2014 ANNUAL GROUNDWATER REPORT

Hammond #41A
Meter Code: 89894
T27N, R8W, Sec25, Unit 0

SITE DETAILS

Site Location: Latitude: 36.540090 N, Longitude: -107.631944 W
Land Type: Federal
Operator: M & G Drilling Company

SITE BACKGROUND

- **Site Assessment:** 6/94
- **Excavation:** 7/94
- **Re-excavation:** 5/97
- **ORC Nutrient Injection:** 7/98

Hammond #41A (Site) is being 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, LLC's (EPCGP's) program methods. Currently, the Site is operated by M & G Drilling Company and is active.

The Site is located on Federal land. Various site investigations have occurred from 1994 through 2003. Monitoring wells were installed in 1997 (MW-1), 1999 (MW-2 and MW-3), and 2003 (MW-4). Currently, groundwater sampling is conducted on a semi-annual basis and free product has not been observed.

SUMMARY OF 2014 ACTIVITIES

On April 4 and October 24, 2014, water levels were gauged at MW-1, MW-2, MW-3, and MW-4. For each sampling event in 2014, monitoring wells MW-1, MW-2, and MW-3 were dry. Groundwater samples were collected from monitoring well MW-4 during each 2014 sampling event using a HydraSleeve™ (HydraSleeve) no-purge passive groundwater sampling device. The HydraSleeve was set during the previous sampling event approximately 0.5 foot above termination depth of the monitoring wells using a suspension tether and stainless steel 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 TestAmerica Laboratories, Inc. in Corpus Christi, Texas where they were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX). Additional field parameters were collected including dissolved oxygen, temperature, conductivity, pH, and oxidation-reduction potential (ORP) using a YSI multi-parameter instrument. The water remaining in the HydraSleeve was combined in a waste container and taken to Basin Disposal, Inc. for disposal.

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T27N, R8W, Sec25, Unit 0

SUMMARY TABLES

Historic analytical and water level data are summarized in Table 1.

SITE MAPS

Groundwater analytical maps (Figures 1 and 3) and groundwater elevation contour maps (Figures 2 and 4) summarize the results of the 2014 groundwater sampling and gauging events.

ANALYTICAL LAB REPORTS

The groundwater analytical lab reports are included as Appendix A.

RESULTS

- The groundwater flow direction cannot be determined based on observations because MW-4 was the only monitoring well where groundwater elevation data was collected, due to the other wells on site being dry (see Figures 2 and 4).

- Groundwater samples collected from monitoring well MW-4 exhibited either non-detect results or low concentrations below New Mexico Water Quality Control Commission (NMWQCC) standards for BTEX constituents during the April 2014 sampling event. Benzene, toluene, and total xylenes were reported as non-detect and ethylbenzene was reported below the laboratory quantification limit (J-flagged) during the October 2014 sampling event.

- Monitoring wells MW-1, MW-2, and MW-3 were dry during each event in 2014.

PLANNED FUTURE ACTIVITIES

Installation of additional monitoring wells is planned, after establishment of a right-of-way with the United States Bureau of Land Management. The wells will be installed to further assess the extent of dissolved-phase hydrocarbons and to define the groundwater gradient at the Site. MW-4 and the newly-installed monitoring wells will be sampled on a semi-annual basis. Monitoring wells MW-1, MW-2, and MW-3 will be plugged and abandoned in accordance with New Mexico Environment Department, Ground Water Quality Bureau, Monitoring Well Construction and Abandonment Guidelines, dated March 2011.

TABLE

TABLE 1 – GROUNDWATER ANALYTICAL AND WATER LEVEL RESULTS

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

Hammond #41A								
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	05/21/97	150	60.1	56.7	484	18.79	-	-
MW-1	06/09/97	190	12.3	36.9	181	18.89	-	-
MW-1	09/17/97	1230	<5	263	830	18.79	-	-
MW-1	12/09/97	685	<1	141	261	18.47	-	-
MW-1	03/20/98	662	3.06	78.7	292	18.05	-	-
MW-1	06/04/98	286	2.43	38.4	140	18.54	-	-
MW-1	09/10/98	391	<1	34	144	18.19	-	-
MW-1	12/17/98	330	1.6	30	150	17.42	-	-
MW-1	03/23/99	197	<1	15.8	74.1	17.56	-	-
MW-1	06/11/99	260	3.3	42	270	17.80	-	-
MW-1	09/20/99	460	16	78	440	17.36	-	-
MW-1	12/09/99	110	3.9	13	53	17.42	-	-
MW-1	03/31/00	98	3.4	19	59	17.15	-	-
MW-1	06/09/00	290	9.7	49	290	17.64	-	-
MW-1	09/21/00	110	1.7	16	44	18.10	-	-
MW-1	12/05/00	10	<0.5	3.6	4.3	17.91	-	-
MW-1	06/04/01	39	0.6	5.5	16	18.09	-	-
MW-1	08/07/01	33	<0.5	2.8	4.9	18.62	-	-
MW-1	11/27/01	3.2	<0.5	0.6	<0.5	18.06	-	-
MW-1	02/25/02	3.9	<0.5	0.5	<1	17.86	-	-
MW-1	05/21/02	4.4	<0.5	<0.5	<1	18.16	-	-
MW-1	08/21/02					18.70	-	-
MW-1	09/05/02	2.7	0.5	2.2	1.4	18.82	-	-
MW-1	11/15/03					18.26	-	-
MW-1	02/29/04					17.75	-	-
MW-1	05/11/04					17.88	-	-
MW-1	08/19/04					19.06	-	-
MW-1	11/16/04					18.83	-	-
MW-1	02/21/05					18.29	-	-
MW-1	05/18/05					18.21	-	-
MW-1	08/23/05					19.03	-	-
MW-1	11/08/05					18.76	-	-
MW-1	02/23/06					18.48	-	-
MW-1	05/23/06					18.77	-	-
MW-1	11/08/06					17.86	-	-
MW-1	05/24/07	26.6	106	77.4	446	17.50	-	-
MW-1	08/21/07					18.19	-	-
MW-1	11/13/07					18.13	-	-
MW-1	02/12/08					17.66	-	-
MW-1	08/26/08					18.46	-	-
MW-1	02/17/09					17.92	-	-
MW-1	08/25/09					18.06	-	-
MW-1	02/16/10					18.37	-	-
MW-1	02/01/11					18.36	-	-
MW-1	09/23/11					DRY	-	-
MW-1	02/22/12					18.35	-	-
MW-1	06/05/13					DRY	-	-
MW-1	09/11/13					DRY	-	-
MW-1	12/11/13					DRY	-	-
MW-1	04/04/14					DRY	-	-
MW-1	10/24/14					DRY	-	-

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

Hammond #41A								
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	10/15/99	<0.5	<0.5	<0.5	<0.5	14.12	-	-
MW-2	08/28/00	69	1.3	9.4	28	17.32	-	-
MW-2	06/04/01	<0.5	<0.5	<0.5	<0.5	17.54	-	-
MW-2	08/07/01	<0.5	<0.5	<0.5	<0.5	18.08	-	-
MW-2	11/27/01	<0.5	<0.5	<0.5	<0.5	17.47	-	-
MW-2	02/25/02	<0.5	<0.5	<0.5	<1	17.30	-	-
MW-2	05/21/02	<0.5	<0.5	<0.5	<1	17.62	-	-
MW-2	08/21/02					18.19	-	-
MW-2	10/08/02	<0.5	<0.5	<0.5	0.5	17.80	-	-
MW-2	11/15/03					17.69	-	-
MW-2	02/29/04					17.16	-	-
MW-2	05/11/04					17.30	-	-
MW-2	08/19/04					18.51	-	-
MW-2	11/16/04					18.30	-	-
MW-2	02/21/05					17.72	-	-
MW-2	05/18/05					17.65	-	-
MW-2	08/23/05					18.48	-	-
MW-2	11/08/05					18.20	-	-
MW-2	02/23/06					19.95	-	-
MW-2	05/23/06					18.28	-	-
MW-2	11/08/06					17.18	-	-
MW-2	05/24/07					16.90	-	-
MW-2	08/21/07					17.56	-	-
MW-2	11/13/07					17.60	-	-
MW-2	02/12/08					17.13	-	-
MW-2	08/26/08					17.51	-	-
MW-2	02/17/09					17.33	-	-
MW-2	08/25/09					17.40	-	-
MW-2	02/16/10					17.75	-	-
MW-2	09/27/10					DRY	-	-
MW-2	02/01/11					17.66	-	-
MW-2	09/23/11					DRY	-	-
MW-2	02/22/12					DRY	-	-
MW-2	06/05/13					DRY	-	-
MW-2	09/11/13					DRY	-	-
MW-2	12/11/13					DRY	-	-
MW-2	04/04/14					DRY	-	-
MW-2	10/24/14					DRY	-	-

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

Hammond #41A								
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	10/15/99	<0.5	<0.5	<0.5	<0.5	16.43	-	-
MW-3	08/28/00	<0.5	<0.5	<0.5	<0.5	18.96	-	-
MW-3	06/04/01					19.05	-	-
MW-3	08/07/01	<0.5	<0.5	<0.5	<0.5	19.58	-	-
MW-3	11/27/01					19.02	-	-
MW-3	02/25/02					18.81	-	-
MW-3	05/21/02					19.10	-	-
MW-3	08/21/02					19.67	-	-
MW-3	10/08/02	<0.5	<0.5	<0.5	0.6	19.38	-	-
MW-3	11/15/03					19.23	-	-
MW-3	02/29/04					18.72	-	-
MW-3	05/11/04					18.84	-	-
MW-3	08/19/04					19.84	-	-
MW-3	11/16/04					19.77	-	-
MW-3	02/21/05					19.24	-	-
MW-3	05/18/05					19.15	-	-
MW-3	08/23/05					19.99	-	-
MW-3	11/08/05					19.71	-	-
MW-3	02/23/06					19.40	-	-
MW-3	05/23/06					19.70	-	-
MW-3	11/08/06					18.85	-	-
MW-3	05/24/07					18.48	-	-
MW-3	08/21/07					18.77	-	-
MW-3	11/13/07					19.24	-	-
MW-3	02/12/08					18.36	-	-
MW-3	08/26/08					18.57	-	-
MW-3	02/17/09					18.63	-	-
MW-3	08/25/09					18.55	-	-
MW-3	02/16/10					18.75	-	-
MW-3	09/27/10					DRY	-	-
MW-3	02/01/11					DRY	-	-
MW-3	09/23/11					DRY	-	-
MW-3	02/22/12					DRY	-	-
MW-3	06/05/13					DRY	-	-
MW-3	09/11/13					DRY	-	-
MW-3	12/11/13					DRY	-	-
MW-3	04/04/14					DRY	-	-
MW-3	10/24/14					DRY	-	-

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

Hammond #41A								
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	08/13/03	7.3	128	44.8	625	17.22	-	-
MW-4	11/15/03	19.2	113	84.6	1200	16.40	-	-
MW-4	02/17/04	22.3	109	83.2	774	16.01	-	-
MW-4	02/29/04					15.89	-	-
MW-4	05/11/04	27.2	255	56.6	685	16.03	-	-
MW-4	08/19/04	3.1	<0.5	2.6	5.6	17.24	-	-
MW-4	11/16/04	55.2	53.3	70.7	306	17.00	-	-
MW-4	02/21/05	11.2	20.2	28.9	196	16.43	-	-
MW-4	05/18/05	140	398	252	1710	16.35	-	-
MW-4	08/23/05	<1	<1	<1	5.6	17.18	-	-
MW-4	11/08/05	13.9	20.1	20.1	149	16.91	-	-
MW-4	02/23/06	64.2	195	118	641	16.23	-	-
MW-4	05/23/06	49.2	188	85.1	304	16.92	-	-
MW-4	11/08/06	1.7	1.8	2.2	4.7	15.97	-	-
MW-4	02/24/07					15.66	-	-
MW-4	05/24/07	25.8	103	74.3	399	15.66	-	-
MW-4	08/21/07	15.9	81	59.6	322	16.33	-	-
MW-4	11/13/07	21.7	83	93.4	343	16.30	-	-
MW-4	02/12/08	24.2	74.5	99.1	362	16.81	-	-
MW-4	08/26/08	15.9	60.6	73.5	255	16.62	-	-
MW-4	02/17/09	14.3	50.6	85.3	246	17.06	-	-
MW-4	08/25/09	2.7	23.4	28.3	127	17.17	-	-
MW-4	02/16/10	13.8	1.2	52.9	79.9	16.55	-	-
MW-4	09/27/10	2.6	<2	3.2	4.2 J	17.15	-	-
MW-4	02/01/11	11.8	0.88 J	82.7	249	16.51	-	-
MW-4	09/23/11	<1	<1	<1	<3	17.30	-	-
MW-4	02/22/12	8.5	0.34 J	69.4	88.7	16.53	-	-
MW-4	02/23/06	U1	U1	U1	U2	15.57		
MW-4	05/23/06	U1	U1	U1	U2	15.04		
MW-4	05/24/07	U1	U1	U1	U2	NA		
MW-4	08/26/08	U1	U1	U1	U3	17.23		
MW-4	02/17/09	U1	U1	U1	U2	18.70		
MW-4	08/25/09	U1	U1	U1	U2	14.45		
MW-4	09/23/11	U1	U1	U1	J1.8	14.62		
MW-4	06/05/13	0.73	<0.30	16.0	4.0	16.51	-	-
MW-4	09/11/13	<0.14	<0.20	<0.30	<0.23	16.52	-	-
MW-4	12/11/13	<0.20	<0.38	2.0	11	15.87	-	-
MW-4	04/04/14	<0.20	<0.38	16.0	23	15.71	-	-
MW-4	10/24/14	<0.38	<0.70	0.53 J	<1.6	17.24	-	-

Notes:
Results highlighted yellow exceed their respective New Mexico Water Quality Control Comission standards.
"J" = Result is less than the reporting limit but greater than or equal to the method detection limit and the result in 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\HAMMOND #41A\2014 MAPS\Hammond#41A_GARM_1SA_2014.mxd

SMA BENCHMARK
ELEV. 5975.98'
NAD 83 NAVD 88
STATE PLANE COORDINATE SYSTEM
NEW MEXICO WEST

MW-4
B: <0.20
T: <0.38
E: 16
X: 23

MW-2
DRY

MW-1
DRY

MW-3
DRY

HAMMOND #41A WELLHEAD
METER HOUSE
SEPARATOR
DRIP TANK
DOGLEG
GAS RISER
METER RUN
(OUTSIDE)
OTHER WELLHEAD
METER HOUSE
(NOT IN USE)

5976
5977
5978
5979
5980

LEGEND:

- 5980 — APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- G A S — NATURAL GAS LINE
- MONITORING WELL
- SMA BENCHMARK

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 40 80

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/14/2014	CCL	CCL	DAW

TITLE:
HAMMOND #41A
GROUNDWATER ANALYTICAL RESULTS
SAMPLED APRIL 4, 2014

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\HAMMOND #41A\2014 MAPS\Hammond#41A_GECM_1SA_2014.mxd

SMA BENCHMARK
ELEV. 5975.98'
NAD 83 NAVD 88
STATE PLANE COORDINATE SYSTEM
NEW MEXICO WEST

MW-2
DRY
MW-2

MW-4
5960.51
MW-4

MW-1
DRY
MW-1

MW-3
DRY
MW-3

HAMMOND #41A WELLHEAD

METER HOUSE

SEPARATOR

DRIP TANK

DOGLEG

GAS RISER

METER RUN
(OUTSIDE)

OTHER WELLHEAD

METER HOUSE
(NOT IN USE)

5976
5977
5978
5979
5980

LEGEND:

- 5980 — APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- G A S — NATURAL GAS LINE
- MONITORING WELL
- SMA BENCHMARK

N

SCALE IN FEET
0 40 80

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	10/14/2014	CCL	CCL	DAW

TITLE:
HAMMOND #41A
GROUNDWATER ELEVATION MAP
GAUGED APRIL 4, 2014

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\HAMMOND #41A\2014 MAPS\Hammond#41A_GARM_2SA_2014.mxd

SMA BENCHMARK
ELEV. 5975.98'
NAD 83 NAVD 88
STATE PLANE COORDINATE SYSTEM
NEW MEXICO WEST

MW-4
B: <0.38
T: <0.70
E: 0.53 J
X: <1.6

MW-2
DRY

MW-1
DRY

MW-3
DRY

HAMMOND #41A WELLHEAD
METER HOUSE
SEPARATOR
DRIP TANK
DOGLEG
GAS RISER
METER RUN
(OUTSIDE)
OTHER WELLHEAD
METER HOUSE
(NOT IN USE)

5976
5977
5978
5979
5980

LEGEND:

- 5980 — APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- G A S — NATURAL GAS LINE
- MONITORING WELL
- SMA BENCHMARK

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 40 80

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	12/30/2014	CCL	CCL	DAW

TITLE:
HAMMOND #41A
GROUNDWATER ANALYTICAL RESULTS
SAMPLED OCTOBER 24, 2014

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\HAMMOND #41A\2014 MAPS\Hammond#41A_GECM_2SA_2014.mxd

SMA BENCHMARK
ELEV. 5975.98'
NAD 83 NAVD 88
STATE PLANE COORDINATE SYSTEM
NEW MEXICO WEST

MW-2
DRY
MW-2

MW-4
5958.98
MW-4

MW-1
DRY
MW-1

MW-3
DRY
MW-3

5976

HAMMOND #41A WELLHEAD

METER HOUSE

SEPARATOR

DRIP TANK

DOGLEG

5977

5978

5979

5980

GAS RISER

METER RUN
(OUTSIDE)

OTHER WELLHEAD

METER HOUSE
(NOT IN USE)

LEGEND:

- 5980 — APPROXIMATE GROUND SURFACE CONTOUR AND ELEVATION, FEET
- ACCESS ROAD
- G A S — NATURAL GAS LINE
- MONITORING WELL
- SMA BENCHMARK

N

SCALE IN FEET
0 40 80

REVISION	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
A	12/30/2014	CCL	CCL	DAW

TITLE:
HAMMOND #41A
GROUNDWATER ELEVATION MAP
GAUGED OCTOBER 24, 2014

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

MWH

Figure No.: 4

APPENDIX A

APRIL 4, 2014 GROUNDWATER SAMPLING ANALYTICAL REPORT
OCTOBER 24, 2014 GROUNDWATER SAMPLING ANALYTICAL REPORT

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: 560-46604-1
Client Project/Site: Hammond #41A, 4/4/14 BTEX

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

Attn: Ms. Sarah Gardner

Authorized for release by:
4/21/2014 9:35:00 AM

Neal Salcher, Senior Project Manager
neal.salcher@testamericainc.com

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: 560-46604-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-46604-1

Comments
No additional comments.

Receipt
The sample was received on 4/8/2014 9:45 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9º C.

GC VOA
Method(s) 8021B: LCS and MB are also designated as ICV and ICB for calibration...batch 100781

No other analytical or quality issues were noted.

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

Detection Summary

Client: MWH Americas Inc
Project/Site: Hammond #41A, 4/4/14 BTEX

TestAmerica Job ID: 560-46604-1

Client Sample ID: MW-4

Lab Sample ID: 560-46604-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	16		2.0	0.20	ug/L	1		8021B	Total/NA
Xylenes, Total	23		2.0	0.65	ug/L	1		8021B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: MWH Americas Inc
Project/Site: Hammond #41A, 4/4/14 BTEX

TestAmerica Job ID: 560-46604-1

Client Sample ID: MW-4
Date Collected: 04/04/14 14:40
Date Received: 04/08/14 09:45

Lab Sample ID: 560-46604-1
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.20		2.0	0.20	ug/L			04/14/14 18:51	1
Toluene	<0.38		2.0	0.38	ug/L			04/14/14 18:51	1
Ethylbenzene	**16**		2.0	0.20	ug/L			04/14/14 18:51	1
Xylenes, Total	**23**		2.0	0.65	ug/L			04/14/14 18:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*58 - 129*		*04/14/14 18:51*	*1*
Trifluorotoluene (Surr)	*97*		*54 - 130*		*04/14/14 18:51*	*1*

Client: MWH Americas Inc
Project/Site: Hammond #41A, 4/4/14 BTEX

TestAmerica Job ID: 560-46604-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 560-100789/7
Matrix: Water
Analysis Batch: 100789

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.20		2.0	0.20	ug/L			04/14/14 16:55	1
Toluene	<0.38		2.0	0.38	ug/L			04/14/14 16:55	1
Ethylbenzene	<0.20		2.0	0.20	ug/L			04/14/14 16:55	1
Xylenes, Total	<0.65		2.0	0.65	ug/L			04/14/14 16:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*58 - 129*		*04/14/14 16:55*	*1*
Trifluorotoluene (Surr)	*100*		*54 - 130*		*04/14/14 16:55*	*1*

Lab Sample ID: LCS 560-100789/6
Matrix: Water
Analysis Batch: 100789

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			40.0	38.5		ug/L		96	70 - 130		
Toluene			40.0	40.6		ug/L		101	70 - 130		
Ethylbenzene			40.0	39.6		ug/L		99	70 - 130		
Xylenes, Total			120	114		ug/L		95	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*58 - 129*
Trifluorotoluene (Surr)	*106*		*54 - 130*

Certification Summary

Client: MWH Americas Inc
Project/Site: Hammond #41A, 4/4/14 BTEX

TestAmerica Job ID: 560-46604-1

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	03-31-15

Method Summary

Client: MWH Americas Inc
Project/Site: Hammond #41A, 4/4/14 BTEX

TestAmerica Job ID: 560-46604-1

Method	Method Description	Protocol	Laboratory
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: Hammond #41A, 4/4/14 BTEX

TestAmerica Job ID: 560-46604-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-46604-1	MW-4	Water	04/04/14 14:40	04/08/14 09:45

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

Chain of Custody Record

Client Information	Sampler	Lab PM	Carrier Tracking No(s):	COC No.
Client Contact: ~~Mr. Daniel Wade~~ Sarah Gardner	Sarah Gardner / Chris Lee	Kellogg, Timothy L.	Fed ex	560-13131-1157
Company: MWH Americas Inc	Phone: 303 291 2239	E-Mail: tim.kellogg@testamericainc.com	803645897188	Page: Page Loc: 560
Address: 1801 California Street Suite 2900	Due Date Requested:			Job #: 46604
City: Denver	TAT Requested (days):			
State, Zip: CO, 80202				
Phone: ~~713-420-3414(Tel)~~ 303 291 2239	PO #: Purchase Order not required			
Email: sarah.gardner ~~Daniel.A.Wade~~@us.mwhglobal.com	WO #: TWO # C-STLI-			
Project Name: San Juan River Basin Pit Sites	Project #: 56000058			
Site: Hammond #41A	SSOW#:			

Analysis Requested

Preservation Code: A

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:
~~MW-1~~	~~4/4/14~~			Water					Not Sampled
~~MW-2~~	~~4/4/14~~			Water					Not Sampled
~~MW-3~~	~~4/4/14~~			Water					Not Sampled
MW-4	4/4/14	1440		Water			X	3	
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					

Preservation Codes:
A - HCl
B - NaOH
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:

560-46604 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	Sarah Gardner	4/7/14 900	MWH	[illegible]	4/8/14 9:45	TACC
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: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
		OBS 1.7C Cor 1.9C IR#1 Seal

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 560-46604-1

Login Number: 46604

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Rood, Vivian R

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.	True	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Tel: (850)474-1001

TestAmerica Job ID: 400-97692-1
Client Project/Site: KM Hammond #41A

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

Attn: Ms. Sarah Gardner

Authorized for release by:
11/6/2014 1:52:34 PM
Bernard Kirkland, Manager of Project Management
(912)354-7858 e.3238
bernard.kirkland@testamericainc.com

Designee for

Neal Salcher, Senior Project Manager
(713)690-4444
neal.salcher@testamericainc.com

Table of Contents

Client: MWH Americas Inc
Project/Site: KM Hammond #41A

TestAmerica Job ID: 400-97692-1

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
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 400-97692-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative
400-97692-1

Comments
No additional comments.

Receipt
The samples were received on 10/28/2014 9:39 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.8º C.

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

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

Sample Summary

Client: MWH Americas Inc
Project/Site: KM Hammond #41A

TestAmerica Job ID: 400-97692-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-97692-1	MW-4	Water	10/24/14 11:20	10/28/14 09:39
400-97692-2	TRIP BLANK	Water	10/24/14 11:30	10/28/14 09:39

Client: MWH Americas Inc
Project/Site: KM Hammond #41A

TestAmerica Job ID: 400-97692-1

Client Sample ID: MW-4

Lab Sample ID: 400-97692-1

Date Collected: 10/24/14 11:20

Matrix: Water

Date Received: 10/28/14 09:39

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			11/01/14 17:39	1
Ethylbenzene	**0.53**	**J**	1.0	0.50	ug/L			11/01/14 17:39	1
Toluene	<0.70		1.0	0.70	ug/L			11/01/14 17:39	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/01/14 17:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*102*		*78 - 118*		*11/01/14 17:39*	*1*
Dibromofluoromethane	*112*		*81 - 121*		*11/01/14 17:39*	*1*
Toluene-d8 (Surr)	*88*		*80 - 120*		*11/01/14 17:39*	*1*

Client Sample ID: TRIP BLANK

Lab Sample ID: 400-97692-2

Date Collected: 10/24/14 11:30

Matrix: Water

Date Received: 10/28/14 09:39

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			11/01/14 18:04	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/01/14 18:04	1
Toluene	<0.70		1.0	0.70	ug/L			11/01/14 18:04	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/01/14 18:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*94*		*78 - 118*		*11/01/14 18:04*	*1*
Dibromofluoromethane	*109*		*81 - 121*		*11/01/14 18:04*	*1*
Toluene-d8 (Surr)	*91*		*80 - 120*		*11/01/14 18:04*	*1*

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

Lab Sample ID: MB 400-235149/4
Matrix: Water
Analysis Batch: 235149

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.38		1.0	0.38	ug/L			11/01/14 11:00	1
Ethylbenzene	<0.50		1.0	0.50	ug/L			11/01/14 11:00	1
Toluene	<0.70		1.0	0.70	ug/L			11/01/14 11:00	1
Xylenes, Total	<1.6		10	1.6	ug/L			11/01/14 11:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*92*		*78 - 118*		*11/01/14 11:00*	*1*
Dibromofluoromethane	*102*		*81 - 121*		*11/01/14 11:00*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*11/01/14 11:00*	*1*

Lab Sample ID: LCS 400-235149/1002
Matrix: Water
Analysis Batch: 235149

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	58.9		ug/L		118	79 - 120
Ethylbenzene	50.0	52.1		ug/L		104	80 - 120
Toluene	50.0	50.3		ug/L		101	80 - 120
Xylenes, Total	100	105		ug/L		105	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*91*		*78 - 118*
Dibromofluoromethane	*106*		*81 - 121*
Toluene-d8 (Surr)	*93*		*80 - 120*

Lab Chronicle

Client: MWH Americas Inc
Project/Site: KM Hammond #41A

TestAmerica Job ID: 400-97692-1

Client Sample ID: MW-4

Lab Sample ID: 400-97692-1

Date Collected: 10/24/14 11:20

Matrix: Water

Date Received: 10/28/14 09:39

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235149	11/01/14 17:39	CLN	TAL PEN

Client Sample ID: TRIP BLANK

Lab Sample ID: 400-97692-2

Date Collected: 10/24/14 11:30

Matrix: Water

Date Received: 10/28/14 09:39

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	235149	11/01/14 18:04	CLN	TAL PEN

Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Method Summary

Client: MWH Americas Inc
Project/Site: KM Hammond #41A

TestAmerica Job ID: 400-97692-1

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

Protocol References:

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

Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

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: Chris Lee, Sarah Gardner	Lab PM: Salcher, Neal	Carrier Tracking No(s):	COC No: 560-15211-1508.1
Client Contact: Ms. Sarah Gardner	Phone: 303 291-2242	E-Mail: neal.salcher@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):			
State, Zip: CO, 80202				
Phone: 303-291-2239(Tel)	PO #: Purchase Order Requested			
Email: sarah.gardner@mwhglobal.com	WO #: As per Enfos			
Project Name: KM Hammond #41A	Project #: 56004963			
Site:	SSOW#:			

Analysis Requested

400-97692 COC

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-4	10/24/14	1120	G	Water			X		
TRIP BLANK	10/24/14	1130	G	Water			X		
				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:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	10/27/14 915	MWH	[signature]	10-28-14 0829	
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: 3.8°C IR-2