2014	SeqNo: 538768		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.8	0.049	0.9852	0.6932	109	67.4	135			
Toluene	3.6	0.049	0.9852	2.492	112	72.6	135			
Ethylbenzene	2.6	0.049	0.9852	1.454	117	69.4	143			
Xylenes, Total	12	0.099	2.956	8.658	107	70.8	144			
Surr: 4-Bromofluorobenzene	1.3		0.9852		131	80	120			S

Sample ID	1405604-001AMSD		SampType: MSD	TestCode: EPA Method 8021B: Volatiles						
Client ID:	Shamrock #63 Com		Batch ID: 13175	RunNo: 18624						
Prep Date:	5/14/2014		Analysis Date: 5/15/2014	SeqNo: 538769		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.9	0.049	0.9814	0.6932	122	67.4	135	6.60	20	
Toluene	3.5	0.049	0.9814	2.492	99.5	72.6	135	3.64	20	
Ethylbenzene	2.7	0.049	0.9814	1.454	126	69.4	143	3.11	20	
Xylenes, Total	12	0.098	2.944	8.658	122	70.8	144	3.51	20	
Surr: 4-Bromofluorobenzene	1.3		0.9814		136	80	120	0	0	S

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#: 1405604

16-May-14

Client: Daniel B. Stephens & Assoc.

Project: Shamrock #63

Sample ID	MB-13175 MK	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	PBS	Batch ID:	R18624	RunNo:	18624					
Prep Date:		Analysis Date:	5/15/2014	SeqNo:	538774	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		103	80	120			

Sample ID	LCS-13175 MK	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	LCSS	Batch ID:	R18624	RunNo:	18624					
Prep Date:		Analysis Date:	5/15/2014	SeqNo:	538775	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		105	80	120			

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
4901 Hawkins NE
Albuquerque, NM 87105
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: DBS

Work Order Number: 1405604

RcptNo: 1

Received by/date:

AT 05/14/14

Logged By: Lindsay Mangin

5/14/2014 1:42:00 PM

[Signature]

Completed By: Lindsay Mangin

5/14/2014 1:58:19 PM

[Signature]

Reviewed By:

KMS 5/14/14

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? Client

Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☐ No ☒ NA ☐
Samples were collected the same day and chilled.
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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	8.4	Good	Not Present			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

[illegible]

If necessary, samples submitted to Hell 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.

Heated Headspace Field Screening Method for Soil Samples

All field activities will be conducted in accordance with the New Mexico Environment Department (NMED) Petroleum Storage Tank Regulations (20.5 NMAC), including Section 1.0; Soil and Groundwater Sampling and Disposal, found in the New Mexico Underground Storage Tank Bureau Guidelines for Corrective Action (March 13, 2000).

Soil samples to be screened in the field shall be placed in a sixteen (16)-ounce (or larger) clean glass jar until approximately one-half full. Clean aluminum foil shall be placed over the top of the jar and secured with the lid ring (or equivalent).

The sample shall not be evaluated until it reaches a temperature of at least 60 degrees Fahrenheit but shall not be allowed to reach a temperature in excess of 80 degrees Fahrenheit. When working in cold weather conditions, samples may be warmed to the appropriate evaluation temperature by placing them inside a heated vehicle. Samples shall be protected from exposure to direct sunlight.

Aromatic hydrocarbon vapor concentrations shall be allowed to develop for at least five (5) minutes prior to evaluating each sample. Samples shall be shaken vigorously to assist the development of vapors in the headspace.

After allowing sufficient time for the development of vapors in the headspace, the foil cover of the sample container shall be pierced using the probe of a photo-ionization detector (PID). The highest measurement of headspace vapors in parts per million (ppm) shall be recorded for each sample.

After evaluating the sample and recording the highest measurement of headspace vapors, the sample and the aluminum foil lid shall be disposed of properly. The sample container may be reused after it has been properly cleaned.

Soil Sample Collection Using Methanol Extraction

All field activities will be conducted in accordance with the New Mexico Environment Department (NMED) Petroleum Storage Tank Regulations (20.5 NMAC), including Section 1.0; Soil and Groundwater Sampling and Disposal, found in the New Mexico Underground Storage Tank Bureau Guidelines for Corrective Action (March 13, 2000).

Each soil sample collected shall be representative of the area intended for laboratory analysis. Soil samples may be collected from a backhoe bucket, split spoon sampler or the bottom or sidewall of an excavation only after the soil surface has been scraped away to expose fresh soil. The soil sample shall be collected using a disposable plastic syringe supplied by the laboratory. The graduated syringe shall be filled with approximately ten (10) cubic centimeters (cc) of fresh soil from the intended sample location.

Working carefully but quickly, the screw cap shall be removed from a twenty (20) milliliter (ml) glass sample vial containing methanol (supplied by the laboratory) and the soil sample shall be pushed from the syringe into the vial, taking care not to allow soil particles to adhere to the rim of the vial. The screw cap shall be replaced on the 20 ml glass vial containing the sample and tightened securely. Once the screw cap is secure, the sample shall be gently agitated to completely immerse the soil in the methanol. Excessive agitation of the sample shall be avoided.

Two (2) 40 ml sample vials containing soil and methanol shall be prepared in the field for each intended soil sample location. In addition to the 40 ml sample vials, a minimum of twenty (20) grams of dry soil (no methanol added) from each intended soil sample location shall be placed in a clean four (4) –ounce glass sample jar supplied by the laboratory. The labels on all three (3) sample containers shall correspond to one soil sample location.

All labeled soil sample containers shall be placed under ice in an insulated storage chest, and sealed with custody tape. The collected soil samples will be delivered with chain-of-custody documentation to a certified laboratory. The soil samples will be analyzed by the certified laboratory in accordance with the appropriate EPA Methodology.

Monitoring Well Installation

Upon borehole completion, a 4-inch diameter, Schedule 40 PVC pipe with a 20-foot section of 0.020-inch slotted screen with a sediment sump and cap on the bottom will be lowered into and centered in each borehole. The well materials will be placed such that the top of the slotted screen is approximately 10 ft above the existing water table. Coarse grained (10/20) silica sand will be backfilled below and around the well screen to a depth of approximately 3 feet above the screened interval. A bentonite seal, having an approximate thickness of 2 feet and consisting of hydrated bentonite pellets, will be constructed on top of the silica sand pack or filter pack seal. The remainder of the borehole will be backfilled with cement grout having a minimum five percent bentonite content to within approximately one foot of the top of the PVC well casing. The remainder of the backfill, approximately 12 inches, will consist of concrete. The top of the well casing will be terminated above grade, sealed with a lockable water-tight cap, and covered with a steel protective well cover. A concrete slab of a minimum two (2) foot radius and six (6) inches thick will be poured around the well cover and sloped so that rainfall and runoff flows away from the well. Well completion logs including lithology for the new monitoring wells will be included in the report.

The new monitoring wells will be developed first by surging the well for 5 to 10 minutes throughout the length of the well screen with a bailer or slug, followed by removal of the ground water and sediment from the well with a bailer. Each well will be surged and bailed in this manner until pH, temperature and specific conductivity readings stabilize and turbidity is reduced to the greatest extent possible.

Ground Water Sampling

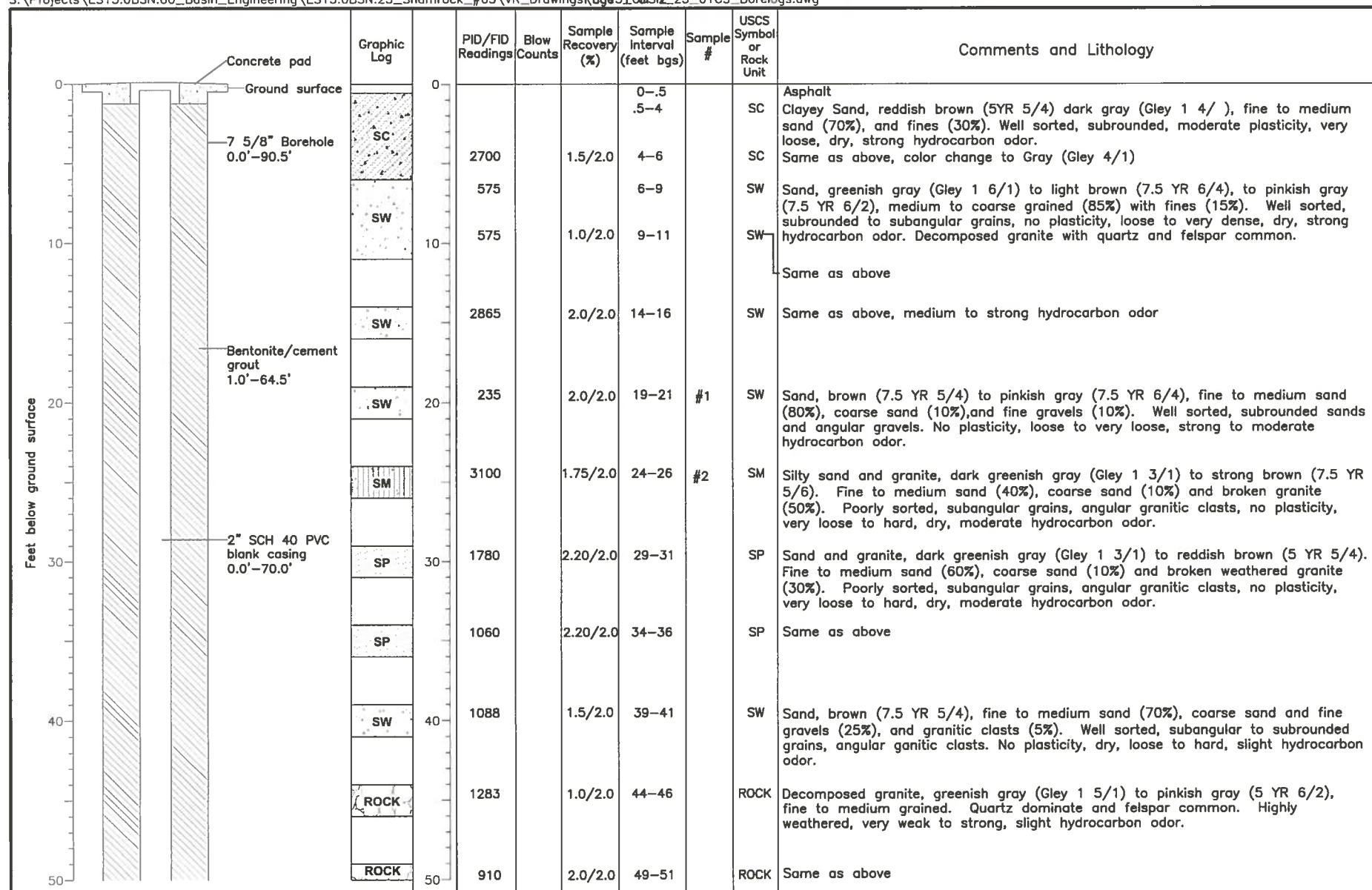
All field activities will be conducted in accordance with the New Mexico Environment Department (NMED) Petroleum Storage Tank Regulations (20.5 NMAC), including Section 1.0; Soil and Groundwater Sampling and Disposal, found in the New Mexico Underground Storage Tank Bureau Guidelines for Corrective Action (March 13, 2000).

The NMED Petroleum Storage Tank Bureau (PSTB) Project Manager will be notified of the intent to sample the site at least ninety-six (96) hours in advance of the scheduled monitoring event.

Prior to sampling, an electronic interface probe will be used to measure the water levels and total depths of the monitoring wells to be sampled. These data will be used to calculate casing volumes of water for each well. The interface probe will also indicate if free phase hydrocarbons are present in the well. If free phase hydrocarbons are detected, the well will not be purged or sampled. If free phase hydrocarbons are not detected, the well will be purged using an HDPE disposable bailer to remove three casing volumes of water or, if the well is completed in a low transmissivity formation, water will be removed until the well is dry. Disposal of purged water will take place within the site property boundary on an impervious surface (if possible) near the well of origin. When specifically required by a Work Plan, purged water will be placed in a water-tight container and transported to an approved disposal or recycling facility.

After purging, the sample bailer will be used to transfer the ground water to sample bottles containing the appropriate preservative (if required). The sample bottles will then be labeled, placed under ice in an insulated storage chest, and sealed with custody tape. Ground water samples will be delivered with chain-of-custody documentation to a certified laboratory. The ground water samples will be analyzed by the certified laboratory in accordance with the appropriate EPA Methodology.

Water quality parameters including pH, temperature, specific conductance, total dissolved solids and dissolved oxygen will be measured immediately prior to sample collection. The date and time of sample collection, weather conditions, volume of water in the well, volume of water purged prior to sampling, physical sample descriptions (including turbidity, color and odor), other pertinent observations, and water quality measurements will be recorded on Ground Water Monitoring Data Sheets.



Geologist: C. Johannesen
Driller: Rogers
Date completed: 5-13-14

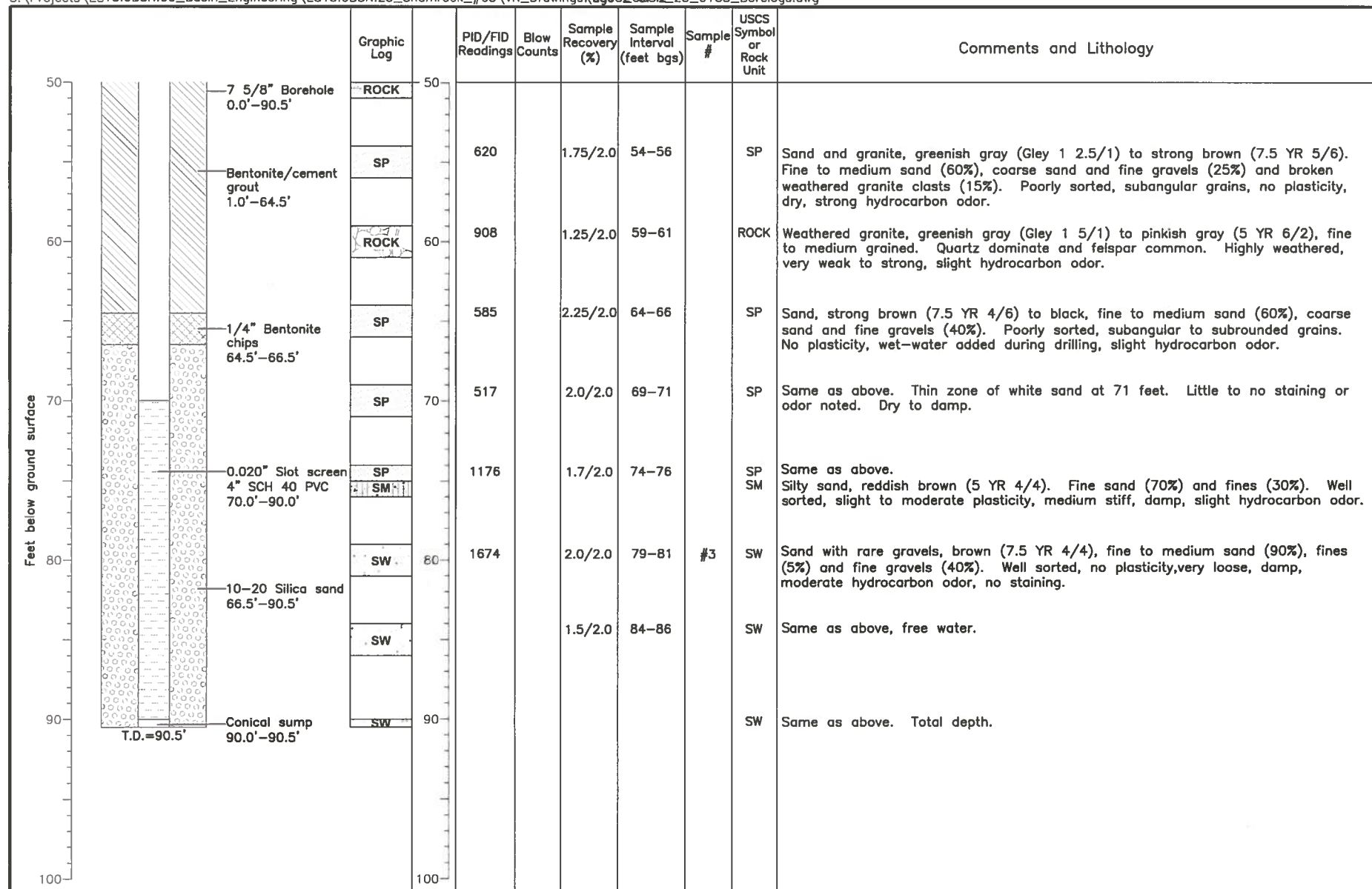
Drilling method: Hollow stem auger
Diameter: 7 5/8"
Sampling device: Split spoon/auger

Northing:
Easting:
Elevation:

SHAMROCK #63
Well: MW-06



Daniel B. Stephens & Associates, Inc.
7/10/2014 JN ES13.OBSN.25



Geologist: C. Johannesen
 Driller: Rogers
 Date completed: 5-13-14

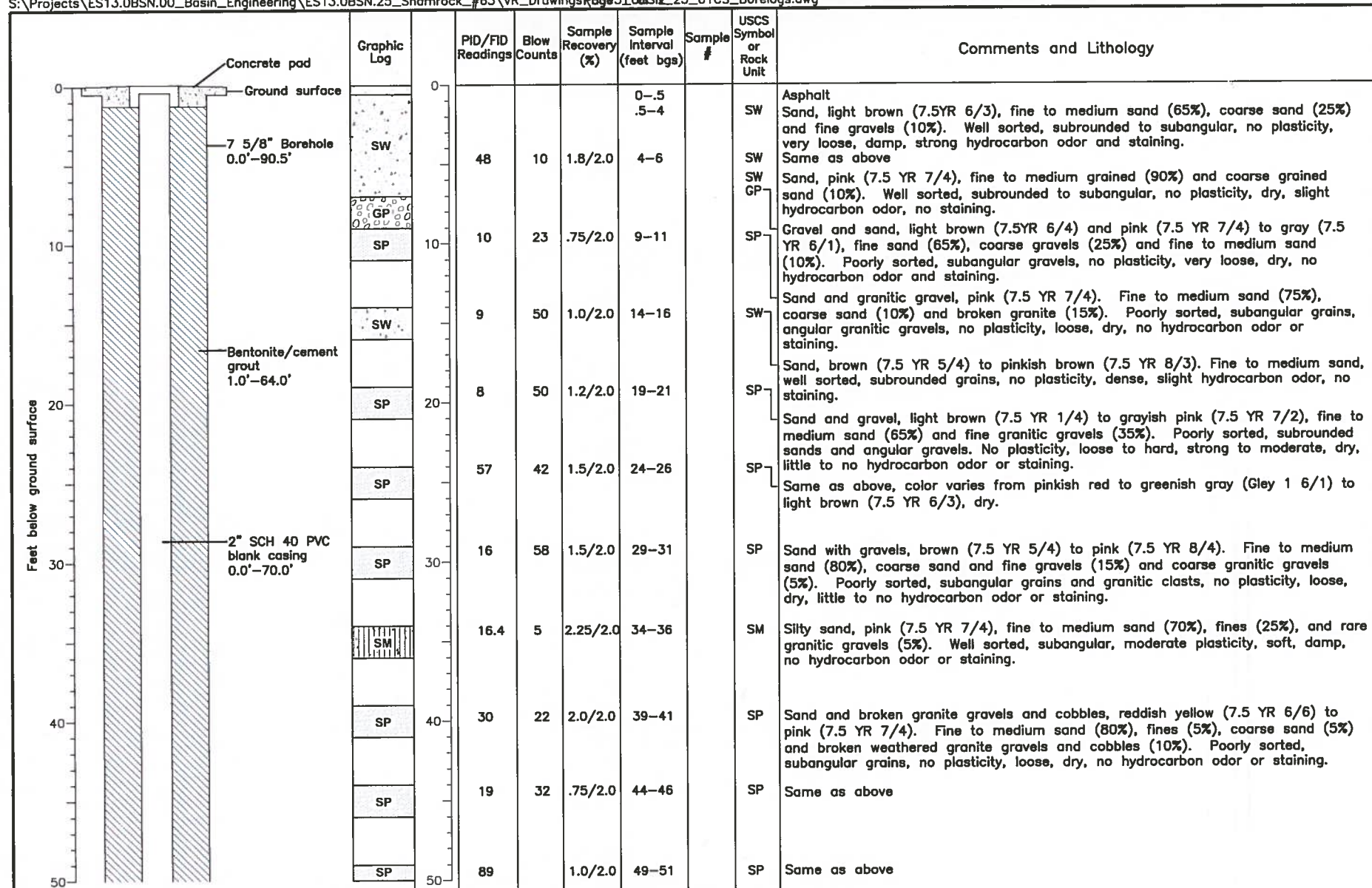
Drilling method: Hollow stem auger
 Diameter: 7 5/8"
 Sampling device: Split spoon/auger

Northing:
 Easting:
 Elevation:

SHAMROCK #63
Well: MW-06



Daniel B. Stephens & Associates, Inc.
 7/10/2014 JN ES13.0BSN.25



Geologist: C. Johannesen
 Driller: Rogers
 Date completed: 5-14-14

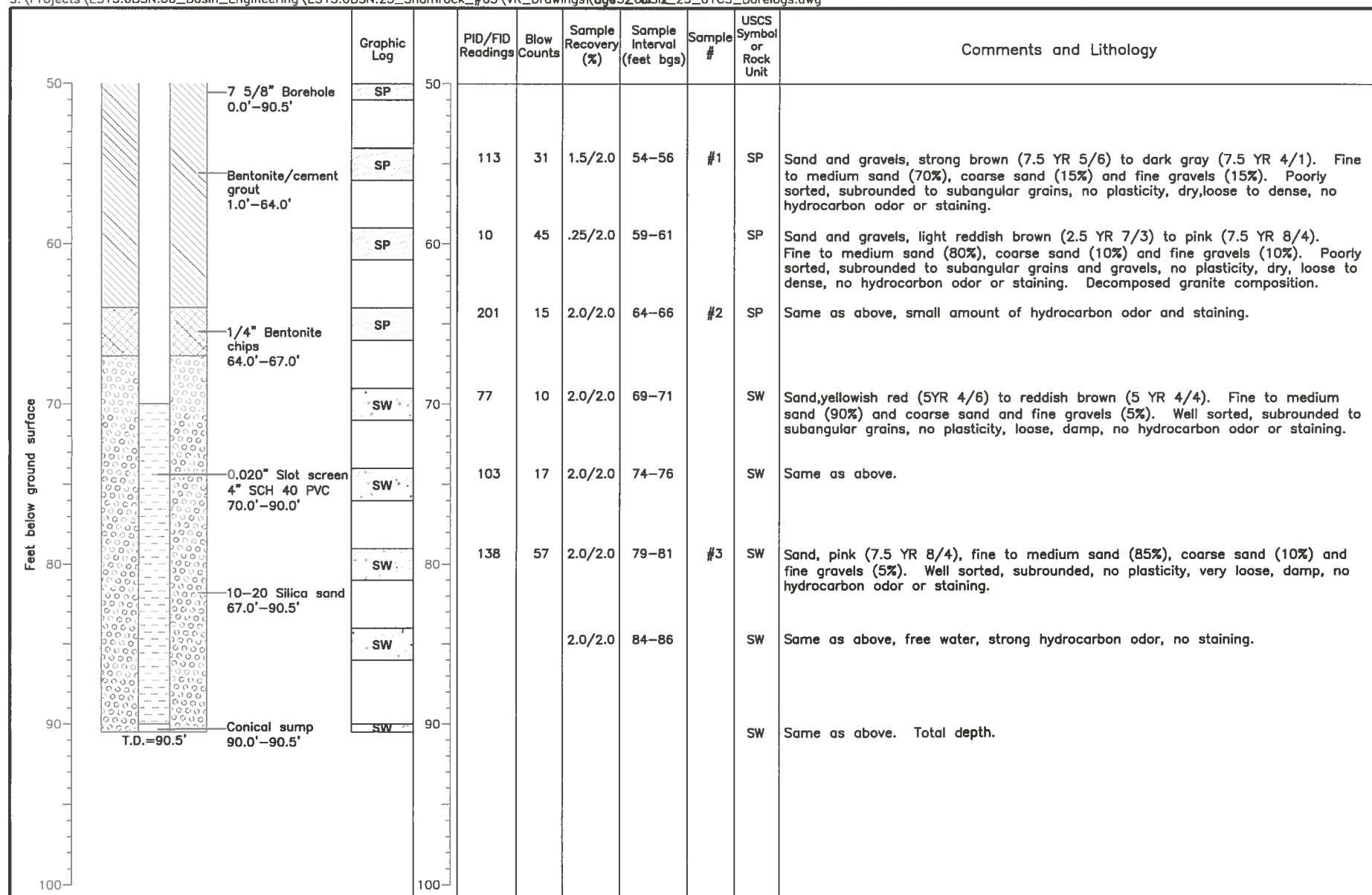
Drilling method: Hollow stem auger
 Diameter: 7 5/8"
 Sampling device: Split spoon/auger

Northing:
 Easting:
 Elevation:

SHAMROCK #63
 Well: MW-07



Daniel B. Stephens & Associates, Inc.
 7/10/2014 JN ES13.OBSN.25

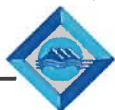


Geologist: C. Johannesen
 Driller: Rogers
 Date completed: 5-14-14

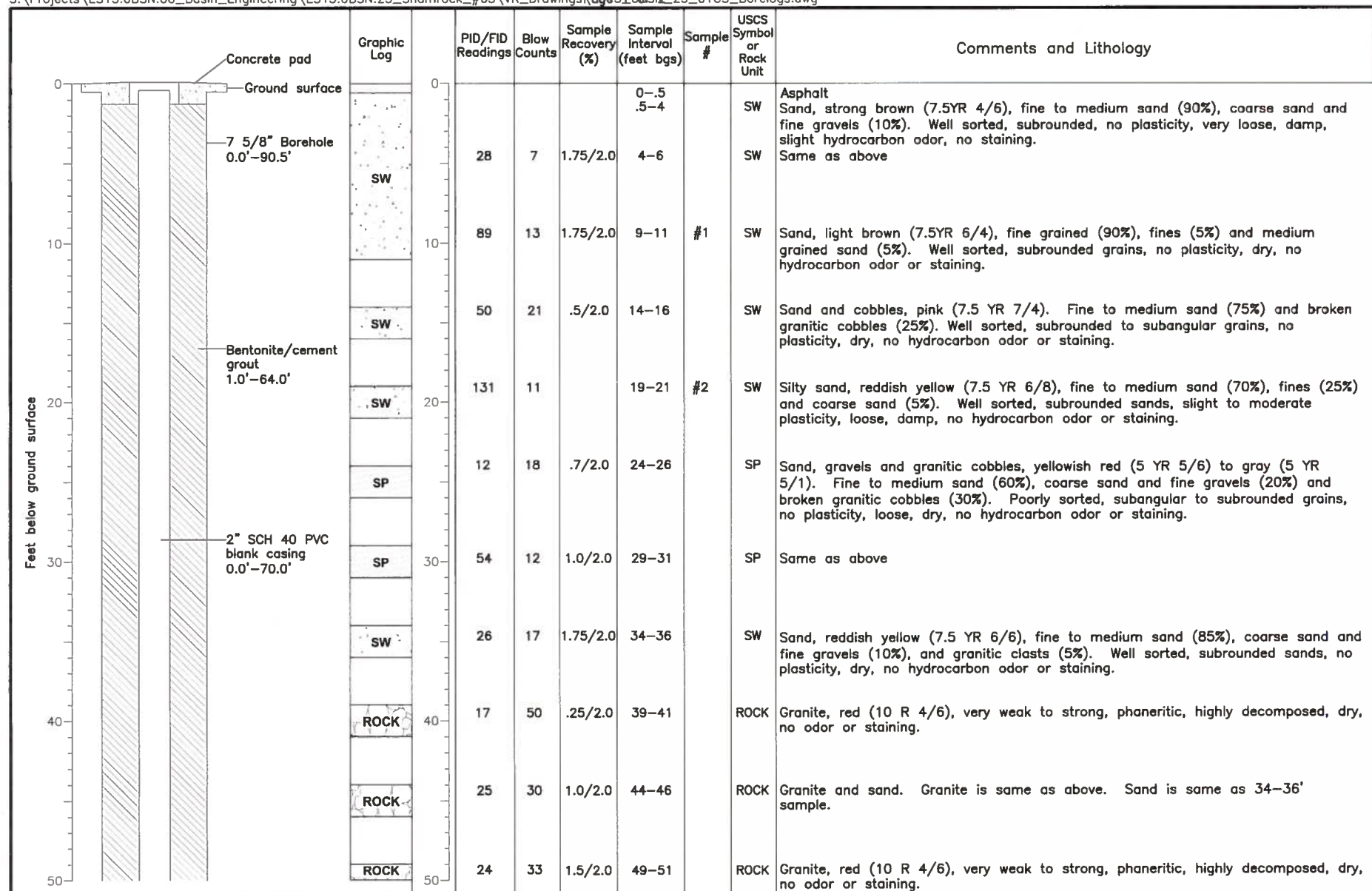
Drilling method: Hollow stem auger
 Diameter: 7 5/8"
 Sampling device: Split spoon/auger

Northing:
 Easting:
 Elevation:

SHAMROCK #63
 Well: MW-07



Daniel B. Stephens & Associates, Inc.
 7/10/2014 JN ES13.0BSN.25



Geologist: C. Johannesen
 Driller: Rogers
 Date completed: 5-15-14

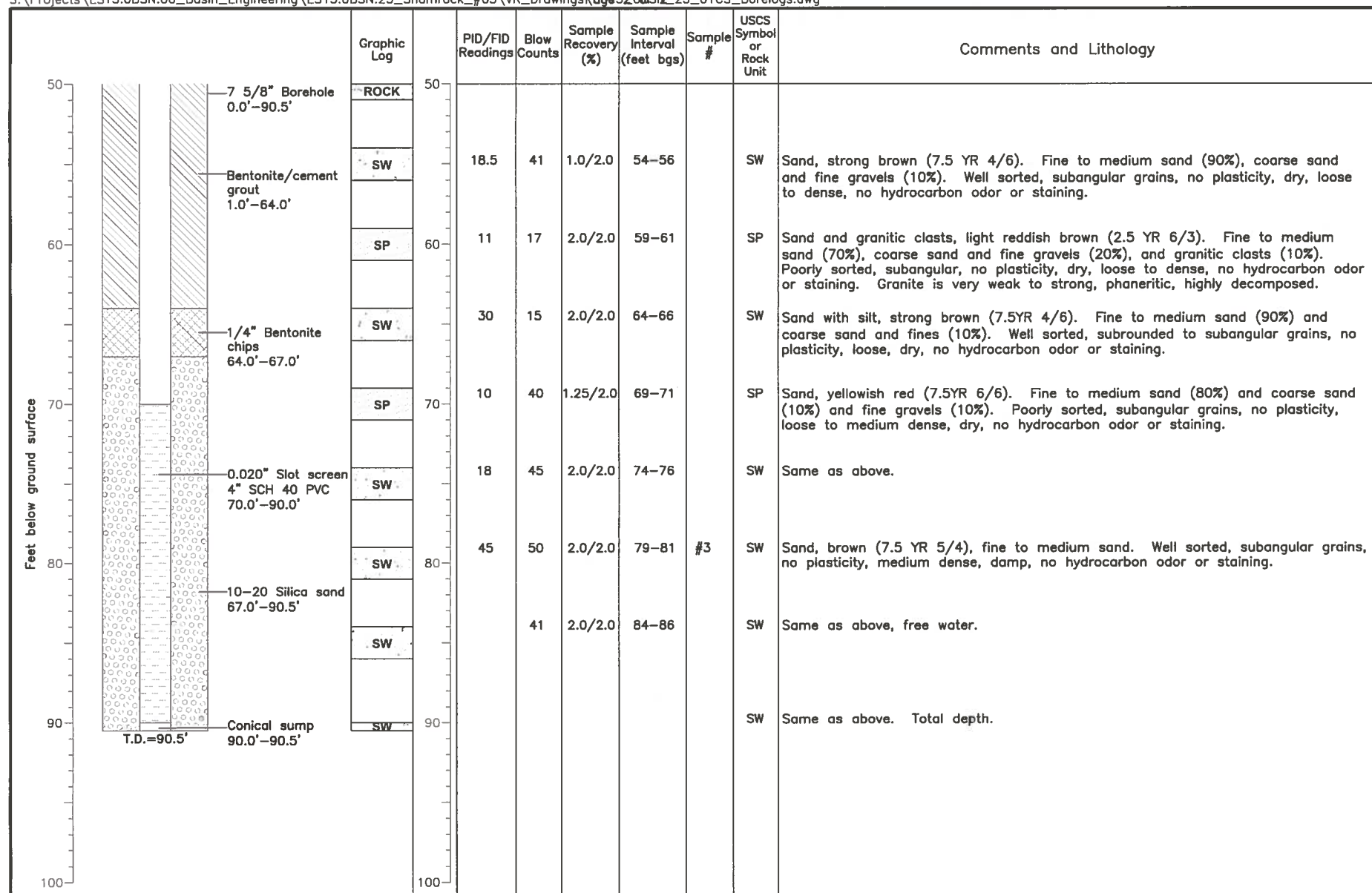
Drilling method: Hollow stem auger
 Diameter: 7 5/8"
 Sampling device: Split spoon/auger

Northing:
 Easting:
 Elevation:

SHAMROCK #63
Well: MW-08



Daniel B. Stephens & Associates, Inc.
 7/10/2014
 JN ES13.0BSN.25



Geologist: C. Johannesen
 Driller: Rogers
 Date completed: 5-15-14

Drilling method: Hollow stem auger
 Diameter: 7 5/8"
 Sampling device: Split spoon/auger

Northing:
 Easting:
 Elevation:

SHAMROCK #63
Well: MW-08



Daniel B. Stephens & Associates, Inc.
 7/10/2014 JN ES13.0BSN.25

Scott A. Verhines, P.E.
State Engineer



Santa Fe Office
PO BOX 25102
SANTA FE, NM 87504-5102

Trn Nbr: 546148
File Nbr: RG 93132

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

May. 08, 2014

JOHN E. CASEY
BASIN ENGINEERING, ~~NET~~ INC.
P.O. BOX 3909
DURANGO, CO 81302

Greetings:

Enclosed is your copy of the above numbered permit that has been approved subject to the conditions set forth on the approval page. In accordance with the conditions of approval, the well can only be tested for 10 cumulative days, and the well is to be plugged on or before 05/08/2015, unless a permit to use the water is acquired from this office.

A Well Record & Log (OSE Form wr-20) shall be filed in this office within twenty (20) days after completion of drilling, but no later than 05/08/2015.

Appropriate forms can be downloaded from the OSE website www.ose.state.nm.us or will be mailed upon request.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Churan", is written over a horizontal line.

Ken Churan
(505) 827-6120

Enclosure

explore

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL

- 4 No water shall be appropriated and beneficially used under this permit.
- 6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.
- B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.
- C Driller's well record must be filed with the State Engineer within 20 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.
- G If artesian water is encountered, all rules and regulations pertaining to the drilling and casing of artesian wells shall be complied with.
- LOG The Point of Diversion RG 93132 POD2 must be completed and the Well Log filed on or before 05/08/2015.
- LOG The Point of Diversion RG 93132 POD3 must be completed and the Well Log filed on or before 05/08/2015.
- LOG The Point of Diversion RG 93132 POD4 must be completed and the Well Log filed on or before 05/08/2015.

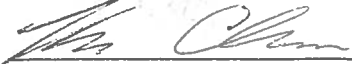
ACTION OF STATE ENGINEER

Notice of Intention Rcvd: Date Rcvd. Corrected:
Formal Application Rcvd: 05/05/2014 Pub. of Notice Ordered:
Date Returned - Correction: Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 08 day of May A.D., 2014

Scott A. Verhines, P.E., State Engineer

By: 

Ken Churan

File Number: RG 93132

Trn Number: 546148



NEW MEXICO OFFICE OF THE STATE ENGINEER

APPLICATION FOR PERMIT TO DRILL A WELL WITH NO CONSUMPTIVE USE OF WATER



(check applicable box):

For fees, see State Engineer website: <http://www.ose.state.nm.us/>6-37778

- Purpose:
- ☐ Pollution Control And / Or Recovery ☐ Geo-Thermal
- ☐ Exploratory ☐ Construction Site De-Watering ☐ Other (Describe):
- ☒ Monitoring ☐ Mineral De-Watering

A separate permit will be required to apply water to beneficial use.

☒ Temporary Request - Requested Start Date: **05/12/2014**Requested End Date: **06/15/2020**Plugging Plan of Operations Submitted? ☐ Yes ☒ No

1. APPLICANT(S)

Name: Basin Engineering, Inc.	Name:
Contact or Agent: John E. Casey, P.E. check here if Agent ☒	Contact or Agent: check here if Agent ☐
Mailing Address: PO Box 3909	Mailing Address:
City: Durango	City:
State: CO Zip Code: 81302	State: Zip Code:
Phone: 970-769-2196 ☐ Home ☒ Cell Phone (Work): 970-259-2078	Phone: ☐ Home ☐ Cell Phone (Work):
E-mail (optional): jec@basinengineering.net	E-mail (optional):

2014 MAY -5 PM 1:38

FOR OSE INTERNAL USE

Application for Permit, Form wr-07, Rev 8/25/11

File Number: <u>RG-93132</u>	Trn Number: <u>546148</u>
Trans Description (optional):	
Sub-Basin: <u>NRG</u>	
PCW/LOG Due Date: <u>5/8/15</u>	

2. WELL(S) Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84)

☒ NM State Plane (NAD83) (Feet)

☐ NM West Zone

☐ NM East Zone

☒ NM Central Zone

☐ UTM (NAD83) (Meters)

☐ Zone 12N

☐ Zone 13N

☐ Lat/Long (WGS84) (to the nearest 1/10th of second)

Well Number (if known):	X or Easting or Latitude:	Y or Northing or Longitude:	Optional: Complete boxes labeled "Other" below with PLSS (Public Land Survey System, i.e. Quarters, Section, Township, Range); Hydrographic Survey Map & Tract; Lot, Block & Subdivision; OR Land Grant Name if known.
MW-6 POD 2	1712506.19	1690249.83	PLSS
MW-7 POD 3	1712547.77	1690286.88	PLSS
MW-8 POD 4	1712698.40	1690202.64	PLSS

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)

Additional well descriptions are attached: ☐ Yes ☐ No If yes, how many _____

Other description relating well to common landmarks, streets, or other:

Well is on land owned by: Manuel Miramonte

Well Information: **NOTE:** If more than one (1) well needs to be described, provide attachment. Attached? ☐ Yes ☒ No
If yes, how many _____

Approximate depth of well (feet): 90.00

Outside diameter of well casing (inches): 2.10

Driller Name: Rodgers Environmental

Driller License Number: NMWD 225

3. ADDITIONAL STATEMENTS OR EXPLANATIONS

Site Map Attached

The monitoring wells are being installed at the request of NMED-PSTB to further define the on-site ground water plume at this old gas station location. Estimated monitoring duration 5 years.

FOR USE INTERNAL USE

Application for Permit, Form wr-07

File Number: RG-93132

Trn Number: 546148

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

Exploratory: ☐ Include a description of any proposed pump test, if applicable.	Pollution Control and/or Recovery: ☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for the pollution control or recovery operation. ☐ The estimated maximum period of time for completion of the operation. ☐ The annual diversion amount. ☐ The annual consumptive use amount. ☐ The maximum amount of water to be diverted and injected for the duration of the operation. ☐ The method and place of discharge. ☐ The method of measurement of water produced and discharged. ☐ The source of water to be injected. ☐ The method of measurement of water injected. ☐ The characteristics of the aquifer. ☐ The method of determining the resulting annual consumptive use of water and depletion from any related stream system. ☐ Proof of any permit required from the New Mexico Environment Department. ☐ An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	Construction De-Watering: ☐ Include a description of the proposed dewatering operation, ☐ The estimated duration of the operation, ☐ The maximum amount of water to be diverted, ☐ A description of the need for the dewatering operation, and, ☐ A description of how the diverted water will be disposed of.	Mine De-Watering: ☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for mine dewatering. ☐ The estimated maximum period of time for completion of the operation. ☐ The source(s) of the water to be diverted. ☐ The geohydrologic characteristics of the aquifer(s). ☐ The maximum amount of water to be diverted per annum. ☐ The maximum amount of water to be diverted for the duration of the operation. ☐ The quality of the water. ☐ The method of measurement of water diverted. ☐ The recharge of water to the aquifer. ☐ Description of the estimated area of hydrologic effect of the project. ☐ The method and place of discharge. ☐ An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. ☐ A description of the methods employed to estimate effects on surface water rights and underground water rights. ☐ Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.
Monitoring: ☒ Include the reason for the monitoring well, and, ☒ The duration of the planned monitoring.		Geo-Thermal: ☐ Include a description of the geothermal heat exchange project, ☐ The amount of water to be diverted and re-injected for the project, ☐ The time frame for constructing the geothermal heat exchange project, and, ☐ The duration of the project. ☐ Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.	

ACKNOWLEDGEMENT

I, We (name of applicant(s)), John E. Casey

Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

John E. Casey
Applicant Signature

Applicant Signature

ACTION OF THE STATE ENGINEER

This application is:

☒ approved

☐ partially approved

☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 8th day of MAY 20 14, for the State Engineer,

SCOTT VERHUES, P.E., State Engineer

By: [Signature]
Signature

KEN CHURAN
Print

Title: WATER RESOURCE SPECIALIST
Print

FOR USE INTERNAL USE

Application for Permit, Form wr-07

File Number: RG-93132

Trn Number: 546148

OFFICE OF THE STATE ENGINEER/INTERSTATE STREAM COMMISSION – SANTA FE OFFICE

OFFICIAL RECEIPT NUMBER: **6-37778** DATE: **5/5/14** FILE NO.: **713, D.**
 TOTAL: **15.00** RECEIVED: **F. Steen** DOLLARS CHECK NO.: **1198** CASH: **1198**
 PAYOR: **Basin Engineering** ADDRESS: **P.O. Box 3909** CITY: **Durango** STATE: **CO**
 ZIP: **81302** RECEIVED BY: **POB**

INSTRUCTIONS: Indicate the number of actions to the left of the appropriate type of filing. Complete the receipt information. **Original** to payor; **pink** copy to Program Support/ASD; and **yellow** copy for Water Rights. If a mistake is made, void the original and all copies and submit to Program Support/ASD as part of your daily deposit.

A. Ground Water Filing Fees

1. Change of Ownership of Water Right \$ 2.00
2. Application to Appropriate or Supplement Domestic 72-12-1 Well \$ 125.00
3. Application to Repair or Deepen 72-12-1 Well \$ 75.00
4. Application for Replacement 72-12-1 Well \$ 75.00
5. Application to Change Purpose of Use 72-12-1 Well \$ 75.00
6. Application for Stock Well \$ 5.00

B. Surface Water Filing Fees

1. Change of Ownership of a Water Right \$ 5.00
2. Declaration of Water Right \$ 10.00
3. Amended Declaration \$ 25.00
4. Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Surface Water \$ 200.00
5. Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Surface Water \$ 200.00
6. Application to Change Point of Diversion \$ 100.00
7. Application to Change Place and/or Purpose of Use \$ 100.00
8. Application to Appropriate Notice of Intent to Appropriate \$ 25.00
9. Notice of Intent to Appropriate \$ 25.00
10. Application for Extension of Time \$ 50.00
11. Supplemental Well to a Surface Right \$ 100.00
12. Return Flow Credit \$ 100.00
13. Proof of Completion of Works \$ 25.00
14. Proof of Application of Water to Beneficial Use \$ 25.00
15. Water Development Plan \$ 100.00
16. Declaration of Livestock Water Impoundment \$ 10.00
17. Application for Livestock Water Impoundment \$ 10.00

C. Well Driller Fees

1. Application for Well Driller's License \$ 50.00
2. Application for Renewal of Well Driller's License \$ 50.00
3. Application to Amend Well Driller's License \$ 50.00

D. Reproduction of Documents

- @ 0.25¢ \$ _____
 Map(s) \$ _____

E. Certification

\$ _____

F. Other

\$ _____

G. Comments:

7. Application to Appropriate Irrigation, Municipal, or Commercial Use \$ 25.00
8. Declaration of Water Right \$ 1.00
9. Application for Supplemental Non 72-12-1 Well \$ 25.00
10. Application to Change Place or Purpose of Use Non 72-12-1 Well \$ 25.00
11. Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Ground Water \$ 50.00
12. Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Ground Water \$ 50.00
13. Application to Change Point of Diversion of Non 72-12-1 Well \$ 25.00
14. Application to Repair or Deepen Non 72-12-1 Well \$ 5.00

15. Application for Test, Expl. Observ. Well \$ 5.00
16. Application for Extension of Time \$ 25.00
17. Proof of Application to Beneficial Use \$ 25.00
18. Notice of Intent to Appropriate \$ 25.00

All fees are non-refundable.



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NUMBER (WELL NUMBER) 3				OSE FILE NUMBER(S) RG 93132					
	WELL OWNER NAME(S) Basin Engineering, Inc. contact John E. Casey				PHONE (OPTIONAL) 970-769-2196					
	WELL OWNER MAILING ADDRESS PO Box 3909				CITY Durango		STATE CO		ZIP 81302	
	WELL LOCATION (FROM GPS)		DEGREES LATITUDE 35		MINUTES 38		SECONDS 43.55 N		* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84	
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE										
2. DRILLING & CASING INFORMATION	LICENSE NUMBER WD225		NAME OF LICENSED DRILLER John Tanner				NAME OF WELL DRILLING COMPANY Rodgers & Co., Inc.			
	DRILLING STARTED 5/13/14		DRILLING ENDED 5/14/14		DEPTH OF COMPLETED WELL (FT) 90		BORE HOLE DEPTH (FT) 90		DEPTH WATER FIRST ENCOUNTERED (FT) unknown	
	COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☒ SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) 82					
	DRILLING FLUID: ☐ AIR ☐ MUD ☐ ADDITIVES - SPECIFY:									
	DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☒ OTHER - SPECIFY: hollow stem auger									
	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)		
	FROM	TO								
	0		70	7-5/8	PVC casing	slip/glued	2	Sch 40		
	70		90	7-5/8	PVC screen	slip/glued	2	Sch 40	0.020	
3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT				
	FROM	TO								
	0		65	7-5/8	Cement/bentonite grout	18.61	HSA			
	65		67	7-5/8	Bentonite pellets	0.57	HSA			
	67		90	7-5/8	10/20 silica sand	6.58	HSA			

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER

POD NUMBER

TRN NUMBER

LOCATION

PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	30	30	Silty sand and gravel	☐ Y ☒ N	
	30	90	60	Decomposed granite	☒ Y ☐ N	
					☐ Y ☐ N	
					☐ Y ☐ N	
					☐ Y ☐ N	
					☐ Y ☐ N	
					☐ Y ☐ N	
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					☐ Y ☐ N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ☐ PUMP					TOTAL ESTIMATED WELL YIELD (gpm): 2	
☐ AIR LIFT ☒ BAILER ☐ OTHER - SPECIFY:						

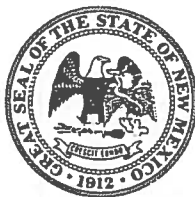
5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.
	MISCELLANEOUS INFORMATION: MW-7	
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: John Tanner	

6. SIGNATURE	THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:	
	 SIGNATURE OF DRILLER / PRINT SIGNEE NAME	John Tanner 05/20/14 DATE

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCATION			PAGE 2 OF 2



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NUMBER (WELL NUMBER) 2				OSE FILE NUMBER(S) RG 93132					
	WELL OWNER NAME(S) Basin Engineering, Inc. contact John E. Casey				PHONE (OPTIONAL) 970-769-2196					
	WELL OWNER MAILING ADDRESS PO Box 3909				CITY Durango		STATE CO	ZIP 81302		
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 35	MINUTES 38	SECONDS 43.21 N	• ACCURACY REQUIRED: ONE TENTH OF A SECOND • DATUM REQUIRED: WGS 84					
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE										
2. DRILLING & CASING INFORMATION	LICENSE NUMBER WD225		NAME OF LICENSED DRILLER John Tanner				NAME OF WELL DRILLING COMPANY Rodgers & Co., Inc.			
	DRILLING STARTED 5/12/14		DRILLING ENDED 5/13/14		DEPTH OF COMPLETED WELL (FT) 90		BORE HOLE DEPTH (FT) 92		DEPTH WATER FIRST ENCOUNTERED (FT) unknown	
	COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☒ SHALLOW (UNCONFINED)						STATIC WATER LEVEL IN COMPLETED WELL (FT) 82			
	DRILLING FLUID ☐ AIR ☐ MUD ☐ ADDITIVES - SPECIFY:									
	DRILLING METHOD ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☒ OTHER - SPECIFY: hollow stem auger									
	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)		
	FROM	TO								
	0		70	7-5/8	PVC casing	slip/glued	2	Sch 40		
	70		90	7-5/8	PVC screen	slip/glued	2	Sch 40	0.020	
3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT				
	FROM	TO								
	0		65	7-5/8	Cement/bentonite grout	18.61	HSA			
	65		67	7-5/8	Bentonite pellets	0.57	HSA			
	67		92	7-5/8	10/20 silica sand	7.15	HSA			

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER

POD NUMBER

TRN NUMBER

LOCATION

PAGE 1 OF 2

	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
4. HYDROGEOLOGIC LOG OF WELL	0	25	25	Silty sand and gravel	☐ Y ☒ N	
	25	92	67	Decomposed granite	☒ Y ☐ N	
					☐ Y ☐ N	
					☐ Y ☐ N	
					☐ Y ☐ N	
					☐ Y ☐ N	
					☐ Y ☐ N	
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					☐ Y ☐ N	
	METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ☐ PUMP					TOTAL ESTIMATED WELL YIELD (gpm): 2
☐ AIR LIFT ☒ BAILER ☐ OTHER - SPECIFY:						
5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
	MISCELLANEOUS INFORMATION: MW-6					
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: John Tanner					
6. SIGNATURE	THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING: SIGNATURE OF DRILLER John Tanner PRINT SIGNEE NAME 05/20/14 DATE					

FOR OSE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 06/08/2012)	
FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCATION			PAGE 2 OF 2



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NUMBER (WELL NUMBER) 4			OSE FILE NUMBER(S) RG 93132						
	WELL OWNER NAME(S) Basin Engineering, Inc. contact John E. Casey			PHONE (OPTIONAL) 970-769-2196						
	WELL OWNER MAILING ADDRESS PO Box 3909			CITY STATE ZIP Durango CO 81302						
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 35	MINUTES 38	SECONDS 42.63 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84					
		LONGITUDE 106	0	24.21 W						
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE										
2. DRILLING & CASING INFORMATION	LICENSE NUMBER WD225		NAME OF LICENSED DRILLER John Tanner		NAME OF WELL DRILLING COMPANY Rodgers & Co., Inc.					
	DRILLING STARTED 5/15/14		DRILLING ENDED 5/15/14		DEPTH OF COMPLETED WELL (FT) 90					
					BORE HOLE DEPTH (FT) 92					
					DEPTH WATER FIRST ENCOUNTERED (FT) unknown					
	COMPLETED WELL IS:		☐ ARTESIAN ☐ DRY HOLE ☒ SHALLOW (UNCONFINED)		STATIC WATER LEVEL IN COMPLETED WELL (FT) 82					
	DRILLING FLUID:		☐ AIR ☐ MUD ☐ ADDITIVES - SPECIFY:							
	DRILLING METHOD:		☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☒ OTHER - SPECIFY: hollow stem auger							
	DEPTH (feet bgl)		BORE HOLE DIAM (inches)		CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)		CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO								
	0	70	7-5/8	PVC casing	slip/glued	2	Sch 40			
70	90	7-5/8	PVC screen	slip/glued	2	Sch 40	0.020			
3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT				
	FROM	TO								
	0	65	7-5/8	Cement/bentonite grout	18.61	HSA				
	65	67	7-5/8	Bentonite pellets	0.57	HSA				
	67	92	7-5/8	10/20 silica sand	7.15	HSA				

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER

POD NUMBER

TRN NUMBER

LOCATION

PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

5. TEST: BIG SUPERVISION

6 SIGNATURE

SURVEYING CONTROL, INC.

131 Madison St., N.E.
Albuquerque, NM 87108
(505) 266-0935
Fax (505) 266-9985

June 24, 2014

Attn: John E. Casey, PE
Basin Engineering, Inc.
P.O. Box 3909
Durango, CO 81302

Re: Coordinates & Elevations for Monitor Wells on Shamrock #63 Site at Santa Fe, NM

Dear John:

The following are the coordinates and elevations for the monitor wells on the above referenced site. The coordinates are New Mexico State Plane Coordinates, Central Zone (NAD 83), and have been adjusted to the Arrow Engineering control point "CP 1" (N = 1690387.977', E = 1712653.816'). The coordinates below are referred to the center of the lid for each well. The elevations are NAVD 88, and have been adjusted to "CP 1" as well (Elevation used = 6625.10'). The elevations for the "Top PVC" on monitor wells 1, 2, 3 & 5 are referred to the existing black Magic Marker spot/chiseled notch on the northerly edge of the PVC well casing. The elevation for the "Top PVC" on monitor well 4 is referred to the existing black Magic Marker spot/chiseled notch on the southwesterly edge of the PVC well casing. The elevations for the "Top PVC" on monitor wells 6, 7 & 8 are referred to a black Magic Marker spot we placed on the northerly edge of the PVC well casing.

Well	Northing	Easting	Top Lid Elev.	Top PVC Elev.
MW-1	1690251.66	1712617.95	6620.83	6620.48
MW-2	1690323.59	1712592.22	6622.54	6622.11
MW-3	1690271.76	1712673.95	6621.37	6620.94
MW-4	1690162.33	1712646.66	6619.95	6619.54
MW-5	1690230.83	1712558.58	6621.32	6620.97
MW-6	1690260.06	1712518.82	6621.92	6621.73
MW-7	1690293.13	1712555.22	6622.84	6622.46
MW-8	1690208.21	1712695.46	6620.31	6619.98

NOTE: The coordinates & elevations above are expressed in U.S. Survey Feet.

Please do not hesitate to call if you have any questions or if you need any additional information.

Sincerely,



Stephen J. Toler, PS

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Nashville

2960 Foster Creighton Drive

Nashville, TN 37204

Tel: (615)726-0177

TestAmerica Job ID: 490-53262-1

Client Project/Site: Shamrock #63

For:

Basin Engineering, Inc.

PO BOX 3909

Durango, Colorado 81302

Attn: Mr. John Casey



Authorized for release by:

5/30/2014 3:45:30 PM

Heather Wagner, Project Manager I

(615)301-5763

heather.wagner@testamericainc.com

Designee for

Leah Klingensmith, Senior Project Manager

(615)301-5038

leah.klingensmith@testamericainc.com

LINKS

Review your project
results through

Total Access

Have a Question?



Visit us at:

www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page	1
Table of Contents	2
Sample Summary	3
Case Narrative	4
Definitions	5
Client Sample Results	6
QC Sample Results	24
QC Association	36
Chronicle	38
Method Summary	41
Certification Summary	42
Chain of Custody	43
Receipt Checklists	45

1
2
3
4
5
6
7
8
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13

Sample Summary

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
490-53262-1	MW-06-19-21	Solid	05/12/14 17:00	05/16/14 08:30
490-53262-2	MW-06-24-26	Solid	05/12/14 17:05	05/16/14 08:30
490-53262-3	MW-06-79-81	Solid	05/12/14 17:10	05/16/14 08:30
490-53262-4	MW-07-64-66	Solid	05/14/14 15:15	05/16/14 08:30
490-53262-5	MW-07-54-56	Solid	05/14/14 15:00	05/16/14 08:30
490-53262-6	MW-07-79-81	Solid	05/14/14 15:50	05/16/14 08:30
490-53262-7	MW-08-09-11	Solid	05/15/14 15:15	05/16/14 08:30
490-53262-8	MW-08-19-21	Solid	05/15/14 15:30	05/16/14 08:30
490-53262-9	MW-08-79-81	Solid	05/15/14 15:45	05/16/14 08:30

TestAmerica Nashville

Case Narrative

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Job ID: 490-53262-1

Laboratory: TestAmerica Nashville

Narrative

Job Narrative
490-53262-1

Comments

No additional comments.

Receipt

The samples were received on 5/16/2014 8:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.5° C.

GC/MS VOA

Method(s) 8260B: Surrogate recovery for the following sample(s) was outside control limits: MW-06-19-21 (490-53262-1), MW-06-79-81 (490-53262-3). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 8260B: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for batch 164531 recovered outside control limits for the following analytes: 2-Butanone. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method(s) 8260B: Reanalysis of the following sample(s) was performed outside of the analytical holding time due to client request for additional compounds. : MW-06-19-21 (490-53262-1), MW-06-24-26 (490-53262-2), MW-06-79-81 (490-53262-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits
*	LCS or LCSD exceeds the control limits
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding time
F1	MS and/or MSD Recovery exceeds the control limits
F2	MS/MSD RPD exceeds control limits

GC/MS VOA TICs

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
J	Indicates an Estimated Value for TICs
T	Result is a tentatively identified compound (TIC) and an estimated value.
N	Presumptive evidence of material.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-06-19-21

Lab Sample ID: 490-53262-1

Date Collected: 05/12/14 17:00

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,1,1-Trichloroethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,1,2,2-Tetrachloroethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,1,2-Trichloroethane	ND		0.236		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,1-Dichloroethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,1-Dichloroethene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,1-Dichloropropene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,2,3-Trichlorobenzene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,2,3-Trichloropropane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,2,4-Trichlorobenzene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,2,4-Trimethylbenzene	52.1		1.89		mg/Kg		05/17/14 07:05	05/23/14 22:31	20
1,2-Dibromo-3-Chloropropane	ND		0.236		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,2-Dibromoethane (EDB)	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,2-Dichlorobenzene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,2-Dichloroethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,2-Dichloropropane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,3,5-TMB	15.9		1.89		mg/Kg		05/17/14 07:05	05/23/14 22:31	20
1,3-Dichlorobenzene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,3-Dichloropropane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
1,4-Dichlorobenzene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
2,2-Dichloropropane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
2-Butanone (MEK)	ND		2.36		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
2-Chlorotoluene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
2-Hexanone	ND		2.36		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
4-Chlorotoluene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
4-Methyl-2-pentanone (MIBK)	ND		2.36		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Acetone	ND		2.36		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Benzene	2.86		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Bromobenzene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Bromochloromethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Bromodichloromethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Bromoform	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Bromomethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Carbon disulfide	ND		0.236		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Carbon tetrachloride	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Chlorobenzene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Chlorodibromomethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Chloroethane	ND		0.236		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
2-Methylnaphthalene	192	H E	4.71		mg/Kg		05/17/14 07:05	05/29/14 02:57	20
Chloroform	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Chloromethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
cis-1,2-Dichloroethene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
cis-1,3-Dichloropropene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Dibromomethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Dichlorodifluoromethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Ethylbenzene	17.2		1.89		mg/Kg		05/17/14 07:05	05/23/14 22:31	20
Hexachlorobutadiene	ND		0.236		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Isopropylbenzene	1.82		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Methyl tert-butyl ether	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-06-19-21

Lab Sample ID: 490-53262-1

Date Collected: 05/12/14 17:00

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		0.471		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Naphthalene	16.5		4.71		mg/Kg		05/17/14 07:05	05/23/14 22:31	20
n-Butylbenzene	6.98		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
N-Propylbenzene	6.51		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
p-Isopropyltoluene	1.29		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
sec-Butylbenzene	1.22		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Styrene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
tert-Butylbenzene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Tetrachloroethene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Toluene	39.4		1.89		mg/Kg		05/17/14 07:05	05/23/14 22:31	20
trans-1,2-Dichloroethene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
trans-1,3-Dichloropropene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Trichloroethene	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Trichlorofluoromethane	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Vinyl chloride	ND		0.0943		mg/Kg		05/17/14 07:05	05/23/14 23:52	1
Xylenes, Total	92.6		4.71		mg/Kg		05/17/14 07:05	05/23/14 22:31	20

Tentatively Identified Compound

Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-methylnaphthalene	2.61 T H J	mg/Kg		11.00	90-12-0	05/17/14 07:05	05/29/14 02:32	1

Surrogate

%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
119		70 - 130	05/17/14 07:05	05/23/14 22:31	20
335 X		70 - 130	05/17/14 07:05	05/23/14 23:52	1
145 X		70 - 130	05/17/14 07:05	05/29/14 02:32	1
100		70 - 130	05/17/14 07:05	05/29/14 02:57	20
104		70 - 130	05/17/14 07:05	05/23/14 22:31	20
132 X		70 - 130	05/17/14 07:05	05/23/14 23:52	1
100		70 - 130	05/17/14 07:05	05/29/14 02:32	1
95		70 - 130	05/17/14 07:05	05/29/14 02:57	20
95		70 - 130	05/17/14 07:05	05/23/14 22:31	20
77		70 - 130	05/17/14 07:05	05/23/14 23:52	1
65 X		70 - 130	05/17/14 07:05	05/29/14 02:32	1
97		70 - 130	05/17/14 07:05	05/29/14 02:57	20
87		70 - 130	05/17/14 07:05	05/23/14 22:31	20
87		70 - 130	05/17/14 07:05	05/23/14 23:52	1
102		70 - 130	05/17/14 07:05	05/29/14 02:32	1
100		70 - 130	05/17/14 07:05	05/29/14 02:57	20

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	92		0.10		%			05/17/14 14:14	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-06-24-26

Date Collected: 05/12/14 17:05

Date Received: 05/16/14 08:30

Lab Sample ID: 490-53262-2

Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,1,1-Trichloroethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,1,2,2-Tetrachloroethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,1,2-Trichloroethane	ND		0.252		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,1-Dichloroethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,1-Dichloroethene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,1-Dichloropropene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,2,3-Trichlorobenzene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,2,3-Trichloropropane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,2,4-Trichlorobenzene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,2,4-Trimethylbenzene	6.61		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,2-Dibromo-3-Chloropropane	ND		0.252		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,2-Dibromoethane (EDB)	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,2-Dichlorobenzene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,2-Dichloroethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,2-Dichloropropane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,3,5-TMB	2.09		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,3-Dichlorobenzene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,3-Dichloropropane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
1,4-Dichlorobenzene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
2,2-Dichloropropane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
2-Butanone (MEK)	ND		2.52		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
2-Chlorotoluene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
2-Hexanone	ND		2.52		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
4-Chlorotoluene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
4-Methyl-2-pentanone (MIBK)	ND		2.52		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Acetone	ND		2.52		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Benzene	0.190		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Bromobenzene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Bromochloromethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Bromodichloromethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Bromoform	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Bromomethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Carbon disulfide	ND		0.252		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Carbon tetrachloride	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Chlorobenzene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Chlorodibromomethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Chloroethane	ND		0.252		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
2-Methylnaphthalene	101	H	5.03		mg/Kg		05/17/14 07:05	05/29/14 03:48	20
Chloroform	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Chloromethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
cis-1,2-Dichloroethene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
cis-1,3-Dichloropropene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Dibromomethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Dichlorodifluoromethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Ethylbenzene	1.25		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Hexachlorobutadiene	ND		0.252		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Isopropylbenzene	0.263		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Methyl tert-butyl ether	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-06-24-26

Lab Sample ID: 490-53262-2

Date Collected: 05/12/14 17:05

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		0.503		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Naphthalene	3.98		0.252		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
n-Butylbenzene	1.37		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
N-Propylbenzene	0.803		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
p-Isopropyltoluene	0.342		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
sec-Butylbenzene	0.295		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Styrene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
tert-Butylbenzene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Tetrachloroethene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Toluene	1.87		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
trans-1,2-Dichloroethene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
trans-1,3-Dichloropropene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Trichloroethene	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Trichlorofluoromethane	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Vinyl chloride	ND		0.101		mg/Kg		05/17/14 07:05	05/23/14 23:25	1
Xylenes, Total	6.63		0.252		mg/Kg		05/17/14 07:05	05/23/14 23:25	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-methylnaphthalene	3.56	T H J	mg/Kg		10.99	90-12-0	05/17/14 07:05	05/29/14 03:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		70 - 130	05/17/14 07:05	05/23/14 23:25	1
1,2-Dichloroethane-d4 (Surr)	99		70 - 130	05/17/14 07:05	05/29/14 03:23	1
1,2-Dichloroethane-d4 (Surr)	100		70 - 130	05/17/14 07:05	05/29/14 03:48	20
4-Bromofluorobenzene (Surr)	106		70 - 130	05/17/14 07:05	05/23/14 23:25	1
4-Bromofluorobenzene (Surr)	94		70 - 130	05/17/14 07:05	05/29/14 03:23	1
4-Bromofluorobenzene (Surr)	94		70 - 130	05/17/14 07:05	05/29/14 03:48	20
Dibromofluoromethane (Surr)	86		70 - 130	05/17/14 07:05	05/23/14 23:25	1
Dibromofluoromethane (Surr)	97		70 - 130	05/17/14 07:05	05/29/14 03:23	1
Dibromofluoromethane (Surr)	102		70 - 130	05/17/14 07:05	05/29/14 03:48	20
Toluene-d8 (Surr)	87		70 - 130	05/17/14 07:05	05/23/14 23:25	1
Toluene-d8 (Surr)	101		70 - 130	05/17/14 07:05	05/29/14 03:23	1
Toluene-d8 (Surr)	101		70 - 130	05/17/14 07:05	05/29/14 03:48	20

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	96		0.10		%			05/17/14 14:14	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-06-79-81

Lab Sample ID: 490-53262-3

Date Collected: 05/12/14 17:10

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,1,1-Trichloroethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,1,2,2-Tetrachloroethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,1,2-Trichloroethane	ND		0.226		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,1-Dichloroethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,1-Dichloroethene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,1-Dichloropropene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,2,3-Trichlorobenzene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,2,3-Trichloropropane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,2,4-Trichlorobenzene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,2,4-Trimethylbenzene	23.4		1.81		mg/Kg		05/17/14 07:05	05/23/14 21:37	20
1,2-Dibromo-3-Chloropropane	ND		0.226		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,2-Dibromoethane (EDB)	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,2-Dichlorobenzene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,2-Dichloroethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,2-Dichloropropane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,3,5-TMB	6.95		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,3-Dichlorobenzene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,3-Dichloropropane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
1,4-Dichlorobenzene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
2,2-Dichloropropane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
2-Butanone (MEK)	ND	*	2.26		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
2-Chlorotoluene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
2-Hexanone	ND		2.26		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
4-Chlorotoluene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
4-Methyl-2-pentanone (MIBK)	ND		2.26		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Acetone	ND		2.26		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Benzene	1.66		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Bromobenzene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Bromochloromethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Bromodichloromethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Bromoform	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Bromomethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Carbon disulfide	ND		0.226		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Carbon tetrachloride	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Chlorobenzene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Chlorodibromomethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Chloroethane	ND		0.226		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
2-Methylnaphthalene	91.8	H	4.53		mg/Kg		05/17/14 07:05	05/29/14 04:39	20
Chloroform	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Chloromethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
cis-1,2-Dichloroethene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
cis-1,3-Dichloropropene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Dibromomethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Dichlorodifluoromethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Ethylbenzene	7.40		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Hexachlorobutadiene	ND		0.226		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Isopropylbenzene	0.952		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Methyl tert-butyl ether	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-06-79-81

Lab Sample ID: 490-53262-3

Date Collected: 05/12/14 17:10

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		0.453		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Naphthalene	4.26		0.226		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
n-Butylbenzene	2.94		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
N-Propylbenzene	3.24		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
p-Isopropyltoluene	0.641		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
sec-Butylbenzene	0.610		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Styrene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
tert-Butylbenzene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Tetrachloroethene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Toluene	15.1		1.81		mg/Kg		05/17/14 07:05	05/23/14 21:37	20
trans-1,2-Dichloroethene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
trans-1,3-Dichloropropene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Trichloroethene	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Trichlorofluoromethane	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Vinyl chloride	ND		0.0906		mg/Kg		05/17/14 07:05	05/23/14 22:58	1
Xylenes, Total	46.7		4.53		mg/Kg		05/17/14 07:05	05/23/14 21:37	20

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-methylnaphthalene	4.50	T H J N	mg/Kg		11.00	90-12-0	05/17/14 07:05	05/29/14 04:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		70 - 130	05/17/14 07:05	05/23/14 21:37	20
1,2-Dichloroethane-d4 (Surr)	94		70 - 130	05/17/14 07:05	05/23/14 22:58	1
1,2-Dichloroethane-d4 (Surr)	94		70 - 130	05/17/14 07:05	05/29/14 04:14	1
1,2-Dichloroethane-d4 (Surr)	101		70 - 130	05/17/14 07:05	05/29/14 04:39	20
4-Bromofluorobenzene (Surr)	103		70 - 130	05/17/14 07:05	05/23/14 21:37	20
4-Bromofluorobenzene (Surr)	136	X	70 - 130	05/17/14 07:05	05/23/14 22:58	1
4-Bromofluorobenzene (Surr)	94		70 - 130	05/17/14 07:05	05/29/14 04:14	1
4-Bromofluorobenzene (Surr)	95		70 - 130	05/17/14 07:05	05/29/14 04:39	20
Dibromofluoromethane (Surr)	93		70 - 130	05/17/14 07:05	05/23/14 21:37	20
Dibromofluoromethane (Surr)	83		70 - 130	05/17/14 07:05	05/23/14 22:58	1
Dibromofluoromethane (Surr)	86		70 - 130	05/17/14 07:05	05/29/14 04:14	1
Dibromofluoromethane (Surr)	101		70 - 130	05/17/14 07:05	05/29/14 04:39	20
Toluene-d8 (Surr)	86		70 - 130	05/17/14 07:05	05/23/14 21:37	20
Toluene-d8 (Surr)	90		70 - 130	05/17/14 07:05	05/23/14 22:58	1
Toluene-d8 (Surr)	102		70 - 130	05/17/14 07:05	05/29/14 04:14	1
Toluene-d8 (Surr)	100		70 - 130	05/17/14 07:05	05/29/14 04:39	20

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	97		0.10		%			05/17/14 14:14	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-07-64-66

Lab Sample ID: 490-53262-4

Date Collected: 05/14/14 15:15

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,1,1-Trichloroethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,1,2,2-Tetrachloroethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,1,2-Trichloroethane	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,1-Dichloroethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,1-Dichloroethene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,1-Dichloropropene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,2,3-Trichlorobenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,2,3-Trichloropropane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,2,4-Trichlorobenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,2,4-Trimethylbenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,2-Dibromo-3-Chloropropane	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,2-Dibromoethane (EDB)	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,2-Dichlorobenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,2-Dichloroethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,2-Dichloropropane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,3,5-TMB	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,3-Dichlorobenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,3-Dichloropropane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
1,4-Dichlorobenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
2,2-Dichloropropane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
2-Butanone (MEK)	ND	*	1.94		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
2-Chlorotoluene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
2-Hexanone	ND		1.94		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
4-Chlorotoluene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
4-Methyl-2-pentanone (MIBK)	ND		1.94		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Acetone	ND		1.94		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Benzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Bromobenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Bromochloromethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Bromodichloromethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Bromoform	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Bromomethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Carbon disulfide	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Carbon tetrachloride	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Chlorobenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Chlorodibromomethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Chloroethane	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
2-Methylnaphthalene	ND		0.194		mg/Kg		05/17/14 07:05	05/28/14 23:08	1
Chloroform	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Chloromethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
cis-1,2-Dichloroethene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
cis-1,3-Dichloropropene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Dibromomethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Dichlorodifluoromethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Ethylbenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Hexachlorobutadiene	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Isopropylbenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Methyl tert-butyl ether	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-07-64-66

Lab Sample ID: 490-53262-4

Date Collected: 05/14/14 15:15

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		0.388		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Naphthalene	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
n-Butylbenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
N-Propylbenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
p-Isopropyltoluene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
sec-Butylbenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Styrene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
tert-Butylbenzene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Tetrachloroethene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Toluene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
trans-1,2-Dichloroethene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
trans-1,3-Dichloropropene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Trichloroethene	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Trichlorofluoromethane	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Vinyl chloride	ND		0.0776		mg/Kg		05/17/14 07:05	05/23/14 19:21	1
Xylenes, Total	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 19:21	1

Tentatively Identified Compound

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Pentane	0.543	T J N	mg/Kg		1.23	109-66-0	05/17/14 07:05	05/28/14 23:33	20
Hexadecane	1.50	T J N	mg/Kg		10.99	544-76-3	05/17/14 07:05	05/28/14 23:33	20
1-methylnaphthalene	0.000	J N	mg/Kg		11.00	90-12-0	05/17/14 07:05	05/28/14 23:08	1

Surrogate

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		70 - 130	05/17/14 07:05	05/23/14 19:21	1
1,2-Dichloroethane-d4 (Surr)	105		70 - 130	05/17/14 07:05	05/28/14 23:08	1
4-Bromofluorobenzene (Surr)	97		70 - 130	05/17/14 07:05	05/23/14 19:21	1
4-Bromofluorobenzene (Surr)	97		70 - 130	05/17/14 07:05	05/28/14 23:08	1
Dibromofluoromethane (Surr)	95		70 - 130	05/17/14 07:05	05/23/14 19:21	1
Dibromofluoromethane (Surr)	102		70 - 130	05/17/14 07:05	05/28/14 23:08	1
Toluene-d8 (Surr)	88		70 - 130	05/17/14 07:05	05/23/14 19:21	1
Toluene-d8 (Surr)	102		70 - 130	05/17/14 07:05	05/28/14 23:08	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	86		0.10		%			05/17/14 14:14	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-07-54-56

Lab Sample ID: 490-53262-5

Date Collected: 05/14/14 15:00

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,1,1-Trichloroethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,1,2,2-Tetrachloroethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,1,2-Trichloroethane	ND		0.223		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,1-Dichloroethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,1-Dichloroethene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,1-Dichloropropene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,2,3-Trichlorobenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,2,3-Trichloropropane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,2,4-Trichlorobenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,2,4-Trimethylbenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,2-Dibromo-3-Chloropropane	ND		0.223		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,2-Dibromoethane (EDB)	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,2-Dichlorobenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,2-Dichloroethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,2-Dichloropropane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,3,5-TMB	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,3-Dichlorobenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,3-Dichloropropane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
1,4-Dichlorobenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
2,2-Dichloropropane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
2-Butanone (MEK)	ND		2.23		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
2-Chlorotoluene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
2-Hexanone	ND		2.23		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
4-Chlorotoluene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
4-Methyl-2-pentanone (MIBK)	ND		2.23		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Acetone	ND		2.23		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Benzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Bromobenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Bromochloromethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Bromodichloromethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Bromoform	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Bromomethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Carbon disulfide	ND		0.223		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Carbon tetrachloride	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Chlorobenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Chlorodibromomethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Chloroethane	ND		0.223		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
2-Methylnaphthalene	ND		0.223		mg/Kg		05/17/14 07:05	05/28/14 22:17	1
Chloroform	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Chloromethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
cis-1,2-Dichloroethene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
cis-1,3-Dichloropropene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Dibromomethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Dichlorodifluoromethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Ethylbenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Hexachlorobutadiene	ND		0.223		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Isopropylbenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Methyl tert-butyl ether	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-07-54-56

Lab Sample ID: 490-53262-5

Date Collected: 05/14/14 15:00

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		0.446		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Naphthalene	ND		0.223		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
n-Butylbenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
N-Propylbenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
p-Isopropyltoluene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
sec-Butylbenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Styrene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
tert-Butylbenzene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Tetrachloroethene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Toluene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
trans-1,2-Dichloroethene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
trans-1,3-Dichloropropene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Trichloroethene	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Trichlorofluoromethane	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Vinyl chloride	ND		0.0891		mg/Kg		05/17/14 07:05	05/23/14 18:54	1
Xylenes, Total	ND		0.223		mg/Kg		05/17/14 07:05	05/23/14 18:54	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-methylnaphthalene	0.000	J N	mg/Kg		11.00	90-12-0	05/17/14 07:05	05/28/14 22:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		70 - 130	05/17/14 07:05	05/23/14 18:54	1
1,2-Dichloroethane-d4 (Surr)	108		70 - 130	05/17/14 07:05	05/28/14 22:17	1
4-Bromofluorobenzene (Surr)	97		70 - 130	05/17/14 07:05	05/23/14 18:54	1
4-Bromofluorobenzene (Surr)	98		70 - 130	05/17/14 07:05	05/28/14 22:17	1
Dibromofluoromethane (Surr)	94		70 - 130	05/17/14 07:05	05/23/14 18:54	1
Dibromofluoromethane (Surr)	102		70 - 130	05/17/14 07:05	05/28/14 22:17	1
Toluene-d8 (Surr)	86		70 - 130	05/17/14 07:05	05/23/14 18:54	1
Toluene-d8 (Surr)	101		70 - 130	05/17/14 07:05	05/28/14 22:17	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	90		0.10		%			05/17/14 14:14	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-07-79-81

Lab Sample ID: 490-53262-6

Date Collected: 05/14/14 15:50

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,1,1-Trichloroethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,1,2,2-Tetrachloroethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,1,2-Trichloroethane	ND		0.219		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,1-Dichloroethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,1-Dichloroethene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,1-Dichloropropene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,2,3-Trichlorobenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,2,3-Trichloropropane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,2,4-Trichlorobenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,2,4-Trimethylbenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,2-Dibromo-3-Chloropropane	ND		0.219		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,2-Dibromoethane (EDB)	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,2-Dichlorobenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,2-Dichloroethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,2-Dichloropropane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,3,5-TMB	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,3-Dichlorobenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,3-Dichloropropane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
1,4-Dichlorobenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
2,2-Dichloropropane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
2-Butanone (MEK)	ND		2.19		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
2-Chlorotoluene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
2-Hexanone	ND		2.19		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
4-Chlorotoluene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
4-Methyl-2-pentanone (MIBK)	ND		2.19		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Acetone	ND		2.19		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Benzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Bromobenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Bromochloromethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Bromodichloromethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Bromoform	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Bromomethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Carbon disulfide	ND		0.219		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Carbon tetrachloride	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Chlorobenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Chlorodibromomethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Chloroethane	ND		0.219		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
2-Methylnaphthalene	ND		0.219		mg/Kg		05/17/14 07:05	05/28/14 22:42	1
Chloroform	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Chloromethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
cis-1,2-Dichloroethene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
cis-1,3-Dichloropropene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Dibromomethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Dichlorodifluoromethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Ethylbenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Hexachlorobutadiene	ND		0.219		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Isopropylbenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Methyl tert-butyl ether	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-07-79-81

Lab Sample ID: 490-53262-6

Date Collected: 05/14/14 15:50

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		0.437		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Naphthalene	ND		0.219		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
n-Butylbenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
N-Propylbenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
p-Isopropyltoluene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
sec-Butylbenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Styrene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
tert-Butylbenzene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Tetrachloroethene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Toluene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
trans-1,2-Dichloroethene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
trans-1,3-Dichloropropene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Trichloroethene	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Trichlorofluoromethane	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Vinyl chloride	ND		0.0874		mg/Kg		05/17/14 07:05	05/23/14 19:48	1
Xylenes, Total	ND		0.219		mg/Kg		05/17/14 07:05	05/23/14 19:48	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-methylnaphthalene	0.000	J N	mg/Kg		11.00	90-12-0	05/17/14 07:05	05/28/14 22:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		70 - 130	05/17/14 07:05	05/23/14 19:48	1
1,2-Dichloroethane-d4 (Surr)	108		70 - 130	05/17/14 07:05	05/28/14 22:42	1
4-Bromofluorobenzene (Surr)	101		70 - 130	05/17/14 07:05	05/23/14 19:48	1
4-Bromofluorobenzene (Surr)	96		70 - 130	05/17/14 07:05	05/28/14 22:42	1
Dibromofluoromethane (Surr)	93		70 - 130	05/17/14 07:05	05/23/14 19:48	1
Dibromofluoromethane (Surr)	99		70 - 130	05/17/14 07:05	05/28/14 22:42	1
Toluene-d8 (Surr)	86		70 - 130	05/17/14 07:05	05/23/14 19:48	1
Toluene-d8 (Surr)	100		70 - 130	05/17/14 07:05	05/28/14 22:42	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	97		0.10		%			05/17/14 14:14	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-08-09-11

Lab Sample ID: 490-53262-7

Date Collected: 05/15/14 15:15

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,1,1-Trichloroethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,1,2,2-Tetrachloroethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,1,2-Trichloroethane	ND		0.233		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,1-Dichloroethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,1-Dichloroethene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,1-Dichloropropene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,2,3-Trichlorobenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,2,3-Trichloropropane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,2,4-Trichlorobenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,2,4-Trimethylbenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,2-Dibromo-3-Chloropropane	ND		0.233		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,2-Dibromoethane (EDB)	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,2-Dichlorobenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,2-Dichloroethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,2-Dichloropropane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,3,5-TMB	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,3-Dichlorobenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,3-Dichloropropane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
1,4-Dichlorobenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
2,2-Dichloropropane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
2-Butanone (MEK)	ND		2.33		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
2-Chlorotoluene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
2-Hexanone	ND		2.33		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
4-Chlorotoluene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
4-Methyl-2-pentanone (MIBK)	ND		2.33		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Acetone	ND		2.33		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Benzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Bromobenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Bromochloromethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Bromodichloromethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Bromoform	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Bromomethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Carbon disulfide	ND		0.233		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Carbon tetrachloride	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Chlorobenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Chlorodibromomethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Chloroethane	ND		0.233		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
2-Methylnaphthalene	ND		0.233		mg/Kg		05/17/14 07:05	05/28/14 23:59	1
Chloroform	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Chloromethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
cis-1,2-Dichloroethene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
cis-1,3-Dichloropropene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Dibromomethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Dichlorodifluoromethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Ethylbenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Hexachlorobutadiene	ND		0.233		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Isopropylbenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Methyl tert-butyl ether	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-08-09-11

Lab Sample ID: 490-53262-7

Date Collected: 05/15/14 15:15

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		0.467		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Naphthalene	ND		0.233		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
n-Butylbenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
N-Propylbenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
p-Isopropyltoluene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
sec-Butylbenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Styrene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
tert-Butylbenzene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Tetrachloroethene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Toluene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
trans-1,2-Dichloroethene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
trans-1,3-Dichloropropene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Trichloroethene	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Trichlorofluoromethane	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Vinyl chloride	ND		0.0934		mg/Kg		05/17/14 07:05	05/23/14 20:15	1
Xylenes, Total	ND		0.233		mg/Kg		05/17/14 07:05	05/23/14 20:15	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-methylnaphthalene	0.000	J N	mg/Kg		11.00	90-12-0	05/17/14 07:05	05/28/14 23:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		70 - 130	05/17/14 07:05	05/23/14 20:15	1
1,2-Dichloroethane-d4 (Surr)	107		70 - 130	05/17/14 07:05	05/28/14 23:59	1
4-Bromofluorobenzene (Surr)	100		70 - 130	05/17/14 07:05	05/23/14 20:15	1
4-Bromofluorobenzene (Surr)	97		70 - 130	05/17/14 07:05	05/28/14 23:59	1
Dibromofluoromethane (Surr)	93		70 - 130	05/17/14 07:05	05/23/14 20:15	1
Dibromofluoromethane (Surr)	107		70 - 130	05/17/14 07:05	05/28/14 23:59	1
Toluene-d8 (Surr)	90		70 - 130	05/17/14 07:05	05/23/14 20:15	1
Toluene-d8 (Surr)	102		70 - 130	05/17/14 07:05	05/28/14 23:59	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	90		0.10		%			05/19/14 09:54	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-08-19-21

Lab Sample ID: 490-53262-8

Date Collected: 05/15/14 15:30

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,1,1-Trichloroethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,1,2,2-Tetrachloroethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,1,2-Trichloroethane	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,1-Dichloroethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,1-Dichloroethene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,1-Dichloropropene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,2,3-Trichlorobenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,2,3-Trichloropropane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,2,4-Trichlorobenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,2,4-Trimethylbenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,2-Dibromo-3-Chloropropane	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,2-Dibromoethane (EDB)	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,2-Dichlorobenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,2-Dichloroethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,2-Dichloropropane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,3,5-TMB	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,3-Dichlorobenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,3-Dichloropropane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
1,4-Dichlorobenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
2,2-Dichloropropane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
2-Butanone (MEK)	ND		1.94		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
2-Chlorotoluene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
2-Hexanone	ND		1.94		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
4-Chlorotoluene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
4-Methyl-2-pentanone (MIBK)	ND		1.94		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Acetone	ND		1.94		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Benzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Bromobenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Bromochloromethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Bromodichloromethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Bromoform	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Bromomethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Carbon disulfide	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Carbon tetrachloride	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Chlorobenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Chlorodibromomethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Chloroethane	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
2-Methylnaphthalene	ND		0.194		mg/Kg		05/17/14 07:05	05/29/14 00:50	1
Chloroform	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Chloromethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
cis-1,2-Dichloroethene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
cis-1,3-Dichloropropene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Dibromomethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Dichlorodifluoromethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Ethylbenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Hexachlorobutadiene	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Isopropylbenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Methyl tert-butyl ether	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-08-19-21

Lab Sample ID: 490-53262-8

Date Collected: 05/15/14 15:30

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		0.387		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Naphthalene	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
n-Butylbenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
N-Propylbenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
p-Isopropyltoluene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
sec-Butylbenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Styrene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
tert-Butylbenzene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Tetrachloroethene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Toluene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
trans-1,2-Dichloroethene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
trans-1,3-Dichloropropene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Trichloroethene	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Trichlorofluoromethane	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Vinyl chloride	ND		0.0774		mg/Kg		05/17/14 07:05	05/23/14 20:42	1
Xylenes, Total	ND		0.194		mg/Kg		05/17/14 07:05	05/23/14 20:42	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-methylnaphthalene	0.000	J N	mg/Kg		11.00	90-12-0	05/17/14 07:05	05/29/14 00:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		70 - 130	05/17/14 07:05	05/23/14 20:42	1
1,2-Dichloroethane-d4 (Surr)	106		70 - 130	05/17/14 07:05	05/29/14 00:50	1
4-Bromofluorobenzene (Surr)	99		70 - 130	05/17/14 07:05	05/23/14 20:42	1
4-Bromofluorobenzene (Surr)	101		70 - 130	05/17/14 07:05	05/29/14 00:50	1
Dibromofluoromethane (Surr)	90		70 - 130	05/17/14 07:05	05/23/14 20:42	1
Dibromofluoromethane (Surr)	105		70 - 130	05/17/14 07:05	05/29/14 00:50	1
Toluene-d8 (Surr)	88		70 - 130	05/17/14 07:05	05/23/14 20:42	1
Toluene-d8 (Surr)	100		70 - 130	05/17/14 07:05	05/29/14 00:50	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	83		0.10		%			05/19/14 09:54	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-08-79-81

Lab Sample ID: 490-53262-9

Date Collected: 05/15/14 15:45

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,1,1-Trichloroethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,1,2,2-Tetrachloroethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,1,2-Trichloroethane	ND		0.203		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,1-Dichloroethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,1-Dichloroethene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,1-Dichloropropene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,2,3-Trichlorobenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,2,3-Trichloropropane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,2,4-Trichlorobenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,2,4-Trimethylbenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,2-Dibromo-3-Chloropropane	ND		0.203		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,2-Dibromoethane (EDB)	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,2-Dichlorobenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,2-Dichloroethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,2-Dichloropropane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,3,5-TMB	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,3-Dichlorobenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,3-Dichloropropane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
1,4-Dichlorobenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
2,2-Dichloropropane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
2-Butanone (MEK)	ND		2.03		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
2-Chlorotoluene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
2-Hexanone	ND		2.03		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
4-Chlorotoluene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
4-Methyl-2-pentanone (MIBK)	ND		2.03		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Acetone	ND		2.03		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Benzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Bromobenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Bromochloromethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Bromodichloromethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Bromoform	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Bromomethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Carbon disulfide	ND		0.203		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Carbon tetrachloride	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Chlorobenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Chlorodibromomethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Chloroethane	ND		0.203		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
2-Methylnaphthalene	ND		0.203		mg/Kg		05/17/14 07:05	05/29/14 01:41	1
Chloroform	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Chloromethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
cis-1,2-Dichloroethene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
cis-1,3-Dichloropropene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Dibromomethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Dichlorodifluoromethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Ethylbenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Hexachlorobutadiene	ND		0.203		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Isopropylbenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Methyl tert-butyl ether	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-08-79-81

Lab Sample ID: 490-53262-9

Date Collected: 05/15/14 15:45

Matrix: Solid

Date Received: 05/16/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		0.407		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Naphthalene	ND		0.203		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
n-Butylbenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
N-Propylbenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
p-Isopropyltoluene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
sec-Butylbenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Styrene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
tert-Butylbenzene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Tetrachloroethene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Toluene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
trans-1,2-Dichloroethene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
trans-1,3-Dichloropropene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Trichloroethene	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Trichlorofluoromethane	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Vinyl chloride	ND		0.0814		mg/Kg		05/17/14 07:05	05/23/14 21:09	1
Xylenes, Total	ND		0.203		mg/Kg		05/17/14 07:05	05/23/14 21:09	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-methylnaphthalene	0.000	J N	mg/Kg		11.00	90-12-0	05/17/14 07:05	05/29/14 01:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		70 - 130	05/17/14 07:05	05/23/14 21:09	1
1,2-Dichloroethane-d4 (Surr)	107		70 - 130	05/17/14 07:05	05/29/14 01:41	1
4-Bromofluorobenzene (Surr)	101		70 - 130	05/17/14 07:05	05/23/14 21:09	1
4-Bromofluorobenzene (Surr)	101		70 - 130	05/17/14 07:05	05/29/14 01:41	1
Dibromofluoromethane (Surr)	92		70 - 130	05/17/14 07:05	05/23/14 21:09	1
Dibromofluoromethane (Surr)	107		70 - 130	05/17/14 07:05	05/29/14 01:41	1
Toluene-d8 (Surr)	88		70 - 130	05/17/14 07:05	05/23/14 21:09	1
Toluene-d8 (Surr)	100		70 - 130	05/17/14 07:05	05/29/14 01:41	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	84		0.10		%			05/19/14 09:54	1

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

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

Lab Sample ID: 490-53262-4 MS

Matrix: Solid

Analysis Batch: 165429

Client Sample ID: MW-07-64-66

Prep Type: Total/NA

Prep Batch: 163163

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,4-Trimethylbenzene	ND		38.8	42.78		mg/Kg		110	14 - 165
1,2-Dibromoethane (EDB)	ND		38.8	40.52		mg/Kg		104	18 - 156
1,2-Dichloroethane	ND		38.8	ND	F1	mg/Kg		3	28 - 138
1,3,5-TMB	ND		38.8	42.70		mg/Kg		110	18 - 164
Benzene	ND		38.8	42.46		mg/Kg		110	31 - 143
2-Methylnaphthalene	ND		38.8	50.26		mg/Kg		126	10 - 172
Ethylbenzene	ND		38.8	42.69		mg/Kg		110	23 - 161
Isopropylbenzene	ND		38.8	43.78		mg/Kg		113	23 - 181
Methyl tert-butyl ether	ND		38.8	40.22		mg/Kg		104	28 - 141
Naphthalene	ND		38.8	40.32		mg/Kg		104	10 - 176
n-Butylbenzene	ND		38.8	50.20		mg/Kg		129	10 - 175
N-Propylbenzene	ND		38.8	44.59		mg/Kg		115	19 - 162
p-Isopropyltoluene	ND		38.8	47.01		mg/Kg		121	12 - 168
sec-Butylbenzene	ND		38.8	44.46		mg/Kg		115	12 - 170
tert-Butylbenzene	ND		38.8	43.01		mg/Kg		111	20 - 164
Toluene	ND		38.8	41.43		mg/Kg		107	30 - 155
Xylenes, Total	ND		116	127.3		mg/Kg		109	25 - 162

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		70 - 130
4-Bromofluorobenzene (Surr)	94		70 - 130
Dibromofluoromethane (Surr)	102		70 - 130
Toluene-d8 (Surr)	100		70 - 130

Lab Sample ID: 490-53262-4 MSD

Matrix: Solid

Analysis Batch: 165429

Client Sample ID: MW-07-64-66

Prep Type: Total/NA

Prep Batch: 163163

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,4-Trimethylbenzene	ND		38.8	42.99		mg/Kg		111	14 - 165	0	50
1,2-Dibromoethane (EDB)	ND		38.8	40.58		mg/Kg		105	18 - 156	0	50
1,2-Dichloroethane	ND		38.8	40.76	F2	mg/Kg		105	28 - 138	190	50
1,3,5-TMB	ND		38.8	43.29		mg/Kg		112	18 - 164	1	50
Benzene	ND		38.8	42.71		mg/Kg		110	31 - 143	1	50
2-Methylnaphthalene	ND		38.8	45.67		mg/Kg		114	10 - 172	10	50
Ethylbenzene	ND		38.8	42.65		mg/Kg		110	23 - 161	0	50
Isopropylbenzene	ND		38.8	43.51		mg/Kg		112	23 - 181	1	50
Methyl tert-butyl ether	ND		38.8	40.25		mg/Kg		104	28 - 141	0	50
Naphthalene	ND		38.8	42.88		mg/Kg		111	10 - 176	6	50
n-Butylbenzene	ND		38.8	50.17		mg/Kg		129	10 - 175	0	50
N-Propylbenzene	ND		38.8	44.32		mg/Kg		114	19 - 162	1	50
p-Isopropyltoluene	ND		38.8	47.03		mg/Kg		121	12 - 168	0	50
sec-Butylbenzene	ND		38.8	44.26		mg/Kg		114	12 - 170	0	50
tert-Butylbenzene	ND		38.8	42.23		mg/Kg		109	20 - 164	2	50
Toluene	ND		38.8	41.78		mg/Kg		108	30 - 155	1	50
Xylenes, Total	ND		116	127.0		mg/Kg		109	25 - 162	0	50

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

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

Lab Sample ID: 490-53262-4 MSD

Matrix: Solid

Analysis Batch: 165429

Client Sample ID: MW-07-64-66

Prep Type: Total/NA

Prep Batch: 163163

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		70 - 130
4-Bromofluorobenzene (Surr)	96		70 - 130
Dibromofluoromethane (Surr)	100		70 - 130
Toluene-d8 (Surr)	100		70 - 130

Lab Sample ID: 490-53262-5 MS

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: MW-07-54-56

Prep Type: Total/NA

Prep Batch: 163163

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	ND		2.23	1.779		mg/Kg		80	19 - 158
1,1,1-Trichloroethane	ND		2.23	1.851		mg/Kg		83	35 - 149
1,1,2,2-Tetrachloroethane	ND		2.23	2.001		mg/Kg		90	10 - 162
1,1,2-Trichloroethane	ND		2.23	2.089		mg/Kg		94	19 - 157
1,1-Dichloroethane	ND		2.23	2.174		mg/Kg		98	42 - 136
1,1-Dichloroethene	ND		2.23	1.738		mg/Kg		78	41 - 143
1,1-Dichloropropene	ND		2.23	1.899		mg/Kg		85	38 - 145
1,2,3-Trichlorobenzene	ND		2.23	1.654		mg/Kg		74	10 - 157
1,2,3-Trichloropropane	NC		2.23	2.065		mg/Kg		NaN	10 - 157
1,2,4-Trichlorobenzene	ND		2.23	1.625		mg/Kg		73	10 - 167
1,2,4-Trimethylbenzene	ND		2.23	2.108		mg/Kg		95	14 - 165
1,2-Dibromo-3-Chloropropane	ND		2.23	1.302		mg/Kg		58	10 - 147
1,2-Dibromoethane (EDB)	ND		2.23	1.926		mg/Kg		86	18 - 156
1,2-Dichlorobenzene	ND		2.23	2.024		mg/Kg		91	10 - 160
1,2-Dichloroethane	ND		2.23	2.001		mg/Kg		90	28 - 138
1,2-Dichloropropane	NC		2.23	2.040		mg/Kg		NaN	20 - 146
1,3,5-TMB	ND		2.23	1.979		mg/Kg		89	18 - 164
1,3-Dichlorobenzene	ND		2.23	1.962		mg/Kg		88	10 - 162
1,3-Dichloropropane	NC		2.23	2.008		mg/Kg		NaN	22 - 148
1,4-Dichlorobenzene	ND		2.23	1.849		mg/Kg		83	11 - 159
2,2-Dichloropropane	NC		2.23	1.620		mg/Kg		NaN	33 - 148
2-Butanone (MEK)	NC		11.1	13.16		mg/Kg		NaN	18 - 153
2-Chlorotoluene	ND		2.23	1.922		mg/Kg		86	20 - 156
2-Hexanone	NC		11.1	10.93		mg/Kg		NaN	10 - 169
4-Chlorotoluene	ND		2.23	1.964		mg/Kg		88	17 - 159
4-Methyl-2-pentanone (MIBK)	ND		11.1	10.45		mg/Kg		94	10 - 168
Acetone	NC		11.1	12.84		mg/Kg		NaN	19 - 175
Benzene	ND		2.23	1.983		mg/Kg		89	31 - 143
Bromobenzene	ND		2.23	1.947		mg/Kg		87	12 - 157
Bromochloromethane	ND		2.23	1.856		mg/Kg		83	31 - 141
Bromodichloromethane	ND		2.23	1.796		mg/Kg		81	19 - 148
Bromoform	ND		2.23	1.255		mg/Kg		56	10 - 165
Bromomethane	NC		2.23	0.4707		mg/Kg		NaN	10 - 164
Carbon disulfide	ND		2.23	0.8913		mg/Kg		40	32 - 144
Carbon tetrachloride	ND		2.23	1.620		mg/Kg		73	31 - 149
Chlorobenzene	ND		2.23	1.928		mg/Kg		87	25 - 152
Chlorodibromomethane	ND		2.23	1.415		mg/Kg		64	14 - 146
Chloroethane	ND		2.23	0.6934		mg/Kg		31	10 - 151

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

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

Lab Sample ID: 490-53262-5 MS

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: MW-07-54-56

Prep Type: Total/NA

Prep Batch: 163163

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Chloroform	NC		2.23	2.064		mg/Kg		NaN	34 - 160
Chloromethane	NC		2.23	1.312		mg/Kg		NaN	10 - 156
cis-1,2-Dichloroethene	NC		2.23	2.109		mg/Kg		NaN	36 - 139
cis-1,3-Dichloropropene	ND		2.23	1.487		mg/Kg		67	15 - 166
Dibromomethane	ND		2.23	1.829		mg/Kg		82	20 - 146
Dichlorodifluoromethane	ND		2.23	1.841		mg/Kg		83	10 - 143
Ethylbenzene	ND		2.23	1.909		mg/Kg		86	23 - 161
Hexachlorobutadiene	ND		2.23	1.731		mg/Kg		78	10 - 171
Isopropylbenzene	ND		2.23	2.050		mg/Kg		92	23 - 181
Methyl tert-butyl ether	ND		2.23	2.350		mg/Kg		102	28 - 141
Methylene Chloride	NC		2.23	1.965		mg/Kg		NaN	24 - 182
Naphthalene	ND		2.23	5.636	F1	mg/Kg		253	10 - 176
n-Butylbenzene	ND		2.23	2.266		mg/Kg		102	10 - 175
N-Propylbenzene	ND		2.23	1.910		mg/Kg		86	19 - 162
p-Isopropyltoluene	ND		2.23	2.048		mg/Kg		92	12 - 168
sec-Butylbenzene	ND		2.23	2.054		mg/Kg		92	12 - 170
Styrene	NC		2.23	2.035		mg/Kg		NaN	10 - 165
tert-Butylbenzene	ND		2.23	1.971		mg/Kg		88	20 - 164
Tetrachloroethene	ND		2.23	1.638		mg/Kg		74	33 - 161
Toluene	ND		2.23	1.728		mg/Kg		78	30 - 155
trans-1,2-Dichloroethene	ND		2.23	1.874		mg/Kg		84	39 - 140
trans-1,3-Dichloropropene	ND		2.23	1.558		mg/Kg		70	10 - 157
Trichloroethene	ND		2.23	1.810		mg/Kg		81	27 - 153
Trichlorofluoromethane	ND		2.23	0.6881		mg/Kg		31	25 - 140
Vinyl chloride	ND		2.23	1.857		mg/Kg		83	20 - 141
Xylenes, Total	ND		4.46	3.810		mg/Kg		85	25 - 162

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		70 - 130
4-Bromofluorobenzene (Surr)	99		70 - 130
Dibromofluoromethane (Surr)	96		70 - 130
Toluene-d8 (Surr)	89		70 - 130

Lab Sample ID: 490-53262-5 MSD

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: MW-07-54-56

Prep Type: Total/NA

Prep Batch: 163163

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1,1,2-Tetrachloroethane	ND		2.23	1.938		mg/Kg		87	19 - 158	9	50
1,1,1-Trichloroethane	ND		2.23	2.012		mg/Kg		90	35 - 149	8	50
1,1,2,2-Tetrachloroethane	ND		2.23	2.124		mg/Kg		95	10 - 162	6	50
1,1,2-Trichloroethane	ND		2.23	2.230		mg/Kg		100	19 - 157	7	50
1,1-Dichloroethane	ND		2.23	2.202		mg/Kg		99	42 - 136	1	50
1,1-Dichloroethene	ND		2.23	1.812		mg/Kg		81	41 - 143	4	50
1,1-Dichloropropene	ND		2.23	1.992		mg/Kg		89	38 - 145	5	50
1,2,3-Trichlorobenzene	ND		2.23	2.204		mg/Kg		99	10 - 157	28	50
1,2,3-Trichloropropane	NC		2.23	2.145		mg/Kg		NaN	10 - 157	4	50
1,2,4-Trichlorobenzene	ND		2.23	2.003		mg/Kg		90	10 - 167	21	50

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

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

Lab Sample ID: 490-53262-5 MSD

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: MW-07-54-56

Prep Type: Total/NA

Prep Batch: 163163

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		Limit
1,2,4-Trimethylbenzene	ND		2.23	2.080		mg/Kg		93	14 - 165	1	50
1,2-Dibromo-3-Chloropropane	ND		2.23	1.486		mg/Kg		67	10 - 147	13	50
1,2-Dibromoethane (EDB)	ND		2.23	2.059		mg/Kg		92	18 - 156	7	50
1,2-Dichlorobenzene	ND		2.23	2.187		mg/Kg		98	10 - 160	8	50
1,2-Dichloroethane	ND		2.23	2.112		mg/Kg		95	28 - 138	5	50
1,2-Dichloropropane	NC		2.23	2.127		mg/Kg		NaN	20 - 146	4	50
1,3,5-TMB	ND		2.23	2.045		mg/Kg		92	18 - 164	3	50
1,3-Dichlorobenzene	ND		2.23	2.084		mg/Kg		94	10 - 162	6	50
1,3-Dichloropropane	NC		2.23	2.138		mg/Kg		NaN	22 - 148	6	42
1,4-Dichlorobenzene	ND		2.23	2.016		mg/Kg		90	11 - 159	9	50
2,2-Dichloropropane	NC		2.23	1.735		mg/Kg		NaN	33 - 148	7	50
2-Butanone (MEK)	NC		11.1	13.77		mg/Kg		NaN	18 - 153	5	50
2-Chlorotoluene	ND		2.23	1.989		mg/Kg		89	20 - 156	3	50
2-Hexanone	NC		11.1	11.78		mg/Kg		NaN	10 - 169	8	50
4-Chlorotoluene	ND		2.23	2.036		mg/Kg		91	17 - 159	4	50
4-Methyl-2-pentanone (MIBK)	ND		11.1	10.82		mg/Kg		97	10 - 168	3	50
Acetone	NC		11.1	12.53		mg/Kg		NaN	19 - 175	2	50
Benzene	ND		2.23	2.067		mg/Kg		93	31 - 143	4	50
Bromobenzene	ND		2.23	2.029		mg/Kg		91	12 - 157	4	50
Bromochloromethane	ND		2.23	1.953		mg/Kg		88	31 - 141	5	50
Bromodichloromethane	ND		2.23	1.923		mg/Kg		86	19 - 148	7	50
Bromoform	ND		2.23	1.415		mg/Kg		64	10 - 165	12	50
Bromomethane	NC		2.23	0.7070		mg/Kg		NaN	10 - 164	40	50
Carbon disulfide	ND		2.23	0.9512		mg/Kg		43	32 - 144	6	50
Carbon tetrachloride	ND		2.23	1.767		mg/Kg		79	31 - 149	9	50
Chlorobenzene	ND		2.23	2.004		mg/Kg		90	25 - 152	4	50
Chlorodibromomethane	ND		2.23	1.555		mg/Kg		70	14 - 146	9	50
Chloroethane	ND		2.23	0.7017		mg/Kg		31	10 - 151	1	50
Chloroform	NC		2.23	2.153		mg/Kg		NaN	34 - 160	4	49
Chloromethane	NC		2.23	1.542		mg/Kg		NaN	10 - 156	16	50
cis-1,2-Dichloroethene	NC		2.23	2.139		mg/Kg		NaN	36 - 139	1	50
cis-1,3-Dichloropropene	ND		2.23	1.555		mg/Kg		70	15 - 166	4	50
Dibromomethane	ND		2.23	1.998		mg/Kg		90	20 - 146	9	50
Dichlorodifluoromethane	ND		2.23	2.004		mg/Kg		90	10 - 143	8	50
Ethylbenzene	ND		2.23	2.007		mg/Kg		90	23 - 161	5	50
Hexachlorobutadiene	ND		2.23	2.082		mg/Kg		93	10 - 171	18	50
Isopropylbenzene	ND		2.23	2.176		mg/Kg		98	23 - 181	6	50
Methyl tert-butyl ether	ND		2.23	2.372		mg/Kg		103	28 - 141	1	50
Methylene Chloride	NC		2.23	2.008		mg/Kg		NaN	24 - 182	2	50
Naphthalene	ND		2.23	2.761	F2	mg/Kg		124	10 - 176	68	50
n-Butylbenzene	ND		2.23	2.342		mg/Kg		105	10 - 175	3	50
N-Propylbenzene	ND		2.23	1.984		mg/Kg		89	19 - 162	4	50
p-Isopropyltoluene	ND		2.23	2.181		mg/Kg		98	12 - 168	6	50
sec-Butylbenzene	ND		2.23	2.123		mg/Kg		95	12 - 170	3	50
Styrene	NC		2.23	2.171		mg/Kg		NaN	10 - 165	6	50
tert-Butylbenzene	ND		2.23	2.059		mg/Kg		92	20 - 164	4	50
Tetrachloroethene	ND		2.23	1.747		mg/Kg		78	33 - 161	6	50
Toluene	ND		2.23	1.786		mg/Kg		80	30 - 155	3	50

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

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

Lab Sample ID: 490-53262-5 MSD

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: MW-07-54-56

Prep Type: Total/NA

Prep Batch: 163163

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
trans-1,2-Dichloroethene	ND		2.23	1.835		mg/Kg		82	39 - 140	2	50
trans-1,3-Dichloropropene	ND		2.23	1.654		mg/Kg		74	10 - 157	6	50
Trichloroethene	ND		2.23	1.955		mg/Kg		88	27 - 153	8	50
Trichlorofluoromethane	ND		2.23	0.7127		mg/Kg		32	25 - 140	4	50
Vinyl chloride	ND		2.23	1.960		mg/Kg		88	20 - 141	5	50
Xylenes, Total	ND		4.46	3.994		mg/Kg		90	25 - 162	5	50

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	95		70 - 130
4-Bromofluorobenzene (Surr)	100		70 - 130
Dibromofluoromethane (Surr)	97		70 - 130
Toluene-d8 (Surr)	87		70 - 130

Lab Sample ID: MB 490-164531/7

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,1,1-Trichloroethane	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,1,2,2-Tetrachloroethane	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,1,2-Trichloroethane	ND		0.00500		mg/Kg			05/23/14 15:17	1
1,1-Dichloroethane	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,1-Dichloroethene	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,1-Dichloropropene	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,2,3-Trichlorobenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,2,3-Trichloropropane	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,2,4-Trichlorobenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,2,4-Trimethylbenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,2-Dibromo-3-Chloropropane	ND		0.00500		mg/Kg			05/23/14 15:17	1
1,2-Dibromoethane (EDB)	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,2-Dichlorobenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,2-Dichloroethane	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,2-Dichloropropane	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,3,5-TMB	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,3-Dichlorobenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,3-Dichloropropane	ND		0.00200		mg/Kg			05/23/14 15:17	1
1,4-Dichlorobenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
2,2-Dichloropropane	ND		0.00200		mg/Kg			05/23/14 15:17	1
2-Butanone (MEK)	ND		0.0500		mg/Kg			05/23/14 15:17	1
2-Chlorotoluene	ND		0.00200		mg/Kg			05/23/14 15:17	1
2-Hexanone	ND		0.0500		mg/Kg			05/23/14 15:17	1
4-Chlorotoluene	ND		0.00200		mg/Kg			05/23/14 15:17	1
4-Methyl-2-pentanone (MIBK)	ND		0.0500		mg/Kg			05/23/14 15:17	1
Acetone	ND		0.0500		mg/Kg			05/23/14 15:17	1
Benzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
Bromobenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
Bromochloromethane	ND		0.00200		mg/Kg			05/23/14 15:17	1

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

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

Lab Sample ID: MB 490-164531/7

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND		0.00200		mg/Kg			05/23/14 15:17	1
Bromoform	ND		0.00200		mg/Kg			05/23/14 15:17	1
Bromomethane	ND		0.00200		mg/Kg			05/23/14 15:17	1
Carbon disulfide	ND		0.00500		mg/Kg			05/23/14 15:17	1
Carbon tetrachloride	ND		0.00200		mg/Kg			05/23/14 15:17	1
Chlorobenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
Chlorodibromomethane	ND		0.00200		mg/Kg			05/23/14 15:17	1
Chloroethane	ND		0.00500		mg/Kg			05/23/14 15:17	1
2-Methylnaphthalene	ND		0.00500		mg/Kg			05/23/14 15:17	1
Chloroform	ND		0.00200		mg/Kg			05/23/14 15:17	1
Chloromethane	ND		0.00200		mg/Kg			05/23/14 15:17	1
cis-1,2-Dichloroethene	ND		0.00200		mg/Kg			05/23/14 15:17	1
cis-1,3-Dichloropropene	ND		0.00200		mg/Kg			05/23/14 15:17	1
Dibromomethane	ND		0.00200		mg/Kg			05/23/14 15:17	1
Dichlorodifluoromethane	ND		0.00200		mg/Kg			05/23/14 15:17	1
Ethylbenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
Hexachlorobutadiene	ND		0.00500		mg/Kg			05/23/14 15:17	1
Isopropylbenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
Methyl tert-butyl ether	ND		0.00200		mg/Kg			05/23/14 15:17	1
Methylene Chloride	ND		0.0100		mg/Kg			05/23/14 15:17	1
Naphthalene	ND		0.00500		mg/Kg			05/23/14 15:17	1
n-Butylbenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
N-Propylbenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
p-Isopropyltoluene	ND		0.00200		mg/Kg			05/23/14 15:17	1
sec-Butylbenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
Styrene	ND		0.00200		mg/Kg			05/23/14 15:17	1
tert-Butylbenzene	ND		0.00200		mg/Kg			05/23/14 15:17	1
Tetrachloroethene	ND		0.00200		mg/Kg			05/23/14 15:17	1
Toluene	ND		0.00200		mg/Kg			05/23/14 15:17	1
trans-1,2-Dichloroethene	ND		0.00200		mg/Kg			05/23/14 15:17	1
trans-1,3-Dichloropropene	ND		0.00200		mg/Kg			05/23/14 15:17	1
Trichloroethene	ND		0.00200		mg/Kg			05/23/14 15:17	1
Trichlorofluoromethane	ND		0.00200		mg/Kg			05/23/14 15:17	1
Vinyl chloride	ND		0.00200		mg/Kg			05/23/14 15:17	1
Xylenes, Total	ND		0.00500		mg/Kg			05/23/14 15:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	101		70 - 130		05/23/14 15:17	1
4-Bromofluorobenzene (Surr)	103		70 - 130		05/23/14 15:17	1
Dibromofluoromethane (Surr)	98		70 - 130		05/23/14 15:17	1
Toluene-d8 (Surr)	90		70 - 130		05/23/14 15:17	1

Lab Sample ID: MB 490-164531/8

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.100		mg/Kg			05/23/14 15:44	1

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

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

Lab Sample ID: MB 490-164531/8

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	ND		0.100		mg/Kg			05/23/14 15:44	1
1,1,2,2-Tetrachloroethane	ND		0.100		mg/Kg			05/23/14 15:44	1
1,1,2-Trichloroethane	ND		0.250		mg/Kg			05/23/14 15:44	1
1,1-Dichloroethane	ND		0.100		mg/Kg			05/23/14 15:44	1
1,1-Dichloroethene	ND		0.100		mg/Kg			05/23/14 15:44	1
1,1-Dichloropropene	ND		0.100		mg/Kg			05/23/14 15:44	1
1,2,3-Trichlorobenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
1,2,3-Trichloropropane	ND		0.100		mg/Kg			05/23/14 15:44	1
1,2,4-Trichlorobenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
1,2,4-Trimethylbenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
1,2-Dibromo-3-Chloropropane	ND		0.250		mg/Kg			05/23/14 15:44	1
1,2-Dibromoethane (EDB)	ND		0.100		mg/Kg			05/23/14 15:44	1
1,2-Dichlorobenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
1,2-Dichloroethane	ND		0.100		mg/Kg			05/23/14 15:44	1
1,2-Dichloropropane	ND		0.100		mg/Kg			05/23/14 15:44	1
1,3,5-TMB	ND		0.100		mg/Kg			05/23/14 15:44	1
1,3-Dichlorobenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
1,3-Dichloropropane	ND		0.100		mg/Kg			05/23/14 15:44	1
1,4-Dichlorobenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
2,2-Dichloropropane	ND		0.100		mg/Kg			05/23/14 15:44	1
2-Butanone (MEK)	ND		2.50		mg/Kg			05/23/14 15:44	1
2-Chlorotoluene	ND		0.100		mg/Kg			05/23/14 15:44	1
2-Hexanone	ND		2.50		mg/Kg			05/23/14 15:44	1
4-Chlorotoluene	ND		0.100		mg/Kg			05/23/14 15:44	1
4-Methyl-2-pentanone (MIBK)	ND		2.50		mg/Kg			05/23/14 15:44	1
Acetone	ND		2.50		mg/Kg			05/23/14 15:44	1
Benzene	ND		0.100		mg/Kg			05/23/14 15:44	1
Bromobenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
Bromochloromethane	ND		0.100		mg/Kg			05/23/14 15:44	1
Bromodichloromethane	ND		0.100		mg/Kg			05/23/14 15:44	1
Bromoform	ND		0.100		mg/Kg			05/23/14 15:44	1
Bromomethane	ND		0.100		mg/Kg			05/23/14 15:44	1
Carbon disulfide	ND		0.250		mg/Kg			05/23/14 15:44	1
Carbon tetrachloride	ND		0.100		mg/Kg			05/23/14 15:44	1
Chlorobenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
Chlorodibromomethane	ND		0.100		mg/Kg			05/23/14 15:44	1
Chloroethane	ND		0.250		mg/Kg			05/23/14 15:44	1
2-Methylnaphthalene	ND		0.250		mg/Kg			05/23/14 15:44	1
Chloroform	ND		0.100		mg/Kg			05/23/14 15:44	1
Chloromethane	ND		0.100		mg/Kg			05/23/14 15:44	1
cis-1,2-Dichloroethene	ND		0.100		mg/Kg			05/23/14 15:44	1
cis-1,3-Dichloropropene	ND		0.100		mg/Kg			05/23/14 15:44	1
Dibromomethane	ND		0.100		mg/Kg			05/23/14 15:44	1
Dichlorodifluoromethane	ND		0.100		mg/Kg			05/23/14 15:44	1
Ethylbenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
Hexachlorobutadiene	ND		0.250		mg/Kg			05/23/14 15:44	1
Isopropylbenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
Methyl tert-butyl ether	ND		0.100		mg/Kg			05/23/14 15:44	1

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

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

Lab Sample ID: MB 490-164531/8

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		0.500		mg/Kg			05/23/14 15:44	1
Naphthalene	ND		0.250		mg/Kg			05/23/14 15:44	1
n-Butylbenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
N-Propylbenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
p-Isopropyltoluene	ND		0.100		mg/Kg			05/23/14 15:44	1
sec-Butylbenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
Styrene	ND		0.100		mg/Kg			05/23/14 15:44	1
tert-Butylbenzene	ND		0.100		mg/Kg			05/23/14 15:44	1
Tetrachloroethene	ND		0.100		mg/Kg			05/23/14 15:44	1
Toluene	ND		0.100		mg/Kg			05/23/14 15:44	1
trans-1,2-Dichloroethene	ND		0.100		mg/Kg			05/23/14 15:44	1
trans-1,3-Dichloropropene	ND		0.100		mg/Kg			05/23/14 15:44	1
Trichloroethene	ND		0.100		mg/Kg			05/23/14 15:44	1
Trichlorofluoromethane	ND		0.100		mg/Kg			05/23/14 15:44	1
Vinyl chloride	ND		0.100		mg/Kg			05/23/14 15:44	1
Xylenes, Total	ND		0.250		mg/Kg			05/23/14 15:44	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		70 - 130		05/23/14 15:44	1
4-Bromofluorobenzene (Surr)	99		70 - 130		05/23/14 15:44	1
Dibromofluoromethane (Surr)	92		70 - 130		05/23/14 15:44	1
Toluene-d8 (Surr)	90		70 - 130		05/23/14 15:44	1

Lab Sample ID: LCS 490-164531/5

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	0.0200	0.01903		mg/Kg		95	80 - 136
1,1,1-Trichloroethane	0.0200	0.02044		mg/Kg		102	72 - 140
1,1,2,2-Tetrachloroethane	0.0200	0.02164		mg/Kg		108	66 - 134
1,1,2-Trichloroethane	0.0200	0.02116		mg/Kg		106	78 - 128
1,1-Dichloroethane	0.0200	0.02116		mg/Kg		106	75 - 124
1,1-Dichloroethene	0.0200	0.02106		mg/Kg		105	75 - 131
1,1-Dichloropropene	0.0200	0.02133		mg/Kg		107	79 - 127
1,2,3-Trichlorobenzene	0.0200	0.01868		mg/Kg		93	70 - 150
1,2,3-Trichloropropane	0.0200	0.02233		mg/Kg		112	65 - 139
1,2,4-Trichlorobenzene	0.0200	0.01675		mg/Kg		84	62 - 150
1,2,4-Trimethylbenzene	0.0200	0.01980		mg/Kg		99	77 - 139
1,2-Dibromo-3-Chloropropane	0.0200	0.01731		mg/Kg		87	49 - 142
1,2-Dibromoethane (EDB)	0.0200	0.02060		mg/Kg		103	80 - 135
1,2-Dichlorobenzene	0.0200	0.02011		mg/Kg		101	80 - 134
1,2-Dichloroethane	0.0200	0.02229		mg/Kg		111	65 - 134
1,2-Dichloropropane	0.0200	0.02156		mg/Kg		108	69 - 120
1,3,5-TMB	0.0200	0.02000		mg/Kg		100	78 - 138
1,3-Dichlorobenzene	0.0200	0.01979		mg/Kg		99	79 - 137
1,3-Dichloropropane	0.0200	0.02056		mg/Kg		103	78 - 126
1,4-Dichlorobenzene	0.0200	0.01963		mg/Kg		98	77 - 139

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

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

Lab Sample ID: LCS 490-164531/5

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.
	Added	Result	Qualifier				Limits
2,2-Dichloropropane	0.0200	0.01583		mg/Kg		79	68 - 145
2-Butanone (MEK)	0.100	0.1336	*	mg/Kg		134	61 - 132
2-Chlorotoluene	0.0200	0.02003		mg/Kg		100	78 - 132
2-Hexanone	0.100	0.1073		mg/Kg		107	57 - 148
4-Chlorotoluene	0.0200	0.02064		mg/Kg		103	77 - 138
4-Methyl-2-pentanone (MIBK)	0.100	0.1008		mg/Kg		101	59 - 138
Acetone	0.100	0.1187		mg/Kg		119	51 - 149
Benzene	0.0200	0.02187		mg/Kg		109	75 - 127
Bromobenzene	0.0200	0.01998		mg/Kg		100	75 - 130
Bromochloromethane	0.0200	0.01945		mg/Kg		97	70 - 132
Bromodichloromethane	0.0200	0.01815		mg/Kg		91	68 - 135
Bromoform	0.0200	0.01456		mg/Kg		73	36 - 150
Bromomethane	0.0200	0.01766		mg/Kg		88	43 - 142
Carbon disulfide	0.0200	0.01896		mg/Kg		95	74 - 135
Carbon tetrachloride	0.0200	0.01952		mg/Kg		98	70 - 141
Chlorobenzene	0.0200	0.01950		mg/Kg		97	84 - 125
Chlorodibromomethane	0.0200	0.01605		mg/Kg		80	66 - 134
Chloroethane	0.0200	0.01818		mg/Kg		91	53 - 144
Chloroform	0.0200	0.02098		mg/Kg		105	76 - 130
Chloromethane	0.0200	0.01556		mg/Kg		78	23 - 150
cis-1,2-Dichloroethene	0.0200	0.02150		mg/Kg		108	75 - 125
cis-1,3-Dichloropropene	0.0200	0.01554		mg/Kg		78	73 - 148
Dibromomethane	0.0200	0.02106		mg/Kg		105	71 - 130
Dichlorodifluoromethane	0.0200	0.02104		mg/Kg		105	12 - 144
Ethylbenzene	0.0200	0.01982		mg/Kg		99	80 - 134
Hexachlorobutadiene	0.0200	0.01707		mg/Kg		85	65 - 148
Isopropylbenzene	0.0200	0.01949		mg/Kg		97	80 - 150
Methyl tert-butyl ether	0.0200	0.02078		mg/Kg		104	70 - 136
Methylene Chloride	0.0200	0.02067		mg/Kg		103	68 - 144
Naphthalene	0.0200	0.02047		mg/Kg		102	69 - 150
n-Butylbenzene	0.0200	0.02001		mg/Kg		100	72 - 152
N-Propylbenzene	0.0200	0.01971		mg/Kg		99	75 - 137
p-Isopropyltoluene	0.0200	0.01937		mg/Kg		97	77 - 141
sec-Butylbenzene	0.0200	0.01974		mg/Kg		99	79 - 141
Styrene	0.0200	0.02050		mg/Kg		103	82 - 137
tert-Butylbenzene	0.0200	0.01931		mg/Kg		97	80 - 132
Tetrachloroethene	0.0200	0.01825		mg/Kg		91	78 - 140
Toluene	0.0200	0.01832		mg/Kg		92	80 - 132
trans-1,2-Dichloroethene	0.0200	0.02117		mg/Kg		106	76 - 128
trans-1,3-Dichloropropene	0.0200	0.01605		mg/Kg		80	62 - 139
Trichloroethene	0.0200	0.02036		mg/Kg		102	77 - 127
Trichlorofluoromethane	0.0200	0.01852		mg/Kg		93	50 - 140
Vinyl chloride	0.0200	0.02020		mg/Kg		101	47 - 136
Xylenes, Total	0.0400	0.03910		mg/Kg		98	80 - 137

Surrogate	LCS	LCS	Limits
%Recovery	Qualifier		
1,2-Dichloroethane-d4 (Surr)	98		70 - 130
4-Bromofluorobenzene (Surr)	104		70 - 130

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

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

Lab Sample ID: LCS 490-164531/5

Matrix: Solid

Analysis Batch: 164531

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	97		70 - 130
Toluene-d8 (Surr)	87		70 - 130

Lab Sample ID: MB 490-165429/7

Matrix: Solid

Analysis Batch: 165429

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.100		mg/Kg			05/28/14 21:51	1
1,1,1-Trichloroethane	ND		0.100		mg/Kg			05/28/14 21:51	1
1,1,2,2-Tetrachloroethane	ND		0.100		mg/Kg			05/28/14 21:51	1
1,1,2-Trichloroethane	ND		0.250		mg/Kg			05/28/14 21:51	1
1,1-Dichloroethane	ND		0.100		mg/Kg			05/28/14 21:51	1
1,1-Dichloroethene	ND		0.100		mg/Kg			05/28/14 21:51	1
1,1-Dichloropropene	ND		0.100		mg/Kg			05/28/14 21:51	1
1,2,3-Trichlorobenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
1,2,3-Trichloropropane	NC		0.100		ug/L			05/28/14 21:51	1
1,2,4-Trichlorobenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
1,2,4-Trimethylbenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
1,2-Dibromo-3-Chloropropane	ND		0.250		mg/Kg			05/28/14 21:51	1
1,2-Dibromoethane (EDB)	ND		0.100		mg/Kg			05/28/14 21:51	1
1,2-Dichlorobenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
1,2-Dichloroethane	ND		0.100		mg/Kg			05/28/14 21:51	1
1,2-Dichloropropane	ND		0.100		mg/Kg			05/28/14 21:51	1
1,3,5-TMB	ND		0.100		mg/Kg			05/28/14 21:51	1
1,3-Dichlorobenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
1,3-Dichloropropane	NC		0.100		ug/L			05/28/14 21:51	1
1,4-Dichlorobenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
2,2-Dichloropropane	NC		0.100		ug/L			05/28/14 21:51	1
2,2-Dichloropropane	NC		0.100		ug/L			05/28/14 21:51	1
2-Butanone (MEK)	NC		2.50		ug/L			05/28/14 21:51	1
2-Chlorotoluene	ND		0.100		mg/Kg			05/28/14 21:51	1
2-Hexanone	NC		2.50		ug/L			05/28/14 21:51	1
4-Chlorotoluene	ND		0.100		mg/Kg			05/28/14 21:51	1
4-Methyl-2-pentanone (MIBK)	ND		2.50		mg/Kg			05/28/14 21:51	1
Acetone	ND		2.50		mg/Kg			05/28/14 21:51	1
Benzene	ND		0.100		mg/Kg			05/28/14 21:51	1
Bromobenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
Bromochloromethane	ND		0.100		mg/Kg			05/28/14 21:51	1
Bromodichloromethane	ND		0.100		mg/Kg			05/28/14 21:51	1
Bromoform	ND		0.100		mg/Kg			05/28/14 21:51	1
Bromomethane	ND		0.100		mg/Kg			05/28/14 21:51	1
Carbon disulfide	ND		0.250		mg/Kg			05/28/14 21:51	1
Carbon tetrachloride	ND		0.100		mg/Kg			05/28/14 21:51	1
Chlorobenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
Chlorodibromomethane	ND		0.100		mg/Kg			05/28/14 21:51	1
Chloroethane	ND		0.250		mg/Kg			05/28/14 21:51	1
2-Methylnaphthalene	ND		0.250		mg/Kg			05/28/14 21:51	1

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

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

Lab Sample ID: MB 490-165429/7

Matrix: Solid

Analysis Batch: 165429

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloroform	NC		0.100		ug/L			05/28/14 21:51	1
Chloroform	NC		0.100		ug/L			05/28/14 21:51	1
Chloromethane	NC		0.100		ug/L			05/28/14 21:51	1
Chloromethane	NC		0.100		ug/L			05/28/14 21:51	1
cis-1,2-Dichloroethene	NC		0.100		ug/L			05/28/14 21:51	1
cis-1,2-Dichloroethene	NC		0.100		ug/L			05/28/14 21:51	1
cis-1,3-Dichloropropene	ND		0.100		mg/Kg			05/28/14 21:51	1
Dibromomethane	ND		0.100		mg/Kg			05/28/14 21:51	1
Dichlorodifluoromethane	ND		0.100		mg/Kg			05/28/14 21:51	1
Ethylbenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
Hexachlorobutadiene	ND		0.250		mg/Kg			05/28/14 21:51	1
Isopropylbenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
Methyl tert-butyl ether	ND		0.100		mg/Kg			05/28/14 21:51	1
Methylene Chloride	NC		0.500		ug/L			05/28/14 21:51	1
Methylene Chloride	NC		0.500		ug/L			05/28/14 21:51	1
Naphthalene	ND		0.250		mg/Kg			05/28/14 21:51	1
n-Butylbenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
N-Propylbenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
p-Isopropyltoluene	ND		0.100		mg/Kg			05/28/14 21:51	1
sec-Butylbenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
Styrene	NC		0.100		ug/L			05/28/14 21:51	1
tert-Butylbenzene	ND		0.100		mg/Kg			05/28/14 21:51	1
Tetrachloroethene	ND		0.100		mg/Kg			05/28/14 21:51	1
Toluene	ND		0.100		mg/Kg			05/28/14 21:51	1
trans-1,2-Dichloroethene	ND		0.100		mg/Kg			05/28/14 21:51	1
trans-1,3-Dichloropropene	ND		0.100		mg/Kg			05/28/14 21:51	1
Trichloroethene	ND		0.100		mg/Kg			05/28/14 21:51	1
Trichlorofluoromethane	ND		0.100		mg/Kg			05/28/14 21:51	1
Vinyl chloride	ND		0.100		mg/Kg			05/28/14 21:51	1
Xylenes, Total	ND		0.250		mg/Kg			05/28/14 21:51	1

Tentatively Identified Compound	MB MB		Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
	Est. Result	Qualifier							
Tentatively Identified Compound	None		mg/Kg					05/28/14 21:51	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	110		70 - 130		05/28/14 21:51	1
4-Bromofluorobenzene (Surr)	102		70 - 130		05/28/14 21:51	1
Dibromofluoromethane (Surr)	103		70 - 130		05/28/14 21:51	1
Toluene-d8 (Surr)	101		70 - 130		05/28/14 21:51	1

Lab Sample ID: LCS 490-165429/3

Matrix: Solid

Analysis Batch: 165429

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
1,2,4-Trimethylbenzene	2.50	2.658		mg/Kg		106	77 - 139
1,2-Dibromoethane (EDB)	2.50	2.593		mg/Kg		104	80 - 135

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

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

Lab Sample ID: LCS 490-165429/3

Matrix: Solid

Analysis Batch: 165429

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	
1,2-Dichloroethane	2.50	2.648		mg/Kg		106	65 - 134	
1,3,5-TMB	2.50	2.666		mg/Kg		107	78 - 138	
Benzene	2.50	2.676		mg/Kg		107	75 - 127	
2-Methylnaphthalene	2.50	2.607		mg/Kg		104	24 - 150	
Ethylbenzene	2.50	2.606		mg/Kg		104	80 - 134	
Isopropylbenzene	2.50	2.639		mg/Kg		106	80 - 150	
Methyl tert-butyl ether	2.50	2.635		mg/Kg		105	70 - 136	
Naphthalene	2.50	2.641		mg/Kg		106	69 - 150	
n-Butylbenzene	2.50	3.019		mg/Kg		121	72 - 152	
N-Propylbenzene	2.50	2.742		mg/Kg		110	75 - 137	
p-Isopropyltoluene	2.50	2.908		mg/Kg		116	77 - 141	
sec-Butylbenzene	2.50	2.682		mg/Kg		107	79 - 141	
tert-Butylbenzene	2.50	2.605		mg/Kg		104	80 - 132	
Toluene	2.50	2.572		mg/Kg		103	80 - 132	
Xylenes, Total	7.50	7.761		mg/Kg		103	80 - 137	

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	102		70 - 130
4-Bromofluorobenzene (Surr)	96		70 - 130
Dibromofluoromethane (Surr)	100		70 - 130
Toluene-d8 (Surr)	99		70 - 130

Method: Moisture - Percent Moisture

Lab Sample ID: 490-53244-A-9 DU

Matrix: Solid

Analysis Batch: 163271

Client Sample ID: Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU DU		Unit	D	RPD RPD	
			Result	Qualifier			Limit	Limit
Percent Solids	83		81		%		2	20

Lab Sample ID: 490-53304-B-5 DU

Matrix: Solid

Analysis Batch: 163430

Client Sample ID: Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU DU		Unit	D	RPD RPD	
			Result	Qualifier			Limit	Limit
Percent Solids	75		74		%		2	20

TestAmerica Nashville

QC Association Summary

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

GC/MS VOA

Prep Batch: 163163

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-53262-1	MW-06-19-21	Total/NA	Solid	5030B	
490-53262-2	MW-06-24-26	Total/NA	Solid	5030B	
490-53262-3	MW-06-79-81	Total/NA	Solid	5030B	
490-53262-4	MW-07-64-66	Total/NA	Solid	5030B	
490-53262-4 MS	MW-07-64-66	Total/NA	Solid	5030B	
490-53262-4 MSD	MW-07-64-66	Total/NA	Solid	5030B	
490-53262-5	MW-07-54-56	Total/NA	Solid	5030B	
490-53262-5 MS	MW-07-54-56	Total/NA	Solid	5030B	
490-53262-5 MSD	MW-07-54-56	Total/NA	Solid	5030B	
490-53262-6	MW-07-79-81	Total/NA	Solid	5030B	
490-53262-7	MW-08-09-11	Total/NA	Solid	5030B	
490-53262-8	MW-08-19-21	Total/NA	Solid	5030B	
490-53262-9	MW-08-79-81	Total/NA	Solid	5030B	

Analysis Batch: 164531

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-53262-1	MW-06-19-21	Total/NA	Solid	8260B	163163
490-53262-1	MW-06-19-21	Total/NA	Solid	8260B	163163
490-53262-2	MW-06-24-26	Total/NA	Solid	8260B	163163
490-53262-3	MW-06-79-81	Total/NA	Solid	8260B	163163
490-53262-3	MW-06-79-81	Total/NA	Solid	8260B	163163
490-53262-4	MW-07-64-66	Total/NA	Solid	8260B	163163
490-53262-5	MW-07-54-56	Total/NA	Solid	8260B	163163
490-53262-5 MS	MW-07-54-56	Total/NA	Solid	8260B	163163
490-53262-5 MSD	MW-07-54-56	Total/NA	Solid	8260B	163163
490-53262-6	MW-07-79-81	Total/NA	Solid	8260B	163163
490-53262-7	MW-08-09-11	Total/NA	Solid	8260B	163163
490-53262-8	MW-08-19-21	Total/NA	Solid	8260B	163163
490-53262-9	MW-08-79-81	Total/NA	Solid	8260B	163163
LCS 490-164531/5	Lab Control Sample	Total/NA	Solid	8260B	
MB 490-164531/7	Method Blank	Total/NA	Solid	8260B	
MB 490-164531/8	Method Blank	Total/NA	Solid	8260B	

Analysis Batch: 165429

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-53262-1	MW-06-19-21	Total/NA	Solid	8260B	163163
490-53262-1	MW-06-19-21	Total/NA	Solid	8260B	163163
490-53262-2	MW-06-24-26	Total/NA	Solid	8260B	163163
490-53262-2	MW-06-24-26	Total/NA	Solid	8260B	163163
490-53262-3	MW-06-79-81	Total/NA	Solid	8260B	163163
490-53262-3	MW-06-79-81	Total/NA	Solid	8260B	163163
490-53262-4	MW-07-64-66	Total/NA	Solid	8260B	163163
490-53262-4	MW-07-64-66	Total/NA	Solid	8260B	163163
490-53262-4 MS	MW-07-64-66	Total/NA	Solid	8260B	163163
490-53262-4 MSD	MW-07-64-66	Total/NA	Solid	8260B	163163
490-53262-5	MW-07-54-56	Total/NA	Solid	8260B	163163
490-53262-6	MW-07-79-81	Total/NA	Solid	8260B	163163
490-53262-7	MW-08-09-11	Total/NA	Solid	8260B	163163
490-53262-8	MW-08-19-21	Total/NA	Solid	8260B	163163
490-53262-9	MW-08-79-81	Total/NA	Solid	8260B	163163
LCS 490-165429/3	Lab Control Sample	Total/NA	Solid	8260B	

TestAmerica Nashville

QC Association Summary

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

GC/MS VOA (Continued)

Analysis Batch: 165429 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 490-165429/7	Method Blank	Total/NA	Solid	8260B	

General Chemistry

Analysis Batch: 163271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-53244-A-9 DU	Duplicate	Total/NA	Solid	Moisture	
490-53244-A-9 MS	Matrix Spike	Total/NA	Solid	Moisture	
490-53244-A-9 MSD	Matrix Spike Duplicate	Total/NA	Solid	Moisture	
490-53262-1	MW-06-19-21	Total/NA	Solid	Moisture	
490-53262-2	MW-06-24-26	Total/NA	Solid	Moisture	
490-53262-3	MW-06-79-81	Total/NA	Solid	Moisture	
490-53262-4	MW-07-64-66	Total/NA	Solid	Moisture	
490-53262-5	MW-07-54-56	Total/NA	Solid	Moisture	
490-53262-6	MW-07-79-81	Total/NA	Solid	Moisture	

Analysis Batch: 163430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-53262-7	MW-08-09-11	Total/NA	Solid	Moisture	
490-53262-8	MW-08-19-21	Total/NA	Solid	Moisture	
490-53262-9	MW-08-79-81	Total/NA	Solid	Moisture	
490-53304-B-5 DU	Duplicate	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-06-19-21

Date Collected: 05/12/14 17:00

Date Received: 05/16/14 08:30

Lab Sample ID: 490-53262-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.303 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		20	5.303 g	5.0 mL	164531	05/23/14 22:31	JJR	TAL NSH
Total/NA	Prep	5030B			5.303 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	5.303 g	5.0 mL	164531	05/23/14 23:52	JJR	TAL NSH
Total/NA	Prep	5030B			5.303 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	5.303 g	5.0 mL	165429	05/29/14 02:32	WC1	TAL NSH
Total/NA	Prep	5030B			5.303 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		20	5.303 g	5.0 mL	165429	05/29/14 02:57	WC1	TAL NSH
Total/NA	Analysis	Moisture		1			163271	05/17/14 14:14	LJE	TAL NSH

Client Sample ID: MW-06-24-26

Date Collected: 05/12/14 17:05

Date Received: 05/16/14 08:30

Lab Sample ID: 490-53262-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			4.97 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	4.97 g	5.0 mL	164531	05/23/14 23:25	JJR	TAL NSH
Total/NA	Prep	5030B			4.97 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	4.97 g	5.0 mL	165429	05/29/14 03:23	WC1	TAL NSH
Total/NA	Prep	5030B			4.97 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		20	4.97 g	5.0 mL	165429	05/29/14 03:48	WC1	TAL NSH
Total/NA	Analysis	Moisture		1			163271	05/17/14 14:14	LJE	TAL NSH

Client Sample ID: MW-06-79-81

Date Collected: 05/12/14 17:10

Date Received: 05/16/14 08:30

Lab Sample ID: 490-53262-3

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.521 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		20	5.521 g	5.0 mL	164531	05/23/14 21:37	JJR	TAL NSH
Total/NA	Prep	5030B			5.521 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	5.521 g	5.0 mL	164531	05/23/14 22:58	JJR	TAL NSH
Total/NA	Prep	5030B			5.521 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	5.521 g	5.0 mL	165429	05/29/14 04:14	WC1	TAL NSH
Total/NA	Prep	5030B			5.521 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		20	5.521 g	5.0 mL	165429	05/29/14 04:39	WC1	TAL NSH
Total/NA	Analysis	Moisture		1			163271	05/17/14 14:14	LJE	TAL NSH

TestAmerica Nashville

Lab Chronicle

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-07-64-66

Date Collected: 05/14/14 15:15

Date Received: 05/16/14 08:30

Lab Sample ID: 490-53262-4

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			6.447 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	6.447 g	5.0 mL	164531	05/23/14 19:21	JJR	TAL NSH
Total/NA	Prep	5030B			6.447 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	6.447 g	5.0 mL	165429	05/28/14 23:08	WC1	TAL NSH
Total/NA	Prep	5030B			6.447 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		20	6.447 g	5.0 mL	165429	05/28/14 23:33	WC1	TAL NSH
Total/NA	Analysis	Moisture		1			163271	05/17/14 14:14	LJE	TAL NSH

Client Sample ID: MW-07-54-56

Date Collected: 05/14/14 15:00

Date Received: 05/16/14 08:30

Lab Sample ID: 490-53262-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.61 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	5.61 g	5.0 mL	164531	05/23/14 18:54	JJR	TAL NSH
Total/NA	Prep	5030B			5.61 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	5.61 g	5.0 mL	165429	05/28/14 22:17	WC1	TAL NSH
Total/NA	Analysis	Moisture		1			163271	05/17/14 14:14	LJE	TAL NSH

Client Sample ID: MW-07-79-81

Date Collected: 05/14/14 15:50

Date Received: 05/16/14 08:30

Lab Sample ID: 490-53262-6

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.718 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	5.718 g	5.0 mL	164531	05/23/14 19:48	JJR	TAL NSH
Total/NA	Prep	5030B			5.718 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	5.718 g	5.0 mL	165429	05/28/14 22:42	WC1	TAL NSH
Total/NA	Analysis	Moisture		1			163271	05/17/14 14:14	LJE	TAL NSH

Client Sample ID: MW-08-09-11

Date Collected: 05/15/14 15:15

Date Received: 05/16/14 08:30

Lab Sample ID: 490-53262-7

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.356 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	5.356 g	5.0 mL	164531	05/23/14 20:15	JJR	TAL NSH
Total/NA	Prep	5030B			5.356 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	5.356 g	5.0 mL	165429	05/28/14 23:59	WC1	TAL NSH
Total/NA	Analysis	Moisture		1			163430	05/19/14 09:54	RRS	TAL NSH

TestAmerica Nashville

Lab Chronicle

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Client Sample ID: MW-08-19-21

Lab Sample ID: 490-53262-8

Date Collected: 05/15/14 15:30

Matrix: Solid

Date Received: 05/16/14 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			6.456 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	6.456 g	5.0 mL	164531	05/23/14 20:42	JJR	TAL NSH
Total/NA	Prep	5030B			6.456 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	6.456 g	5.0 mL	165429	05/29/14 00:50	WC1	TAL NSH
Total/NA	Analysis	Moisture		1			163430	05/19/14 09:54	RRS	TAL NSH

Client Sample ID: MW-08-79-81

Lab Sample ID: 490-53262-9

Date Collected: 05/15/14 15:45

Matrix: Solid

Date Received: 05/16/14 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			6.143 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	6.143 g	5.0 mL	164531	05/23/14 21:09	JJR	TAL NSH
Total/NA	Prep	5030B			6.143 g	5.0 mL	163163	05/17/14 07:05	JLP	TAL NSH
Total/NA	Analysis	8260B		1	6.143 g	5.0 mL	165429	05/29/14 01:41	WC1	TAL NSH
Total/NA	Analysis	Moisture		1			163430	05/19/14 09:54	RRS	TAL NSH

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

TestAmerica Nashville

Method Summary

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL NSH
Moisture	Percent Moisture	EPA	TAL NSH

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Certification Summary

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-53262-1

Laboratory: TestAmerica Nashville

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Arizona	State Program	9	AZ0473	05-05-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260B	5030B	Solid	1,1,1,2-Tetrachloroethane
8260B	5030B	Solid	1,2,4-Trichlorobenzene
8260B	5030B	Solid	1,2-Dibromo-3-Chloropropane
8260B	5030B	Solid	2-Methylnaphthalene
8260B	5030B	Solid	Carbon disulfide
8260B	5030B	Solid	Dibromomethane
8260B	5030B	Solid	Hexachlorobutadiene
8260B	5030B	Solid	Isopropylbenzene
8260B	5030B	Solid	Naphthalene
Moisture		Solid	Percent Solids

COOLER RECEIPT



490-53262 Chain of Custody

Cooler Received/Opened On 5/16/2014 @ 0830

1. Tracking # 6196 (last 4 digits, FedEx)

Courier: FedEx IR Gun ID 94660220

2. Temperature of rep. sample or temp blank when opened: 5.5 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA

4. Were custody seals on outside of cooler? YES...NO...NA

If yes, how many and where: (1) Front

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (Initial) WDM

7. Were custody seals on containers: YES NO and intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used: Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # NA

I certify that I unloaded the cooler and answered questions 7-14 (Initial) ⊕

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (Initial) ⊕

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (Initial) ⊕

I certify that I attached a label with the unique LIMS number to each container (Initial) ⊕

21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO..#

TestAmerica Nashville
2960 Foster Creighton Drive
Nashville, TN 37204

Chain of Custody Record

Phone (615) 726-0177 Fax (615) 726-3404

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

[illegible]

Login Sample Receipt Checklist

Client: Basin Engineering, Inc.

Job Number: 490-53262-1

Login Number: 53262

List Source: TestAmerica Nashville

List Number: 1

Creator: Ford, Easton

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Nashville

2960 Foster Creighton Drive

Nashville, TN 37204

Tel: (615)726-0177

TestAmerica Job ID: 490-54173-1

Client Project/Site: Shamrock #63

For:

Basin Engineering, Inc.

PO BOX 3909

Durango, Colorado 81302

Attn: Mr. John Casey



Authorized for release by:

6/11/2014 11:04:18 AM

Leah Klingensmith, Senior Project Manager

(615)301-5038

leah.klingensmith@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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

Results relate only to the items tested and the sample(s) as received by the laboratory.

1

2

3

4

5

6

7

8

9

10

11

12

13

Table of Contents

Cover Page	1
Table of Contents	2
Sample Summary	3
Case Narrative	4
Definitions	5
Client Sample Results	6
QC Sample Results	20
QC Association	35
Chronicle	36
Method Summary	38
Certification Summary	39
Chain of Custody	40
Receipt Checklists	42

Sample Summary

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
490-54173-1	MW-5	Water	05/27/14 11:40	05/30/14 08:30
490-54173-2	MW-7	Water	05/27/14 12:20	05/30/14 08:30
490-54173-3	MW-1	Water	05/27/14 13:50	05/30/14 08:30
490-54173-4	MW-2	Water	05/27/14 14:20	05/30/14 08:30
490-54173-5	MW-3	Water	05/27/14 15:00	05/30/14 08:30
490-54173-6	MW-4	Water	05/27/14 15:50	05/30/14 08:30
490-54173-7	MW-8	Water	05/27/14 16:40	05/30/14 08:30

Case Narrative

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Job ID: 490-54173-1

Laboratory: TestAmerica Nashville

Narrative

Job Narrative 490-54173-1

Comments

No additional comments.

Receipt

The samples were received on 5/30/2014 8:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.7° C.

GC/MS VOA

Method(s) 8260B: The method blank for preparation batch 167010 contained 1,2,3-trichlorobenzene above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method(s) 8260B: Surrogate recovery for the following sample(s) was outside control limits: MW-1 (490-54173-3). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 8260B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batches 167327, 167631.

Method(s) 8260B: The following sample(s) was diluted due to the nature of the sample matrix: MW-2 (490-54173-4). Elevated reporting limits (RLs) are provided.

Method(s) 8260B: The laboratory control sample (LCS) for batch 167327 recovered outside control limits for the following analytes: Carbon disulfide. Due to low recovery, this analyte is not reported from this batch. (LCS 490-167327/3)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
X	Surrogate is outside control limits
*	LCS or LCSD exceeds the control limits

GC/MS VOA TICs

Qualifier	Qualifier Description
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-5

Lab Sample ID: 490-54173-1

Date Collected: 05/27/14 11:40

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 20:28	1
1,1,1-Trichloroethane	ND		1.00		ug/L			06/05/14 20:28	1
1,1,2,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 20:28	1
1,1,2-Trichloroethane	ND		1.00		ug/L			06/05/14 20:28	1
1,1-Dichloroethane	ND		1.00		ug/L			06/05/14 20:28	1
1,1-Dichloroethene	ND		1.00		ug/L			06/05/14 20:28	1
1,1-Dichloropropene	ND		1.00		ug/L			06/05/14 20:28	1
1,2,3-Trichlorobenzene	ND		1.00		ug/L			06/05/14 20:28	1
1,2,3-Trichloropropane	ND		1.00		ug/L			06/05/14 20:28	1
1,2,4-Trichlorobenzene	ND		1.00		ug/L			06/05/14 20:28	1
1,2,4-Trimethylbenzene	1760		100		ug/L			06/06/14 21:35	100
1,2-Dibromo-3-Chloropropane	ND		10.0		ug/L			06/05/14 20:28	1
1,2-Dibromoethane (EDB)	489		20.0		ug/L			06/06/14 21:08	20
1,2-Dichlorobenzene	ND		1.00		ug/L			06/05/14 20:28	1
1,2-Dichloroethane	1480		20.0		ug/L			06/06/14 21:08	20
1,2-Dichloropropane	18.3		1.00		ug/L			06/05/14 20:28	1
1,3,5-Trimethylbenzene	1350		20.0		ug/L			06/06/14 21:08	20
1,3-Dichlorobenzene	ND		1.00		ug/L			06/05/14 20:28	1
1,3-Dichloropropane	ND		1.00		ug/L			06/05/14 20:28	1
1,4-Dichlorobenzene	ND		1.00		ug/L			06/05/14 20:28	1
2,2-Dichloropropane	ND		1.00		ug/L			06/05/14 20:28	1
2-Butanone (MEK)	94.4		50.0		ug/L			06/05/14 20:28	1
2-Chlorotoluene	ND		1.00		ug/L			06/05/14 20:28	1
2-Hexanone	51.8		10.0		ug/L			06/05/14 20:28	1
4-Chlorotoluene	ND		1.00		ug/L			06/05/14 20:28	1
4-Methyl-2-pentanone (MIBK)	18.6		10.0		ug/L			06/05/14 20:28	1
Acetone	204		25.0		ug/L			06/05/14 20:28	1
Benzene	4570		100		ug/L			06/06/14 21:35	100
Bromobenzene	ND		1.00		ug/L			06/05/14 20:28	1
Bromochloromethane	ND		1.00		ug/L			06/05/14 20:28	1
Bromodichloromethane	ND		1.00		ug/L			06/05/14 20:28	1
Bromoform	ND		1.00		ug/L			06/05/14 20:28	1
Bromomethane	ND		1.00		ug/L			06/05/14 20:28	1
Carbon disulfide	ND		1.00		ug/L			06/05/14 20:28	1
Carbon tetrachloride	ND		1.00		ug/L			06/05/14 20:28	1
Chlorobenzene	ND		1.00		ug/L			06/05/14 20:28	1
Chlorodibromomethane	ND		1.00		ug/L			06/05/14 20:28	1
Chloroethane	ND		1.00		ug/L			06/05/14 20:28	1
2-Methylnaphthalene	1550		250		ug/L			06/07/14 17:21	25
Chloroform	ND		1.00		ug/L			06/05/14 20:28	1
Chloromethane	ND		1.00		ug/L			06/05/14 20:28	1
cis-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 20:28	1
cis-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 20:28	1
Dibromomethane	ND		1.00		ug/L			06/05/14 20:28	1
Dichlorodifluoromethane	ND		1.00		ug/L			06/05/14 20:28	1
Ethylbenzene	1740		20.0		ug/L			06/06/14 21:08	20
Hexachlorobutadiene	ND		2.00		ug/L			06/05/14 20:28	1
Isopropylbenzene	25.7		1.00		ug/L			06/05/14 20:28	1
Methyl tert-butyl ether	3.17		1.00		ug/L			06/05/14 20:28	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-5

Lab Sample ID: 490-54173-1

Date Collected: 05/27/14 11:40

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		5.00		ug/L			06/05/14 20:28	1
Naphthalene	1310		100		ug/L			06/06/14 21:08	20
n-Butylbenzene	ND		1.00		ug/L			06/05/14 20:28	1
N-Propylbenzene	104		1.00		ug/L			06/05/14 20:28	1
p-Isopropyltoluene	5.08		1.00		ug/L			06/05/14 20:28	1
sec-Butylbenzene	5.70		1.00		ug/L			06/05/14 20:28	1
Styrene	ND		1.00		ug/L			06/05/14 20:28	1
tert-Butylbenzene	ND		1.00		ug/L			06/05/14 20:28	1
Tetrachloroethene	ND		1.00		ug/L			06/05/14 20:28	1
Toluene	6590		100		ug/L			06/06/14 21:35	100
trans-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 20:28	1
trans-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 20:28	1
Trichloroethene	ND		1.00		ug/L			06/05/14 20:28	1
Trichlorofluoromethane	ND		1.00		ug/L			06/05/14 20:28	1
Vinyl chloride	ND		1.00		ug/L			06/05/14 20:28	1
Xylenes, Total	7910		200		ug/L			06/06/14 21:35	100

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	118	T J N	ug/L		11.87	90-12-0		06/05/14 20:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	128		70 - 130		06/05/14 20:28	1
1,2-Dichloroethane-d4 (Surr)	126		70 - 130		06/06/14 21:08	20
1,2-Dichloroethane-d4 (Surr)	99		70 - 130		06/06/14 21:35	100
1,2-Dichloroethane-d4 (Surr)	118		70 - 130		06/07/14 17:21	25
4-Bromofluorobenzene (Surr)	113		70 - 130		06/05/14 20:28	1
4-Bromofluorobenzene (Surr)	97		70 - 130		06/06/14 21:08	20
4-Bromofluorobenzene (Surr)	94		70 - 130		06/06/14 21:35	100
4-Bromofluorobenzene (Surr)	103		70 - 130		06/07/14 17:21	25
Dibromofluoromethane (Surr)	89		70 - 130		06/05/14 20:28	1
Dibromofluoromethane (Surr)	94		70 - 130		06/06/14 21:08	20
Dibromofluoromethane (Surr)	94		70 - 130		06/06/14 21:35	100
Dibromofluoromethane (Surr)	97		70 - 130		06/07/14 17:21	25
Toluene-d8 (Surr)	87		70 - 130		06/05/14 20:28	1
Toluene-d8 (Surr)	87		70 - 130		06/06/14 21:08	20
Toluene-d8 (Surr)	95		70 - 130		06/06/14 21:35	100
Toluene-d8 (Surr)	107		70 - 130		06/07/14 17:21	25

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-7

Lab Sample ID: 490-54173-2

Date Collected: 05/27/14 12:20

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 20:55	1
1,1,1-Trichloroethane	ND		1.00		ug/L			06/05/14 20:55	1
1,1,2,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 20:55	1
1,1,2-Trichloroethane	ND		1.00		ug/L			06/05/14 20:55	1
1,1-Dichloroethane	ND		1.00		ug/L			06/05/14 20:55	1
1,1-Dichloroethene	ND		1.00		ug/L			06/05/14 20:55	1
1,1-Dichloropropene	ND		1.00		ug/L			06/05/14 20:55	1
1,2,3-Trichlorobenzene	ND		1.00		ug/L			06/05/14 20:55	1
1,2,3-Trichloropropane	ND		1.00		ug/L			06/05/14 20:55	1
1,2,4-Trichlorobenzene	ND		1.00		ug/L			06/05/14 20:55	1
1,2,4-Trimethylbenzene	1120		50.0		ug/L			06/06/14 22:02	50
1,2-Dibromo-3-Chloropropane	ND		10.0		ug/L			06/05/14 20:55	1
1,2-Dibromoethane (EDB)	130		1.00		ug/L			06/05/14 20:55	1
1,2-Dichlorobenzene	ND		1.00		ug/L			06/05/14 20:55	1
1,2-Dichloroethane	610		50.0		ug/L			06/06/14 22:02	50
1,2-Dichloropropane	14.7		1.00		ug/L			06/05/14 20:55	1
1,3,5-Trimethylbenzene	345		50.0		ug/L			06/06/14 22:02	50
1,3-Dichlorobenzene	ND		1.00		ug/L			06/05/14 20:55	1
1,3-Dichloropropane	ND		1.00		ug/L			06/05/14 20:55	1
1,4-Dichlorobenzene	ND		1.00		ug/L			06/05/14 20:55	1
2,2-Dichloropropane	ND		1.00		ug/L			06/05/14 20:55	1
2-Butanone (MEK)	72.9		50.0		ug/L			06/05/14 20:55	1
2-Chlorotoluene	ND		1.00		ug/L			06/05/14 20:55	1
2-Hexanone	40.0		10.0		ug/L			06/05/14 20:55	1
4-Chlorotoluene	ND		1.00		ug/L			06/05/14 20:55	1
4-Methyl-2-pentanone (MIBK)	24.6		10.0		ug/L			06/05/14 20:55	1
Acetone	231		25.0		ug/L			06/05/14 20:55	1
Benzene	2980		50.0		ug/L			06/06/14 22:02	50
Bromobenzene	ND		1.00		ug/L			06/05/14 20:55	1
Bromochloromethane	ND		1.00		ug/L			06/05/14 20:55	1
Bromodichloromethane	ND		1.00		ug/L			06/05/14 20:55	1
Bromoform	ND		1.00		ug/L			06/05/14 20:55	1
Bromomethane	ND		1.00		ug/L			06/05/14 20:55	1
Carbon disulfide	ND		1.00		ug/L			06/05/14 20:55	1
Carbon tetrachloride	ND		1.00		ug/L			06/05/14 20:55	1
Chlorobenzene	ND		1.00		ug/L			06/05/14 20:55	1
Chlorodibromomethane	ND		1.00		ug/L			06/05/14 20:55	1
Chloroethane	ND		1.00		ug/L			06/05/14 20:55	1
2-Methylnaphthalene	1100		500		ug/L			06/07/14 18:13	50
Chloroform	ND		1.00		ug/L			06/05/14 20:55	1
Chloromethane	ND		1.00		ug/L			06/05/14 20:55	1
cis-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 20:55	1
cis-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 20:55	1
Dibromomethane	ND		1.00		ug/L			06/05/14 20:55	1
Dichlorodifluoromethane	ND		1.00		ug/L			06/05/14 20:55	1
Ethylbenzene	740		50.0		ug/L			06/06/14 22:02	50
Hexachlorobutadiene	ND		2.00		ug/L			06/05/14 20:55	1
Isopropylbenzene	22.0		1.00		ug/L			06/05/14 20:55	1
Methyl tert-butyl ether	47.6		1.00		ug/L			06/05/14 20:55	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-7

Lab Sample ID: 490-54173-2

Date Collected: 05/27/14 12:20

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		5.00		ug/L			06/05/14 20:55	1
Naphthalene	643		250		ug/L			06/06/14 22:02	50
n-Butylbenzene	ND		1.00		ug/L			06/05/14 20:55	1
N-Propylbenzene	90.6		1.00		ug/L			06/05/14 20:55	1
p-Isopropyltoluene	6.11		1.00		ug/L			06/05/14 20:55	1
sec-Butylbenzene	7.36		1.00		ug/L			06/05/14 20:55	1
Styrene	ND		1.00		ug/L			06/05/14 20:55	1
tert-Butylbenzene	ND		1.00		ug/L			06/05/14 20:55	1
Tetrachloroethene	ND		1.00		ug/L			06/05/14 20:55	1
Toluene	3350		50.0		ug/L			06/06/14 22:02	50
trans-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 20:55	1
trans-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 20:55	1
Trichloroethene	ND		1.00		ug/L			06/05/14 20:55	1
Trichlorofluoromethane	ND		1.00		ug/L			06/05/14 20:55	1
Vinyl chloride	ND		1.00		ug/L			06/05/14 20:55	1
Xylenes, Total	5030		100		ug/L			06/06/14 22:02	50

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	313	T J N	ug/L		11.87	90-12-0		06/05/14 20:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	127		70 - 130		06/05/14 20:55	1
1,2-Dichloroethane-d4 (Surr)	101		70 - 130		06/06/14 22:02	50
1,2-Dichloroethane-d4 (Surr)	113		70 - 130		06/07/14 18:13	50
4-Bromofluorobenzene (Surr)	122		70 - 130		06/05/14 20:55	1
4-Bromofluorobenzene (Surr)	98		70 - 130		06/06/14 22:02	50
4-Bromofluorobenzene (Surr)	98		70 - 130		06/07/14 18:13	50
Dibromofluoromethane (Surr)	89		70 - 130		06/05/14 20:55	1
Dibromofluoromethane (Surr)	97		70 - 130		06/06/14 22:02	50
Dibromofluoromethane (Surr)	100		70 - 130		06/07/14 18:13	50
Toluene-d8 (Surr)	88		70 - 130		06/05/14 20:55	1
Toluene-d8 (Surr)	91		70 - 130		06/06/14 22:02	50
Toluene-d8 (Surr)	100		70 - 130		06/07/14 18:13	50

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-1

Lab Sample ID: 490-54173-3

Date Collected: 05/27/14 13:50

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 21:22	1
1,1,1-Trichloroethane	ND		1.00		ug/L			06/05/14 21:22	1
1,1,2,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 21:22	1
1,1,2-Trichloroethane	ND		1.00		ug/L			06/05/14 21:22	1
1,1-Dichloroethane	ND		1.00		ug/L			06/05/14 21:22	1
1,1-Dichloroethene	ND		1.00		ug/L			06/05/14 21:22	1
1,1-Dichloropropene	ND		1.00		ug/L			06/05/14 21:22	1
1,2,3-Trichlorobenzene	ND		1.00		ug/L			06/05/14 21:22	1
1,2,3-Trichloropropane	ND		1.00		ug/L			06/05/14 21:22	1
1,2,4-Trichlorobenzene	ND		1.00		ug/L			06/05/14 21:22	1
1,2,4-Trimethylbenzene	339		20.0		ug/L			06/06/14 22:29	20
1,2-Dibromo-3-Chloropropane	ND		10.0		ug/L			06/05/14 21:22	1
1,2-Dibromoethane (EDB)	25.0		1.00		ug/L			06/05/14 21:22	1
1,2-Dichlorobenzene	ND		1.00		ug/L			06/05/14 21:22	1
1,2-Dichloroethane	166		1.00		ug/L			06/05/14 21:22	1
1,2-Dichloropropane	9.07		1.00		ug/L			06/05/14 21:22	1
1,3,5-Trimethylbenzene	140		1.00		ug/L			06/05/14 21:22	1
1,3-Dichlorobenzene	ND		1.00		ug/L			06/05/14 21:22	1
1,3-Dichloropropane	ND		1.00		ug/L			06/05/14 21:22	1
1,4-Dichlorobenzene	ND		1.00		ug/L			06/05/14 21:22	1
2,2-Dichloropropane	ND		1.00		ug/L			06/05/14 21:22	1
2-Butanone (MEK)	133		50.0		ug/L			06/05/14 21:22	1
2-Chlorotoluene	ND		1.00		ug/L			06/05/14 21:22	1
2-Hexanone	44.1		10.0		ug/L			06/05/14 21:22	1
4-Chlorotoluene	ND		1.00		ug/L			06/05/14 21:22	1
4-Methyl-2-pentanone (MIBK)	58.9		10.0		ug/L			06/05/14 21:22	1
Acetone	228		25.0		ug/L			06/05/14 21:22	1
Benzene	3540		20.0		ug/L			06/06/14 22:29	20
Bromobenzene	ND		1.00		ug/L			06/05/14 21:22	1
Bromochloromethane	ND		1.00		ug/L			06/05/14 21:22	1
Bromodichloromethane	ND		1.00		ug/L			06/05/14 21:22	1
Bromoform	ND		1.00		ug/L			06/05/14 21:22	1
Bromomethane	ND		1.00		ug/L			06/05/14 21:22	1
Carbon disulfide	ND		1.00		ug/L			06/05/14 21:22	1
Carbon tetrachloride	ND		1.00		ug/L			06/05/14 21:22	1
Chlorobenzene	ND		1.00		ug/L			06/05/14 21:22	1
Chlorodibromomethane	ND		1.00		ug/L			06/05/14 21:22	1
Chloroethane	ND		1.00		ug/L			06/05/14 21:22	1
2-Methylnaphthalene	124		100		ug/L			06/07/14 16:30	10
Chloroform	ND		1.00		ug/L			06/05/14 21:22	1
Chloromethane	ND		1.00		ug/L			06/05/14 21:22	1
cis-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 21:22	1
cis-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 21:22	1
Dibromomethane	ND		1.00		ug/L			06/05/14 21:22	1
Dichlorodifluoromethane	ND		1.00		ug/L			06/05/14 21:22	1
Ethylbenzene	74.1		1.00		ug/L			06/05/14 21:22	1
Hexachlorobutadiene	ND		2.00		ug/L			06/05/14 21:22	1
Isopropylbenzene	11.5		1.00		ug/L			06/05/14 21:22	1
Methyl tert-butyl ether	2340		20.0		ug/L			06/06/14 22:29	20

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-1

Lab Sample ID: 490-54173-3

Date Collected: 05/27/14 13:50

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		5.00		ug/L			06/05/14 21:22	1
Naphthalene	175		100		ug/L			06/06/14 22:29	20
n-Butylbenzene	ND		1.00		ug/L			06/05/14 21:22	1
N-Propylbenzene	25.1		1.00		ug/L			06/05/14 21:22	1
p-Isopropyltoluene	1.75		1.00		ug/L			06/05/14 21:22	1
sec-Butylbenzene	2.10		1.00		ug/L			06/05/14 21:22	1
Styrene	ND		1.00		ug/L			06/05/14 21:22	1
tert-Butylbenzene	ND		1.00		ug/L			06/05/14 21:22	1
Tetrachloroethene	ND		1.00		ug/L			06/05/14 21:22	1
Toluene	276		20.0		ug/L			06/06/14 22:29	20
trans-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 21:22	1
trans-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 21:22	1
Trichloroethene	ND		1.00		ug/L			06/05/14 21:22	1
Trichlorofluoromethane	ND		1.00		ug/L			06/05/14 21:22	1
Vinyl chloride	ND		1.00		ug/L			06/05/14 21:22	1
Xylenes, Total	1740		40.0		ug/L			06/06/14 22:29	20

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	187	T J N	ug/L		11.87	90-12-0		06/05/14 21:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	165	X	70 - 130		06/05/14 21:22	1
1,2-Dichloroethane-d4 (Surr)	103		70 - 130		06/06/14 22:29	20
1,2-Dichloroethane-d4 (Surr)	111		70 - 130		06/07/14 16:30	10
4-Bromofluorobenzene (Surr)	104		70 - 130		06/05/14 21:22	1
4-Bromofluorobenzene (Surr)	97		70 - 130		06/06/14 22:29	20
4-Bromofluorobenzene (Surr)	99		70 - 130		06/07/14 16:30	10
Dibromofluoromethane (Surr)	95		70 - 130		06/05/14 21:22	1
Dibromofluoromethane (Surr)	96		70 - 130		06/06/14 22:29	20
Dibromofluoromethane (Surr)	95		70 - 130		06/07/14 16:30	10
Toluene-d8 (Surr)	92		70 - 130		06/05/14 21:22	1
Toluene-d8 (Surr)	93		70 - 130		06/06/14 22:29	20
Toluene-d8 (Surr)	98		70 - 130		06/07/14 16:30	10

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-2

Lab Sample ID: 490-54173-4

Date Collected: 05/27/14 14:20

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 21:49	1
1,1,1-Trichloroethane	ND		1.00		ug/L			06/05/14 21:49	1
1,1,2,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 21:49	1
1,1,2-Trichloroethane	ND		1.00		ug/L			06/05/14 21:49	1
1,1-Dichloroethane	ND		1.00		ug/L			06/05/14 21:49	1
1,1-Dichloroethene	ND		1.00		ug/L			06/05/14 21:49	1
1,1-Dichloropropene	ND		1.00		ug/L			06/05/14 21:49	1
1,2,3-Trichlorobenzene	ND		1.00		ug/L			06/05/14 21:49	1
1,2,3-Trichloropropane	ND		1.00		ug/L			06/05/14 21:49	1
1,2,4-Trichlorobenzene	ND		1.00		ug/L			06/05/14 21:49	1
1,2,4-Trimethylbenzene	45.5		1.00		ug/L			06/05/14 21:49	1
1,2-Dibromo-3-Chloropropane	ND		10.0		ug/L			06/05/14 21:49	1
1,2-Dibromoethane (EDB)	ND		1.00		ug/L			06/05/14 21:49	1
1,2-Dichlorobenzene	ND		1.00		ug/L			06/05/14 21:49	1
1,2-Dichloroethane	20.7		1.00		ug/L			06/05/14 21:49	1
1,2-Dichloropropane	2.71		1.00		ug/L			06/05/14 21:49	1
1,3,5-Trimethylbenzene	33.4		1.00		ug/L			06/05/14 21:49	1
1,3-Dichlorobenzene	ND		1.00		ug/L			06/05/14 21:49	1
1,3-Dichloropropane	ND		1.00		ug/L			06/05/14 21:49	1
1,4-Dichlorobenzene	ND		1.00		ug/L			06/05/14 21:49	1
2,2-Dichloropropane	ND		1.00		ug/L			06/05/14 21:49	1
2-Butanone (MEK)	ND		50.0		ug/L			06/05/14 21:49	1
2-Chlorotoluene	ND		1.00		ug/L			06/05/14 21:49	1
2-Hexanone	ND		10.0		ug/L			06/05/14 21:49	1
4-Chlorotoluene	ND		1.00		ug/L			06/05/14 21:49	1
4-Methyl-2-pentanone (MIBK)	ND		10.0		ug/L			06/05/14 21:49	1
Acetone	ND		25.0		ug/L			06/05/14 21:49	1
Benzene	1510		20.0		ug/L			06/06/14 18:25	20
Bromobenzene	ND		1.00		ug/L			06/05/14 21:49	1
Bromochloromethane	ND		1.00		ug/L			06/05/14 21:49	1
Bromodichloromethane	ND		1.00		ug/L			06/05/14 21:49	1
Bromoform	ND		1.00		ug/L			06/05/14 21:49	1
Bromomethane	ND		1.00		ug/L			06/05/14 21:49	1
Carbon disulfide	ND		1.00		ug/L			06/05/14 21:49	1
Carbon tetrachloride	ND		1.00		ug/L			06/05/14 21:49	1
Chlorobenzene	ND		1.00		ug/L			06/05/14 21:49	1
Chlorodibromomethane	ND		1.00		ug/L			06/05/14 21:49	1
Chloroethane	ND		1.00		ug/L			06/05/14 21:49	1
2-Methylnaphthalene	ND		50.0		ug/L			06/07/14 15:38	5
Chloroform	ND		1.00		ug/L			06/05/14 21:49	1
Chloromethane	ND		1.00		ug/L			06/05/14 21:49	1
cis-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 21:49	1
cis-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 21:49	1
Dibromomethane	ND		1.00		ug/L			06/05/14 21:49	1
Dichlorodifluoromethane	ND		1.00		ug/L			06/05/14 21:49	1
Ethylbenzene	1.86		1.00		ug/L			06/06/14 19:46	1
Hexachlorobutadiene	ND		2.00		ug/L			06/05/14 21:49	1
Isopropylbenzene	8.39		1.00		ug/L			06/05/14 21:49	1
Methyl tert-butyl ether	392		20.0		ug/L			06/06/14 18:25	20

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-2

Lab Sample ID: 490-54173-4

Date Collected: 05/27/14 14:20

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		5.00		ug/L			06/05/14 21:49	1
Naphthalene	ND		5.00		ug/L			06/06/14 19:46	1
n-Butylbenzene	ND		1.00		ug/L			06/05/14 21:49	1
N-Propylbenzene	7.95		1.00		ug/L			06/05/14 21:49	1
p-Isopropyltoluene	1.61		1.00		ug/L			06/05/14 21:49	1
sec-Butylbenzene	2.07		1.00		ug/L			06/05/14 21:49	1
Styrene	ND		1.00		ug/L			06/05/14 21:49	1
tert-Butylbenzene	ND		1.00		ug/L			06/05/14 21:49	1
Tetrachloroethene	ND		1.00		ug/L			06/05/14 21:49	1
Toluene	30.3		1.00		ug/L			06/05/14 21:49	1
trans-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 21:49	1
trans-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 21:49	1
Trichloroethene	ND		1.00		ug/L			06/05/14 21:49	1
Trichlorofluoromethane	ND		1.00		ug/L			06/05/14 21:49	1
Vinyl chloride	ND		1.00		ug/L			06/05/14 21:49	1
Xylenes, Total	104		2.00		ug/L			06/05/14 21:49	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	4.97	T J N	ug/L		11.87	90-12-0		06/06/14 19:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	129		70 - 130		06/05/14 21:49	1
1,2-Dichloroethane-d4 (Surr)	98		70 - 130		06/06/14 18:25	20
1,2-Dichloroethane-d4 (Surr)	130		70 - 130		06/06/14 19:46	1
1,2-Dichloroethane-d4 (Surr)	102		70 - 130		06/07/14 15:38	5
4-Bromofluorobenzene (Surr)	102		70 - 130		06/05/14 21:49	1
4-Bromofluorobenzene (Surr)	96		70 - 130		06/06/14 18:25	20
4-Bromofluorobenzene (Surr)	98		70 - 130		06/06/14 19:46	1
4-Bromofluorobenzene (Surr)	97		70 - 130		06/07/14 15:38	5
Dibromofluoromethane (Surr)	93		70 - 130		06/05/14 21:49	1
Dibromofluoromethane (Surr)	97		70 - 130		06/06/14 18:25	20
Dibromofluoromethane (Surr)	93		70 - 130		06/06/14 19:46	1
Dibromofluoromethane (Surr)	98		70 - 130		06/07/14 15:38	5
Toluene-d8 (Surr)	93		70 - 130		06/05/14 21:49	1
Toluene-d8 (Surr)	93		70 - 130		06/06/14 18:25	20
Toluene-d8 (Surr)	91		70 - 130		06/06/14 19:46	1
Toluene-d8 (Surr)	98		70 - 130		06/07/14 15:38	5

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.

Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-3

Date Collected: 05/27/14 15:00

Date Received: 05/30/14 08:30

Lab Sample ID: 490-54173-5

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 22:16	1
1,1,1-Trichloroethane	ND		1.00		ug/L			06/05/14 22:16	1
1,1,2,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 22:16	1
1,1,2-Trichloroethane	ND		1.00		ug/L			06/05/14 22:16	1
1,1-Dichloroethane	ND		1.00		ug/L			06/05/14 22:16	1
1,1-Dichloroethene	ND		1.00		ug/L			06/05/14 22:16	1
1,1-Dichloropropene	ND		1.00		ug/L			06/05/14 22:16	1
1,2,3-Trichlorobenzene	ND		1.00		ug/L			06/05/14 22:16	1
1,2,3-Trichloropropane	ND		1.00		ug/L			06/05/14 22:16	1
1,2,4-Trichlorobenzene	ND		1.00		ug/L			06/05/14 22:16	1
1,2,4-Trimethylbenzene	ND		1.00		ug/L			06/06/14 14:58	1
1,2-Dibromo-3-Chloropropane	ND		10.0		ug/L			06/05/14 22:16	1
1,2-Dibromoethane (EDB)	ND		1.00		ug/L			06/05/14 22:16	1
1,2-Dichlorobenzene	ND		1.00		ug/L			06/05/14 22:16	1
1,2-Dichloroethane	4.67		1.00		ug/L			06/06/14 14:58	1
1,2-Dichloropropane	ND		1.00		ug/L			06/05/14 22:16	1
1,3,5-Trimethylbenzene	1.14		1.00		ug/L			06/06/14 14:58	1
1,3-Dichlorobenzene	ND		1.00		ug/L			06/05/14 22:16	1
1,3-Dichloropropane	ND		1.00		ug/L			06/05/14 22:16	1
1,4-Dichlorobenzene	ND		1.00		ug/L			06/05/14 22:16	1
2,2-Dichloropropane	ND		1.00		ug/L			06/05/14 22:16	1
2-Butanone (MEK)	ND		50.0		ug/L			06/05/14 22:16	1
2-Chlorotoluene	ND		1.00		ug/L			06/05/14 22:16	1
2-Hexanone	ND		10.0		ug/L			06/05/14 22:16	1
4-Chlorotoluene	ND		1.00		ug/L			06/05/14 22:16	1
4-Methyl-2-pentanone (MIBK)	ND		10.0		ug/L			06/05/14 22:16	1
Acetone	ND		25.0		ug/L			06/05/14 22:16	1
Benzene	67.1		1.00		ug/L			06/05/14 22:16	1
Bromobenzene	ND		1.00		ug/L			06/05/14 22:16	1
Bromochloromethane	ND		1.00		ug/L			06/05/14 22:16	1
Bromodichloromethane	ND		1.00		ug/L			06/05/14 22:16	1
Bromoform	ND		1.00		ug/L			06/05/14 22:16	1
Bromomethane	ND		1.00		ug/L			06/05/14 22:16	1
Carbon disulfide	ND		1.00		ug/L			06/05/14 22:16	1
Carbon tetrachloride	ND		1.00		ug/L			06/05/14 22:16	1
Chlorobenzene	ND		1.00		ug/L			06/05/14 22:16	1
Chlorodibromomethane	ND		1.00		ug/L			06/05/14 22:16	1
Chloroethane	ND		1.00		ug/L			06/05/14 22:16	1
2-Methylnaphthalene	ND		10.0		ug/L			06/07/14 14:46	1
Chloroform	ND		1.00		ug/L			06/05/14 22:16	1
Chloromethane	ND		1.00		ug/L			06/05/14 22:16	1
cis-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 22:16	1
cis-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 22:16	1
Dibromomethane	ND		1.00		ug/L			06/05/14 22:16	1
Dichlorodifluoromethane	ND		1.00		ug/L			06/05/14 22:16	1
Ethylbenzene	ND		1.00		ug/L			06/05/14 22:16	1
Hexachlorobutadiene	ND		2.00		ug/L			06/05/14 22:16	1
Isopropylbenzene	2.01		1.00		ug/L			06/05/14 22:16	1
Methyl tert-butyl ether	117		1.00		ug/L			06/05/14 22:16	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-3

Lab Sample ID: 490-54173-5

Date Collected: 05/27/14 15:00

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		5.00		ug/L			06/05/14 22:16	1
Naphthalene	ND		5.00		ug/L			06/06/14 14:58	1
n-Butylbenzene	ND		1.00		ug/L			06/05/14 22:16	1
N-Propylbenzene	ND		1.00		ug/L			06/05/14 22:16	1
p-Isopropyltoluene	ND		1.00		ug/L			06/05/14 22:16	1
sec-Butylbenzene	ND		1.00		ug/L			06/05/14 22:16	1
Styrene	ND		1.00		ug/L			06/05/14 22:16	1
tert-Butylbenzene	ND		1.00		ug/L			06/05/14 22:16	1
Tetrachloroethene	ND		1.00		ug/L			06/05/14 22:16	1
Toluene	1.02		1.00		ug/L			06/06/14 14:58	1
trans-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 22:16	1
trans-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 22:16	1
Trichloroethene	ND		1.00		ug/L			06/05/14 22:16	1
Trichlorofluoromethane	ND		1.00		ug/L			06/05/14 22:16	1
Vinyl chloride	ND		1.00		ug/L			06/05/14 22:16	1
Xylenes, Total	7.31		2.00		ug/L			06/06/14 14:58	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	0.000	J N	ug/L		11.89	90-12-0		06/06/14 14:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		70 - 130		06/05/14 22:16	1
1,2-Dichloroethane-d4 (Surr)	105		70 - 130		06/06/14 14:58	1
1,2-Dichloroethane-d4 (Surr)	109		70 - 130		06/07/14 14:46	1
4-Bromofluorobenzene (Surr)	103		70 - 130		06/05/14 22:16	1
4-Bromofluorobenzene (Surr)	97		70 - 130		06/06/14 14:58	1
4-Bromofluorobenzene (Surr)	97		70 - 130		06/07/14 14:46	1
Dibromofluoromethane (Surr)	96		70 - 130		06/05/14 22:16	1
Dibromofluoromethane (Surr)	98		70 - 130		06/06/14 14:58	1
Dibromofluoromethane (Surr)	100		70 - 130		06/07/14 14:46	1
Toluene-d8 (Surr)	93		70 - 130		06/05/14 22:16	1
Toluene-d8 (Surr)	92		70 - 130		06/06/14 14:58	1
Toluene-d8 (Surr)	98		70 - 130		06/07/14 14:46	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-4

Lab Sample ID: 490-54173-6

Date Collected: 05/27/14 15:50

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 22:43	1
1,1,1-Trichloroethane	ND		1.00		ug/L			06/05/14 22:43	1
1,1,2,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 22:43	1
1,1,2-Trichloroethane	ND		1.00		ug/L			06/05/14 22:43	1
1,1-Dichloroethane	ND		1.00		ug/L			06/05/14 22:43	1
1,1-Dichloroethene	ND		1.00		ug/L			06/05/14 22:43	1
1,1-Dichloropropene	ND		1.00		ug/L			06/05/14 22:43	1
1,2,3-Trichlorobenzene	ND		1.00		ug/L			06/05/14 22:43	1
1,2,3-Trichloropropane	ND		1.00		ug/L			06/05/14 22:43	1
1,2,4-Trichlorobenzene	ND		1.00		ug/L			06/05/14 22:43	1
1,2,4-Trimethylbenzene	ND		1.00		ug/L			06/05/14 22:43	1
1,2-Dibromo-3-Chloropropane	ND		10.0		ug/L			06/05/14 22:43	1
1,2-Dibromoethane (EDB)	ND		1.00		ug/L			06/05/14 22:43	1
1,2-Dichlorobenzene	ND		1.00		ug/L			06/05/14 22:43	1
1,2-Dichloroethane	ND		1.00		ug/L			06/06/14 14:31	1
1,2-Dichloropropane	ND		1.00		ug/L			06/05/14 22:43	1
1,3,5-Trimethylbenzene	ND		1.00		ug/L			06/05/14 22:43	1
1,3-Dichlorobenzene	ND		1.00		ug/L			06/05/14 22:43	1
1,3-Dichloropropane	ND		1.00		ug/L			06/05/14 22:43	1
1,4-Dichlorobenzene	ND		1.00		ug/L			06/05/14 22:43	1
2,2-Dichloropropane	ND		1.00		ug/L			06/05/14 22:43	1
2-Butanone (MEK)	ND		50.0		ug/L			06/05/14 22:43	1
2-Chlorotoluene	ND		1.00		ug/L			06/05/14 22:43	1
2-Hexanone	ND		10.0		ug/L			06/05/14 22:43	1
4-Chlorotoluene	ND		1.00		ug/L			06/05/14 22:43	1
4-Methyl-2-pentanone (MIBK)	ND		10.0		ug/L			06/05/14 22:43	1
Acetone	ND		25.0		ug/L			06/05/14 22:43	1
Benzene	ND		1.00		ug/L			06/05/14 22:43	1
Bromobenzene	ND		1.00		ug/L			06/05/14 22:43	1
Bromochloromethane	ND		1.00		ug/L			06/05/14 22:43	1
Bromodichloromethane	ND		1.00		ug/L			06/05/14 22:43	1
Bromoform	ND		1.00		ug/L			06/05/14 22:43	1
Bromomethane	ND		1.00		ug/L			06/05/14 22:43	1
Carbon disulfide	ND		1.00		ug/L			06/05/14 22:43	1
Carbon tetrachloride	ND		1.00		ug/L			06/05/14 22:43	1
Chlorobenzene	ND		1.00		ug/L			06/05/14 22:43	1
Chlorodibromomethane	ND		1.00		ug/L			06/05/14 22:43	1
Chloroethane	ND		1.00		ug/L			06/05/14 22:43	1
2-Methylnaphthalene	ND		10.0		ug/L			06/07/14 14:21	1
Chloroform	ND		1.00		ug/L			06/05/14 22:43	1
Chloromethane	ND		1.00		ug/L			06/05/14 22:43	1
cis-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 22:43	1
cis-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 22:43	1
Dibromomethane	ND		1.00		ug/L			06/05/14 22:43	1
Dichlorodifluoromethane	ND		1.00		ug/L			06/05/14 22:43	1
Ethylbenzene	ND		1.00		ug/L			06/05/14 22:43	1
Hexachlorobutadiene	ND		2.00		ug/L			06/05/14 22:43	1
Isopropylbenzene	ND		1.00		ug/L			06/05/14 22:43	1
Methyl tert-butyl ether	ND		1.00		ug/L			06/05/14 22:43	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-4

Lab Sample ID: 490-54173-6

Date Collected: 05/27/14 15:50

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		5.00		ug/L			06/05/14 22:43	1
Naphthalene	ND		5.00		ug/L			06/05/14 22:43	1
n-Butylbenzene	ND		1.00		ug/L			06/05/14 22:43	1
N-Propylbenzene	ND		1.00		ug/L			06/05/14 22:43	1
p-Isopropyltoluene	ND		1.00		ug/L			06/05/14 22:43	1
sec-Butylbenzene	ND		1.00		ug/L			06/05/14 22:43	1
Styrene	ND		1.00		ug/L			06/05/14 22:43	1
tert-Butylbenzene	ND		1.00		ug/L			06/05/14 22:43	1
Tetrachloroethene	ND		1.00		ug/L			06/05/14 22:43	1
Toluene	ND		1.00		ug/L			06/05/14 22:43	1
trans-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 22:43	1
trans-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 22:43	1
Trichloroethene	ND		1.00		ug/L			06/05/14 22:43	1
Trichlorofluoromethane	ND		1.00		ug/L			06/05/14 22:43	1
Vinyl chloride	ND		1.00		ug/L			06/05/14 22:43	1
Xylenes, Total	ND		2.00		ug/L			06/05/14 22:43	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	0.000	J N	ug/L		11.89	90-12-0		06/06/14 14:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		70 - 130		06/05/14 22:43	1
1,2-Dichloroethane-d4 (Surr)	92		70 - 130		06/06/14 14:31	1
1,2-Dichloroethane-d4 (Surr)	108		70 - 130		06/07/14 14:21	1
4-Bromofluorobenzene (Surr)	101		70 - 130		06/05/14 22:43	1
4-Bromofluorobenzene (Surr)	97		70 - 130		06/06/14 14:31	1
4-Bromofluorobenzene (Surr)	99		70 - 130		06/07/14 14:21	1
Dibromofluoromethane (Surr)	94		70 - 130		06/05/14 22:43	1
Dibromofluoromethane (Surr)	95		70 - 130		06/06/14 14:31	1
Dibromofluoromethane (Surr)	97		70 - 130		06/07/14 14:21	1
Toluene-d8 (Surr)	93		70 - 130		06/05/14 22:43	1
Toluene-d8 (Surr)	94		70 - 130		06/06/14 14:31	1
Toluene-d8 (Surr)	96		70 - 130		06/07/14 14:21	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-8

Lab Sample ID: 490-54173-7

Date Collected: 05/27/14 16:40

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 23:10	1
1,1,1-Trichloroethane	ND		1.00		ug/L			06/05/14 23:10	1
1,1,2,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 23:10	1
1,1,2-Trichloroethane	ND		1.00		ug/L			06/05/14 23:10	1
1,1-Dichloroethane	ND		1.00		ug/L			06/05/14 23:10	1
1,1-Dichloroethene	ND		1.00		ug/L			06/05/14 23:10	1
1,1-Dichloropropene	ND		1.00		ug/L			06/05/14 23:10	1
1,2,3-Trichlorobenzene	ND		1.00		ug/L			06/05/14 23:10	1
1,2,3-Trichloropropane	ND		1.00		ug/L			06/05/14 23:10	1
1,2,4-Trichlorobenzene	ND		1.00		ug/L			06/05/14 23:10	1
1,2,4-Trimethylbenzene	1.45		1.00		ug/L			06/05/14 23:10	1
1,2-Dibromo-3-Chloropropane	ND		10.0		ug/L			06/05/14 23:10	1
1,2-Dibromoethane (EDB)	ND		1.00		ug/L			06/05/14 23:10	1
1,2-Dichlorobenzene	ND		1.00		ug/L			06/05/14 23:10	1
1,2-Dichloroethane	5.45		1.00		ug/L			06/05/14 23:10	1
1,2-Dichloropropane	ND		1.00		ug/L			06/05/14 23:10	1
1,3,5-Trimethylbenzene	ND		1.00		ug/L			06/05/14 23:10	1
1,3-Dichlorobenzene	ND		1.00		ug/L			06/05/14 23:10	1
1,3-Dichloropropane	ND		1.00		ug/L			06/05/14 23:10	1
1,4-Dichlorobenzene	ND		1.00		ug/L			06/05/14 23:10	1
2,2-Dichloropropane	ND		1.00		ug/L			06/05/14 23:10	1
2-Butanone (MEK)	ND		50.0		ug/L			06/05/14 23:10	1
2-Chlorotoluene	ND		1.00		ug/L			06/05/14 23:10	1
2-Hexanone	ND		10.0		ug/L			06/05/14 23:10	1
4-Chlorotoluene	ND		1.00		ug/L			06/05/14 23:10	1
4-Methyl-2-pentanone (MIBK)	ND		10.0		ug/L			06/05/14 23:10	1
Acetone	ND		25.0		ug/L			06/05/14 23:10	1
Benzene	66.0		1.00		ug/L			06/05/14 23:10	1
Bromobenzene	ND		1.00		ug/L			06/05/14 23:10	1
Bromochloromethane	ND		1.00		ug/L			06/05/14 23:10	1
Bromodichloromethane	ND		1.00		ug/L			06/05/14 23:10	1
Bromoform	ND		1.00		ug/L			06/05/14 23:10	1
Bromomethane	ND		1.00		ug/L			06/05/14 23:10	1
Carbon disulfide	ND		1.00		ug/L			06/05/14 23:10	1
Carbon tetrachloride	ND		1.00		ug/L			06/05/14 23:10	1
Chlorobenzene	ND		1.00		ug/L			06/05/14 23:10	1
Chlorodibromomethane	ND		1.00		ug/L			06/05/14 23:10	1
Chloroethane	ND		1.00		ug/L			06/05/14 23:10	1
2-Methylnaphthalene	ND		10.0		ug/L			06/07/14 13:55	1
Chloroform	ND		1.00		ug/L			06/05/14 23:10	1
Chloromethane	ND		1.00		ug/L			06/05/14 23:10	1
cis-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 23:10	1
cis-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 23:10	1
Dibromomethane	ND		1.00		ug/L			06/05/14 23:10	1
Dichlorodifluoromethane	ND		1.00		ug/L			06/05/14 23:10	1
Ethylbenzene	ND		1.00		ug/L			06/05/14 23:10	1
Hexachlorobutadiene	ND		2.00		ug/L			06/05/14 23:10	1
Isopropylbenzene	ND		1.00		ug/L			06/05/14 23:10	1
Methyl tert-butyl ether	10.1		1.00		ug/L			06/05/14 23:10	1

TestAmerica Nashville

Client Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-8

Lab Sample ID: 490-54173-7

Date Collected: 05/27/14 16:40

Matrix: Water

Date Received: 05/30/14 08:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		5.00		ug/L			06/05/14 23:10	1
Naphthalene	ND		5.00		ug/L			06/05/14 23:10	1
n-Butylbenzene	ND		1.00		ug/L			06/05/14 23:10	1
N-Propylbenzene	ND		1.00		ug/L			06/05/14 23:10	1
p-Isopropyltoluene	ND		1.00		ug/L			06/05/14 23:10	1
sec-Butylbenzene	ND		1.00		ug/L			06/05/14 23:10	1
Styrene	ND		1.00		ug/L			06/05/14 23:10	1
tert-Butylbenzene	ND		1.00		ug/L			06/05/14 23:10	1
Tetrachloroethene	ND		1.00		ug/L			06/05/14 23:10	1
Toluene	1.62		1.00		ug/L			06/05/14 23:10	1
trans-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 23:10	1
trans-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 23:10	1
Trichloroethene	ND		1.00		ug/L			06/05/14 23:10	1
Trichlorofluoromethane	ND		1.00		ug/L			06/05/14 23:10	1
Vinyl chloride	ND		1.00		ug/L			06/05/14 23:10	1
Xylenes, Total	10.0		2.00		ug/L			06/05/14 23:10	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	7.20	T J N	ug/L		11.87	90-12-0		06/05/14 23:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		70 - 130		06/05/14 23:10	1
1,2-Dichloroethane-d4 (Surr)	108		70 - 130		06/07/14 13:55	1
4-Bromofluorobenzene (Surr)	101		70 - 130		06/05/14 23:10	1
4-Bromofluorobenzene (Surr)	98		70 - 130		06/07/14 13:55	1
Dibromofluoromethane (Surr)	95		70 - 130		06/05/14 23:10	1
Dibromofluoromethane (Surr)	98		70 - 130		06/07/14 13:55	1
Toluene-d8 (Surr)	92		70 - 130		06/05/14 23:10	1
Toluene-d8 (Surr)	98		70 - 130		06/07/14 13:55	1

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: MB 490-167010/6

Matrix: Water

Analysis Batch: 167010

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 14:09	1
1,1,1-Trichloroethane	ND		1.00		ug/L			06/05/14 14:09	1
1,1,2,2-Tetrachloroethane	ND		1.00		ug/L			06/05/14 14:09	1
1,1,2-Trichloroethane	ND		1.00		ug/L			06/05/14 14:09	1
1,1-Dichloroethane	ND		1.00		ug/L			06/05/14 14:09	1
1,1-Dichloroethene	ND		1.00		ug/L			06/05/14 14:09	1
1,1-Dichloropropene	ND		1.00		ug/L			06/05/14 14:09	1
1,2,3-Trichlorobenzene	1.040		1.00		ug/L			06/05/14 14:09	1
1,2,3-Trichloropropane	ND		1.00		ug/L			06/05/14 14:09	1
1,2,4-Trichlorobenzene	ND		1.00		ug/L			06/05/14 14:09	1
1,2,4-Trimethylbenzene	ND		1.00		ug/L			06/05/14 14:09	1
1,2-Dibromo-3-Chloropropane	ND		10.0		ug/L			06/05/14 14:09	1
1,2-Dibromoethane (EDB)	ND		1.00		ug/L			06/05/14 14:09	1
1,2-Dichlorobenzene	ND		1.00		ug/L			06/05/14 14:09	1
1,2-Dichloroethane	ND		1.00		ug/L			06/05/14 14:09	1
1,2-Dichloropropane	ND		1.00		ug/L			06/05/14 14:09	1
1,3,5-Trimethylbenzene	ND		1.00		ug/L			06/05/14 14:09	1
1,3-Dichlorobenzene	ND		1.00		ug/L			06/05/14 14:09	1
1,3-Dichloropropane	ND		1.00		ug/L			06/05/14 14:09	1
1,4-Dichlorobenzene	ND		1.00		ug/L			06/05/14 14:09	1
2,2-Dichloropropane	ND		1.00		ug/L			06/05/14 14:09	1
2-Butanone (MEK)	ND		50.0		ug/L			06/05/14 14:09	1
2-Chlorotoluene	ND		1.00		ug/L			06/05/14 14:09	1
2-Hexanone	ND		10.0		ug/L			06/05/14 14:09	1
4-Chlorotoluene	ND		1.00		ug/L			06/05/14 14:09	1
4-Methyl-2-pentanone (MIBK)	ND		10.0		ug/L			06/05/14 14:09	1
Acetone	ND		25.0		ug/L			06/05/14 14:09	1
Benzene	ND		1.00		ug/L			06/05/14 14:09	1
Bromobenzene	ND		1.00		ug/L			06/05/14 14:09	1
Bromochloromethane	ND		1.00		ug/L			06/05/14 14:09	1
Bromodichloromethane	ND		1.00		ug/L			06/05/14 14:09	1
Bromoform	ND		1.00		ug/L			06/05/14 14:09	1
Bromomethane	ND		1.00		ug/L			06/05/14 14:09	1
Carbon disulfide	ND		1.00		ug/L			06/05/14 14:09	1
Carbon tetrachloride	ND		1.00		ug/L			06/05/14 14:09	1
Chlorobenzene	ND		1.00		ug/L			06/05/14 14:09	1
Chlorodibromomethane	ND		1.00		ug/L			06/05/14 14:09	1
Chloroethane	ND		1.00		ug/L			06/05/14 14:09	1
Chloroform	ND		1.00		ug/L			06/05/14 14:09	1
Chloromethane	ND		1.00		ug/L			06/05/14 14:09	1
cis-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 14:09	1
cis-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 14:09	1
Dibromomethane	ND		1.00		ug/L			06/05/14 14:09	1
Dichlorodifluoromethane	ND		1.00		ug/L			06/05/14 14:09	1
Ethylbenzene	ND		1.00		ug/L			06/05/14 14:09	1
Hexachlorobutadiene	ND		2.00		ug/L			06/05/14 14:09	1
Isopropylbenzene	ND		1.00		ug/L			06/05/14 14:09	1
Methyl tert-butyl ether	ND		1.00		ug/L			06/05/14 14:09	1

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: MB 490-167010/6

Matrix: Water

Analysis Batch: 167010

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		5.00		ug/L			06/05/14 14:09	1
Naphthalene	ND		5.00		ug/L			06/05/14 14:09	1
n-Butylbenzene	ND		1.00		ug/L			06/05/14 14:09	1
N-Propylbenzene	ND		1.00		ug/L			06/05/14 14:09	1
p-Isopropyltoluene	ND		1.00		ug/L			06/05/14 14:09	1
sec-Butylbenzene	ND		1.00		ug/L			06/05/14 14:09	1
Styrene	ND		1.00		ug/L			06/05/14 14:09	1
tert-Butylbenzene	ND		1.00		ug/L			06/05/14 14:09	1
Tetrachloroethene	ND		1.00		ug/L			06/05/14 14:09	1
Toluene	ND		1.00		ug/L			06/05/14 14:09	1
trans-1,2-Dichloroethene	ND		1.00		ug/L			06/05/14 14:09	1
trans-1,3-Dichloropropene	ND		1.00		ug/L			06/05/14 14:09	1
Trichloroethene	ND		1.00		ug/L			06/05/14 14:09	1
Trichlorofluoromethane	ND		1.00		ug/L			06/05/14 14:09	1
Vinyl chloride	ND		1.00		ug/L			06/05/14 14:09	1
Xylenes, Total	ND		2.00		ug/L			06/05/14 14:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		70 - 130		06/05/14 14:09	1
4-Bromofluorobenzene (Surr)	96		70 - 130		06/05/14 14:09	1
Dibromofluoromethane (Surr)	95		70 - 130		06/05/14 14:09	1
Toluene-d8 (Surr)	94		70 - 130		06/05/14 14:09	1

Lab Sample ID: LCS 490-167010/3

Matrix: Water

Analysis Batch: 167010

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	20.0	20.28		ug/L		101	74 - 135
1,1,1-Trichloroethane	20.0	18.54		ug/L		93	78 - 135
1,1,2,2-Tetrachloroethane	20.0	20.73		ug/L		104	69 - 131
1,1,2-Trichloroethane	20.0	20.85		ug/L		104	80 - 124
1,1-Dichloroethane	20.0	18.27		ug/L		91	78 - 125
1,1-Dichloroethene	20.0	18.86		ug/L		94	79 - 124
1,1-Dichloropropene	20.0	20.05		ug/L		100	80 - 122
1,2,3-Trichlorobenzene	20.0	20.07		ug/L		100	62 - 133
1,2,3-Trichloropropane	20.0	21.86		ug/L		109	70 - 131
1,2,4-Trichlorobenzene	20.0	18.50		ug/L		93	63 - 133
1,2,4-Trimethylbenzene	20.0	20.66		ug/L		103	77 - 126
1,2-Dibromo-3-Chloropropane	20.0	17.85		ug/L		89	54 - 125
1,2-Dibromoethane (EDB)	20.0	21.08		ug/L		105	80 - 129
1,2-Dichlorobenzene	20.0	21.50		ug/L		107	80 - 121
1,2-Dichloroethane	20.0	19.31		ug/L		97	77 - 121
1,2-Dichloropropane	20.0	19.22		ug/L		96	75 - 120
1,3,5-Trimethylbenzene	20.0	20.87		ug/L		104	77 - 127
1,3-Dichlorobenzene	20.0	21.46		ug/L		107	80 - 122
1,3-Dichloropropane	20.0	20.04		ug/L		100	80 - 125
1,4-Dichlorobenzene	20.0	20.96		ug/L		105	80 - 120

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: LCS 490-167010/3

Matrix: Water

Analysis Batch: 167010

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,2-Dichloropropane	20.0	14.26		ug/L		71	43 - 161
2-Butanone (MEK)	100	104.2		ug/L		104	62 - 133
2-Chlorotoluene	20.0	20.64		ug/L		103	75 - 126
2-Hexanone	100	96.55		ug/L		97	60 - 142
4-Chlorotoluene	20.0	21.50		ug/L		107	75 - 130
4-Methyl-2-pentanone (MIBK)	100	86.69		ug/L		87	60 - 137
Acetone	100	95.72		ug/L		96	54 - 145
Benzene	20.0	19.92		ug/L		100	80 - 121
Bromobenzene	20.0	20.59		ug/L		103	68 - 130
Bromochloromethane	20.0	19.17		ug/L		96	78 - 129
Bromodichloromethane	20.0	18.67		ug/L		93	75 - 129
Bromoform	20.0	16.16		ug/L		81	46 - 145
Bromomethane	20.0	21.24		ug/L		106	41 - 150
Carbon disulfide	20.0	17.45		ug/L		87	77 - 126
Carbon tetrachloride	20.0	18.47		ug/L		92	64 - 147
Chlorobenzene	20.0	20.67		ug/L		103	80 - 120
Chlorodibromomethane	20.0	17.30		ug/L		86	69 - 133
Chloroethane	20.0	17.03		ug/L		85	72 - 120
Chloroform	20.0	18.98		ug/L		95	73 - 129
Chloromethane	20.0	12.21		ug/L		61	12 - 150
cis-1,2-Dichloroethene	20.0	18.21		ug/L		91	76 - 125
cis-1,3-Dichloropropene	20.0	16.32		ug/L		82	74 - 140
Dibromomethane	20.0	16.84		ug/L		84	71 - 125
Dichlorodifluoromethane	20.0	18.81		ug/L		94	37 - 127
Ethylbenzene	20.0	20.34		ug/L		102	80 - 130
Hexachlorobutadiene	20.0	18.98		ug/L		95	49 - 146
Isopropylbenzene	20.0	20.43		ug/L		102	80 - 141
Methyl tert-butyl ether	20.0	18.54		ug/L		93	72 - 133
Methylene Chloride	20.0	17.93		ug/L		90	79 - 123
Naphthalene	20.0	20.98		ug/L		105	62 - 138
n-Butylbenzene	20.0	20.65		ug/L		103	68 - 132
N-Propylbenzene	20.0	20.44		ug/L		102	75 - 129
p-Isopropyltoluene	20.0	20.73		ug/L		104	75 - 128
sec-Butylbenzene	20.0	20.89		ug/L		104	76 - 128
Styrene	20.0	21.09		ug/L		105	80 - 127
tert-Butylbenzene	20.0	20.39		ug/L		102	76 - 126
Tetrachloroethene	20.0	20.21		ug/L		101	80 - 126
Toluene	20.0	18.65		ug/L		93	80 - 126
trans-1,2-Dichloroethene	20.0	18.56		ug/L		93	79 - 126
trans-1,3-Dichloropropene	20.0	17.03		ug/L		85	63 - 134
Trichloroethene	20.0	19.49		ug/L		97	80 - 123
Trichlorofluoromethane	20.0	18.67		ug/L		93	65 - 124
Vinyl chloride	20.0	18.04		ug/L		90	68 - 120
Xylenes, Total	40.0	40.40		ug/L		101	80 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		70 - 130
4-Bromofluorobenzene (Surr)	99		70 - 130

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: LCS 490-167010/3

Matrix: Water

Analysis Batch: 167010

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	96		70 - 130
Toluene-d8 (Surr)	93		70 - 130

Lab Sample ID: LCSD 490-167010/4

Matrix: Water

Analysis Batch: 167010

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	20.0	20.83		ug/L		104	74 - 135	3	16
1,1,1-Trichloroethane	20.0	18.18		ug/L		91	78 - 135	2	17
1,1,2,2-Tetrachloroethane	20.0	20.82		ug/L		104	69 - 131	0	20
1,1,2-Trichloroethane	20.0	21.02		ug/L		105	80 - 124	1	15
1,1-Dichloroethane	20.0	17.50		ug/L		87	78 - 125	4	17
1,1-Dichloroethene	20.0	17.36		ug/L		87	79 - 124	8	17
1,1-Dichloropropene	20.0	19.19		ug/L		96	80 - 122	4	17
1,2,3-Trichlorobenzene	20.0	19.96		ug/L		100	62 - 133	1	25
1,2,3-Trichloropropane	20.0	21.67		ug/L		108	70 - 131	1	19
1,2,4-Trichlorobenzene	20.0	17.80		ug/L		89	63 - 133	4	19
1,2,4-Trimethylbenzene	20.0	20.07		ug/L		100	77 - 126	3	16
1,2-Dibromo-3-Chloropropane	20.0	17.12		ug/L		86	54 - 125	4	24
1,2-Dibromoethane (EDB)	20.0	21.34		ug/L		107	80 - 129	1	15
1,2-Dichlorobenzene	20.0	20.69		ug/L		103	80 - 121	4	15
1,2-Dichloroethane	20.0	19.03		ug/L		95	77 - 121	1	17
1,2-Dichloropropane	20.0	19.38		ug/L		97	75 - 120	1	17
1,3,5-Trimethylbenzene	20.0	19.94		ug/L		100	77 - 127	5	17
1,3-Dichlorobenzene	20.0	20.85		ug/L		104	80 - 122	3	15
1,3-Dichloropropane	20.0	20.31		ug/L		102	80 - 125	1	14
1,4-Dichlorobenzene	20.0	20.73		ug/L		104	80 - 120	1	15
2,2-Dichloropropane	20.0	12.98		ug/L		65	43 - 161	9	18
2-Butanone (MEK)	100	103.8		ug/L		104	62 - 133	0	19
2-Chlorotoluene	20.0	19.32		ug/L		97	75 - 126	7	17
2-Hexanone	100	95.92		ug/L		96	60 - 142	1	15
4-Chlorotoluene	20.0	20.78		ug/L		104	75 - 130	3	18
4-Methyl-2-pentanone (MIBK)	100	92.07		ug/L		92	60 - 137	6	17
Acetone	100	93.30		ug/L		93	54 - 145	3	21
Benzene	20.0	19.27		ug/L		96	80 - 121	3	17
Bromobenzene	20.0	20.10		ug/L		100	68 - 130	2	20
Bromochloromethane	20.0	18.73		ug/L		94	78 - 129	2	17
Bromodichloromethane	20.0	18.54		ug/L		93	75 - 129	1	18
Bromoform	20.0	16.59		ug/L		83	46 - 145	3	16
Bromomethane	20.0	20.22		ug/L		101	41 - 150	5	50
Carbon disulfide	20.0	16.13		ug/L		81	77 - 126	8	21
Carbon tetrachloride	20.0	17.98		ug/L		90	64 - 147	3	19
Chlorobenzene	20.0	20.21		ug/L		101	80 - 120	2	14
Chlorodibromomethane	20.0	17.46		ug/L		87	69 - 133	1	15
Chloroethane	20.0	16.79		ug/L		84	72 - 120	1	20
Chloroform	20.0	18.54		ug/L		93	73 - 129	2	18
Chloromethane	20.0	11.88		ug/L		59	12 - 150	3	31

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: LCSD 490-167010/4

Matrix: Water

Analysis Batch: 167010

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	20.0	17.91		ug/L		90	76 - 125	2	17
cis-1,3-Dichloropropene	20.0	16.00		ug/L		80	74 - 140	2	15
Dibromomethane	20.0	16.41		ug/L		82	71 - 125	3	16
Dichlorodifluoromethane	20.0	18.52		ug/L		93	37 - 127	2	18
Ethylbenzene	20.0	19.90		ug/L		99	80 - 130	2	15
Hexachlorobutadiene	20.0	18.75		ug/L		94	49 - 146	1	23
Isopropylbenzene	20.0	20.14		ug/L		101	80 - 141	1	16
Methyl tert-butyl ether	20.0	18.05		ug/L		90	72 - 133	3	16
Methylene Chloride	20.0	17.49		ug/L		87	79 - 123	2	17
Naphthalene	20.0	20.75		ug/L		104	62 - 138	1	26
n-Butylbenzene	20.0	19.90		ug/L		100	68 - 132	4	18
N-Propylbenzene	20.0	19.48		ug/L		97	75 - 129	5	17
p-Isopropyltoluene	20.0	19.81		ug/L		99	75 - 128	5	16
sec-Butylbenzene	20.0	19.57		ug/L		98	76 - 128	7	16
Styrene	20.0	21.02		ug/L		105	80 - 127	0	24
tert-Butylbenzene	20.0	19.73		ug/L		99	76 - 126	3	16
Tetrachloroethene	20.0	19.47		ug/L		97	80 - 126	4	16
Toluene	20.0	18.66		ug/L		93	80 - 126	0	15
trans-1,2-Dichloroethene	20.0	17.73		ug/L		89	79 - 126	5	16
trans-1,3-Dichloropropene	20.0	17.03		ug/L		85	63 - 134	0	14
Trichloroethene	20.0	19.00		ug/L		95	80 - 123	3	17
Trichlorofluoromethane	20.0	18.21		ug/L		91	65 - 124	2	18
Vinyl chloride	20.0	17.66		ug/L		88	68 - 120	2	17
Xylenes, Total	40.0	39.30		ug/L		98	80 - 132	3	15

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		70 - 130
4-Bromofluorobenzene (Surr)	98		70 - 130
Dibromofluoromethane (Surr)	94		70 - 130
Toluene-d8 (Surr)	93		70 - 130

Lab Sample ID: 490-53953-C-23 MS

Matrix: Water

Analysis Batch: 167010

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	ND		50.0	48.01		ug/L		96	73 - 141
1,1,1-Trichloroethane	ND		50.0	45.85		ug/L		92	76 - 149
1,1,2,2-Tetrachloroethane	ND		50.0	47.23		ug/L		94	56 - 143
1,1,2-Trichloroethane	ND		50.0	47.49		ug/L		95	74 - 134
1,1-Dichloroethane	ND		50.0	43.94		ug/L		88	71 - 139
1,1-Dichloroethene	ND		50.0	43.06		ug/L		86	70 - 142
1,1-Dichloropropene	ND		50.0	46.56		ug/L		93	76 - 139
1,2,3-Trichlorobenzene	ND		50.0	40.80		ug/L		82	55 - 138
1,2,3-Trichloropropane	ND		50.0	49.10		ug/L		98	53 - 144
1,2,4-Trichlorobenzene	ND		50.0	40.01		ug/L		80	60 - 136
1,2,4-Trimethylbenzene	ND		50.0	47.92		ug/L		96	69 - 136
1,2-Dibromo-3-Chloropropane	ND		50.0	40.60		ug/L		81	52 - 126

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: 490-53953-C-23 MS

Matrix: Water

Analysis Batch: 167010

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	
	Result	Qualifier	Added	Result	Qualifier				Limits	
1,2-Dibromoethane (EDB)	ND		50.0	46.84		ug/L		94	75 - 137	
1,2-Dichlorobenzene	ND		50.0	48.77		ug/L		98	79 - 128	
1,2-Dichloroethane	ND		50.0	43.29		ug/L		87	64 - 136	
1,2-Dichloropropane	ND		50.0	43.70		ug/L		87	67 - 131	
1,3,5-Trimethylbenzene	ND		50.0	48.02		ug/L		96	69 - 139	
1,3-Dichlorobenzene	ND		50.0	47.97		ug/L		96	77 - 131	
1,3-Dichloropropane	ND		50.0	44.69		ug/L		89	72 - 134	
1,4-Dichlorobenzene	ND		50.0	46.17		ug/L		92	78 - 126	
2,2-Dichloropropane	ND		50.0	32.83		ug/L		66	37 - 175	
2-Butanone (MEK)	ND		250	246.3		ug/L		99	50 - 138	
2-Chlorotoluene	ND		50.0	46.56		ug/L		93	67 - 138	
2-Hexanone	ND		250	228.6		ug/L		91	50 - 150	
4-Chlorotoluene	ND		50.0	47.84		ug/L		96	69 - 138	
4-Methyl-2-pentanone (MIBK)	ND		250	211.5		ug/L		85	50 - 147	
Acetone	ND		250	214.2		ug/L		86	45 - 141	
Benzene	2.69		50.0	48.30		ug/L		91	75 - 133	
Bromobenzene	ND		50.0	45.81		ug/L		92	60 - 138	
Bromochloromethane	ND		50.0	44.22		ug/L		88	67 - 139	
Bromodichloromethane	ND		50.0	44.19		ug/L		88	70 - 140	
Bromoform	ND		50.0	39.41		ug/L		79	42 - 147	
Bromomethane	ND		50.0	40.98		ug/L		82	16 - 163	
Carbon disulfide	ND		50.0	34.09		ug/L		68	48 - 152	
Carbon tetrachloride	ND		50.0	47.01		ug/L		94	62 - 164	
Chlorobenzene	ND		50.0	46.38		ug/L		93	80 - 129	
Chlorodibromomethane	ND		50.0	40.90		ug/L		82	66 - 140	
Chloroethane	ND		50.0	43.67		ug/L		87	58 - 137	
Chloroform	ND		50.0	44.45		ug/L		89	66 - 138	
Chloromethane	ND		50.0	27.80		ug/L		56	10 - 169	
cis-1,2-Dichloroethene	ND		50.0	42.21		ug/L		84	68 - 138	
cis-1,3-Dichloropropene	ND		50.0	37.33		ug/L		75	71 - 141	
Dibromomethane	ND		50.0	39.14		ug/L		78	58 - 140	
Dichlorodifluoromethane	ND		50.0	46.95		ug/L		94	40 - 127	
Ethylbenzene	ND		50.0	47.08		ug/L		93	79 - 139	
Hexachlorobutadiene	ND		50.0	41.19		ug/L		82	45 - 155	
Isopropylbenzene	6.52		50.0	55.51		ug/L		98	80 - 153	
Methyl tert-butyl ether	ND		50.0	43.24		ug/L		86	66 - 141	
Methylene Chloride	ND		50.0	40.14		ug/L		80	64 - 139	
Naphthalene	8.20		50.0	50.49		ug/L		85	55 - 140	
n-Butylbenzene	1.85		50.0	52.34		ug/L		101	66 - 141	
N-Propylbenzene	14.5		50.0	60.87		ug/L		93	69 - 142	
p-Isopropyltoluene	ND		50.0	49.36		ug/L		99	71 - 137	
sec-Butylbenzene	2.66		50.0	51.65		ug/L		98	73 - 138	
Styrene	ND		50.0	48.22		ug/L		96	61 - 148	
tert-Butylbenzene	ND		50.0	48.35		ug/L		96	70 - 138	
Tetrachloroethene	ND		50.0	44.63		ug/L		89	72 - 145	
Toluene	ND		50.0	42.19		ug/L		84	75 - 136	
trans-1,2-Dichloroethene	ND		50.0	42.25		ug/L		84	66 - 143	
trans-1,3-Dichloropropene	ND		50.0	40.34		ug/L		81	59 - 135	

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: 490-53953-C-23 MS

Matrix: Water

Analysis Batch: 167010

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Trichloroethene	ND		50.0	45.85		ug/L		92	73 - 144
Trichlorofluoromethane	ND		50.0	48.61		ug/L		97	58 - 139
Vinyl chloride	ND		50.0	45.62		ug/L		91	56 - 129
Xylenes, Total	ND		100	91.88		ug/L		92	74 - 141

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	109		70 - 130
4-Bromofluorobenzene (Surr)	98		70 - 130
Dibromofluoromethane (Surr)	96		70 - 130
Toluene-d8 (Surr)	91		70 - 130

Lab Sample ID: 490-53953-D-23 MSD

Matrix: Water

Analysis Batch: 167010

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	ND		50.0	51.02		ug/L		102	73 - 141	6	16
1,1,1-Trichloroethane	ND		50.0	47.01		ug/L		94	76 - 149	3	17
1,1,2,2-Tetrachloroethane	ND		50.0	49.62		ug/L		99	56 - 143	5	20
1,1,2-Trichloroethane	ND		50.0	49.71		ug/L		99	74 - 134	5	15
1,1-Dichloroethane	ND		50.0	45.30		ug/L		91	71 - 139	3	17
1,1-Dichloroethene	ND		50.0	43.82		ug/L		88	70 - 142	2	17
1,1-Dichloropropene	ND		50.0	48.32		ug/L		97	76 - 139	4	17
1,2,3-Trichlorobenzene	ND		50.0	47.59		ug/L		95	55 - 138	15	25
1,2,3-Trichloropropane	ND		50.0	51.04		ug/L		102	53 - 144	4	19
1,2,4-Trichlorobenzene	ND		50.0	44.14		ug/L		88	60 - 136	10	19
1,2,4-Trimethylbenzene	ND		50.0	49.30		ug/L		99	69 - 136	3	16
1,2-Dibromo-3-Chloropropane	ND		50.0	44.65		ug/L		89	52 - 126	9	24
1,2-Dibromoethane (EDB)	ND		50.0	50.17		ug/L		100	75 - 137	7	15
1,2-Dichlorobenzene	ND		50.0	50.53		ug/L		101	79 - 128	4	15
1,2-Dichloroethane	ND		50.0	44.89		ug/L		90	64 - 136	4	17
1,2-Dichloropropane	ND		50.0	45.46		ug/L		91	67 - 131	4	17
1,3,5-Trimethylbenzene	ND		50.0	49.41		ug/L		99	69 - 139	3	17
1,3-Dichlorobenzene	ND		50.0	49.67		ug/L		99	77 - 131	3	15
1,3-Dichloropropane	ND		50.0	47.48		ug/L		95	72 - 134	6	14
1,4-Dichlorobenzene	ND		50.0	47.79		ug/L		96	78 - 126	3	15
2,2-Dichloropropane	ND		50.0	34.53		ug/L		69	37 - 175	5	18
2-Butanone (MEK)	ND		250	254.9		ug/L		102	50 - 138	3	19
2-Chlorotoluene	ND		50.0	47.98		ug/L		96	67 - 138	3	17
2-Hexanone	ND		250	245.4		ug/L		98	50 - 150	7	15
4-Chlorotoluene	ND		50.0	50.40		ug/L		101	69 - 138	5	18
4-Methyl-2-pentanone (MIBK)	ND		250	226.6		ug/L		91	50 - 147	7	17
Acetone	ND		250	220.5		ug/L		88	45 - 141	3	21
Benzene	2.69		50.0	49.57		ug/L		94	75 - 133	3	17
Bromobenzene	ND		50.0	47.42		ug/L		95	60 - 138	3	20
Bromochloromethane	ND		50.0	46.17		ug/L		92	67 - 139	4	17
Bromodichloromethane	ND		50.0	46.28		ug/L		93	70 - 140	5	18
Bromoform	ND		50.0	41.95		ug/L		84	42 - 147	6	16

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: 490-53953-D-23 MSD

Matrix: Water

Analysis Batch: 167010

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromomethane	ND		50.0	53.58	E	ug/L		107	16 - 163	27	50
Carbon disulfide	ND		50.0	35.84		ug/L		72	48 - 152	5	21
Carbon tetrachloride	ND		50.0	48.28		ug/L		97	62 - 164	3	19
Chlorobenzene	ND		50.0	48.92		ug/L		98	80 - 129	5	14
Chlorodibromomethane	ND		50.0	42.50		ug/L		85	66 - 140	4	15
Chloroethane	ND		50.0	45.89		ug/L		92	58 - 137	5	20
Chloroform	ND		50.0	46.79		ug/L		94	66 - 138	5	18
Chloromethane	ND		50.0	29.80		ug/L		60	10 - 169	7	31
cis-1,2-Dichloroethene	ND		50.0	44.32		ug/L		89	68 - 138	5	17
cis-1,3-Dichloropropene	ND		50.0	38.72		ug/L		77	71 - 141	4	15
Dibromomethane	ND		50.0	39.28		ug/L		79	58 - 140	0	16
Dichlorodifluoromethane	ND		50.0	49.11		ug/L		98	40 - 127	5	18
Ethylbenzene	ND		50.0	49.42		ug/L		98	79 - 139	5	15
Hexachlorobutadiene	ND		50.0	45.74		ug/L		91	45 - 155	10	23
Isopropylbenzene	6.52		50.0	58.65		ug/L		104	80 - 153	5	16
Methyl tert-butyl ether	ND		50.0	44.91		ug/L		90	66 - 141	4	16
Methylene Chloride	ND		50.0	41.88		ug/L		84	64 - 139	4	17
Naphthalene	8.20		50.0	60.57		ug/L		105	55 - 140	18	26
n-Butylbenzene	1.85		50.0	54.79		ug/L		106	66 - 141	5	18
N-Propylbenzene	14.5		50.0	62.92		ug/L		97	69 - 142	3	17
p-Isopropyltoluene	ND		50.0	51.07		ug/L		102	71 - 137	3	16
sec-Butylbenzene	2.66		50.0	53.39		ug/L		101	73 - 138	3	16
Styrene	ND		50.0	51.27		ug/L		103	61 - 148	6	24
tert-Butylbenzene	ND		50.0	49.71		ug/L		99	70 - 138	3	16
Tetrachloroethene	ND		50.0	46.68		ug/L		93	72 - 145	5	16
Toluene	ND		50.0	44.35		ug/L		89	75 - 136	5	15
trans-1,2-Dichloroethene	ND		50.0	44.30		ug/L		89	66 - 143	5	16
trans-1,3-Dichloropropene	ND		50.0	42.61		ug/L		85	59 - 135	5	14
Trichloroethene	ND		50.0	46.97		ug/L		94	73 - 144	2	17
Trichlorofluoromethane	ND		50.0	51.14		ug/L		102	58 - 139	5	18
Vinyl chloride	ND		50.0	47.17		ug/L		94	56 - 129	3	17
Xylenes, Total	ND		100	97.23		ug/L		97	74 - 141	6	15

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	109		70 - 130
4-Bromofluorobenzene (Surr)	99		70 - 130
Dibromofluoromethane (Surr)	95		70 - 130
Toluene-d8 (Surr)	92		70 - 130

Lab Sample ID: MB 490-167327/6

Matrix: Water

Analysis Batch: 167327

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.00		ug/L			06/06/14 14:04	1
1,1,1-Trichloroethane	ND		1.00		ug/L			06/06/14 14:04	1
1,1,2,2-Tetrachloroethane	ND		1.00		ug/L			06/06/14 14:04	1
1,1,2-Trichloroethane	ND		1.00		ug/L			06/06/14 14:04	1

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: MB 490-167327/6

Matrix: Water

Analysis Batch: 167327

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1-Dichloroethane	ND		1.00		ug/L			06/06/14 14:04	1
1,1-Dichloroethene	ND		1.00		ug/L			06/06/14 14:04	1
1,1-Dichloropropene	ND		1.00		ug/L			06/06/14 14:04	1
1,2,3-Trichlorobenzene	ND		1.00		ug/L			06/06/14 14:04	1
1,2,3-Trichloropropane	ND		1.00		ug/L			06/06/14 14:04	1
1,2,4-Trichlorobenzene	ND		1.00		ug/L			06/06/14 14:04	1
1,2,4-Trimethylbenzene	ND		1.00		ug/L			06/06/14 14:04	1
1,2-Dibromo-3-Chloropropane	ND		10.0		ug/L			06/06/14 14:04	1
1,2-Dibromoethane (EDB)	ND		1.00		ug/L			06/06/14 14:04	1
1,2-Dichlorobenzene	ND		1.00		ug/L			06/06/14 14:04	1
1,2-Dichloroethane	ND		1.00		ug/L			06/06/14 14:04	1
1,2-Dichloropropane	ND		1.00		ug/L			06/06/14 14:04	1
1,3,5-Trimethylbenzene	ND		1.00		ug/L			06/06/14 14:04	1
1,3-Dichlorobenzene	ND		1.00		ug/L			06/06/14 14:04	1
1,3-Dichloropropane	ND		1.00		ug/L			06/06/14 14:04	1
1,4-Dichlorobenzene	ND		1.00		ug/L			06/06/14 14:04	1
2,2-Dichloropropane	ND		1.00		ug/L			06/06/14 14:04	1
2-Butanone (MEK)	ND		50.0		ug/L			06/06/14 14:04	1
2-Chlorotoluene	ND		1.00		ug/L			06/06/14 14:04	1
2-Hexanone	ND		10.0		ug/L			06/06/14 14:04	1
4-Chlorotoluene	ND		1.00		ug/L			06/06/14 14:04	1
4-Methyl-2-pentanone (MIBK)	ND		10.0		ug/L			06/06/14 14:04	1
Acetone	ND		25.0		ug/L			06/06/14 14:04	1
Benzene	ND		1.00		ug/L			06/06/14 14:04	1
Bromobenzene	ND		1.00		ug/L			06/06/14 14:04	1
Bromochloromethane	ND		1.00		ug/L			06/06/14 14:04	1
Bromodichloromethane	ND		1.00		ug/L			06/06/14 14:04	1
Bromoform	ND		1.00		ug/L			06/06/14 14:04	1
Bromomethane	ND		1.00		ug/L			06/06/14 14:04	1
Carbon disulfide	ND		1.00		ug/L			06/06/14 14:04	1
Carbon tetrachloride	ND		1.00		ug/L			06/06/14 14:04	1
Chlorobenzene	ND		1.00		ug/L			06/06/14 14:04	1
Chlorodibromomethane	ND		1.00		ug/L			06/06/14 14:04	1
Chloroethane	ND		1.00		ug/L			06/06/14 14:04	1
2-Methylnaphthalene	ND		10.0		ug/L			06/06/14 14:04	1
Chloroform	ND		1.00		ug/L			06/06/14 14:04	1
Chloromethane	ND		1.00		ug/L			06/06/14 14:04	1
cis-1,2-Dichloroethene	ND		1.00		ug/L			06/06/14 14:04	1
cis-1,3-Dichloropropene	ND		1.00		ug/L			06/06/14 14:04	1
Dibromomethane	ND		1.00		ug/L			06/06/14 14:04	1
Dichlorodifluoromethane	ND		1.00		ug/L			06/06/14 14:04	1
Ethylbenzene	ND		1.00		ug/L			06/06/14 14:04	1
Hexachlorobutadiene	ND		2.00		ug/L			06/06/14 14:04	1
Isopropylbenzene	ND		1.00		ug/L			06/06/14 14:04	1
Methyl tert-butyl ether	ND		1.00		ug/L			06/06/14 14:04	1
Methylene Chloride	ND		5.00		ug/L			06/06/14 14:04	1
Naphthalene	ND		5.00		ug/L			06/06/14 14:04	1
n-Butylbenzene	ND		1.00		ug/L			06/06/14 14:04	1

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: MB 490-167327/6

Matrix: Water

Analysis Batch: 167327

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.00		ug/L			06/06/14 14:04	1
p-Isopropyltoluene	ND		1.00		ug/L			06/06/14 14:04	1
sec-Butylbenzene	ND		1.00		ug/L			06/06/14 14:04	1
Styrene	ND		1.00		ug/L			06/06/14 14:04	1
tert-Butylbenzene	ND		1.00		ug/L			06/06/14 14:04	1
Tetrachloroethene	ND		1.00		ug/L			06/06/14 14:04	1
Toluene	ND		1.00		ug/L			06/06/14 14:04	1
trans-1,2-Dichloroethene	ND		1.00		ug/L			06/06/14 14:04	1
trans-1,3-Dichloropropene	ND		1.00		ug/L			06/06/14 14:04	1
Trichloroethene	ND		1.00		ug/L			06/06/14 14:04	1
Trichlorofluoromethane	ND		1.00		ug/L			06/06/14 14:04	1
Vinyl chloride	ND		1.00		ug/L			06/06/14 14:04	1
Xylenes, Total	ND		2.00		ug/L			06/06/14 14:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		70 - 130		06/06/14 14:04	1
4-Bromofluorobenzene (Surr)	99		70 - 130		06/06/14 14:04	1
Dibromofluoromethane (Surr)	95		70 - 130		06/06/14 14:04	1
Toluene-d8 (Surr)	95		70 - 130		06/06/14 14:04	1

Lab Sample ID: LCS 490-167327/3

Matrix: Water

Analysis Batch: 167327

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	20.0	19.80		ug/L		99	74 - 135
1,1,1-Trichloroethane	20.0	17.38		ug/L		87	78 - 135
1,1,2,2-Tetrachloroethane	20.0	19.73		ug/L		99	69 - 131
1,1,2-Trichloroethane	20.0	20.04		ug/L		100	80 - 124
1,1-Dichloroethane	20.0	17.00		ug/L		85	78 - 125
1,1-Dichloroethene	20.0	16.51		ug/L		83	79 - 124
1,1-Dichloropropene	20.0	18.73		ug/L		94	80 - 122
1,2,3-Trichlorobenzene	20.0	18.77		ug/L		94	62 - 133
1,2,3-Trichloropropane	20.0	20.80		ug/L		104	70 - 131
1,2,4-Trichlorobenzene	20.0	17.02		ug/L		85	63 - 133
1,2,4-Trimethylbenzene	20.0	19.22		ug/L		96	77 - 126
1,2-Dibromo-3-Chloropropane	20.0	17.25		ug/L		86	54 - 125
1,2-Dibromoethane (EDB)	20.0	20.31		ug/L		102	80 - 129
1,2-Dichlorobenzene	20.0	20.08		ug/L		100	80 - 121
1,2-Dichloroethane	20.0	18.51		ug/L		93	77 - 121
1,2-Dichloropropane	20.0	18.02		ug/L		90	75 - 120
1,3,5-Trimethylbenzene	20.0	19.28		ug/L		96	77 - 127
1,3-Dichlorobenzene	20.0	19.91		ug/L		100	80 - 122
1,3-Dichloropropane	20.0	19.28		ug/L		96	80 - 125
1,4-Dichlorobenzene	20.0	19.12		ug/L		96	80 - 120
2,2-Dichloropropane	20.0	13.89		ug/L		69	43 - 161
2-Butanone (MEK)	100	105.1		ug/L		105	62 - 133
2-Chlorotoluene	20.0	18.82		ug/L		94	75 - 126

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: LCS 490-167327/3

Matrix: Water

Analysis Batch: 167327

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Hexanone	100	95.13		ug/L		95	60 - 142
4-Chlorotoluene	20.0	19.23		ug/L		96	75 - 130
4-Methyl-2-pentanone (MIBK)	100	89.44		ug/L		89	60 - 137
Acetone	100	91.37		ug/L		91	54 - 145
Benzene	20.0	18.68		ug/L		93	80 - 121
Bromobenzene	20.0	18.58		ug/L		93	68 - 130
Bromochloromethane	20.0	17.90		ug/L		90	78 - 129
Bromodichloromethane	20.0	18.04		ug/L		90	75 - 129
Bromoform	20.0	15.98		ug/L		80	46 - 145
Bromomethane	20.0	16.06		ug/L		80	41 - 150
Carbon disulfide	20.0	15.26	*	ug/L		76	77 - 126
Carbon tetrachloride	20.0	17.59		ug/L		88	64 - 147
Chlorobenzene	20.0	19.77		ug/L		99	80 - 120
Chlorodibromomethane	20.0	16.65		ug/L		83	69 - 133
Chloroethane	20.0	16.74		ug/L		84	72 - 120
Chloroform	20.0	17.70		ug/L		89	73 - 129
Chloromethane	20.0	9.378		ug/L		47	12 - 150
cis-1,2-Dichloroethene	20.0	17.33		ug/L		87	76 - 125
cis-1,3-Dichloropropene	20.0	15.14		ug/L		76	74 - 140
Dibromomethane	20.0	16.08		ug/L		80	71 - 125
Dichlorodifluoromethane	20.0	18.59		ug/L		93	37 - 127
Ethylbenzene	20.0	18.95		ug/L		95	80 - 130
Hexachlorobutadiene	20.0	17.74		ug/L		89	49 - 146
Isopropylbenzene	20.0	19.32		ug/L		97	80 - 141
Methyl tert-butyl ether	20.0	17.61		ug/L		88	72 - 133
Methylene Chloride	20.0	16.82		ug/L		84	79 - 123
Naphthalene	20.0	20.20		ug/L		101	62 - 138
n-Butylbenzene	20.0	19.66		ug/L		98	68 - 132
N-Propylbenzene	20.0	19.00		ug/L		95	75 - 129
p-Isopropyltoluene	20.0	19.65		ug/L		98	75 - 128
sec-Butylbenzene	20.0	19.51		ug/L		98	76 - 128
Styrene	20.0	20.08		ug/L		100	80 - 127
tert-Butylbenzene	20.0	18.83		ug/L		94	76 - 126
Tetrachloroethene	20.0	19.19		ug/L		96	80 - 126
Toluene	20.0	17.75		ug/L		89	80 - 126
trans-1,2-Dichloroethene	20.0	17.19		ug/L		86	79 - 126
trans-1,3-Dichloropropene	20.0	15.94		ug/L		80	63 - 134
Trichloroethene	20.0	18.40		ug/L		92	80 - 123
Trichlorofluoromethane	20.0	17.88		ug/L		89	65 - 124
Vinyl chloride	20.0	17.21		ug/L		86	68 - 120
Xylenes, Total	40.0	38.03		ug/L		95	80 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		70 - 130
4-Bromofluorobenzene (Surr)	96		70 - 130
Dibromofluoromethane (Surr)	95		70 - 130
Toluene-d8 (Surr)	92		70 - 130

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: LCSD 490-167327/4

Matrix: Water

Analysis Batch: 167327

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	20.0	19.76		ug/L		99	74 - 135	0	16
1,1,1-Trichloroethane	20.0	17.54		ug/L		88	78 - 135	1	17
1,1,2,2-Tetrachloroethane	20.0	21.17		ug/L		106	69 - 131	7	20
1,1,2-Trichloroethane	20.0	20.57		ug/L		103	80 - 124	3	15
1,1-Dichloroethane	20.0	17.36		ug/L		87	78 - 125	2	17
1,1-Dichloroethene	20.0	16.98		ug/L		85	79 - 124	3	17
1,1-Dichloropropene	20.0	18.69		ug/L		93	80 - 122	0	17
1,2,3-Trichlorobenzene	20.0	20.15		ug/L		101	62 - 133	7	25
1,2,3-Trichloropropane	20.0	21.74		ug/L		109	70 - 131	4	19
1,2,4-Trichlorobenzene	20.0	17.51		ug/L		88	63 - 133	3	19
1,2,4-Trimethylbenzene	20.0	19.52		ug/L		98	77 - 126	2	16
1,2-Dibromo-3-Chloropropane	20.0	17.40		ug/L		87	54 - 125	1	24
1,2-Dibromoethane (EDB)	20.0	20.51		ug/L		103	80 - 129	1	15
1,2-Dichlorobenzene	20.0	20.58		ug/L		103	80 - 121	2	15
1,2-Dichloroethane	20.0	18.45		ug/L		92	77 - 121	0	17
1,2-Dichloropropane	20.0	18.39		ug/L		92	75 - 120	2	17
1,3,5-Trimethylbenzene	20.0	19.45		ug/L		97	77 - 127	1	17
1,3-Dichlorobenzene	20.0	20.47		ug/L		102	80 - 122	3	15
1,3-Dichloropropane	20.0	19.80		ug/L		99	80 - 125	3	14
1,4-Dichlorobenzene	20.0	20.03		ug/L		100	80 - 120	5	15
2,2-Dichloropropane	20.0	13.46		ug/L		67	43 - 161	3	18
2-Butanone (MEK)	100	108.6		ug/L		109	62 - 133	3	19
2-Chlorotoluene	20.0	19.44		ug/L		97	75 - 126	3	17
2-Hexanone	100	96.44		ug/L		96	60 - 142	1	15
4-Chlorotoluene	20.0	20.32		ug/L		102	75 - 130	6	18
4-Methyl-2-pentanone (MIBK)	100	87.41		ug/L		87	60 - 137	2	17
Acetone	100	91.08		ug/L		91	54 - 145	0	21
Benzene	20.0	18.88		ug/L		94	80 - 121	1	17
Bromobenzene	20.0	18.93		ug/L		95	68 - 130	2	20
Bromochloromethane	20.0	18.23		ug/L		91	78 - 129	2	17
Bromodichloromethane	20.0	18.08		ug/L		90	75 - 129	0	18
Bromoform	20.0	15.93		ug/L		80	46 - 145	0	16
Bromomethane	20.0	17.23		ug/L		86	41 - 150	7	50
Carbon disulfide	20.0	15.64		ug/L		78	77 - 126	2	21
Carbon tetrachloride	20.0	17.64		ug/L		88	64 - 147	0	19
Chlorobenzene	20.0	19.73		ug/L		99	80 - 120	0	14
Chlorodibromomethane	20.0	17.06		ug/L		85	69 - 133	2	15
Chloroethane	20.0	16.46		ug/L		82	72 - 120	2	20
Chloroform	20.0	17.93		ug/L		90	73 - 129	1	18
Chloromethane	20.0	9.342		ug/L		47	12 - 150	0	31
cis-1,2-Dichloroethene	20.0	17.47		ug/L		87	76 - 125	1	17
cis-1,3-Dichloropropene	20.0	15.62		ug/L		78	74 - 140	3	15
Dibromomethane	20.0	16.22		ug/L		81	71 - 125	1	16
Dichlorodifluoromethane	20.0	18.20		ug/L		91	37 - 127	2	18
Ethylbenzene	20.0	18.93		ug/L		95	80 - 130	0	15
Hexachlorobutadiene	20.0	18.21		ug/L		91	49 - 146	3	23
Isopropylbenzene	20.0	19.36		ug/L		97	80 - 141	0	16
Methyl tert-butyl ether	20.0	17.91		ug/L		90	72 - 133	2	16

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: LCSD 490-167327/4

Matrix: Water

Analysis Batch: 167327

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Chloride	20.0	16.99		ug/L		85	79 - 123	1	17
Naphthalene	20.0	20.48		ug/L		102	62 - 138	1	26
n-Butylbenzene	20.0	19.94		ug/L		100	68 - 132	1	18
N-Propylbenzene	20.0	19.42		ug/L		97	75 - 129	2	17
p-Isopropyltoluene	20.0	19.36		ug/L		97	75 - 128	2	16
sec-Butylbenzene	20.0	19.30		ug/L		97	76 - 128	1	16
Styrene	20.0	19.97		ug/L		100	80 - 127	1	24
tert-Butylbenzene	20.0	18.88		ug/L		94	76 - 126	0	16
Tetrachloroethene	20.0	18.25		ug/L		91	80 - 126	5	16
Toluene	20.0	17.63		ug/L		88	80 - 126	1	15
trans-1,2-Dichloroethene	20.0	17.40		ug/L		87	79 - 126	1	16
trans-1,3-Dichloropropene	20.0	16.55		ug/L		83	63 - 134	4	14
Trichloroethene	20.0	18.62		ug/L		93	80 - 123	1	17
Trichlorofluoromethane	20.0	18.09		ug/L		90	65 - 124	1	18
Vinyl chloride	20.0	16.71		ug/L		84	68 - 120	3	17
Xylenes, Total	40.0	37.63		ug/L		94	80 - 132	1	15

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	99		70 - 130
4-Bromofluorobenzene (Surr)	99		70 - 130
Dibromofluoromethane (Surr)	94		70 - 130
Toluene-d8 (Surr)	93		70 - 130

Lab Sample ID: MB 490-167631/7

Matrix: Water

Analysis Batch: 167631

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,2,4-Trimethylbenzene	ND		1.00		ug/L			06/07/14 13:29	1
1,2-Dibromoethane (EDB)	ND		1.00		ug/L			06/07/14 13:29	1
1,2-Dichloroethane	ND		1.00		ug/L			06/07/14 13:29	1
1,3,5-Trimethylbenzene	ND		1.00		ug/L			06/07/14 13:29	1
Benzene	ND		1.00		ug/L			06/07/14 13:29	1
2-Methylnaphthalene	ND		10.0		ug/L			06/07/14 13:29	1
Ethylbenzene	ND		1.00		ug/L			06/07/14 13:29	1
Isopropylbenzene	ND		1.00		ug/L			06/07/14 13:29	1
Methyl tert-butyl ether	ND		1.00		ug/L			06/07/14 13:29	1
Naphthalene	ND		5.00		ug/L			06/07/14 13:29	1
n-Butylbenzene	ND		1.00		ug/L			06/07/14 13:29	1
N-Propylbenzene	ND		1.00		ug/L			06/07/14 13:29	1
p-Isopropyltoluene	ND		1.00		ug/L			06/07/14 13:29	1
sec-Butylbenzene	ND		1.00		ug/L			06/07/14 13:29	1
tert-Butylbenzene	ND		1.00		ug/L			06/07/14 13:29	1
Toluene	ND		1.00		ug/L			06/07/14 13:29	1
Xylenes, Total	ND		2.00		ug/L			06/07/14 13:29	1

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: MB 490-167631/7

Matrix: Water

Analysis Batch: 167631

Client Sample ID: Method Blank

Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		70 - 130		06/07/14 13:29	1
4-Bromofluorobenzene (Surr)	99		70 - 130		06/07/14 13:29	1
Dibromofluoromethane (Surr)	96		70 - 130		06/07/14 13:29	1
Toluene-d8 (Surr)	100		70 - 130		06/07/14 13:29	1

Lab Sample ID: LCS 490-167631/3

Matrix: Water

Analysis Batch: 167631

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,4-Trimethylbenzene	50.0	55.51		ug/L		111	77 - 126
1,2-Dibromoethane (EDB)	50.0	54.68		ug/L		109	80 - 129
1,2-Dichloroethane	50.0	55.51		ug/L		111	77 - 121
1,3,5-Trimethylbenzene	50.0	54.38		ug/L		109	77 - 127
Benzene	50.0	50.66		ug/L		101	80 - 121
2-Methylnaphthalene	50.0	58.97		ug/L		118	35 - 150
Ethylbenzene	50.0	53.19		ug/L		106	80 - 130
Isopropylbenzene	50.0	51.14		ug/L		102	80 - 141
Methyl tert-butyl ether	50.0	49.21		ug/L		98	72 - 133
Naphthalene	50.0	56.64		ug/L		113	62 - 138
n-Butylbenzene	50.0	58.60		ug/L		117	68 - 132
N-Propylbenzene	50.0	56.26		ug/L		113	75 - 129
p-Isopropyltoluene	50.0	56.09		ug/L		112	75 - 128
sec-Butylbenzene	50.0	54.40		ug/L		109	76 - 128
tert-Butylbenzene	50.0	54.05		ug/L		108	76 - 126
Toluene	50.0	52.28		ug/L		105	80 - 126
Xylenes, Total	150	160.9		ug/L		107	80 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	118		70 - 130
4-Bromofluorobenzene (Surr)	98		70 - 130
Dibromofluoromethane (Surr)	98		70 - 130
Toluene-d8 (Surr)	98		70 - 130

Lab Sample ID: LCSD 490-167631/4

Matrix: Water

Analysis Batch: 167631

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,4-Trimethylbenzene	50.0	55.97		ug/L		112	77 - 126	1	16
1,2-Dibromoethane (EDB)	50.0	55.27		ug/L		111	80 - 129	1	15
1,2-Dichloroethane	50.0	55.49		ug/L		111	77 - 121	0	17
1,3,5-Trimethylbenzene	50.0	55.09		ug/L		110	77 - 127	1	17
Benzene	50.0	51.23		ug/L		102	80 - 121	1	17
2-Methylnaphthalene	50.0	63.58		ug/L		127	35 - 150	8	50
Ethylbenzene	50.0	54.39		ug/L		109	80 - 130	2	15
Isopropylbenzene	50.0	52.00		ug/L		104	80 - 141	2	16
Methyl tert-butyl ether	50.0	48.44		ug/L		97	72 - 133	2	16

TestAmerica Nashville

QC Sample Results

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

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

Lab Sample ID: LCSD 490-167631/4

Matrix: Water

Analysis Batch: 167631

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	50.0	55.98		ug/L		112	62 - 138	1	26
n-Butylbenzene	50.0	58.80		ug/L		118	68 - 132	0	18
N-Propylbenzene	50.0	57.08		ug/L		114	75 - 129	1	17
p-Isopropyltoluene	50.0	55.67		ug/L		111	75 - 128	1	16
sec-Butylbenzene	50.0	54.75		ug/L		110	76 - 128	1	16
tert-Butylbenzene	50.0	54.63		ug/L		109	76 - 126	1	16
Toluene	50.0	52.78		ug/L		106	80 - 126	1	15
Xylenes, Total	150	163.5		ug/L		109	80 - 132	2	15

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	116		70 - 130
4-Bromofluorobenzene (Surr)	98		70 - 130
Dibromofluoromethane (Surr)	98		70 - 130
Toluene-d8 (Surr)	99		70 - 130

QC Association Summary

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

GC/MS VOA

Analysis Batch: 167010

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-53953-C-23 MS	Matrix Spike	Total/NA	Water	8260B	
490-53953-D-23 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
490-54173-1	MW-5	Total/NA	Water	8260B	
490-54173-2	MW-7	Total/NA	Water	8260B	
490-54173-3	MW-1	Total/NA	Water	8260B	
490-54173-4	MW-2	Total/NA	Water	8260B	
490-54173-5	MW-3	Total/NA	Water	8260B	
490-54173-6	MW-4	Total/NA	Water	8260B	
490-54173-7	MW-8	Total/NA	Water	8260B	
LCS 490-167010/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 490-167010/4	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 490-167010/6	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 167327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-54173-1	MW-5	Total/NA	Water	8260B	
490-54173-1	MW-5	Total/NA	Water	8260B	
490-54173-2	MW-7	Total/NA	Water	8260B	
490-54173-3	MW-1	Total/NA	Water	8260B	
490-54173-4	MW-2	Total/NA	Water	8260B	
490-54173-4	MW-2	Total/NA	Water	8260B	
490-54173-5	MW-3	Total/NA	Water	8260B	
490-54173-6	MW-4	Total/NA	Water	8260B	
LCS 490-167327/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 490-167327/4	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 490-167327/6	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 167631

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-54173-1	MW-5	Total/NA	Water	8260B	
490-54173-2	MW-7	Total/NA	Water	8260B	
490-54173-3	MW-1	Total/NA	Water	8260B	
490-54173-4	MW-2	Total/NA	Water	8260B	
490-54173-5	MW-3	Total/NA	Water	8260B	
490-54173-6	MW-4	Total/NA	Water	8260B	
490-54173-7	MW-8	Total/NA	Water	8260B	
LCS 490-167631/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 490-167631/4	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 490-167631/7	Method Blank	Total/NA	Water	8260B	

Lab Chronicle

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-5

Date Collected: 05/27/14 11:40

Date Received: 05/30/14 08:30

Lab Sample ID: 490-54173-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		25	10 mL	10 mL	167631	06/07/14 17:21	WC1	TAL NSH
Total/NA	Analysis	8260B		1	5 mL	5 mL	167010	06/05/14 20:28	JJR	TAL NSH
Total/NA	Analysis	8260B		20	5 mL	5 mL	167327	06/06/14 21:08	JJR	TAL NSH
Total/NA	Analysis	8260B		100	5 mL	5 mL	167327	06/06/14 21:35	JJR	TAL NSH

Client Sample ID: MW-7

Date Collected: 05/27/14 12:20

Date Received: 05/30/14 08:30

Lab Sample ID: 490-54173-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		50	10 mL	10 mL	167631	06/07/14 18:13	WC1	TAL NSH
Total/NA	Analysis	8260B		1	5 mL	5 mL	167010	06/05/14 20:55	JJR	TAL NSH
Total/NA	Analysis	8260B		50	5 mL	5 mL	167327	06/06/14 22:02	JJR	TAL NSH

Client Sample ID: MW-1

Date Collected: 05/27/14 13:50

Date Received: 05/30/14 08:30

Lab Sample ID: 490-54173-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	10 mL	10 mL	167631	06/07/14 16:30	WC1	TAL NSH
Total/NA	Analysis	8260B		1	5 mL	5 mL	167010	06/05/14 21:22	JJR	TAL NSH
Total/NA	Analysis	8260B		20	5 mL	5 mL	167327	06/06/14 22:29	JJR	TAL NSH

Client Sample ID: MW-2

Date Collected: 05/27/14 14:20

Date Received: 05/30/14 08:30

Lab Sample ID: 490-54173-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	10 mL	10 mL	167631	06/07/14 15:38	WC1	TAL NSH
Total/NA	Analysis	8260B		1	5 mL	5 mL	167010	06/05/14 21:49	JJR	TAL NSH
Total/NA	Analysis	8260B		20	5 mL	5 mL	167327	06/06/14 18:25	JJR	TAL NSH
Total/NA	Analysis	8260B		1	5 mL	5 mL	167327	06/06/14 19:46	JJR	TAL NSH

Client Sample ID: MW-3

Date Collected: 05/27/14 15:00

Date Received: 05/30/14 08:30

Lab Sample ID: 490-54173-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	167631	06/07/14 14:46	WC1	TAL NSH
Total/NA	Analysis	8260B		1	5 mL	5 mL	167010	06/05/14 22:16	JJR	TAL NSH
Total/NA	Analysis	8260B		1	5 mL	5 mL	167327	06/06/14 14:58	JJR	TAL NSH

TestAmerica Nashville

Lab Chronicle

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Client Sample ID: MW-4

Date Collected: 05/27/14 15:50

Date Received: 05/30/14 08:30

Lab Sample ID: 490-54173-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	167631	06/07/14 14:21	WC1	TAL NSH
Total/NA	Analysis	8260B		1	5 mL	5 mL	167010	06/05/14 22:43	JJR	TAL NSH
Total/NA	Analysis	8260B		1	5 mL	5 mL	167327	06/06/14 14:31	JJR	TAL NSH

Client Sample ID: MW-8

Date Collected: 05/27/14 16:40

Date Received: 05/30/14 08:30

Lab Sample ID: 490-54173-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	167631	06/07/14 13:55	WC1	TAL NSH
Total/NA	Analysis	8260B		1	5 mL	5 mL	167010	06/05/14 23:10	JJR	TAL NSH

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Method Summary

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL NSH

Protocol References:

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

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Certification Summary

Client: Basin Engineering, Inc.
Project/Site: Shamrock #63

TestAmerica Job ID: 490-54173-1

Laboratory: TestAmerica Nashville

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

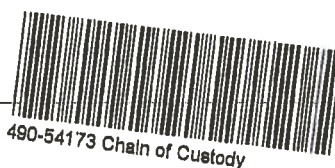
Authority	Program	EPA Region	Certification ID	Expiration Date
Arizona	State Program	9	AZ0473	05-05-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260B		Water	1,1,1,2-Tetrachloroethane
8260B		Water	1,2,4-Trichlorobenzene
8260B		Water	1,2-Dibromo-3-Chloropropane
8260B		Water	2-Methylnaphthalene
8260B		Water	Carbon disulfide
8260B		Water	Dibromomethane
8260B		Water	Hexachlorobutadiene
8260B		Water	Isopropylbenzene
8260B		Water	Naphthalene

Nashville, TN

COOLER RECEIPT



Cooler Received/Opened On: 5/30/2014 @0830

1. Tracking # 6244 (last 4 digits, FedEx)

Courier: Fed-Ex IR Gun ID: 14740456

2. Temperature of rep. sample or temp blank when opened: 4.7 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

If yes, how many and where: 2 Front/Back

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (Initial) Ⓟ

7. Were custody seals on containers: YES NO and intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry Ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # NA

I certify that I unloaded the cooler and answered questions 7-14 (Initial) Ⓟ

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (Initial) Ⓟ

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (Initial) Ⓟ

I certify that I attached a label with the unique LIMS number to each container (Initial) Ⓟ

21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO...#

TestAmerica Nashville
2960 Foster Creighton Drive
Nashville, TN 37204

Phone (615) 726-0177 Fax (615) 726-0954

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

THE LEADER IN ENVIRONMENTAL TESTING

[illegible]

Login Sample Receipt Checklist

Client: Basin Engineering, Inc.

Job Number: 490-54173-1

Login Number: 54173

List Source: TestAmerica Nashville

List Number: 1

Creator: Ford, Easton

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