3R - 074

2013 AGWMR

04 / 03 / 2014

MWH

BUILDING A BETTER WORLD

March 4, 2014

Mr. Glenn von Gonten
New Mexico Oil Conservation Division (NMOCD)
1220 South St., Francis Drive
Santa Fe, NM 87505

RE: 2013 Annual Report Submittals
San Juan River Basin Program - Pit Sites

Dear Mr. von Gonten

On behalf of El Paso CGP Company (EPCGPC), MWH is submitting the enclosed 2013 Annual Reports for 18 of its remaining San Juan River Basin pit groundwater remediation sites. The reports present the 2013 sampling data and planned activities for 2014 at these sites.

If you have any questions concerning the enclosed reports, please contact either Joe Wiley (representing EPCGPC) at 713-420-3475 or me at 515-253-0830.

Sincerely,

David C. Wombacher
Principal Engineer

/mja:dcw:hls
Enclosures
cc: Bill Freeman – NNEPA, Shiprock, NM (Navajo Nation Lands, See Table 1)
Mark Kelly – BLM, Farmington, NM (Federal Lands, See Table 1)
Brandon Powell – NMOCD, Aztec, NM (all 18 reports)
Joe Wiley – EPCGP Company (all 18 reports, electronic)

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TABLE 1

REPORT LISTING AND LAND TYPE
SAN JUAN RIVER BASIN PROGRAM – PIT SITES

METER or LINE ID	NMOCD CASE NO.	SITE NAME	Land Type
87640	3RP-155-0	Canada Mesa #2	Federal
89961	3RP-170-0	Fields A#7A	Federal
73220	3RP-068-0	Fogelson 4-1 Com. #14	Federal
95608	3RP-407-0	Gallegos Canyon Unit #124E	Navajo
03906	3RP-179-0	GCU Com A #142E	State/Fee
89894	3RP-186-0	Hammond #41A	Federal
94715	3RP-196-0	James F. Bell #1E	Federal
70194	3RP-201-0	Johnston Fed #4	State/Fee
89232	3RP-202-0	Johnston Fed #6A	Federal
LD072	3RP-204-0	K27 LD072	Federal
LD087	3RP-205-0	K-31 Line Drip	State/Fee
72556	3RP-207-0	Knight #1	State/Fee
LD174	3RP-212-0	Lateral L 40	Federal
LD151	3RP-213-0	Lateral 0-21 Line Drip	Federal
94810	3RP-223-0	Miles Fed 1A	Federal
89620	3RP-235-0	Sandoval GC A #1A	Federal
70445	3RP-074-0	Standard Oil Com #1	State/Fee
71669	3RP-239-0	State Gas Com N #1	State/Fee

2013 ANNUAL GROUNDWATER REPORT

Standard Oil Com #1
Meter Code: 70445
T29N, R9W, Sec36, Unit N

SITE DETAILS

Site Location: Latitude: 36.678617 N, Longitude: -107.736788
Land Type: State
Operator: Burlington Resources

SITE BACKGROUND

- **Site Assessment:** 5/94
- **Excavation:** 5/94 (60 cy)

Standard Oil Com #1 (Site) is managed pursuant to the procedures set forth in the document entitled, "Remediation Plan for Groundwater Encountered during Pit Closure Activities" (Remediation Plan, El Paso Natural Gas Company / El Paso Field Services Company, 1995). This Remediation Plan was conditionally approved by the New Mexico Oil Conservation Division (OCD) in correspondence dated November 30, 1995; and the OCD approval conditions were adopted into El Paso CGP Company (EPCGP's) program methods. Currently, the site is operated by Burlington Resources Oil & Gas Company LP and is active.

The Site is located on State/Fee land. Various Site investigations have occurred from 1994 through 2012. Monitoring wells were installed in 1994 (MW-1), 1995 (MW-2 through MW-4), 1997 (PZ-01 through PZ-07), 2006 (MW-5) and 2012 (MW-6 through MW-11). Free product was observed in MW-1 in 1996, but was not recovered. Currently, groundwater sampling is conducted on a semi-annual basis and free product is not observed.

SUMMARY OF 2013 ACTIVITIES

In July 2013, a Site survey was completed to re-develop a base Site map and validate the elevation and location of monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5.

Six new wells (MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, and MW-12) were drilled in November 2013, to further assess the extent of the dissolved phase hydrocarbons and to define the groundwater gradient at the Site. Ground surface and casing elevations of existing monitoring wells and all new monitoring wells (completed in November 2013), were again surveyed in November 2013, by a licensed surveyor using state plane coordinates.

Monitoring wells were constructed of 2-inch diameter, schedule 40, 0.010-inch, continuous, factory-slotted PVC screen and schedule 40 blank PVC casing. The well screen was installed from 40 feet below ground surface (bgs) to 15 feet bgs and bisects the observed water table located at depths ranging from 17-28 feet below the top of the monitoring well casings during 2013 gauging events. A 3-foot seal of bentonite chips was placed above the sandpack and the remaining annular space filled with bentonite grout. The wells were completed as stick-up wells with locking protective casings and a concrete surface completion. Four protective bollards were installed around each new monitoring

well. Borehole logs and well construction diagrams are provided in Appendix A. Monitoring wells MW-9, and MW-11 were installed down the axis of the groundwater plume in order to better delineate groundwater impacts from the former EPC pit. Monitoring wells MW-8, MW-10 were installed on the known southern extent of suspected dissolved hydrocarbons. Monitoring well MW-7 was installed to the east of the former EPC pit, and monitoring well MW-6 was installed between the existing monitoring well, MW-2, and the current operator's pit excavation and monitoring well MW-BR. Pertinent Site features and soil boring/monitoring well locations are shown on maps in Figures 1 through 6.

During the drilling of the Site soil borings completed in November 2013, the soil sample interval exhibiting the highest PID reading was collected and placed in a 4-ounce jar for laboratory analysis. Soil samples were analyzed for the presence of benzene, toluene, ethylbenzene, and total xylenes (BTEX) according to EPA Method SW846 8260B, total petroleum hydrocarbons using EPA Method SW846 9071, and chlorides according to EPA Method 300. Sample jars were stored in an ice-filled cooler and shipped under standard chain of custody to Test America Laboratories in Corpus Christi, Texas. The soil sample analytical report is provided in Appendix B.

Monitoring well development was performed using a well swab and disposable bailer until all sediment was removed and visibly clear groundwater was observed. Purged groundwater was stored in a labeled 55-gallon drum and staged on-site along with the soil boring cuttings for later disposal by Safety-Kleen.

On June 5 and September 11, 2013, groundwater levels were gauged at MW-1, MW-2, MW-3, MW-4, and MW-5 and groundwater samples were collected from MW-1, MW-2, MW-3, MW-4, and MW-5 using a HydraSleeve™ (HydraSleeve); a disposable, no-purge passive groundwater sampling device. On December 12, 2013, MW-1 through MW-5, and the new monitoring wells MW-6, MW-7, MW-8, MW-9, MW-10, and MW-11 were gauged for water levels and samples were collected from each well. The new wells were sampled with a 2 inch disposable bailer and MW-1 through MW-5 were sampled with a HydraSleeve. The HydraSleeves were set during the previous sampling event approximately 0.5 foot above termination depth of the monitoring wells using a suspension tether and weights to collect a sample from the screened interval. Groundwater samples were placed into laboratory supplied sample containers, packed on ice and shipped under standard chain of custody protocols to Test America Laboratories in Corpus Christi, Texas where they were analyzed for BTEX. Additional field parameters were collected including dissolved oxygen, temperature, conductivity, pH, and ORP using a YSI multi-parameter instrument. The de minimis water remaining in HydraSleeves was combined in a waste container and transferred to an off-site 55-gallon drum for later disposal by Safety-Kleen.

SUMMARY TABLES

The soil sampling results are summarized in Table 1, and the historic analytical and water level data are summarized in Table 2.

SITE MAPS

Groundwater analytical results and groundwater elevation contour maps from the 2013 quarterly sampling events are included as Figures 1 through 6.

ANALYTICAL LAB REPORTS

The soil and groundwater analytical lab reports are included as Appendices B and C, respectively.

RESULTS

- Based on 2013 quarterly water level gauging events, the groundwater flow direction is generally to the west-northwest at the Site (see Figures 2, 4, and 6).

- Concentrations of benzene in groundwater collected from MW-1 were above the New Mexico Water Quality Control Commission (NMWQCC) standard during the three 2013 quarterly sampling events. Concentrations of toluene, ethylbenzene, and total xylenes were detected below their respective NMWQCC standards in the three quarterly sampling events.

- Concentrations of benzene and total xylenes in groundwater collected from MW-2 were above their respective NMWQCC standards during the three quarterly 2013 sampling events. Concentrations of toluene and ethylbenzene were detected below their respective NMWQCC standards in the three quarterly sampling events.

- Concentrations of benzene and total xylenes in groundwater collected from MW-3 were above their respective NMWQCC standards during the three quarterly 2013 sampling events. Concentrations of toluene and ethylbenzene were detected below their respective NMWQCC standards in the three quarterly sampling events.

- BTEX constituents were not detected above NMWQCC standards in groundwater collected from MW-4 during the three 2013 quarterly sampling events.

- BTEX constituents were not detected in groundwater samples from MW-5 during any of the three 2013 quarterly sampling events.

- Benzene concentrations were above the NMWQCC standard in groundwater collected from MW-6 during the December 2013 sampling event. Toluene, ethylbenzene, and total xylenes were detected below their respective NMWQCC standards.

- Total xylenes concentrations were above the NMWQCC standard in groundwater collected from MW-7 during the December 2013 sampling event. Benzene, toluene, and ethylbenzene were detected below NMWQCC standards.

- Benzene and total xylenes concentrations were above their respective NMWQCC standards in groundwater collected from MW-8 during the December 2013 sampling event. Toluene and ethylbenzene were detected below NMWQCC standards.

- Benzene concentrations were above the NMWQCC standard in groundwater collected from MW-9 during the December 2013 sampling event. Toluene, ethylbenzene, and total xylenes were detected below their respective NMWQCC standards.

- Benzene and total xylenes concentrations were above their respective NMWQCC standards in groundwater collected from MW-10 during the December 2013 sampling event. Concentrations of toluene and ethylbenzene were detected below NMWQCC standards.

- Benzene and total xylenes concentrations were above their respective NMWQCC standards in groundwater collected from MW-11 during the December 2013 sampling event. Concentrations of toluene and ethylbenzene were detected below NMWQCC standards.

- It appears that elevated BTEX concentrations observed in monitoring wells located west, southwest, and south of the former EPCGP pit may be due to impacts from a release from a former Burlington pit located approximately 80 to 100 feet south of the EPCGP pit, or possibly from a release from current operations by Burlington. Based on the distribution of BTEX compounds in groundwater samples collected from these wells, documented groundwater flow direction, and an understanding of dissolved hydrocarbon fate and transport, it is unlikely that impacts in these wells could be associated with the EPCGP pit release.

- Soil samples were collected from the borings for monitoring wells MW-6 through MW-11. Sample locations were based on elevated soil screening results. For benzene, all sample results were either non-detect or below the reporting limit (J-flagged) with exception of MW-11, (1.2 milligrams per kilogram of soil [mg/kg]). Toluene results ranged from non detect (MW-7) to a high of 0.63 mg/kg at MW-7. Ethylbenzne results ranged from 0.12 mg/kg (MW-8) to 5.8 mg/kg at MW-11. Total xylenes concentrations ranged from 0.59 mg/kg (MW-8) to 53 mg/kg at MW-11. TPH were non detect at MW-8, MW-9, MW-10 or below the reporting limit, (J-flagged) at MW-7. TPH reported at MW-6 and MW-11 was 240 mg/kg and 86 mg/kg, respectively. Chloride was reported below the reporting limit (J-flagged) at three locations with a high concentration of 210 mg/kg at MW-10.

PLANNED FUTURE ACTIVITIES

Monitoring wells MW-1 through MW-11 will be gauged and sampled on a semi-annual basis in 2014. Groundwater elevation and analytical data collected during 2014 will be evaluated and presented in the 2014 Annual Groundwater Report issued in early 2015.

TABLES

TABLE 1 - SOIL ANALYTICAL RESULTS

Standard Oil Com #1							
Location	**Date**	**Benzene (mg/Kg)**	**Toluene (mg/kg)**	**Ethylbenzene (mg/Kg)**	**Xylenes (mg/Kg)**	**TPH (mg/Kg)**	**Chloride (mg/Kg)**
MW-6(27.5-30)	11/19/13	<0.45	0.89 J	6.2	48	240	130
MW-7(22.5-25)	11/19/13	<0.022	<0.011	0.14	2.7	13 J	75
MW-8(27.5-30)	11/18/13	0.079 J	0.082 J	0.12	0.59	<1.6	36 J
MW-9(22.5-25)	11/19/13	0.24 J	0.63	1.9	9.3	<1.5	54 J
MW-10(27.5-30)	11/18/13	0.55 J	0.46 J	3.2	27	<1.4	210
MW-11(22.5-25)	11/19/13	1.2	0.21 J	5.8	53	86	46 J

Notes:
"J" = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
"<" = analyte was not detected at the indicated reporting limit (some historic data were reported at the detection limit).

TABLE 2 - GROUNDWATER ANALYTICAL RESULTS

Standard Oil Com #1								
Location	**Date**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethylbenzene (µg/L)**	**Total Xylenes (µg/L)**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-1	09/12/95	482	629	188	1980	21.03	-	-
MW-1	11/07/96	277	121	161	1590	21.30	21.24	0.06
MW-1	02/07/97	119	20.2	139	1490	20.96	-	-
MW-1	05/09/97	105	14.2	145	1480	20.78	-	-
MW-1	08/08/97	82.6	15.6	140	1400	21.13	-	-
MW-1	11/04/97	91.4	32.4	141	1320	20.86	-	-
MW-1	02/03/98	109	31	163	1680	20.61	-	-
MW-1	05/07/98	107	24.2	161	1640	20.47	-	-
MW-1	08/04/98	113	48.7	167	1580	20.85	-	-
MW-1	11/03/98	122	61.3	190	1930	20.62	-	-
MW-1	02/02/99	157	75.8	204	2100	20.02	-	-
MW-1	05/19/99	178	55.2	184	1730	19.86	-	-
MW-1	08/04/99	252	136	203	1890	19.98	-	-
MW-1	11/09/99	240	98	180	1500	19.91	-	-
MW-1	02/25/00	1300	1000	260	1700	19.69	-	-
MW-1	05/24/00	56	120	220	1500	-	-	-
MW-1	08/08/00	12	11	66	470	-	-	-
MW-1	11/06/00	390	110	180	1100	20.29	-	-
MW-1	02/15/01	280	88	160	1200	20.18	-	-
MW-1	06/04/01	340	170	170	430	20.05	-	-
MW-1	08/07/01	510	340	250	1500	20.41	-	-
MW-1	12/04/01	330	98	150	1200	20.26	-	-
MW-1	02/25/02	310	170	170	1200	20.06	-	-
MW-1	05/14/02	250	150	190	1400	20.17	-	-
MW-1	08/06/02	551	398	214	1041	20.69	-	-
MW-1	11/04/02	464	207	235	1085	20.61	-	-
MW-1	02/27/03	600	330	225	993	20.24	-	-
MW-1	05/19/03	230	206	172	977	20.31	-	-
MW-1	08/18/03					21.00	-	-
MW-1	11/15/03					20.41	-	-
MW-1	02/17/04					19.89	-	-
MW-1	06/02/04	416	534	287	1330	19.99	-	-
MW-1	06/24/05	234	310	305	1530	19.98	-	-
MW-1	06/07/06	66	71.9	165	804	20.18	-	-
MW-1	06/12/07	29.8	38.2	116	477	19.85	-	-
MW-1	06/16/08	45.4	37.7	164	598	20.24	-	-
MW-1	06/10/09	33.7	16.4	156	484	20.52	-	-
MW-1	06/02/10	23.1	5.4	152	421	20.63	-	-
MW-1	05/09/11	<50	<50	137	394	20.60	-	-
MW-1	05/15/12	16.4	2.4	150	510	20.61	-	-
MW-1	06/05/13	23	3.5	190	54	20.79	-	-
MW-1	09/11/13	13	0.68 J	220	13	21.21	-	-
MW-1	12/12/13	12	17	150	8.7	20.52	-	-

TABLE 2 - GROUNDWATER ANALYTICAL RESULTS

Standard Oil Com #1								
Location	**Date**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethylbenzene (µg/L)**	**Total Xylenes (µg/L)**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-2	12/13/01	940	74	360	2900	27.15	-	-
MW-2	08/06/02					27.65	-	-
MW-2	11/04/02					27.59	-	-
MW-2	05/19/03	673	167	228	1010	27.29	-	-
MW-2	08/18/03					29.96	-	-
MW-2	11/15/03					27.33	-	-
MW-2	02/17/04					26.86	-	-
MW-2	06/02/04	943	120	309	1130	26.94	-	-
MW-2	06/24/05	1090	120	418	1510	26.92	-	-
MW-2	06/07/06	592	37.7	216	692	27.12	-	-
MW-2	06/12/07	781	<25	286	733	26.96	-	-
MW-2	06/16/08	480	5.6 J	299	614	27.17	-	-
MW-2	06/10/09	532	<1	356	836	27.45	-	-
MW-2	06/02/10	421	3	348	670	27.50	-	-
MW-2	05/09/11	354	1.5 J	275	461	27.56	-	-
MW-2	05/15/12	630	12.2	358	892	27.53	-	-
MW-2	06/05/13	440	94	520	1700	27.59	-	-
MW-2	09/11/13	390	11	680	2100	28.14	-	-
MW-2	12/12/13	150	8.6	300	640	27.43	-	-

TABLE 2 - GROUNDWATER ANALYTICAL RESULTS

Standard Oil Com #1								
Location	**Date**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethylbenzene (µg/L)**	**Total Xylenes (µg/L)**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-3	12/13/01	1800	1600	570	5600	27.15	-	-
MW-3	08/06/02					27.65	-	-
MW-3	11/04/02					27.59	-	-
MW-3	05/19/03					27.29	-	-
MW-3	08/18/03					29.96	-	-
MW-3	11/15/03					27.33	-	-
MW-3	02/17/04					26.86	-	-
MW-3	06/02/04					26.94	-	-
MW-3	06/24/05					26.92	-	-
MW-3	06/07/06					27.12	-	-
MW-3	06/12/07					26.96	-	-
MW-3	06/16/08					27.17	-	-
MW-3	06/10/09					27.45	-	-
MW-3	06/02/10					27.50	-	-
MW-3	05/09/11	2370	15.2	429	836	27.56	-	-
MW-3	05/15/12	2240	10.3	405	807	27.53	-	-
MW-3	06/05/13	2500	24	400	970	21.57	-	-
MW-3	09/11/13	2200	<0.6	550	1300	22.02	-	-
MW-3	12/12/13	1300	<3	390	700	21.33	-	-

TABLE 2 - GROUNDWATER ANALYTICAL RESULTS

Standard Oil Com #1								
Location	**Date**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethylbenzene (µg/L)**	**Total Xylenes (µg/L)**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-4	12/13/01	380	340	780	7300	21.10	-	-
MW-4	08/06/02					21.53	-	-
MW-4	11/04/02					21.40	-	-
MW-4	05/19/03					21.07	-	-
MW-4	08/18/03					21.78	-	-
MW-4	11/15/03					21.22	-	-
MW-4	02/17/04					20.74	-	-
MW-4	06/02/04					20.74	-	-
MW-4	06/24/05					20.75	-	-
MW-4	06/07/06					20.96	-	-
MW-4	06/12/07					20.58	-	-
MW-4	06/16/08					20.95	-	-
MW-4	06/10/09					21.23	-	-
MW-4	06/02/10					21.25	-	-
MW-4	05/09/11	1.6	5.2	227	700	21.33	-	-
MW-4	05/15/12	59	5	187	545	17.60	-	-
MW-4	06/05/13	0.16 J	0.56 J	82	71	17.79	-	-
MW-4	09/11/13	<0.14	0.73 J	140	75	18.21	-	-
MW-4	12/12/13	0.21 J	13	37	1.1 J	17.56	-	-

TABLE 2 - GROUNDWATER ANALYTICAL RESULTS

Standard Oil Com #1								
Location	**Date**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethylbenzene (µg/L)**	**Total Xylenes (µg/L)**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-5	11/09/06					17.63	-	-
MW-5	06/12/07	<1	<1	<1	15.6	17.85	-	-
MW-5	06/16/08	<1	<1	0.39 J	0.68 J	18.20	-	-
MW-5	06/10/09	<1	<1	1.7	4.2	18.58	-	-
MW-5	06/02/10	<2	<2	<2	<6	18.65	-	-
MW-5	05/09/11					18.74	-	-
MW-5	05/15/12					18.67	-	-
MW-5	06/05/13	<0.14	<0.30	<0.20	<0.23	18.88	-	-
MW-5	09/11/13	<0.14	<0.30	<0.20	<0.23	19.41	-	-
MW-5	12/12/13	<0.20	<0.38	<0.20	<0.65	18.69	-	-

TABLE 2 - GROUNDWATER ANALYTICAL RESULTS

Standard Oil Com #1								
Location	**Date**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethylbenzene (µg/L)**	**Total Xylenes (µg/L)**	**Depth to Water (ft.)**	**Depth to LNAPL (ft.)**	**LNAPL Thickness (ft.)**
NMWQCC Standards:		10	750	750	620	NA	NA	NA
MW-6	12/12/13	60	35	73	220	27.63	-	-
MW-7	12/12/13	<1.0	110	200	2200	21.40	-	-
MW-8	12/12/13	350	53	480	780	27.95	-	-
MW-9	12/12/13	250	110	250	310	21.61	-	-
MW-10	12/12/13	1600	460	130	1100	27.74	-	-
MW-11	12/12/13	1800	270	410	3000	20.16	-	-

Notes:
Results highlighted yellow exceed their respective New Mexico Water Quality Control Comission standards.
"J" = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
"<" = analyte was not detected at the indicated reporting limit (some historic data were reported at the detection limit).

FIGURES

L:\San Juan River Basin\SJRB GENERAL\GIS-NEW_MXDs\STANDARD OIL COM #1\2013 MAPS\Std_Oil_Com#1_GARM_2Q_2013.mxd

PZ-4
PZ-7
PZ-2
PZ-3
PZ-6
PZ-1
PZ-5

MW-4
B: J 0.16
T: J 0.56
E: 82
X: 71

MW-5
B: <0.14
T: <0.30
E: <0.20
X: <0.23

MW-3
B: **2500**
T: 24
E: 400
X: **970**

MW-1
B: **23**
T: 3.5
E: 190
X: 54

MW-2
B: **440**
T: 94
E: 520
X: **1700**

FORMER EPC PIT

BLOWDOWN VALVE

T-POST

CONCRETE PAD

METER HOUSE

SMA BENCHMARK
ELEV. 5687.12
NAD 83 NAVD 88
STATE PLANE COORDINATE SYSTEM
NEW MEXICO WEST

TANK 1
OIL STORAGE TANK

WELLHEAD

BURLINGTON RESOURCES
EXCAVATED PIT AREA (30' DEEP)

MW-BR

COMPRESSOR

SEPARATOR

TANK 2
COVERED STEEL TANK

5675 5676 5677 5678 5679 5680 5681 5682 5683 5684 5685 5686 5687 5688 5689

LEGEND:

- 5795 — APPROX. GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- FENCE
- FORMER PIT
- PW — PRODUCED WATER LINE
- GAS — NATURAL GAS PIPELINE
- BENCHMARK
- GAS VALVE
- MONITORING WELL
- OTHER MONITORING WELL
- RIG ANCHOR

EXPLANATION OF ANALYTES AND APPLICABLE STANDARDS:

RESULTS IN **BOLDFACE** TYPE INDICATE CONCENTRATION IN EXCESS OF THE STANDARD FOR THAT ANALYTE.
NS = NOT SAMPLED
µg/L = MICROGRAMS PER LITER
<0.30 = BELOW METHOD DETECTION LIMIT

ANALYTE	NMWQCC STANDARDS
B = Benzene	10 µg/L
T = Toluene	750 µg/L
E = Ethylbenzene	750 µg/L
X = Total Xylenes	620 µg/L

N

SCALE IN FEET
0 30 60

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/25/2013	CCL	CCL	DAW

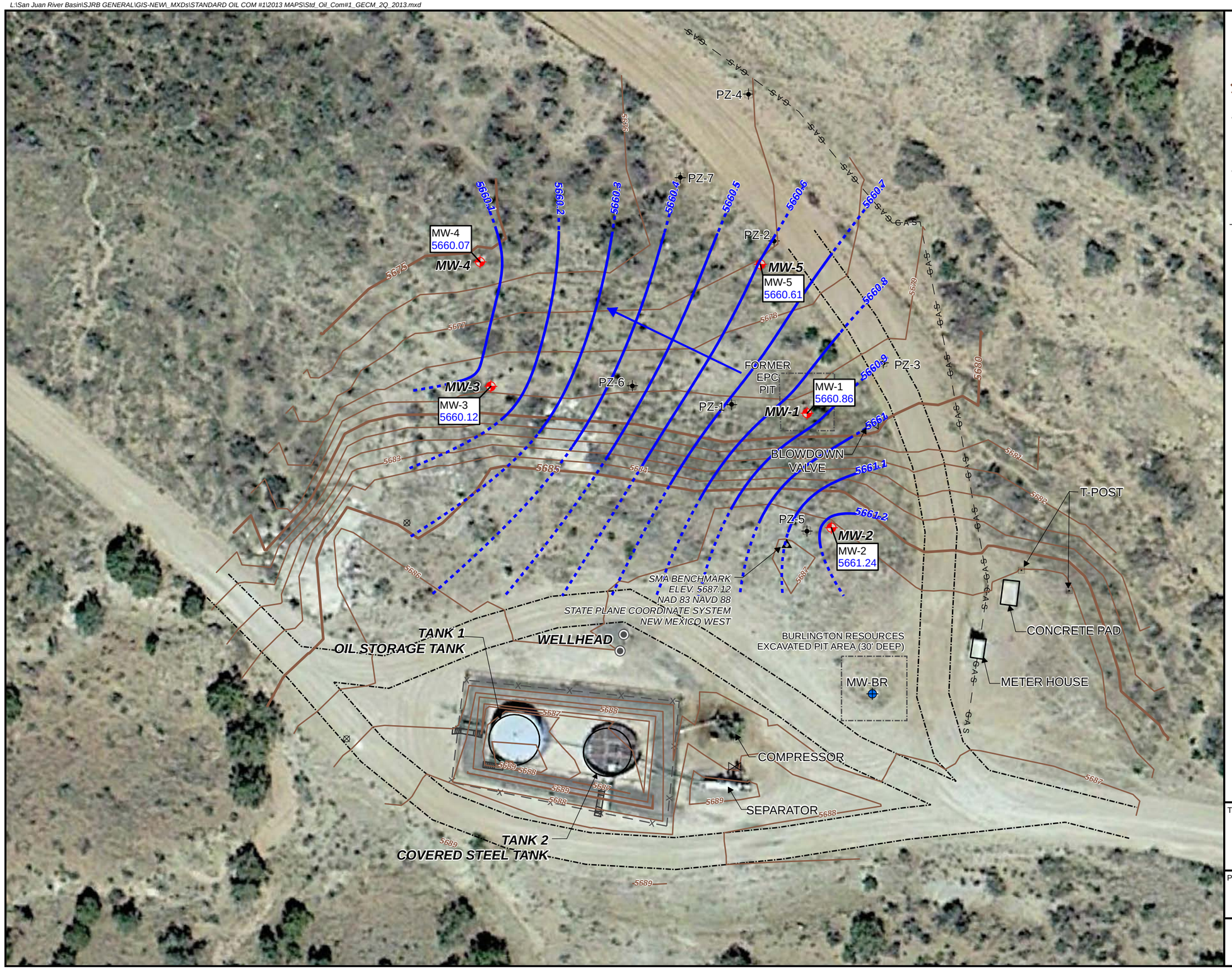
TITLE:
STANDARD OIL COM #1
GROUNDWATER ANALYTICAL RESULTS
SAMPLED JUNE 5, 2013

PROJECT:
SAN JUAN RIVER BASIN
MONITORING AND REMEDIATION
SAN JUAN COUNTY, NEW MEXICO

MWH

Figure No.:
1

L:\San Juan River Basin\SJRB GENERAL\GIS-NEW_MXDs\STANDARD OIL COM #1\2013 MAPS\Std_Oil_Com#1_GECM_2Q_2013.mxd



LEGEND:

- 5795 — APPROX. GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- FENCE
- FORMER PIT
- PW — PRODUCED WATER LINE
- GAS — NATURAL GAS PIPELINE
- BENCHMARK
- GAS VALVE
- MONITORING WELL
- OTHER MONITORING WELL
- RIG ANCHOR

NOTES:

5318.24 — GROUNDWATER ELEVATION CORRECTED FOR PRODUCT THICKNESS. FEET ABOVE MEAN SEA LEVEL

5317 — CORRECTED WATER LEVEL ELEVATION CONTOUR DASHED WHERE INFERRED (FEET ABOVE MEAN SEA LEVEL, 0.5 FOOT CONTOUR INTERVAL)

DIRECTION OF GROUNDWATER FLOW

N

SCALE IN FEET

0 30 60

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/25/2013	CCL	CCL	DAW

TITLE:

STANDARD OIL COM #1
GROUNDWATER ELEVATION MAP
GAUGED JUNE 5, 2013

PROJECT:

SAN JUAN RIVER BASIN
MONITORING AND REMEDIATION
SAN JUAN COUNTY, NEW MEXICO

MWH

Figure No.: 2

L:\San Juan River Basin\SJRB GENERAL\GIS-NEW_MXDs\STANDARD OIL COM #1\2013 MAPS\Std_Oil_Com#1_GARM_3Q_2013.mxd

PZ-4
PZ-7
PZ-2
PZ-3
PZ-6
PZ-1
PZ-5

MW-4
B: <0.14
T: J0.73
E: 140
X: 75

MW-5
B: <0.14
T: <0.30
E: <0.20
X: <0.23

MW-3
B: **2200**
T: <0.6
E: 550
X: **1300**

MW-1
B: **13**
T: J0.68
E: 220
X: 13

MW-2
B: **390**
T: 11
E: 680
X: **2100**

FORMER EPC PIT

BLOWDOWN VALVE

T-POST

CONCRETE PAD

METER HOUSE

SMA BENCHMARK
ELEV. 5687.12
NAD 83 NAVD 88
STATE PLANE COORDINATE SYSTEM
NEW MEXICO WEST

TANK 1
OIL STORAGE TANK

WELLHEAD

BURLINGTON RESOURCES
EXCAVATED PIT AREA (30' DEEP)

MW-BR

COMPRESSOR

SEPARATOR

TANK 2
COVERED STEEL TANK

LEGEND:

- APPROX. GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- FENCE
- FORMER PIT
- PRODUCED WATER LINE
- NATURAL GAS PIPELINE
- BENCHMARK
- GAS VALVE
- MONITORING WELL
- OTHER MONITORING WELL
- RIG ANCHOR

EXPLANATION OF ANALYTES AND APPLICABLE STANDARDS:

RESULTS IN **BOLDFACE** TYPE INDICATE CONCENTRATION IN EXCESS OF THE STANDARD FOR THAT ANALYTE.
NS = NOT SAMPLED
µg/L = MICROGRAMS PER LITER
<0.30 = BELOW METHOD DETECTION LIMIT

ANALYTE	NMWQCC STANDARDS
B = Benzene	10 µg/L
T = Toluene	750 µg/L
E = Ethylbenzene	750 µg/L
X = Total Xylenes	620 µg/L

N

SCALE IN FEET
0 30 60

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/25/2013	CCL	CCL	DAW

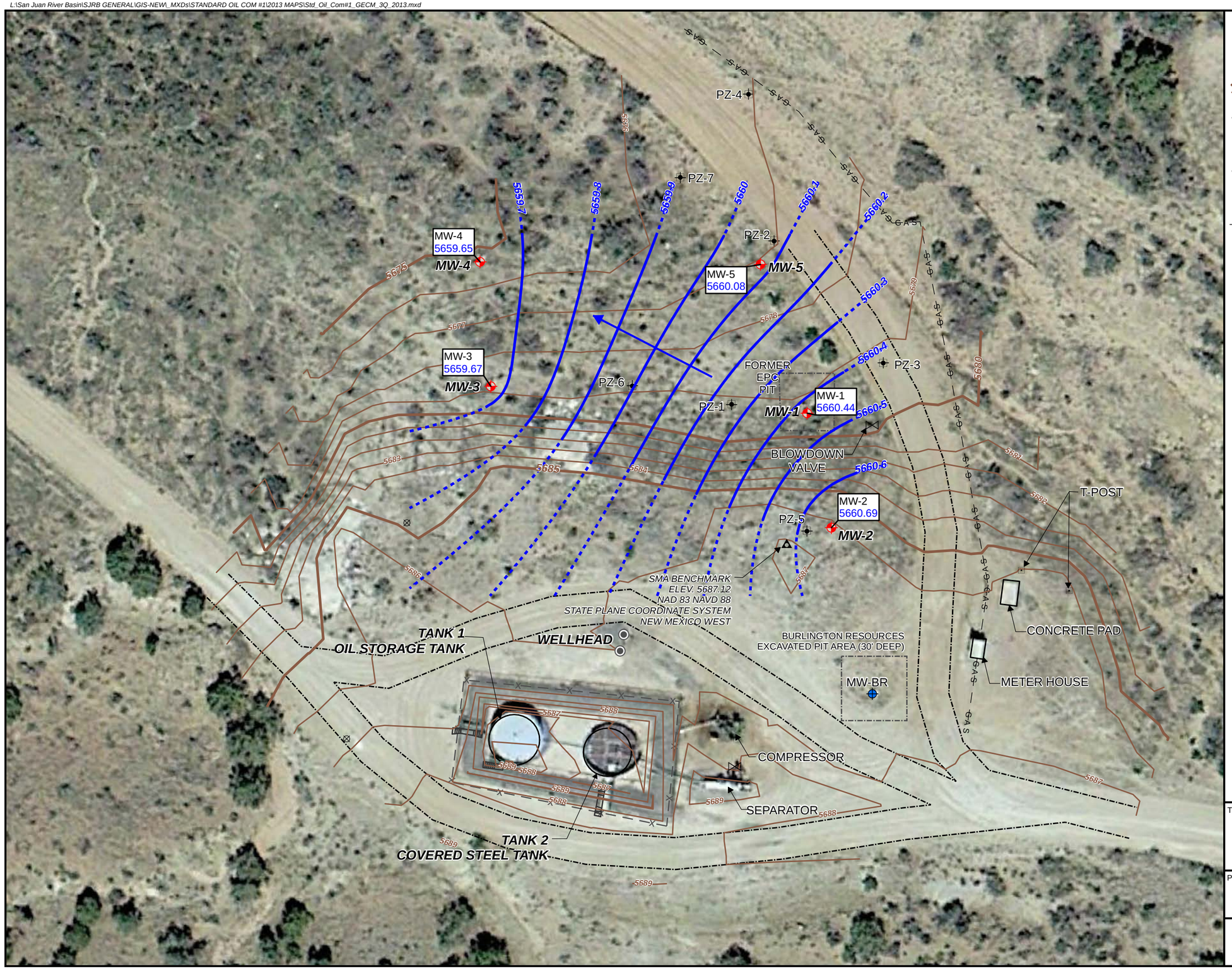
TITLE:
STANDARD OIL COM #1
GROUNDWATER ANALYTICAL RESULTS
SAMPLED SEPTEMBER 11, 2013

PROJECT:
SAN JUAN RIVER BASIN
MONITORING AND REMEDIATION
SAN JUAN COUNTY, NEW MEXICO

MWH

Figure No.:
3

L:\San Juan River Basin\SJRB GENERAL\GIS-NEW_MXDs\STANDARD OIL COM #1\2013 MAPS\Std_Oil_Com#1_GECM_3Q_2013.mxd



LEGEND:

- 5795 — APPROX. GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- FENCE
- FORMER PIT
- PW — PRODUCED WATER LINE
- GAS — NATURAL GAS PIPELINE
- BENCHMARK
- GAS VALVE
- MONITORING WELL
- OTHER MONITORING WELL
- RIG ANCHOR

NOTES:

5318.24 — GROUNDWATER ELEVATION CORRECTED FOR PRODUCT THICKNESS. FEET ABOVE MEAN SEA LEVEL

5317 — CORRECTED WATER LEVEL ELEVATION CONTOUR DASHED WHERE INFERRED (FEET ABOVE MEAN SEA LEVEL, 0.5 FOOT CONTOUR INTERVAL)

DIRECTION OF GROUNDWATER FLOW

N

SCALE IN FEET

0 30 60

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/25/2013	CCL	CCL	DAW

TITLE:

STANDARD OIL COM #1
GROUNDWATER ELEVATION MAP
GAUGED SEPTEMBER 11, 2013

PROJECT:

SAN JUAN RIVER BASIN
MONITORING AND REMEDIATION
SAN JUAN COUNTY, NEW MEXICO

MWH

Figure No.: 4

L:\San Juan River Basin\SJRB GENERAL\GIS-NEW_MXDs\STANDARD OIL COM #1\2013 MAPS\Std_Oil_Com#1_GARM_4Q_2013.mxd

LEGEND:

- APPROX. GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- FENCE
- FORMER PIT
- PRODUCED WATER LINE
- NATURAL GAS PIPELINE
- BENCHMARK
- GAS VALVE
- MONITORING WELL
- OTHER MONITORING WELL
- RIG ANCHOR

EXPLANATION OF ANALYTES AND APPLICABLE STANDARDS:

RESULTS IN **BOLDFACE** TYPE INDICATE CONCENTRATION IN EXCESS OF THE STANDARD FOR THAT ANALYTE.
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µg/L = MICROGRAMS PER LITER
<0.30 = BELOW METHOD DETECTION LIMIT

ANALYTE	NMWQCC STANDARDS
B = Benzene	10 µg/L
T = Toluene	750 µg/L
E = Ethylbenzene	750 µg/L
X = Total Xylenes	620 µg/L

N

SCALE IN FEET
0 30 60

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	1/13/2014	CCL	CCL	DAW

TITLE:
STANDARD OIL COM #1
GROUNDWATER ANALYTICAL RESULTS
SAMPLED DECEMBER 12, 2013

PROJECT:
SAN JUAN RIVER BASIN
MONITORING AND REMEDIATION
SAN JUAN COUNTY, NEW MEXICO

MWH

Figure No.: 5

L:\San Juan River Basin\SJRB GENERAL\GIS-NEW_MXDs\STANDARD OIL COM #1\2013 MAPS\Std_Oil_Com#1_GECM_4Q_2013.mxd

LEGEND:

- 5795 — APPROX. GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- FENCE
- FORMER PIT
- PW — PRODUCED WATER LINE
- GAS — NATURAL GAS PIPELINE
- BENCHMARK
- GAS VALVE
- MONITORING WELL
- OTHER MONITORING WELL
- RIG ANCHOR

NOTES:

5662.30 — GROUNDWATER ELEVATION CORRECTED FOR PRODUCT THICKNESS. FEET ABOVE MEAN SEA LEVEL

-5661.75- — CORRECTED WATER LEVEL ELEVATION CONTOUR DASHED WHERE INFERRED (FEET ABOVE MEAN SEA LEVEL, 0.5 FOOT CONTOUR INTERVAL)

DIRECTION OF GROUNDWATER FLOW

N

SCALE IN FEET

0 30 60

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	2/24/2014	CCL	CCL	DAW

TITLE:

STANDARD OIL COM #1
GROUNDWATER ELEVATION MAP
GAUGED DECEMBER 13, 2013

PROJECT:

SAN JUAN RIVER BASIN
MONITORING AND REMEDIATION
SAN JUAN COUNTY, NEW MEXICO

MWH

Figure No.: 6

APPENDICES

APPENDIX A - BOREHOLE AND WELL CONSTRUCTION LOGS

APPENDIX B - NOVEMBER SOIL SAMPLING ANALYTICAL REPORT

APPENDIX C - JUNE 5, 2013 GROUNDWATER SAMPLING ANALYTICAL REPORT
SEPTEMBER 11, 2013 GROUNDWATER SAMPLING ANALYTICAL REPORT
DECEMBER 12, 2013 GROUNDWATER SAMPLING ANALYTICAL REPORT

APPENDIX A

MW-6
MW-7
MW-8
MW-9
MW-10
MW-11

GEOLOGIST: Doug Burr	COMPLETION DATE: November 19, 2013
DRILLER: Miguel Alveredo	GROUND SURFACE ELEV (ft MSL) 5686.8
DRILLING COMPANY: National	TOP OF CASING ELEV (ft, MSL) 5689.9
DRILLING METHOD: Hollow Stem Auger	STATE PLANE COORDINATES (ft)
HOLE DIAMETER (IN): 8.0	Northing 2066319.8 Easting 2751435.8

Groundwater seepage encountered at 31.5 ft depth during drilling.
Soil colors classified using the Munsell soil color charts
PID not available

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
		0				NA	Protective casing
		2					
		4					
Silty sand, light olive brown, 2.5Y 5/4, dry, loose, weak cementation, predominantly fine grained sand, trace medium sand, trace coarse sand.	- Hand augered to 5' bgs (no sample recovered)	6		SM	0%		8in → Annular space seal; 2-inch ID schedule 40 PVC riser
		8			50%		
		10			0%		8in → Bentonite seal
Poorly graded sand, dark yellowish brown, 10YR 4/6, loose, dry-moist weak cementation, 80% medium sand, 15% coarse sand,		12		SP			
		14			100%		8in → Silica sand

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-6

Standard Oil Com #1

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
predominantly quartz.		16		SP	0%	NA	2-inch ID schedule 40 PVC riser
	- as above, increase in coarse sand (50%), trace gravel (1")	18			100%		
		20			0%		
	- as above, no gravel	22					
		24			100%		
		26			0%		8in → Silica sand; 2-inch ID schedule 40, No. 10 screen
Sandy silt, dark greenish gray, Gley 4/10 GY, stiff, moderate cementation, mottled with black veining, and white nodules, strong TPH odor, moist - wet.	- sampled Standard Oil Com #1 MW-6 - 27.5' collected at 0830	28		ML	100%		
Silty sand, dark grey, Gley 4/N, loose, wet, weak cementation, strong TPH odor, predominantly fine grained sand, trace medium grained sand.		30		SM			
Very silty sand, dark grey, Gley 4/N, medium stiff, wet, weak cementation, strong TPH odor.		32		SM-ML	25%		
		34			100%		
		36			25%		
Poorly graded sand with silt, dark grey, Gley 4/N, loose, wet, weak cementation, strong TPH odor.				SP-SM			
				SM-ML			

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-6

Standard Oil Com #1

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
brownish grey, 2.5Y 6/2, very stiff, moist, moderate cementation, sand is fine grained.	Total depth = 40' bgs	40 42 44 46 48 50 52 54 56 58 60		SM-ML	100%	NA	8in Silica sand 2-inch ID schedule 40, No. 10 screen

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-6

Standard Oil Com #1

GEOLOGIST: Doug Burr	COMPLETION DATE: November 19, 2013
DRILLER: Miguel Alveredo	GROUND SURFACE ELEV (ft MSL) 5679.4
DRILLING COMPANY: National	TOP OF CASING ELEV (ft, MSL) 5682.7
DRILLING METHOD: Hollow Stem Auger	STATE PLANE COORDINATES (ft)
HOLE DIAMETER (IN): 8.0	Northing 2066380.6 Easting 2751444.8

Groundwater seepage encountered at 25.5 ft depth during drilling.
Soil colors classified using the Munsell soil color charts
PID not available

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
Slightly silty sand, 2.5Y 5/4, light olive brown, loose, dry to moist, weak cementation, predominantly fine and medium graded sands, angular - sub angular (quartz).	- Hand augered to 5' bgs (no sample recovered)	0		SP-SM	0%	NA	Protective casing
		2					
		4					8in → Annular space seal
		6			100%		2-inch ID schedule 40 PVC riser
		8					
		10			0%		8in → Bentonite seal
		12		SP			
Poorly graded sand 10YR 5/4, yellowish brown, loose, dry - moist, predominantly medium sands, angular - sub angular, mostly quartz,		14			100%		8in → Silica sand

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-7

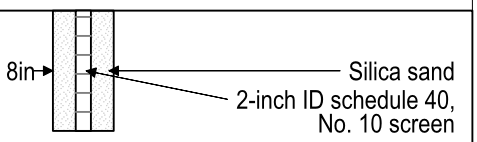
Standard Oil Com #1

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
trace coarse sand.		16		SP	0%	NA	2-inch ID schedule 40 PVC riser
	- caliche noted, moderate cementation at 18'	18			75%		
	- as above, minor clay lens at 19.5', iron oxide staining on either side of clay lense	20			0%		
Sandy silt, Gley 4/10 GY, dark greenish grey, moist, stiff, moderate cementation, mottled with greyish brown 10YR 5/2, strong TPH odor.	- sampled Standard Oil Com #1 MW-7 - 22.5' collected at 1050	22		ML			
Very silty sand, 5Y 4/1, dark gray, medium stiff, weak cementation, minor concretion no bed, sand is very fine grained, mottled with black.		24		SM-ML	100%		
	- Gley 2.5/N, wet, strong TPH odor, moist.	26		SM	80%	8in	Silica sand
Silty sand, as above, decrease in silt content, increase in medium sand content, wet.		28			100%		2-inch ID schedule 40, No. 10 screen
	- as above	30			75%		
		32					
		34			100%		
Sandy silt, 2.5Y 5/3, light olive brown, moist, medium stiff, moderate cementation, sands are very fine grained.		36		ML	50%		

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-7

Standard Oil Com #1

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
Very silty sand, 2.5Y 5/4 light olive brown, mottled with 2.5Y 5/1, gray moist, medium stiff, white veining present.	Total depth = 40' bgs	40		SM-ML	100%	NA	
		42					
		44					
		46					
		48					
		50					
		52					
		54					
		56					
		58					
		60					

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-7

Standard Oil Com #1

GEOLOGIST: Doug Burr	COMPLETION DATE: November 18, 2013
DRILLER: Miguel Alveredo	GROUND SURFACE ELEV (ft MSL) 5685.7
DRILLING COMPANY: National	TOP OF CASING ELEV (ft, MSL) 5688.6
DRILLING METHOD: Hollow Stem Auger	STATE PLANE COORDINATES (ft)
HOLE DIAMETER (IN): 8.0	Northing 2066343.8 Easting 2751375.0

Groundwater seepage encountered at 27.0 ft depth during drilling.
Soil colors classified using the Munsell soil color charts
PID not available

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
		0				NA	Protective casing
		2			0%		
		4					
Silty sand, light olive brown, 2.5Y 5/4, dry, loose, weak cementation, predominantly fine sand, trace medium sand, trace gravel (1").	- Hand augered to 5' bgs (no sample recovered)	6		SM			8in Annular space seal; 2-inch ID schedule 40 PVC riser
		8			80%		
		10			0%		8in Bentonite seal
	- as above, increase in medium sand to 50%, predominantly quartz	12					
		14			100%		8in Silica sand

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-8

Standard Oil Com #1

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
	- as above	16 18 20 22		SM	0% 100% 80%	NA	2-inch ID schedule 40 PVC riser
Slightly silty sand, light olive brown 2.5Y 5/6, loose, dry to moist, weak cementation, predominantly medium sand (quartz).		24 26		SP-SM			8in → Silica sand 2-inch ID schedule 40, No. 10 screen
Sandy silt, dark greenish gray, Gley 4/10 GY, stiff, moderate cementation, mottled with black veining and white nodules, strong TPH odor, wet.	- sampled Standard Oil Com #1 MW-8 - 27.5' collected at 1530	28		ML	75%		
	- color change to dark gray 5Y 4/1, stiff, weak cementation, strong odor, wet	30 32					
Silty sand, dark grey, Gley 4/N, loose, wet, weak cementation, strong TPH odor.		34		SM	80%		
Poorly graded sand with silt, dark gray Gley 4/N, loose, wet, weak cementation.		36		SP-SM			
Very silty sand, light gray 2.5Y 6/2, very stiff, moist, moderate				SM-ML	75%		

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-8

Standard Oil Com #1

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
cementation, sand is fine grained, predominantly quartz.	Total depth = 40' bgs	40 42 44 46 48 50 52 54 56 58 60		SM-ML		NA	8in → Silica sand; 2-inch ID schedule 40, No. 10 screen

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-8

Standard Oil Com #1

GEOLOGIST: Doug Burr	COMPLETION DATE: November 19, 2013
DRILLER: Miguel Alveredo	GROUND SURFACE ELEV (ft MSL) 5678.9
DRILLING COMPANY: National	TOP OF CASING ELEV (ft, MSL) 5682.1
DRILLING METHOD: Hollow Stem Auger	STATE PLANE COORDINATES (ft)
HOLE DIAMETER (IN): 8.0	Northing 2066381.9 Easting 2751373.2

Groundwater seepage encountered at 21.0 ft depth during drilling.
Soil colors classified using the Munsell soil color charts

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
	- Hand augered to 5' bgs (no sample recovered)	0			0%	NA	Protective casing; 8in; Annular space seal; 2-inch ID schedule 40 PVC riser
		6			0%		
Slightly silty sand, 2.5Y 5/4, light olive brown, loose, dry, weak cementation, predominantly fine to medium grained sands, trace coarse sand, predominantly quartz.		8		SP-SM	75%	0.5	
		10			0%	NA	8in; Bentonite seal
		12			75%	0.5	
	- as above, moist - dry, some iron oxide staining	14					8in; Silica sand

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-9

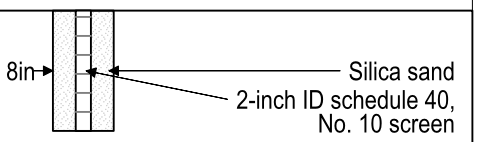
Standard Oil Com #1

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
		16		SP-SM	0%	0.5 NA	2-inch ID schedule 40 PVC riser
Very silty sand, 2.5Y 5/2, grayish brown, moist, medium stiff, moderate consolidation, very fine sands.		18		SM-ML	100%	102	
SP-SM as described at 7.5'	- as above, change in color to Gley 4/10GY, increase in medium sand, strong TPH odor, wet - sampled Standard Oil Com #1 MW-9 - 22.5' collected at 1340	20		SP-SM	50%	1173	
		22					
		24			100%	1696	
Poorly graded sand, Gley 4/10Y, wet, loose, weak cementation, strong TPH odor, predominantly quarts 50%, medium sand 50%.		26		SP	100%	659	8in Silica sand 2-inch ID schedule 40, No. 10 screen
Very silty sand, light olive brown, moist, medium stiff very fine sands.		28		SM-ML	100%	99	
		30					
		32			0%	NA	
As described at 25', wet				SP	100%	52	
As described at 28', increase in medium sand to 50%, wet.	- color change to 5Y 4/3 olive	34		SM-ML			
		36			100%	67	
						43	

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-9

Standard Oil Com #1

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
				SM-ML	100%	43	
	Total depth = 40' bgs	40					
		42					
		44					
		46					
		48					
		50					
		52					
		54					
		56					
		58					
		60					

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-9

Standard Oil Com #1

GEOLOGIST: Doug Burr	COMPLETION DATE: November 18, 2013
DRILLER: Miguel Alveredo	GROUND SURFACE ELEV (ft MSL) 5685.1
DRILLING COMPANY: National	TOP OF CASING ELEV (ft, MSL) 5688.2
DRILLING METHOD: Hollow Stem Auger	STATE PLANE COORDINATES (ft)
HOLE DIAMETER (IN): 8.0	Northing 2066344.9 Easting 2751321.9

Groundwater seepage encountered at 33.5 ft depth during drilling.
Soil colors classified using the Munsell soil color charts
PID not available

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
		0				NA	Protective casing
		2			0%		
		4					
Silty sand, light yellowish brown, 2.5Y 6/3, dry, loose, weak cementation, predominantly fine sands.	- Hand augered to 5' bgs (no sample recovered)	6		SM			8in → Annular space seal; 2-inch ID schedule 40 PVC riser
		8			20%		
		10			0%		8in → Bentonite seal
	- as above, trace gravel (1/2")	12					
		14			100%		8in → Silica sand

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-10

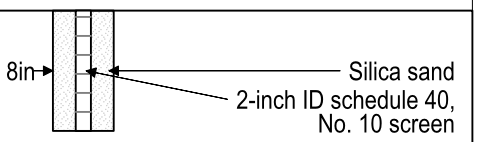
Standard Oil Com #1

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
		16		SM	0%	NA	2-inch ID schedule 40 PVC riser
	- As above, increase in silt content (~30%), charcoal and white veining present. Sandstone cobble present at 20', dry - moist.	18			100%		
		20			20%		
	- silt layer noted at 24', light olive brown 2.5Y 5/3 - silty sand, light olive brown, 2.5Y 5/4, moist - dry, loose, no cementation	22			100%		
		24			50%		8in → Silica sand 2-inch ID schedule 40, No. 10 screen
Sandy silt with clay, dark greenish gray, Gley 3/5GY, moist, moderate cementation, medium plasticity, very strong TPH odor, white nodules present.	- sampled Standard Oil Com #1 MW-10 - 27.5' collected at 1245	26		ML			
Silty sand, dark greenish gray, Gley 4/5GY, moist, loose, very strong TPH odor.		28		SM	100%		
		30			0%		
	- as above, wet, minor concretion noted at 33.5'	32			100%		
	- As above changed to: greenish gray Gley 5/10Y, wet, loose, poorly sorted, 50% coarse sand, predominantly quartz.	34			100%		
Sandy silt, olive gray 5Y 5/2, moist, stiff, moderate cementation, low plasticity.		36		ML			

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-10

Standard Oil Com #1

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
				ML	100%	NA	
	Total depth = 40' bgs	40					
		42					
		44					
		46					
		48					
		50					
		52					
		54					
		56					
		58					
		60					

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-10

Standard Oil Com #1

GEOLOGIST: Doug Burr	COMPLETION DATE: November 20, 2013
DRILLER: Miguel Alveredo	GROUND SURFACE ELEV (ft MSL) 5677.3
DRILLING COMPANY: National	TOP OF CASING ELEV (ft, MSL) 5680.3
DRILLING METHOD: Hollow Stem Auger	STATE PLANE COORDINATES (ft)
HOLE DIAMETER (IN): 8.0	Northing 2066392.9 Easting 2751289.0

Groundwater seepage encountered at 22.5 ft depth during drilling.
Soil colors classified using the Munsell soil color charts

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
	- Hand augered to 5' bgs (no sample recovered)	0			0%	NA	8in → Annular space seal; 2-inch ID schedule 40 PVC riser; Protective casing
Silty sand, 10YR 5/4, yellowish brown, moist - dry, medium stiff, moderate cementation and white veining present.		8		SM	80%	0	
		10				0	8in → Bentonite seal
Very silty sand, 10YR 5/3, brown, dry - moist, moderate cementation.		12		SM-ML	20%	0.8	
Sandy silt with clay, 10YR 4/3, brown, moist, moderate cementation, stiff white veining		14		ML / SP	100%		8in → Silica sand

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-11

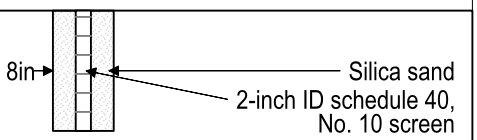
Standard Oil Com #1

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
6/4, light yellowish brown, loose, dry - moist, 50% medium sand, predominantly quartz, angular - sub angular, weak cementation, no odor.		16		SP	0%	0.8	2-inch ID schedule 40 PVC riser
						NA	
	- as above, moderate cementation, some caliche noted, no odor	18			100%	1.7	
		20				NA	
	- sampled Standard Oil Com #1 MW-11 - 22.5' collected at 0900	22			0%		
	- As above, color change to Gley, 4/10Y, dark greenish gray, wet, strong TPH odor, mottled with black (Gley 2.5/N).	24			80%	2809	
						NA	
	- 25' - 30' no recovery	26			0%		8in → Silica sand; 2-inch ID schedule 40, No. 10 screen
		28				NA	
					0%		
		30				74	
	- as above, wet				50%		
		32				67	
		34			100%		
Very silty sand, Gley 4/10Y, dark greenish gray, stiff, moderate cementation, moist, strong TPH odor, trace iron oxide staining.				SM-ML		NA	
		36			0%		
	- as above					40.1	

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-11

Standard Oil Com #1

SOIL DESCRIPTION	COMMENTS	DEPTH (ft)	LITHOLOGY	SOIL	RECOVERY	PID/OVA (ppm)	WELL CONSTRUCTION
	- Driller had to over drill to 43' due to blowing sands. Well will be set at 40'. Native backfill 40'-43'	40		SM-ML	100%	40.1	
		42			0%	NA	
	Total depth = 43' bgs	44					
		46					
		48					
		50					
		52					
		54					
		56					
		58					
		60					

MWH

LOG & RECORD OF WELL CONSTRUCTION
MW-11

Standard Oil Com #1

APPENDIX B

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-43890-1
TestAmerica Sample Delivery Group: November 2013
Client Project/Site: Standard Oil Com #1 Soil Analysis

For:
MWH Americas Inc
2890 East Cottonwood Pkwy
Suite 300
Salt Lake City, Utah 84121

Attn: Cary Rubel

Authorized for release by:
12/18/2013 9:35:54 AM

Timothy Kellogg, Lab Director
(361)289-2673
tim.kellogg@testamericainc.com

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Surrogate is outside control limits
F	MS/MSD Recovery and/or RPD exceeds the control limits

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate 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
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)

Case Narrative

Client: MWH Americas Inc
Project/Site: Standard Oil Com #1 Soil Analysis

TestAmerica Job ID: 560-43890-1
SDG: November 2013

Job ID: 560-43890-1

Laboratory: TestAmerica Corpus Christi

Narrative

Receipt

The samples were received on 11/21/2013 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 14.8º C.

GC/MS VOA

Method(s) 8260B: It was noted that some the matrix spike (MS) recoveries for 560-43890-1 were outside of the control limits. It was also noted that some of the surrogate (dibromofluoromethane) recoveries for samples 560-43890-3 and -6 were outside of the control limits. Finally, samples 560-43890-1, -3, -5 and -6 were diluted due to the abundance of non-target analytes. Elevated reporting limits (RLs) are provided. Matrix interferences inherent to the samples are suspected to be the cause of the recoveries. The associated laboratory control sample (LCS) recovery met acceptance criteria. No other analytical or quality issues were noted.

Client Sample ID: STD-OIL MW-10-27.5

Lab Sample ID: 560-43890-1

Date Collected: 11/18/13 12:45
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 81.9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.55	J	1.1	0.22	mg/Kg	☼	11/26/13 15:23	11/27/13 03:11	500
Ethylbenzene	3.2		1.1	0.11	mg/Kg	☼	11/26/13 15:23	11/27/13 03:11	500
Toluene	0.46	J	1.1	0.11	mg/Kg	☼	11/26/13 15:23	11/27/13 03:11	500
Xylenes, Total	27		3.3	0.11	mg/Kg	☼	11/26/13 15:23	11/27/13 03:11	500

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*121*		*50 - 135*	*11/26/13 15:23*	*11/27/13 03:11*	*500*
4-Bromofluorobenzene (Surr)	*100*		*37 - 138*	*11/26/13 15:23*	*11/27/13 03:11*	*500*
Dibromofluoromethane (Surr)	*81*		*55 - 135*	*11/26/13 15:23*	*11/27/13 03:11*	*500*
1,2-Dichloroethane-d4 (Surr)	*119*		*60 - 145*	*11/26/13 15:23*	*11/27/13 03:11*	*500*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
TPH (1664A)	<1.4		60	1.4	mg/Kg	☼	12/10/13 12:19	12/10/13 12:24	1

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	210		61	6.1	mg/Kg	☼		12/02/13 13:32	1

Client Sample ID: STD-OIL MW-8-27.5

Lab Sample ID: 560-43890-2

Date Collected: 11/18/13 15:30
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 75.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.079	J	0.12	0.024	mg/Kg	☼	11/26/13 15:23	11/27/13 03:36	50
Ethylbenzene	0.12		0.12	0.012	mg/Kg	☼	11/26/13 15:23	11/27/13 03:36	50
Toluene	0.082	J	0.12	0.012	mg/Kg	☼	11/26/13 15:23	11/27/13 03:36	50
Xylenes, Total	0.59		0.35	0.012	mg/Kg	☼	11/26/13 15:23	11/27/13 03:36	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*50 - 135*	*11/26/13 15:23*	*11/27/13 03:36*	*50*
4-Bromofluorobenzene (Surr)	*92*		*37 - 138*	*11/26/13 15:23*	*11/27/13 03:36*	*50*
Dibromofluoromethane (Surr)	*88*		*55 - 135*	*11/26/13 15:23*	*11/27/13 03:36*	*50*
1,2-Dichloroethane-d4 (Surr)	*113*		*60 - 145*	*11/26/13 15:23*	*11/27/13 03:36*	*50*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
TPH (1664A)	<1.6		66	1.6	mg/Kg	☼	12/10/13 12:19	12/10/13 12:24	1

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	36	J	66	6.6	mg/Kg	☼		12/02/13 13:33	1

Client Sample ID: STD-OIL MW-6-27.5

Lab Sample ID: 560-43890-3

Date Collected: 11/19/13 08:30
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 79.0

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.45		2.2	0.45	mg/Kg	☼	11/26/13 15:23	11/27/13 04:01	1000

Client Sample ID: STD-OIL MW-6-27.5

Lab Sample ID: 560-43890-3

Date Collected: 11/19/13 08:30
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 79.0

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	6.2		2.2	0.22	mg/Kg	☼	11/26/13 15:23	11/27/13 04:01	1000
Toluene	0.89	J	2.2	0.22	mg/Kg	☼	11/26/13 15:23	11/27/13 04:01	1000
Xylenes, Total	48		6.7	0.22	mg/Kg	☼	11/26/13 15:23	11/27/13 04:01	1000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*153*	*X*	*50 - 135*	*11/26/13 15:23*	*11/27/13 04:01*	*1000*
4-Bromofluorobenzene (Surr)	*126*		*37 - 138*	*11/26/13 15:23*	*11/27/13 04:01*	*1000*
Dibromofluoromethane (Surr)	*88*		*55 - 135*	*11/26/13 15:23*	*11/27/13 04:01*	*1000*
1,2-Dichloroethane-d4 (Surr)	*132*		*60 - 145*	*11/26/13 15:23*	*11/27/13 04:01*	*1000*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
TPH (1664A)	240		63	1.5	mg/Kg	☼	12/10/13 12:19	12/10/13 12:24	1

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	130		63	6.3	mg/Kg	☼		12/02/13 13:34	1

Client Sample ID: STD-OIL MW-7-22.5

Lab Sample ID: 560-43890-4

Date Collected: 11/19/13 10:50
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 78.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.022		0.11	0.022	mg/Kg	☼	11/26/13 15:23	11/27/13 00:14	50
Ethylbenzene	0.14		0.11	0.011	mg/Kg	☼	11/26/13 15:23	11/27/13 00:14	50
Toluene	<0.011		0.11	0.011	mg/Kg	☼	11/26/13 15:23	11/27/13 00:14	50
Xylenes, Total	2.7		0.33	0.011	mg/Kg	☼	11/26/13 15:23	11/27/13 00:14	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*50 - 135*	*11/26/13 15:23*	*11/27/13 00:14*	*50*
4-Bromofluorobenzene (Surr)	*95*		*37 - 138*	*11/26/13 15:23*	*11/27/13 00:14*	*50*
Dibromofluoromethane (Surr)	*87*		*55 - 135*	*11/26/13 15:23*	*11/27/13 00:14*	*50*
1,2-Dichloroethane-d4 (Surr)	*109*		*60 - 145*	*11/26/13 15:23*	*11/27/13 00:14*	*50*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
TPH (1664A)	13	J	63	1.5	mg/Kg	☼	12/10/13 12:19	12/10/13 12:24	1

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	75		64	6.4	mg/Kg	☼		12/02/13 13:34	1

Client Sample ID: STD-OIL MW-9-22.5

Lab Sample ID: 560-43890-5

Date Collected: 11/19/13 13:40
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 77.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	J	0.45	0.089	mg/Kg	☼	11/26/13 15:23	11/27/13 04:27	200
Ethylbenzene	1.9		0.45	0.045	mg/Kg	☼	11/26/13 15:23	11/27/13 04:27	200

Client Sample ID: STD-OIL MW-9-22.5

Lab Sample ID: 560-43890-5

Date Collected: 11/19/13 13:40
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 77.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	0.63		0.45	0.045	mg/Kg	☼	11/26/13 15:23	11/27/13 04:27	200
Xylenes, Total	9.3		1.3	0.045	mg/Kg	☼	11/26/13 15:23	11/27/13 04:27	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*117*		*50 - 135*	*11/26/13 15:23*	*11/27/13 04:27*	*200*
4-Bromofluorobenzene (Surr)	*97*		*37 - 138*	*11/26/13 15:23*	*11/27/13 04:27*	*200*
Dibromofluoromethane (Surr)	*88*		*55 - 135*	*11/26/13 15:23*	*11/27/13 04:27*	*200*
1,2-Dichloroethane-d4 (Surr)	*120*		*60 - 145*	*11/26/13 15:23*	*11/27/13 04:27*	*200*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
TPH (1664A)	<1.5		64	1.5	mg/Kg	☼	12/10/13 12:19	12/10/13 12:24	1

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	54	J	64	6.4	mg/Kg	☼		12/02/13 13:35	1

Client Sample ID: STD-OIL MW-11-22.5

Lab Sample ID: 560-43890-6

Date Collected: 11/20/13 09:00
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 80.9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.2		1.1	0.22	mg/Kg	☼	11/26/13 15:23	11/27/13 04:52	500
Ethylbenzene	5.8		1.1	0.11	mg/Kg	☼	11/26/13 15:23	11/27/13 04:52	500
Toluene	0.21	J	1.1	0.11	mg/Kg	☼	11/26/13 15:23	11/27/13 04:52	500
Xylenes, Total	53		3.2	0.11	mg/Kg	☼	11/26/13 15:23	11/27/13 04:52	500

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*146*	*X*	*50 - 135*	*11/26/13 15:23*	*11/27/13 04:52*	*500*
4-Bromofluorobenzene (Surr)	*119*		*37 - 138*	*11/26/13 15:23*	*11/27/13 04:52*	*500*
Dibromofluoromethane (Surr)	*91*		*55 - 135*	*11/26/13 15:23*	*11/27/13 04:52*	*500*
1,2-Dichloroethane-d4 (Surr)	*116*		*60 - 145*	*11/26/13 15:23*	*11/27/13 04:52*	*500*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
TPH (1664A)	86		61	1.5	mg/Kg	☼	12/10/13 12:19	12/10/13 12:24	1

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	46	J	62	6.2	mg/Kg	☼		12/02/13 13:35	1

Client Sample ID: Trip Blank

Lab Sample ID: 560-43890-7

Date Collected: 11/20/13 00:00
Matrix: Water
Date Received: 11/21/13 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00014		0.0010	0.00014	mg/L			11/27/13 14:12	1
Ethylbenzene	<0.00020		0.0010	0.00020	mg/L			11/27/13 14:12	1
Toluene	<0.00030		0.0010	0.00030	mg/L			11/27/13 14:12	1

Client: MWH Americas Inc
Project/Site: Standard Oil Com #1 Soil Analysis

TestAmerica Job ID: 560-43890-1
SDG: November 2013

Client Sample ID: Trip Blank
Date Collected: 11/20/13 00:00
Date Received: 11/21/13 10:00

Lab Sample ID: 560-43890-7
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	<0.00023		0.0030	0.00023	mg/L			11/27/13 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*11/27/13 14:12*	*1*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*11/27/13 14:12*	*1*

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

Lab Sample ID: MB 560-95552/1-A
Matrix: Solid
Analysis Batch: 95568

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 95552

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.020		0.10	0.020	mg/Kg		11/26/13 15:23	11/26/13 23:49	50
Ethylbenzene	<0.010		0.10	0.010	mg/Kg		11/26/13 15:23	11/26/13 23:49	50
Toluene	<0.010		0.10	0.010	mg/Kg		11/26/13 15:23	11/26/13 23:49	50
Xylenes, Total	<0.010		0.30	0.010	mg/Kg		11/26/13 15:23	11/26/13 23:49	50

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*50 - 135*	*11/26/13 15:23*	*11/26/13 23:49*	*50*
4-Bromofluorobenzene (Surr)	*96*		*37 - 138*	*11/26/13 15:23*	*11/26/13 23:49*	*50*
Dibromofluoromethane (Surr)	*95*		*55 - 135*	*11/26/13 15:23*	*11/26/13 23:49*	*50*
1,2-Dichloroethane-d4 (Surr)	*119*		*60 - 145*	*11/26/13 15:23*	*11/26/13 23:49*	*50*

Lab Sample ID: LCS 560-95552/2-A
Matrix: Solid
Analysis Batch: 95568

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 95552

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	2.50	2.47		mg/Kg		99	70 - 130
Ethylbenzene	2.50	2.35		mg/Kg		94	70 - 130
Toluene	2.50	2.33		mg/Kg		93	70 - 130
Xylenes, Total	5.00	4.67		mg/Kg		93	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*108*		*50 - 135*
4-Bromofluorobenzene (Surr)	*101*		*37 - 138*
Dibromofluoromethane (Surr)	*116*		*55 - 135*
1,2-Dichloroethane-d4 (Surr)	*118*		*60 - 145*

Lab Sample ID: 560-43890-4 MS
Matrix: Solid
Analysis Batch: 95568

Client Sample ID: STD-OIL MW-7-22.5
Prep Type: Total/NA
Prep Batch: 95552

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.022		2.86	2.45		mg/Kg	☼	85	66 - 130
Ethylbenzene	0.14		2.86	2.68		mg/Kg	☼	89	64 - 130
Toluene	<0.011		2.86	2.25		mg/Kg	☼	79	60 - 130
Xylenes, Total	2.7		5.73	10.4	F	mg/Kg	☼	135	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*50 - 135*
4-Bromofluorobenzene (Surr)	*103*		*37 - 138*
Dibromofluoromethane (Surr)	*100*		*55 - 135*
1,2-Dichloroethane-d4 (Surr)	*105*		*60 - 145*

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

Lab Sample ID: 560-43890-4 MSD
Matrix: Solid
Analysis Batch: 95568

Client Sample ID: STD-OIL MW-7-22.5
Prep Type: Total/NA
Prep Batch: 95552

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<0.022		2.86	2.47		mg/Kg	☼	86	66 - 130	1	40.0
Ethylbenzene	0.14		2.86	2.57		mg/Kg	☼	85	64 - 130	4	40.0
Toluene	<0.011		2.86	2.30		mg/Kg	☼	80	60 - 130	2	40.0
Xylenes, Total	2.7		5.72	7.83		mg/Kg	☼	90	70 - 130	28	40.0

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*87*		*50 - 135*
4-Bromofluorobenzene (Surr)	*82*		*37 - 138*
Dibromofluoromethane (Surr)	*90*		*55 - 135*
1,2-Dichloroethane-d4 (Surr)	*91*		*60 - 145*

Lab Sample ID: MB 560-95583/8
Matrix: Water
Analysis Batch: 95583

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00014		0.0010	0.00014	mg/L			11/27/13 12:47	1
Ethylbenzene	<0.00020		0.0010	0.00020	mg/L			11/27/13 12:47	1
Toluene	<0.00030		0.0010	0.00030	mg/L			11/27/13 12:47	1
Xylenes, Total	<0.00023		0.0030	0.00023	mg/L			11/27/13 12:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*70 - 130*		*11/27/13 12:47*	*1*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*11/27/13 12:47*	*1*

Lab Sample ID: LCS 560-95583/3
Matrix: Water
Analysis Batch: 95583

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0250	0.0248		mg/L		99	70 - 130
Ethylbenzene	0.0250	0.0257		mg/L		103	70 - 130
Toluene	0.0250	0.0225		mg/L		90	70 - 130
Xylenes, Total	0.0750	0.0793		mg/L		106	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*91*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*

Method: 9071B - HEM and SGT-HEM

Lab Sample ID: MB 600-122471/1-A
Matrix: Solid
Analysis Batch: 122472

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 122471

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
TPH (1664A)	<1.2		50	1.2	mg/Kg		12/10/13 14:17	12/10/13 14:17	1

Method: 9071B - HEM and SGT-HEM (Continued)

Lab Sample ID: LCS 600-122471/2-A
Matrix: Solid
Analysis Batch: 122472

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 122471

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
TPH (1664A)			2000	1960		mg/Kg		98	70 - 130		

Lab Sample ID: LCSD 600-122471/17-A
Matrix: Solid
Analysis Batch: 122472

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 122471

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
TPH (1664A)			2000	1950		mg/Kg		97	70 - 130	1	30

Method: 9251 - Chloride

Lab Sample ID: MB 560-95714/1-A
Matrix: Solid
Analysis Batch: 95702

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.89	J	5.0	0.50	mg/Kg			12/02/13 13:31	1

Lab Sample ID: LCS 560-95714/2-A
Matrix: Solid
Analysis Batch: 95702

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			150	145		mg/Kg		97	85 - 115		

Lab Sample ID: 560-43890-1 MS
Matrix: Solid
Analysis Batch: 95702

Client Sample ID: STD-OIL MW-10-27.5
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	210		2440	2660		mg/Kg	☼	100	85 - 115		

Lab Sample ID: 560-43890-1 MSD
Matrix: Solid
Analysis Batch: 95702

Client Sample ID: STD-OIL MW-10-27.5
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	210		2440	2720		mg/Kg	☼	103	85 - 115	2	30

GC/MS VOA

Prep Batch: 95552

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43890-1	STD-OIL MW-10-27.5	Total/NA	Solid	5030B	
560-43890-2	STD-OIL MW-8-27.5	Total/NA	Solid	5030B	
560-43890-3	STD-OIL MW-6-27.5	Total/NA	Solid	5030B	
560-43890-4	STD-OIL MW-7-22.5	Total/NA	Solid	5030B	
560-43890-4 MS	STD-OIL MW-7-22.5	Total/NA	Solid	5030B	
560-43890-4 MSD	STD-OIL MW-7-22.5	Total/NA	Solid	5030B	
560-43890-5	STD-OIL MW-9-22.5	Total/NA	Solid	5030B	
560-43890-6	STD-OIL MW-11-22.5	Total/NA	Solid	5030B	
LCS 560-95552/2-A	Lab Control Sample	Total/NA	Solid	5030B	
MB 560-95552/1-A	Method Blank	Total/NA	Solid	5030B	

Analysis Batch: 95568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43890-1	STD-OIL MW-10-27.5	Total/NA	Solid	8260B	95552
560-43890-2	STD-OIL MW-8-27.5	Total/NA	Solid	8260B	95552
560-43890-3	STD-OIL MW-6-27.5	Total/NA	Solid	8260B	95552
560-43890-4	STD-OIL MW-7-22.5	Total/NA	Solid	8260B	95552
560-43890-4 MS	STD-OIL MW-7-22.5	Total/NA	Solid	8260B	95552
560-43890-4 MSD	STD-OIL MW-7-22.5	Total/NA	Solid	8260B	95552
560-43890-5	STD-OIL MW-9-22.5	Total/NA	Solid	8260B	95552
560-43890-6	STD-OIL MW-11-22.5	Total/NA	Solid	8260B	95552
LCS 560-95552/2-A	Lab Control Sample	Total/NA	Solid	8260B	95552
MB 560-95552/1-A	Method Blank	Total/NA	Solid	8260B	95552

Analysis Batch: 95583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43890-7	Trip Blank	Total/NA	Water	8260B	
LCS 560-95583/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-95583/8	Method Blank	Total/NA	Water	8260B	

General Chemistry

Analysis Batch: 95505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43890-1	STD-OIL MW-10-27.5	Total/NA	Solid	Moisture	
560-43890-2	STD-OIL MW-8-27.5	Total/NA	Solid	Moisture	
560-43890-3	STD-OIL MW-6-27.5	Total/NA	Solid	Moisture	
560-43890-4	STD-OIL MW-7-22.5	Total/NA	Solid	Moisture	
560-43890-5	STD-OIL MW-9-22.5	Total/NA	Solid	Moisture	
560-43890-6	STD-OIL MW-11-22.5	Total/NA	Solid	Moisture	

Analysis Batch: 95702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43890-1	STD-OIL MW-10-27.5	Soluble	Solid	9251	95714
560-43890-1 MS	STD-OIL MW-10-27.5	Soluble	Solid	9251	95714
560-43890-1 MSD	STD-OIL MW-10-27.5	Soluble	Solid	9251	95714
560-43890-2	STD-OIL MW-8-27.5	Soluble	Solid	9251	95714
560-43890-3	STD-OIL MW-6-27.5	Soluble	Solid	9251	95714
560-43890-4	STD-OIL MW-7-22.5	Soluble	Solid	9251	95714
560-43890-5	STD-OIL MW-9-22.5	Soluble	Solid	9251	95714

General Chemistry (Continued)

Analysis Batch: 95702 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43890-6	STD-OIL MW-11-22.5	Soluble	Solid	9251	95714
LCS 560-95714/2-A	Lab Control Sample	Soluble	Solid	9251	95714
MB 560-95714/1-A	Method Blank	Soluble	Solid	9251	95714

Leach Batch: 95714

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43890-1	STD-OIL MW-10-27.5	Soluble	Solid	DI Leach	
560-43890-1 MS	STD-OIL MW-10-27.5	Soluble	Solid	DI Leach	
560-43890-1 MSD	STD-OIL MW-10-27.5	Soluble	Solid	DI Leach	
560-43890-2	STD-OIL MW-8-27.5	Soluble	Solid	DI Leach	
560-43890-3	STD-OIL MW-6-27.5	Soluble	Solid	DI Leach	
560-43890-4	STD-OIL MW-7-22.5	Soluble	Solid	DI Leach	
560-43890-5	STD-OIL MW-9-22.5	Soluble	Solid	DI Leach	
560-43890-6	STD-OIL MW-11-22.5	Soluble	Solid	DI Leach	
LCS 560-95714/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
MB 560-95714/1-A	Method Blank	Soluble	Solid	DI Leach	

Prep Batch: 122471

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43890-1	STD-OIL MW-10-27.5	Total/NA	Solid	9071B	
560-43890-2	STD-OIL MW-8-27.5	Total/NA	Solid	9071B	
560-43890-3	STD-OIL MW-6-27.5	Total/NA	Solid	9071B	
560-43890-4	STD-OIL MW-7-22.5	Total/NA	Solid	9071B	
560-43890-5	STD-OIL MW-9-22.5	Total/NA	Solid	9071B	
560-43890-6	STD-OIL MW-11-22.5	Total/NA	Solid	9071B	
LCS 600-122471/2-A	Lab Control Sample	Total/NA	Solid	9071B	
LCSD 600-122471/17-A	Lab Control Sample Dup	Total/NA	Solid	9071B	
MB 600-122471/1-A	Method Blank	Total/NA	Solid	9071B	

Analysis Batch: 122472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43890-1	STD-OIL MW-10-27.5	Total/NA	Solid	9071B	122471
560-43890-2	STD-OIL MW-8-27.5	Total/NA	Solid	9071B	122471
560-43890-3	STD-OIL MW-6-27.5	Total/NA	Solid	9071B	122471
560-43890-4	STD-OIL MW-7-22.5	Total/NA	Solid	9071B	122471
560-43890-5	STD-OIL MW-9-22.5	Total/NA	Solid	9071B	122471
560-43890-6	STD-OIL MW-11-22.5	Total/NA	Solid	9071B	122471
LCS 600-122471/2-A	Lab Control Sample	Total/NA	Solid	9071B	122471
LCSD 600-122471/17-A	Lab Control Sample Dup	Total/NA	Solid	9071B	122471
MB 600-122471/1-A	Method Blank	Total/NA	Solid	9071B	122471

Client Sample ID: STD-OIL MW-10-27.5

Lab Sample ID: 560-43890-1

Date Collected: 11/18/13 12:45
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 81.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			95552	11/26/13 15:23	ANT	TAL CC
Total/NA	Analysis	8260B		500	95568	11/27/13 03:11	RJT	TAL CC
Total/NA	Analysis	Moisture		1	95505	11/25/13 14:56	DRB	TAL CC
Soluble	Leach	DI Leach			95714	12/02/13 11:00	LPO	TAL CC
Soluble	Analysis	9251		1	95702	12/02/13 13:32	LPO	TAL CC
Total/NA	Prep	9071B			122471	12/10/13 12:19	FNC	TAL HOU
Total/NA	Analysis	9071B		1	122472	12/10/13 12:24	FNC	TAL HOU

Client Sample ID: STD-OIL MW-8-27.5

Lab Sample ID: 560-43890-2

Date Collected: 11/18/13 15:30
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 75.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			95552	11/26/13 15:23	ANT	TAL CC
Total/NA	Analysis	8260B		50	95568	11/27/13 03:36	RJT	TAL CC
Total/NA	Analysis	Moisture		1	95505	11/25/13 14:56	DRB	TAL CC
Soluble	Leach	DI Leach			95714	12/02/13 11:00	LPO	TAL CC
Soluble	Analysis	9251		1	95702	12/02/13 13:33	LPO	TAL CC
Total/NA	Prep	9071B			122471	12/10/13 12:19	FNC	TAL HOU
Total/NA	Analysis	9071B		1	122472	12/10/13 12:24	FNC	TAL HOU

Client Sample ID: STD-OIL MW-6-27.5

Lab Sample ID: 560-43890-3

Date Collected: 11/19/13 08:30
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 79.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			95552	11/26/13 15:23	ANT	TAL CC
Total/NA	Analysis	8260B		1000	95568	11/27/13 04:01	RJT	TAL CC
Total/NA	Analysis	Moisture		1	95505	11/25/13 14:56	DRB	TAL CC
Soluble	Leach	DI Leach			95714	12/02/13 11:00	LPO	TAL CC
Soluble	Analysis	9251		1	95702	12/02/13 13:34	LPO	TAL CC
Total/NA	Prep	9071B			122471	12/10/13 12:19	FNC	TAL HOU
Total/NA	Analysis	9071B		1	122472	12/10/13 12:24	FNC	TAL HOU

Client Sample ID: STD-OIL MW-7-22.5

Lab Sample ID: 560-43890-4

Date Collected: 11/19/13 10:50
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 78.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			95552	11/26/13 15:23	ANT	TAL CC
Total/NA	Analysis	8260B		50	95568	11/27/13 00:14	RJT	TAL CC
Total/NA	Analysis	Moisture		1	95505	11/25/13 14:56	DRB	TAL CC

Lab Chronicle

Client: MWH Americas Inc
Project/Site: Standard Oil Com #1 Soil Analysis

TestAmerica Job ID: 560-43890-1
SDG: November 2013

Client Sample ID: STD-OIL MW-7-22.5

Lab Sample ID: 560-43890-4

Date Collected: 11/19/13 10:50
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 78.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			95714	12/02/13 11:00	LPO	TAL CC
Soluble	Analysis	9251		1	95702	12/02/13 13:34	LPO	TAL CC
Total/NA	Prep	9071B			122471	12/10/13 12:19	FNC	TAL HOU
Total/NA	Analysis	9071B		1	122472	12/10/13 12:24	FNC	TAL HOU

Client Sample ID: STD-OIL MW-9-22.5

Lab Sample ID: 560-43890-5

Date Collected: 11/19/13 13:40
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 77.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			95552	11/26/13 15:23	ANT	TAL CC
Total/NA	Analysis	8260B		200	95568	11/27/13 04:27	RJT	TAL CC
Total/NA	Analysis	Moisture		1	95505	11/25/13 14:56	DRB	TAL CC
Soluble	Leach	DI Leach			95714	12/02/13 11:00	LPO	TAL CC
Soluble	Analysis	9251		1	95702	12/02/13 13:35	LPO	TAL CC
Total/NA	Prep	9071B			122471	12/10/13 12:19	FNC	TAL HOU
Total/NA	Analysis	9071B		1	122472	12/10/13 12:24	FNC	TAL HOU

Client Sample ID: STD-OIL MW-11-22.5

Lab Sample ID: 560-43890-6

Date Collected: 11/20/13 09:00
Matrix: Solid
Date Received: 11/21/13 10:00
Percent Solids: 80.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			95552	11/26/13 15:23	ANT	TAL CC
Total/NA	Analysis	8260B		500	95568	11/27/13 04:52	RJT	TAL CC
Total/NA	Analysis	Moisture		1	95505	11/25/13 14:56	DRB	TAL CC
Soluble	Leach	DI Leach			95714	12/02/13 11:00	LPO	TAL CC
Soluble	Analysis	9251		1	95702	12/02/13 13:35	LPO	TAL CC
Total/NA	Prep	9071B			122471	12/10/13 12:19	FNC	TAL HOU
Total/NA	Analysis	9071B		1	122472	12/10/13 12:24	FNC	TAL HOU

Client Sample ID: Trip Blank

Lab Sample ID: 560-43890-7

Date Collected: 11/20/13 00:00
Matrix: Water
Date Received: 11/21/13 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	95583	11/27/13 14:12	RP56	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Certification Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com #1 Soil Analysis

TestAmerica Job ID: 560-43890-1
SDG: November 2013

Laboratory: TestAmerica Corpus Christi

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10362	10-31-14
Oklahoma	State Program	6	9968	08-31-14
Texas	NELAP	6	T104704210-12-8	03-31-14
USDA	Federal		P330-11-00060	02-03-14

Laboratory: TestAmerica Houston

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Arkansas DEQ	State Program	6	88-0759	08-04-14
Louisiana	NELAP	6	30643	06-30-14
Oklahoma	State Program	6	1309	08-31-14
Texas	NELAP	6	T104704223	10-31-14
USDA	Federal		P330-08-00217	04-01-14
Utah	NELAP	8	TX00083	10-31-14

Method Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com #1 Soil Analysis

TestAmerica Job ID: 560-43890-1
SDG: November 2013

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC
9071B	HEM and SGT-HEM	SW846	TAL HOU
9251	Chloride	SW846	TAL CC
Moisture	Percent Moisture	EPA	TAL CC

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 CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com #1 Soil Analysis

TestAmerica Job ID: 560-43890-1
SDG: November 2013

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-43890-1	STD-OIL MW-10-27.5	Solid	11/18/13 12:45	11/21/13 10:00
560-43890-2	STD-OIL MW-8-27.5	Solid	11/18/13 15:30	11/21/13 10:00
560-43890-3	STD-OIL MW-6-27.5	Solid	11/19/13 08:30	11/21/13 10:00
560-43890-4	STD-OIL MW-7-22.5	Solid	11/19/13 10:50	11/21/13 10:00
560-43890-5	STD-OIL MW-9-22.5	Solid	11/19/13 13:40	11/21/13 10:00
560-43890-6	STD-OIL MW-11-22.5	Solid	11/20/13 09:00	11/21/13 10:00
560-43890-7	Trip Blank	Water	11/20/13 00:00	11/21/13 10:00

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custo

560-43890 Chain of Custody

TestAmerica
THE LEADER IN ENVIRO

Loc: 560
43890

Client Information	Sampler: Dan Bow	Lab PM: Kellogg, Timothy L.	COC No: 560-11420-1198.1
Client Contact: Mr. Daniel Wade	Phone: 916 761 3793	E-Mail: tim.kellogg@testam...	Page: Page 1 of 1
Company: MWH Americas Inc			Job #:
Address: 1801 California Street Suite 2900	Due Date Requested:		
City: Denver	TAT Requested (days):		
State, Zip: CO, 80202			
Phone: 713-420-3414(Tel)	PO #: Purchase Order not required		
Email: Daniel.A.Wade@us.mwhglobal.com	WO #: TWO # C-STLI-		
Project Name: W-MWH-10-23-13-DAW-01	Project #: 56000058		
Site: Standard Oil Com #1	SSOW#:		

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300 - Chloride	Moisture, TX_1005	8260B - BTEX	8260B - BTEX	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N	N	A		
STD-OIL-MW-10-27.5'	11/8/13	1245	C	Solid	N		X	X	X			
STD-OIL-MW-8-27.5'	11/8/13	1530	C	Solid			X	X	X			
STD-OIL-MW-6-27.5'	11/9/13	0830	C	Solid			X	X	X			
STD-OIL-MW-7-22.5	11/9/13	1050	C	Solid			X	X	X			
STD-OIL-MW-9-22.5	11/9/13	1340	C	Solid			X	X	X			
STD-OIL-MW-11-22.5	11/20/13	0900	C	Solid			X	X	X			
				Solid								
Trip Blank				Water								

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

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

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	11/20/13 1400	MWH		11-21-13 10:0	TACC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.: FedEx 899527757360

Cooler Temperature(s) °C and Other Remarks: 14.0/14.8 IR4 seal

12/18/2013

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 560-43890-1
SDG Number: November 2013

Login Number: 43890
List Number: 1
Creator: Wing, Randi

List Source: TestAmerica Corpus Christi

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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.	False	Cooler temperature outside required temperature criteria.
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.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 560-43890-1
SDG Number: November 2013

Login Number: 43890
List Number: 1
Creator: Lopez, Sandro R

List Source: TestAmerica Houston
List Creation: 11/26/13 11:09 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= 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	1.2
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.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX C

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-40561-1
TestAmerica Sample Delivery Group: June 2013
Client Project/Site: Standard Oil Com #1

For:
MWH Americas Inc
1801 California Street
Suite 2900
Denver, Colorado 80202

Attn: Mr. Daniel Wade

Authorized for release by:
6/19/2013 7:32:59 PM

Timothy Kellogg, Lab Director
tim.kellogg@testamericainc.com

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate 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
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
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)

Job ID: 560-40561-1

Laboratory: TestAmerica Corpus Christi

Narrative

Receipt

The samples were received on 6/12/2013 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.0º C. No analytical or quality issues were noted.

Client: MWH Americas Inc
Project/Site: Standard Oil Com #1

TestAmerica Job ID: 560-40561-1
SDG: June 2013

Client Sample ID: MW-1

Lab Sample ID: 560-40561-1

Date Collected: 06/08/13 10:05
Matrix: Water
Date Received: 06/12/13 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.023		0.0020	0.00028	mg/L			06/17/13 17:35	2
Ethylbenzene	0.19		0.0020	0.00040	mg/L			06/17/13 17:35	2
Toluene	0.0035		0.0020	0.00060	mg/L			06/17/13 17:35	2
Xylenes, Total	0.054		0.0060	0.00045	mg/L			06/17/13 17:35	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*105*		*70 - 130*		*06/17/13 17:35*	*2*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*		*06/17/13 17:35*	*2*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*06/17/13 17:35*	*2*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 130*		*06/17/13 17:35*	*2*

Client Sample ID: MW-2

Lab Sample ID: 560-40561-2

Date Collected: 06/08/13 10:20
Matrix: Water
Date Received: 06/12/13 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.44		0.010	0.0014	mg/L			06/17/13 18:00	10
Ethylbenzene	0.52		0.010	0.0020	mg/L			06/17/13 18:00	10
Toluene	0.094		0.010	0.0030	mg/L			06/17/13 18:00	10
Xylenes, Total	1.7		0.030	0.0023	mg/L			06/17/13 18:00	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*70 - 130*		*06/17/13 18:00*	*10*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*		*06/17/13 18:00*	*10*
Dibromofluoromethane (Surr)	*97*		*70 - 130*		*06/17/13 18:00*	*10*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*		*06/17/13 18:00*	*10*

Client Sample ID: MW-3

Lab Sample ID: 560-40561-3

Date Collected: 06/08/13 10:40
Matrix: Water
Date Received: 06/12/13 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2.5		0.020	0.0028	mg/L			06/17/13 18:26	20
Ethylbenzene	0.40		0.020	0.0040	mg/L			06/17/13 18:26	20
Toluene	0.024		0.020	0.0060	mg/L			06/17/13 18:26	20
Xylenes, Total	0.97		0.060	0.0045	mg/L			06/17/13 18:26	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*06/17/13 18:26*	*20*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*		*06/17/13 18:26*	*20*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*06/17/13 18:26*	*20*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 130*		*06/17/13 18:26*	*20*

Client: MWH Americas Inc
Project/Site: Standard Oil Com #1

TestAmerica Job ID: 560-40561-1
SDG: June 2013

Client Sample ID: MW-4

Lab Sample ID: 560-40561-4

Date Collected: 06/08/13 10:50
Date Received: 06/12/13 10:00

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.00016	J	0.0010	0.00014	mg/L			06/17/13 18:51	1
Ethylbenzene	0.082		0.0010	0.00020	mg/L			06/17/13 18:51	1
Toluene	0.00056	J	0.0010	0.00030	mg/L			06/17/13 18:51	1
Xylenes, Total	0.071		0.0030	0.00023	mg/L			06/17/13 18:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*106*		*70 - 130*		*06/17/13 18:51*	*1*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*		*06/17/13 18:51*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*06/17/13 18:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 130*		*06/17/13 18:51*	*1*

Client Sample ID: MW-5

Lab Sample ID: 560-40561-5

Date Collected: 06/08/13 10:30
Date Received: 06/12/13 10:00

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00014		0.0010	0.00014	mg/L			06/17/13 19:16	1
Ethylbenzene	<0.00020		0.0010	0.00020	mg/L			06/17/13 19:16	1
Toluene	<0.00030		0.0010	0.00030	mg/L			06/17/13 19:16	1
Xylenes, Total	<0.00023		0.0030	0.00023	mg/L			06/17/13 19:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*70 - 130*		*06/17/13 19:16*	*1*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*		*06/17/13 19:16*	*1*
Dibromofluoromethane (Surr)	*109*		*70 - 130*		*06/17/13 19:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 130*		*06/17/13 19:16*	*1*

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

Lab Sample ID: MB 560-89169/8
Matrix: Water
Analysis Batch: 89169

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00014		0.0010	0.00014	mg/L			06/17/13 12:32	1
Ethylbenzene	<0.00020		0.0010	0.00020	mg/L			06/17/13 12:32	1
Toluene	<0.00030		0.0010	0.00030	mg/L			06/17/13 12:32	1
Xylenes, Total	<0.00023		0.0030	0.00023	mg/L			06/17/13 12:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*70 - 130*		*06/17/13 12:32*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*06/17/13 12:32*	*1*
Dibromofluoromethane (Surr)	*110*		*70 - 130*		*06/17/13 12:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*06/17/13 12:32*	*1*

Lab Sample ID: LCS 560-89169/3
Matrix: Water
Analysis Batch: 89169

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0250	0.0276		mg/L		110	70 - 130
Ethylbenzene	0.0250	0.0245		mg/L		98	70 - 130
Toluene	0.0250	0.0278		mg/L		111	70 - 130
Xylenes, Total	0.0750	0.0736		mg/L		98	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*70 - 130*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 130*

Lab Chronicle

Client: MWH Americas Inc
Project/Site: Standard Oil Com #1

TestAmerica Job ID: 560-40561-1
SDG: June 2013

Client Sample ID: MW-1
Lab Sample ID: 560-40561-1
Date Collected: 06/08/13 10:05
Matrix: Water
Date Received: 06/12/13 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2	89169	06/17/13 17:35	RT	TAL CC

Client Sample ID: MW-2
Lab Sample ID: 560-40561-2
Date Collected: 06/08/13 10:20
Matrix: Water
Date Received: 06/12/13 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	89169	06/17/13 18:00	RT	TAL CC

Client Sample ID: MW-3
Lab Sample ID: 560-40561-3
Date Collected: 06/08/13 10:40
Matrix: Water
Date Received: 06/12/13 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		20	89169	06/17/13 18:26	RT	TAL CC

Client Sample ID: MW-4
Lab Sample ID: 560-40561-4
Date Collected: 06/08/13 10:50
Matrix: Water
Date Received: 06/12/13 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	89169	06/17/13 18:51	RT	TAL CC

Client Sample ID: MW-5
Lab Sample ID: 560-40561-5
Date Collected: 06/08/13 10:30
Matrix: Water
Date Received: 06/12/13 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	89169	06/17/13 19:16	RT	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Certification Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com #1

TestAmerica Job ID: 560-40561-1
SDG: June 2013

Laboratory: TestAmerica Corpus Christi

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10362	10-31-13
Oklahoma	State Program	6	9968	08-31-13
Texas	NELAP	6	T104704210-12-8	03-31-14
USDA	Federal		P330-11-00060	02-03-14

Method Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com #1

TestAmerica Job ID: 560-40561-1
SDG: June 2013

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

Protocol References:

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

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Sample Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com #1

TestAmerica Job ID: 560-40561-1
SDG: June 2013

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-40561-1	MW-1	Water	06/08/13 10:05	06/12/13 10:00
560-40561-2	MW-2	Water	06/08/13 10:20	06/12/13 10:00
560-40561-3	MW-3	Water	06/08/13 10:40	06/12/13 10:00
560-40561-4	MW-4	Water	06/08/13 10:50	06/12/13 10:00
560-40561-5	MW-5	Water	06/08/13 10:30	06/12/13 10:00

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

No. [illegible]

CHAIN OF CUSTODY RECORD

Loc: 560
40561

CUSTOMER INFORMATION	PROJECT INFORMATION
COMPANY: MWH	PROJECT NAME/NUMBER: Standard oil Com #1
SEND REPORT TO: Daniel Wade	**BILLING INFORMATION**
ADDRESS: 1801 California st, Suite 2900 Denver, CO 80202	BILL TO: Kinder Morgan ADDRESS Houston, TX
PHONE: 303-291-2250	PHONE:
FAX.	FAX: PO NO·

560-40561 Chain of Custody

SEAL INTACT Yes
TEMP C 4.8
CORR TEMP C 4.0
IR GUN ID 4
INITIAL/DATE MM 6/12

SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.	NUMBER O	8260	REMARKS/PRECAUTIONS.
DW ~~MW-~~	MW-1	6/8/13	1005	GW	VOA	HCL	3	X	
	MW-2	↓	1020	↓	↓	↓	3	X	
	MW-3		1040				3	X	
	MW-4		1050				3	X	
	MW-5		1030				3	X	

SAMPLER· Daniel Wade
SHIPMENT METHOD· FedEx
AIRBILL NO.. 795788553894

REQUIRED TURNAROUND ☒ ROUTINE TAT (10 BUSINESS DAYS) ☐ RUSH TAT (MAY REQUIRE SURCHARGE)

1. RELINQUISHED BY: Daniel Wade	DATE	2. RELINQUISHED BY:	DATE	3. RELINQUISHED BY:	DATE
SIGNATURE: 6/11	~~6/10/13~~ DW	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY: MWH 1000	TIME ~~1130~~ DW	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME
1. RECEIVED BY:	DATE	2. RECEIVED BY:	DATE	3. RECEIVED BY·	DATE
SIGNATURE:	6/12/13	SIGNATURE·		SIGNATURE:	
PRINTED NAME/COMPANY:	TIME: 1100	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME

TestAmerica
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone: 361.289.2673/Fax: 361.289.2471

TAL-8222-560 (0412)

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 560-40561-1
SDG Number: June 2013

Login Number: 40561
List Number: 1
Creator: McDermott, Vivian

List Source: TestAmerica Corpus Christi

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (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 Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-42537-1
TestAmerica Sample Delivery Group: September 2013
Client Project/Site: Standard Oil Com Groundwater Analysis

For:
MWH Americas Inc
1801 California Street
Suite 2900
Denver, Colorado 80202

Attn: Mr. Daniel Wade

Authorized for release by:
10/3/2013 11:09:53 AM
Lindy Maingot, Project Manager I
lindy.maingot@testamericainc.com

Designee for

Timothy Kellogg, Lab Director
tim.kellogg@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.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate 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
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)

Job ID: 560-42537-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-42537-1

Comments
No additional comments.

Receipt
The samples were received on 9/14/2013 10:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.4° C.

GC/MS VOA
No analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

Detection Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-42537-1
SDG: September 2013

Client Sample ID: MW-1 — Lab Sample ID: 560-42537-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.013		0.0020	0.00028	mg/L	2		8260B	Total/NA
Ethylbenzene	0.22		0.0020	0.00040	mg/L	2		8260B	Total/NA
Toluene	0.00068	J	0.0020	0.00060	mg/L	2		8260B	Total/NA
Xylenes, Total	0.013		0.0060	0.00045	mg/L	2		8260B	Total/NA

Client Sample ID: MW-2 — Lab Sample ID: 560-42537-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.39		0.020	0.0028	mg/L	20		8260B	Total/NA
Ethylbenzene	0.68		0.020	0.0040	mg/L	20		8260B	Total/NA
Toluene	0.011	J	0.020	0.0060	mg/L	20		8260B	Total/NA
Xylenes, Total	2.1		0.060	0.0045	mg/L	20		8260B	Total/NA

Client Sample ID: MW-3 — Lab Sample ID: 560-42537-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	2.2		0.020	0.0028	mg/L	20		8260B	Total/NA
Ethylbenzene	0.55		0.020	0.0040	mg/L	20		8260B	Total/NA
Xylenes, Total	1.3		0.060	0.0045	mg/L	20		8260B	Total/NA

Client Sample ID: MW-4 — Lab Sample ID: 560-42537-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	0.14		0.0010	0.00020	mg/L	1		8260B	Total/NA
Toluene	0.00073	J	0.0010	0.00030	mg/L	1		8260B	Total/NA
Xylenes, Total	0.075		0.0030	0.00023	mg/L	1		8260B	Total/NA

Client Sample ID: MW-5 — Lab Sample ID: 560-42537-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-42537-1
SDG: September 2013

Client Sample ID: MW-1

Lab Sample ID: 560-42537-1

Date Collected: 09/11/13 11:20
Matrix: Water
Date Received: 09/14/13 10:05

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.013		0.0020	0.00028	mg/L			09/19/13 13:17	2
Ethylbenzene	0.22		0.0020	0.00040	mg/L			09/19/13 13:17	2
Toluene	0.00068	J	0.0020	0.00060	mg/L			09/19/13 13:17	2
Xylenes, Total	0.013		0.0060	0.00045	mg/L			09/19/13 13:17	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*09/19/13 13:17*	*2*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*		*09/19/13 13:17*	*2*
Dibromofluoromethane (Surr)	*95*		*70 - 130*		*09/19/13 13:17*	*2*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 140*		*09/19/13 13:17*	*2*

Client Sample ID: MW-2

Lab Sample ID: 560-42537-2

Date Collected: 09/11/13 11:15
Matrix: Water
Date Received: 09/14/13 10:05

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.39		0.020	0.0028	mg/L			09/19/13 13:41	20
Ethylbenzene	0.68		0.020	0.0040	mg/L			09/19/13 13:41	20
Toluene	0.011	J	0.020	0.0060	mg/L			09/19/13 13:41	20
Xylenes, Total	2.1		0.060	0.0045	mg/L			09/19/13 13:41	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*09/19/13 13:41*	*20*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*		*09/19/13 13:41*	*20*
Dibromofluoromethane (Surr)	*92*		*70 - 130*		*09/19/13 13:41*	*20*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 140*		*09/19/13 13:41*	*20*

Client Sample ID: MW-3

Lab Sample ID: 560-42537-3

Date Collected: 09/11/13 11:10
Matrix: Water
Date Received: 09/14/13 10:05

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2.2		0.020	0.0028	mg/L			09/19/13 14:06	20
Ethylbenzene	0.55		0.020	0.0040	mg/L			09/19/13 14:06	20
Toluene	<0.0060		0.020	0.0060	mg/L			09/19/13 14:06	20
Xylenes, Total	1.3		0.060	0.0045	mg/L			09/19/13 14:06	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*09/19/13 14:06*	*20*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*		*09/19/13 14:06*	*20*
Dibromofluoromethane (Surr)	*95*		*70 - 130*		*09/19/13 14:06*	*20*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 140*		*09/19/13 14:06*	*20*

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-42537-1
SDG: September 2013

Client Sample ID: MW-4

Date Collected: 09/11/13 11:05
Date Received: 09/14/13 10:05

Lab Sample ID: 560-42537-4

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00014		0.0010	0.00014	mg/L			09/19/13 14:31	1
Ethylbenzene	**0.14**		0.0010	0.00020	mg/L			09/19/13 14:31	1
Toluene	**0.00073**	**J**	0.0010	0.00030	mg/L			09/19/13 14:31	1
Xylenes, Total	**0.075**		0.0030	0.00023	mg/L			09/19/13 14:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*09/19/13 14:31*	*1*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*		*09/19/13 14:31*	*1*
Dibromofluoromethane (Surr)	*96*		*70 - 130*		*09/19/13 14:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 140*		*09/19/13 14:31*	*1*

Client Sample ID: MW-5

Date Collected: 09/11/13 11:00
Date Received: 09/14/13 10:05

Lab Sample ID: 560-42537-5

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00014		0.0010	0.00014	mg/L			09/19/13 14:57	1
Ethylbenzene	<0.00020		0.0010	0.00020	mg/L			09/19/13 14:57	1
Toluene	<0.00030		0.0010	0.00030	mg/L			09/19/13 14:57	1
Xylenes, Total	<0.00023		0.0030	0.00023	mg/L			09/19/13 14:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*09/19/13 14:57*	*1*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*		*09/19/13 14:57*	*1*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*09/19/13 14:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 140*		*09/19/13 14:57*	*1*

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

Lab Sample ID: MB 560-92911/8
Matrix: Water
Analysis Batch: 92911

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00014		0.0010	0.00014	mg/L			09/19/13 09:58	1
Ethylbenzene	<0.00020		0.0010	0.00020	mg/L			09/19/13 09:58	1
Toluene	<0.00030		0.0010	0.00030	mg/L			09/19/13 09:58	1
Xylenes, Total	<0.00023		0.0030	0.00023	mg/L			09/19/13 09:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*09/19/13 09:58*	*1*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*		*09/19/13 09:58*	*1*
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*09/19/13 09:58*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 140*		*09/19/13 09:58*	*1*

Lab Sample ID: LCS 560-92911/3
Matrix: Water
Analysis Batch: 92911

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0250	0.0233		mg/L		93	70 - 130
Ethylbenzene	0.0250	0.0237		mg/L		95	70 - 130
Toluene	0.0250	0.0233		mg/L		93	70 - 130
Xylenes, Total	0.0750	0.0705		mg/L		94	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*70 - 130*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*98*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*89*		*70 - 140*

Certification Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-42537-1
SDG: September 2013

Laboratory: TestAmerica Corpus Christi

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10362	10-31-13
Oklahoma	State Program	6	9968	08-31-14
Texas	NELAP	6	T104704210-12-8	03-31-14
USDA	Federal		P330-11-00060	02-03-14

Method Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-42537-1
SDG: September 2013

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

Protocol References:

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

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Sample Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-42537-1
SDG: September 2013

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-42537-1	MW-1	Water	09/11/13 11:20	09/14/13 10:05
560-42537-2	MW-2	Water	09/11/13 11:15	09/14/13 10:05
560-42537-3	MW-3	Water	09/11/13 11:10	09/14/13 10:05
560-42537-4	MW-4	Water	09/11/13 11:05	09/14/13 10:05
560-42537-5	MW-5	Water	09/11/13 11:00	09/14/13 10:05

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custo

560-42537 Chain of Custody

TestAmerica THE LEADER IN ENV

Loc: 560
42537

Client Information	Sampler: DAW	Lab PM: Kellogg, Timothy L	COC No: 560-10718-1157
Client Contact: Mr. Daniel Wade	Phone: 303-912-2625	E-Mail: tim.kellogg@testamericainc.com	Page: Page 1 of 1
Company: MWH Americas Inc			Job #:
Address: 1801 California Street Suite 2900	Due Date Requested:		
City: Denver	TAT Requested (days): Standard		
State, Zip: CO, 80202			
Phone: 713-420-3414(Tel)	PO #: Purchase Order not required		
Email: Daniel.A.Wade@us.mwhglobal.com	WO #: TWO # C-STLI-		
Project Name: San Juan River Basin Pit Sites	Project #: 56000058		
Site: Standard Oil Com	SSOW#:		

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - BTEX	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
MW-1	9/11/13	1120	G	Water			X		
MW-2	9/11/13	1115	G	Water			X		
MW-3	9/11/13	1110	G	Water			X		
MW-4	9/11/13	1105	G	Water			X		
MW-5	9/11/13	1600	G	Water			X		
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					

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

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

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: Date: Time: Method of Shipment: FedEx Std

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	9/13/13 1200			9/14/13 1005	TACC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☒ Yes ☐ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: OBS 1.3 Corr 1.4C IR4

10/3/2013

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 560-42537-1
SDG Number: September 2013

Login Number: 42537
List Number: 1
Creator: Wing, Randi

List Source: TestAmerica Corpus Christi

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
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.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-44360-1
TestAmerica Sample Delivery Group: December 2013
Client Project/Site: Standard Oil Com Groundwater Analysis

For:
MWH Americas Inc
2890 East Cottonwood Pkwy
Suite 300
Salt Lake City, Utah 84121

Attn: Mr. Cary Ruble

Authorized for release by:
12/30/2013 7:42:04 PM

Timothy Kellogg, Lab Director
(361)289-2673
tim.kellogg@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

Qualifiers

GC VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
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)

Case Narrative

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-44360-1
SDG: December 2013

Job ID: 560-44360-1

Laboratory: TestAmerica Corpus Christi

Narrative

Receipt

The samples were received on 12/17/2013 10:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.5º C.

GC VOA

Method(s) 8021B: It was noted that some of the surrogate recoveries for sample 560-44360-6 were outside of the control limits. Evidence of matrix interference is present and it is suspected to be the cause of the recoveries. No other analytical or quality issues were noted.

Detection Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-44360-1
SDG: December 2013

Client Sample ID: MW-1 — Lab Sample ID: 560-44360-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.012		0.0020	0.00020	mg/L	1		8021B	Total/NA
Toluene	0.017		0.0020	0.00038	mg/L	1		8021B	Total/NA
Ethylbenzene	0.15		0.0020	0.00020	mg/L	1		8021B	Total/NA
Xylenes, Total	0.0087		0.0020	0.00065	mg/L	1		8021B	Total/NA

Client Sample ID: MW-2 — Lab Sample ID: 560-44360-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.15		0.0040	0.00040	mg/L	2		8021B	Total/NA
Toluene	0.0086		0.0040	0.00075	mg/L	2		8021B	Total/NA
Ethylbenzene	0.30		0.0040	0.00040	mg/L	2		8021B	Total/NA
Xylenes, Total	0.64		0.0040	0.0013	mg/L	2		8021B	Total/NA

Client Sample ID: MW-3 — Lab Sample ID: 560-44360-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.3		0.010	0.0014	mg/L	10		8260B	Total/NA
Ethylbenzene	0.39		0.010	0.0020	mg/L	10		8260B	Total/NA
Xylenes, Total	0.70		0.030	0.0023	mg/L	10		8260B	Total/NA

Client Sample ID: MW-4 — Lab Sample ID: 560-44360-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.00021	J	0.0020	0.00020	mg/L	1		8021B	Total/NA
Toluene	0.013		0.0020	0.00038	mg/L	1		8021B	Total/NA
Ethylbenzene	0.037		0.0020	0.00020	mg/L	1		8021B	Total/NA
Xylenes, Total	0.0011	J	0.0020	0.00065	mg/L	1		8021B	Total/NA

Client Sample ID: MW-5 — Lab Sample ID: 560-44360-5

No Detections.

Client Sample ID: MW-6 — Lab Sample ID: 560-44360-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.060		0.0020	0.00020	mg/L	1		8021B	Total/NA
Toluene	0.035		0.0020	0.00038	mg/L	1		8021B	Total/NA
Ethylbenzene	0.073		0.0020	0.00020	mg/L	1		8021B	Total/NA
Xylenes, Total	0.22		0.0020	0.00065	mg/L	1		8021B	Total/NA

Client Sample ID: MW-7 — Lab Sample ID: 560-44360-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.11		0.010	0.0019	mg/L	5		8021B	Total/NA
Ethylbenzene	0.20		0.010	0.0010	mg/L	5		8021B	Total/NA
Xylenes, Total	2.2		0.010	0.0032	mg/L	5		8021B	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 560-44360-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.35		0.0080	0.00080	mg/L	4		8021B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-44360-1
SDG: December 2013

Client Sample ID: MW-8 (Continued) — Lab Sample ID: 560-44360-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.053		0.0080	0.0015	mg/L	4		8021B	Total/NA
Ethylbenzene	0.48		0.0080	0.00080	mg/L	4		8021B	Total/NA
Xylenes, Total	0.78		0.0080	0.0026	mg/L	4		8021B	Total/NA

Client Sample ID: MW-9 — Lab Sample ID: 560-44360-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.25		0.0030	0.00042	mg/L	3		8260B	Total/NA
Ethylbenzene	0.25		0.0030	0.00060	mg/L	3		8260B	Total/NA
Toluene	0.11		0.0030	0.00090	mg/L	3		8260B	Total/NA
Xylenes, Total	0.31		0.0090	0.00068	mg/L	3		8260B	Total/NA

Client Sample ID: MW-10 — Lab Sample ID: 560-44360-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.6		0.010	0.0014	mg/L	10		8260B	Total/NA
Ethylbenzene	0.13		0.010	0.0020	mg/L	10		8260B	Total/NA
Toluene	0.46		0.010	0.0030	mg/L	10		8260B	Total/NA
Xylenes, Total	1.1		0.030	0.0023	mg/L	10		8260B	Total/NA

Client Sample ID: MW-11 — Lab Sample ID: 560-44360-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.8		0.010	0.0014	mg/L	10		8260B	Total/NA
Ethylbenzene	0.41		0.010	0.0020	mg/L	10		8260B	Total/NA
Toluene	0.27		0.010	0.0030	mg/L	10		8260B	Total/NA
Xylenes, Total	3.0		0.030	0.0023	mg/L	10		8260B	Total/NA

Client Sample ID: Trip Blank — Lab Sample ID: 560-44360-12

No Detections.

This Detection Summary does not include radiochemical test results.

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-44360-1
SDG: December 2013

Client Sample ID: MW-1

Lab Sample ID: 560-44360-1

Date Collected: 12/12/13 14:10
Matrix: Water
Date Received: 12/17/13 10:40

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.012		0.0020	0.00020	mg/L			12/23/13 00:16	1
Toluene	0.017		0.0020	0.00038	mg/L			12/23/13 00:16	1
Ethylbenzene	0.15		0.0020	0.00020	mg/L			12/23/13 00:16	1
Xylenes, Total	0.0087		0.0020	0.00065	mg/L			12/23/13 00:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*58 - 129*		*12/23/13 00:16*	*1*
Trifluorotoluene (Surr)	*101*		*54 - 130*		*12/23/13 00:16*	*1*

Client Sample ID: MW-2

Lab Sample ID: 560-44360-2

Date Collected: 12/12/13 14:15
Matrix: Water
Date Received: 12/17/13 10:40

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.15		0.0040	0.00040	mg/L			12/23/13 00:48	2
Toluene	0.0086		0.0040	0.00075	mg/L			12/23/13 00:48	2
Ethylbenzene	0.30		0.0040	0.00040	mg/L			12/23/13 00:48	2
Xylenes, Total	0.64		0.0040	0.0013	mg/L			12/23/13 00:48	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*58 - 129*		*12/23/13 00:48*	*2*
Trifluorotoluene (Surr)	*93*		*54 - 130*		*12/23/13 00:48*	*2*

Client Sample ID: MW-3

Lab Sample ID: 560-44360-3

Date Collected: 12/12/13 14:20
Matrix: Water
Date Received: 12/17/13 10:40

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.3		0.010	0.0014	mg/L			12/24/13 18:34	10
Ethylbenzene	0.39		0.010	0.0020	mg/L			12/24/13 18:34	10
Toluene	<0.0030		0.010	0.0030	mg/L			12/24/13 18:34	10
Xylenes, Total	0.70		0.030	0.0023	mg/L			12/24/13 18:34	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*12/24/13 18:34*	*10*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*		*12/24/13 18:34*	*10*

Client Sample ID: MW-4

Lab Sample ID: 560-44360-4

Date Collected: 12/12/13 14:25
Matrix: Water
Date Received: 12/17/13 10:40

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.00021	J	0.0020	0.00020	mg/L			12/23/13 01:41	1
Toluene	0.013		0.0020	0.00038	mg/L			12/23/13 01:41	1
Ethylbenzene	0.037		0.0020	0.00020	mg/L			12/23/13 01:41	1
Xylenes, Total	0.0011	J	0.0020	0.00065	mg/L			12/23/13 01:41	1

Client Sample ID: MW-4

Date Collected: 12/12/13 14:25
Date Received: 12/17/13 10:40

Lab Sample ID: 560-44360-4
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*87*		*58 - 129*		*12/23/13 01:41*	*1*
Trifluorotoluene (Surr)	*103*		*54 - 130*		*12/23/13 01:41*	*1*

Client Sample ID: MW-5

Date Collected: 12/12/13 14:30
Date Received: 12/17/13 10:40

Lab Sample ID: 560-44360-5
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00020		0.0020	0.00020	mg/L			12/23/13 02:08	1
Toluene	<0.00038		0.0020	0.00038	mg/L			12/23/13 02:08	1
Ethylbenzene	<0.00020		0.0020	0.00020	mg/L			12/23/13 02:08	1
Xylenes, Total	<0.00065		0.0020	0.00065	mg/L			12/23/13 02:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*84*		*58 - 129*		*12/23/13 02:08*	*1*
Trifluorotoluene (Surr)	*86*		*54 - 130*		*12/23/13 02:08*	*1*

Client Sample ID: MW-6

Date Collected: 12/12/13 14:35
Date Received: 12/17/13 10:40

Lab Sample ID: 560-44360-6
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.060**		0.0020	0.00020	mg/L			12/23/13 02:35	1
Toluene	**0.035**		0.0020	0.00038	mg/L			12/23/13 02:35	1
Ethylbenzene	**0.073**		0.0020	0.00020	mg/L			12/23/13 02:35	1
Xylenes, Total	**0.22**		0.0020	0.00065	mg/L			12/23/13 02:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*89*		*58 - 129*		*12/23/13 02:35*	*1*
Trifluorotoluene (Surr)	*132*	*X*	*54 - 130*		*12/23/13 02:35*	*1*

Client Sample ID: MW-7

Date Collected: 12/12/13 14:40
Date Received: 12/17/13 10:40

Lab Sample ID: 560-44360-7
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.0010		0.010	0.0010	mg/L			12/23/13 08:36	5
Toluene	**0.11**		0.010	0.0019	mg/L			12/23/13 08:36	5
Ethylbenzene	**0.20**		0.010	0.0010	mg/L			12/23/13 08:36	5
Xylenes, Total	**2.2**		0.010	0.0032	mg/L			12/23/13 08:36	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*95*		*58 - 129*		*12/23/13 08:36*	*5*
Trifluorotoluene (Surr)	*89*		*54 - 130*		*12/23/13 08:36*	*5*

Client Sample ID: MW-8

Lab Sample ID: 560-44360-8

Date Collected: 12/12/13 14:45
Matrix: Water
Date Received: 12/17/13 10:40

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.35		0.0080	0.00080	mg/L			12/23/13 09:02	4
Toluene	0.053		0.0080	0.0015	mg/L			12/23/13 09:02	4
Ethylbenzene	0.48		0.0080	0.00080	mg/L			12/23/13 09:02	4
Xylenes, Total	0.78		0.0080	0.0026	mg/L			12/23/13 09:02	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*58 - 129*		*12/23/13 09:02*	*4*
Trifluorotoluene (Surr)	*93*		*54 - 130*		*12/23/13 09:02*	*4*

Client Sample ID: MW-9

Lab Sample ID: 560-44360-9

Date Collected: 12/12/13 14:50
Matrix: Water
Date Received: 12/17/13 10:40

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.25		0.0030	0.00042	mg/L			12/24/13 18:59	3
Ethylbenzene	0.25		0.0030	0.00060	mg/L			12/24/13 18:59	3
Toluene	0.11		0.0030	0.00090	mg/L			12/24/13 18:59	3
Xylenes, Total	0.31		0.0090	0.00068	mg/L			12/24/13 18:59	3

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*70 - 130*		*12/24/13 18:59*	*3*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*		*12/24/13 18:59*	*3*

Client Sample ID: MW-10

Lab Sample ID: 560-44360-10

Date Collected: 12/12/13 14:55
Matrix: Water
Date Received: 12/17/13 10:40

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.6		0.010	0.0014	mg/L			12/24/13 19:25	10
Ethylbenzene	0.13		0.010	0.0020	mg/L			12/24/13 19:25	10
Toluene	0.46		0.010	0.0030	mg/L			12/24/13 19:25	10
Xylenes, Total	1.1		0.030	0.0023	mg/L			12/24/13 19:25	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*70 - 130*		*12/24/13 19:25*	*10*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*		*12/24/13 19:25*	*10*

Client Sample ID: MW-11

Lab Sample ID: 560-44360-11

Date Collected: 12/12/13 15:00
Matrix: Water
Date Received: 12/17/13 10:40

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.8		0.010	0.0014	mg/L			12/24/13 19:50	10
Ethylbenzene	0.41		0.010	0.0020	mg/L			12/24/13 19:50	10
Toluene	0.27		0.010	0.0030	mg/L			12/24/13 19:50	10
Xylenes, Total	3.0		0.030	0.0023	mg/L			12/24/13 19:50	10

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-44360-1
SDG: December 2013

Client Sample ID: MW-11

Lab Sample ID: 560-44360-11

Date Collected: 12/12/13 15:00
Matrix: Water
Date Received: 12/17/13 10:40

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*12/24/13 19:50*	*10*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*		*12/24/13 19:50*	*10*

Client Sample ID: Trip Blank

Lab Sample ID: 560-44360-12

Date Collected: 12/12/13 00:00
Matrix: Water
Date Received: 12/17/13 10:40

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00014		0.0010	0.00014	mg/L			12/24/13 15:14	1
Ethylbenzene	<0.00020		0.0010	0.00020	mg/L			12/24/13 15:14	1
Toluene	<0.00030		0.0010	0.00030	mg/L			12/24/13 15:14	1
Xylenes, Total	<0.00023		0.0030	0.00023	mg/L			12/24/13 15:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*12/24/13 15:14*	*1*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*		*12/24/13 15:14*	*1*

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

Lab Sample ID: MB 560-96541/8
Matrix: Water
Analysis Batch: 96541

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00014		0.0010	0.00014	mg/L			12/24/13 11:54	1
Ethylbenzene	<0.00020		0.0010	0.00020	mg/L			12/24/13 11:54	1
Toluene	<0.00030		0.0010	0.00030	mg/L			12/24/13 11:54	1
Xylenes, Total	<0.00023		0.0030	0.00023	mg/L			12/24/13 11:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*70 - 130*		*12/24/13 11:54*	*1*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*		*12/24/13 11:54*	*1*

Lab Sample ID: LCS 560-96541/3
Matrix: Water
Analysis Batch: 96541

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0250	0.0263		mg/L		105	70 - 130
Ethylbenzene	0.0250	0.0242		mg/L		97	70 - 130
Toluene	0.0250	0.0259		mg/L		104	70 - 130
Xylenes, Total	0.0750	0.0731		mg/L		98	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*70 - 130*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 560-96487/5
Matrix: Water
Analysis Batch: 96487

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00020		0.0020	0.00020	mg/L			12/22/13 22:55	1
Toluene	<0.00038		0.0020	0.00038	mg/L			12/22/13 22:55	1
Ethylbenzene	<0.00020		0.0020	0.00020	mg/L			12/22/13 22:55	1
Xylenes, Total	<0.00065		0.0020	0.00065	mg/L			12/22/13 22:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*58 - 129*		*12/22/13 22:55*	*1*
Trifluorotoluene (Surr)	*87*		*54 - 130*		*12/22/13 22:55*	*1*

Lab Sample ID: LCS 560-96487/4
Matrix: Water
Analysis Batch: 96487

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0400	0.0358		mg/L		90	70 - 130
Toluene	0.0400	0.0361		mg/L		90	70 - 130
Ethylbenzene	0.0400	0.0366		mg/L		91	70 - 130

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: LCS 560-96487/4
Matrix: Water
Analysis Batch: 96487

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Xylenes, Total			0.120	0.108		mg/L		90	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*58 - 129*
Trifluorotoluene (Surr)	*87*		*54 - 130*

Lab Chronicle

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-44360-1
SDG: December 2013

Client Sample ID: MW-1
Lab Sample ID: 560-44360-1
Date Collected: 12/12/13 14:10
Matrix: Water
Date Received: 12/17/13 10:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	96487	12/23/13 00:16	RQH	TAL CC

Client Sample ID: MW-2
Lab Sample ID: 560-44360-2
Date Collected: 12/12/13 14:15
Matrix: Water
Date Received: 12/17/13 10:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		2	96487	12/23/13 00:48	RQH	TAL CC

Client Sample ID: MW-3
Lab Sample ID: 560-44360-3
Date Collected: 12/12/13 14:20
Matrix: Water
Date Received: 12/17/13 10:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	96541	12/24/13 18:34	RP56	TAL CC

Client Sample ID: MW-4
Lab Sample ID: 560-44360-4
Date Collected: 12/12/13 14:25
Matrix: Water
Date Received: 12/17/13 10:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	96487	12/23/13 01:41	RQH	TAL CC

Client Sample ID: MW-5
Lab Sample ID: 560-44360-5
Date Collected: 12/12/13 14:30
Matrix: Water
Date Received: 12/17/13 10:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	96487	12/23/13 02:08	RQH	TAL CC

Client Sample ID: MW-6
Lab Sample ID: 560-44360-6
Date Collected: 12/12/13 14:35
Matrix: Water
Date Received: 12/17/13 10:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	96487	12/23/13 02:35	RQH	TAL CC

Lab Chronicle

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-44360-1
SDG: December 2013

Client Sample ID: MW-7

Lab Sample ID: 560-44360-7

Date Collected: 12/12/13 14:40
Matrix: Water
Date Received: 12/17/13 10:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		5	96487	12/23/13 08:36	RQH	TAL CC

Client Sample ID: MW-8

Lab Sample ID: 560-44360-8

Date Collected: 12/12/13 14:45
Matrix: Water
Date Received: 12/17/13 10:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		4	96487	12/23/13 09:02	RQH	TAL CC

Client Sample ID: MW-9

Lab Sample ID: 560-44360-9

Date Collected: 12/12/13 14:50
Matrix: Water
Date Received: 12/17/13 10:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		3	96541	12/24/13 18:59	RP56	TAL CC

Client Sample ID: MW-10

Lab Sample ID: 560-44360-10

Date Collected: 12/12/13 14:55
Matrix: Water
Date Received: 12/17/13 10:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	96541	12/24/13 19:25	RP56	TAL CC

Client Sample ID: MW-11

Lab Sample ID: 560-44360-11

Date Collected: 12/12/13 15:00
Matrix: Water
Date Received: 12/17/13 10:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	96541	12/24/13 19:50	RP56	TAL CC

Client Sample ID: Trip Blank

Lab Sample ID: 560-44360-12

Date Collected: 12/12/13 00:00
Matrix: Water
Date Received: 12/17/13 10:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	96541	12/24/13 15:14	RP56	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Certification Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-44360-1
SDG: December 2013

Laboratory: TestAmerica Corpus Christi

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10362	10-31-14
Oklahoma	State Program	6	9968	08-31-14
Texas	NELAP	6	T104704210-12-8	03-31-14
USDA	Federal		P330-11-00060	02-03-14

Method Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-44360-1
SDG: December 2013

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC
8021B	Volatile Organic Compounds (GC)	SW846	TAL CC

Protocol References:

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

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Sample Summary

Client: MWH Americas Inc
Project/Site: Standard Oil Com Groundwater Analysis

TestAmerica Job ID: 560-44360-1
SDG: December 2013

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-44360-1	MW-1	Water	12/12/13 14:10	12/17/13 10:40
560-44360-2	MW-2	Water	12/12/13 14:15	12/17/13 10:40
560-44360-3	MW-3	Water	12/12/13 14:20	12/17/13 10:40
560-44360-4	MW-4	Water	12/12/13 14:25	12/17/13 10:40
560-44360-5	MW-5	Water	12/12/13 14:30	12/17/13 10:40
560-44360-6	MW-6	Water	12/12/13 14:35	12/17/13 10:40
560-44360-7	MW-7	Water	12/12/13 14:40	12/17/13 10:40
560-44360-8	MW-8	Water	12/12/13 14:45	12/17/13 10:40
560-44360-9	MW-9	Water	12/12/13 14:50	12/17/13 10:40
560-44360-10	MW-10	Water	12/12/13 14:55	12/17/13 10:40
560-44360-11	MW-11	Water	12/12/13 15:00	12/17/13 10:40
560-44360-12	Trip Blank	Water	12/12/13 00:00	12/17/13 10:40

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: CCL	Lab PM: Kellogg, Timothy L.	Carrier Tracking No(s):	COC No: 560-11604-1157.1
Client Contact: ~~Mr. Daniel Wade~~ Christopher Lee	Phone: 303 291 2242	E-Mail: tim.kellogg@testamericainc.com		Page: Page 1 of 2
Company: MWH Americas Inc				Job #: Loc: 560 44360

Address: 1801 California Street Suite 2900	Due Date Requested:
City: Denver	TAT Requested (days): STANDARD
State, Zip: CO, 80202	PO #: Purchase Order not required
Phone: 713-420-3414(Tel)	WO #: TWO # C-STLI-
Email: Christopher.C.Lee@MWHGlobal.com ~~Daniel.A.Wade@us.mwhglobal.com~~	Project #: 56000058
Project Name: San Juan River Basin Pit Sites	SSOW#:
Site: STANDARD Oil Com	

Analysis Requested

Pres
A - I
B - I
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
P - Na2O4S
Q - Na2SO3
R - Na2S2SO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - ph 4-5
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - BTEX	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
MW-1	12/12/13	1410	G	Water			X		
MW-2	12/12/13	1415	G	Water			X		
MW-3	12/12/13	1420	G	Water			X		
MW-4	12/12/13	1425	G	Water			X		
MW-5	12/12/13	1430	G	Water			X		
MW-6	12/12/13	1435	G	Water			X		
MW-7	12/12/13	1440	G	Water			X		
MW-8	12/12/13	1445	G	Water			X		
MW-9	12/12/13	1450	G	Water			X		
MW-10	12/12/13	1455	G	Water			X		
MW-11	12/12/13	1500	G	Water			X		

560-44360 Chain of Custody

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

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

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		12/16/2013 0900			12-17-13 10:20	TAC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 1.3/1.5 IR Gun

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 560-44360-1
SDG Number: December 2013

Login Number: 44360
List Number: 1
Creator: Rood, Vivian R

List Source: TestAmerica Corpus Christi

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	