

2016 ANNUAL GROUNDWATER REPORT

Sandoval GC A#1A
NMOCD Case#: 3RP-235-0
Meter Code: 89620

Latitude: 36.772101, Longitude: -107.753601

SITE DETAILS

Site Location: Latitude: 36.772101, Longitude: -107.753601
Land Type: Federal
Operator: BP/America Production Company

SITE BACKGROUND

- **Site Assessment:** 5/94
- **Excavation:** 9/94 (50 cy)
- **Re-Excavation:** 7/97 (504 cy)
- **ORC Nutrient Injection** 10/01

Environmental Remediation activities at the Sandoval GC A#1A (Site) are 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 (EPCPG) program methods. Currently, the Site is operated by BP America Production Company and is active.

The Site is located on Federal land. Various site investigations have occurred from 1994 through 2015. A monitoring well was installed in 1994 (MW-1). Additional borings advanced for well installation purposes encountered refusal in 1995 and 1997. Wells MW-2 through MW-5 were installed in 2015. Free product was encountered in monitoring well MW-2 at the Site in 2016. Currently, groundwater sampling is conducted on a semi-annual basis.

SUMMARY OF 2016 ACTIVITIES

On April 19 and October 16, 2016, water levels were gauged at MW-1, MW-2, MW-3, MW-4 and MW-5. Groundwater samples were collected from each well that did not contain free product using HydraSleeve™ (HydraSleeve) no-purge groundwater sampling devices. 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 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 Pensacola, Florida where they were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX). Additional field parameters are collected from the excess sample water recovered by the HydraSleeve. Excess sample water is poured into a YSI multi-parameter instrument sample cup and analyzed. Field parameters include dissolved oxygen, temperature, conductivity, pH, and oxidation-reduction potential. Field parameters are not collected if free product is present. The unused sample water is combined in a waste container and taken to Basin Disposal, Inc. for disposal.

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SUMMARY TABLES

Historic groundwater analytical results and well gauging data are summarized in Tables 1 and 2, respectively.

SITE MAPS

Groundwater analytical maps (Figures 1 and 3) and groundwater elevation contour maps (Figures 2 and 4) summarize results of the 2016 groundwater sampling and gauging events.

ANALYTICAL LAB REPORTS

The groundwater analytical lab reports are included as Appendix A.

GROUNDWATER RESULTS

- The groundwater flow direction at the Site is generally to the east (see Figure 2 and 4).
- Groundwater samples collected in 2016 from MW-2, MW-4, and MW-5 exceeded the New Mexico Water Quality Control Commission (NMWQCC) standard (10 micrograms per liter [$\mu\text{g/L}$]) for benzene in groundwater. Benzene was either below the NMWQCC standard or not detected in monitoring wells MW-1 and MW-3.
- Groundwater samples collected in 2016 from MW-4 and MW-5 exceeded the NMWQCC standard (750 $\mu\text{g/L}$) for toluene in groundwater. Toluene was not detected in monitoring wells MW-1, MW-2, and MW-3.
- Groundwater samples collected in 2016 from MW-4 and MW-5 exceeded the NMWQCC standard (750 $\mu\text{g/L}$) for ethylbenzene in groundwater. Ethylbenzene was either below the NMWQCC standard or not detected in monitoring wells MW-1, MW-2, and MW-3.
- Groundwater samples collected in 2016 from MW-4 and MW-5 exceeded the NMWQCC standard (620 $\mu\text{g/L}$) for total xylenes in groundwater. Total xylenes were either below the NMWQCC standard or not detected in monitoring wells MW-1, MW-2, and MW-3.

Based on the analytical results collected to date, it appears groundwater samples collected on April 19, 2016, from monitoring wells MW-2 and MW-4 may have been switched. Future groundwater sampling results from these monitoring wells may support this conclusion.

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PLANNED FUTURE ACTIVITIES

Groundwater monitoring events will be conducted on a semi-annual basis. EPCGP will continue to monitor the current operator's site activities as they address a historical release at the Site. The 2017 Annual Report will be submitted in early 2018.

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TABLES

TABLE 1 – GROUNDWATER ANALYTICAL RESULTS

TABLE 2 – GROUNDWATER ELEVATION RESULTS

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

Sandoval GC A #1A					
Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Standards:		10	750	750	620
MW-1	05/30/95	5500	3980	579	4780
MW-1	04/12/96	10400	8960	925	10100
MW-1	07/26/96	8980	7980	1000	9430
MW-1	10/18/96	11050	9960	900	10700
MW-1	01/21/97	7700	7210	787	8430
MW-1	04/16/97	8900	8680	996	9250
MW-1	07/11/97	8240	7850	709	8230
MW-1	09/04/97	4420	2370	850	9660
MW-1	10/22/97	3460	39.6	714	7690
MW-1	01/06/98	3850	194	795	8570
MW-1	04/23/98	4330	406	783	7220
MW-1	04/19/99	4300	1260	629	7440
MW-1	04/13/00	2300	1500	590	5900
MW-1	05/30/01	2800	710	560	5200
MW-1	10/08/01	NS	NS	NS	NS
MW-1	05/16/02	3000	1500	440	5300
MW-1	05/21/03	3850	601	443	6360
MW-1	11/16/04	2490	30.9	346	2860
MW-1	11/08/05	338	8.5	80.1	757
MW-1	11/08/06	198	3.4	14.9	83.6
MW-1	11/29/07	441	3.8	52.2	72.2
MW-1	11/18/08	120	<2	17.9	8.3
MW-1	11/04/09	88.4	<1	14.8	4.3
MW-1	06/03/10	NS	NS	NS	NS
MW-1	11/09/10	54	<2	8.7	12.7
MW-1	11/16/11	31.3	<1	14.2	8.9
MW-1	06/08/13	0.27 J	<0.30	<0.20	<0.23
MW-1	09/09/13	0.36 J	<0.30	<0.20	<0.23
MW-1	12/12/13	0.31 J	<0.38	<0.20	<0.65
MW-1	04/02/14	1.1 J	1.7 J	<0.20	1.4 J
MW-1	10/23/14	3.3	<0.70	3.8	<1.6
MW-1	05/30/15	5.7	<5.0	5.3	6
MW-1	11/20/15	8.3	<5.0	5.2	14
MW-1	04/19/16	<2.0	<10	<2.0	<10
MW-1	10/16/16	3.2	<5.0	2	<5.0

TABLE 1 - GROUNDWATER ANALYTICAL RESULTS

Sandoval GC A #1A					
Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Standards:		10	750	750	620
MW-2	11/20/15	2400	3700	530	7400
MW-2	04/19/16	3.2	<5.0	<1.0	10
MW-2	10/16/16	NS	NS	NS	NS
MW-3	11/20/15	55	62	16	140
MW-3	04/19/16	1.6	<5.0	1.8	40
MW-3	10/16/16	<1.0	<5.0	<1.0	<5.0
MW-4	11/20/15	490	<10	4.0	140
MW-4	04/19/16	6600	8200	1200	16000
MW-4	10/16/16	22	<5.0	<1.0	9.6
MW-5	11/20/15	7500	17000	590	7100
MW-5	04/19/16	5800	1600	680	6100
MW-5	10/16/16	4700	6700	1000	10000
Notes: "µg/L" = micrograms per liter Results highlighted yellow exceed their respective New Mexico Water Quality Control Commission (NMWQCC) standards. "J" = Result is less than the reporting limit but greater than or equal to the method detection limit and the result is an approximate value. "<" = analyte was not detected at the indicated reporting limit (some historic data were reported at the detection limit). "NS" = Monitoring well not sampled					

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Sandoval GC A #1A						
Location	Date	TOC	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)	GW Elevation (ft.)
MW-1	05/30/95	5716.63	34.49	NR		5682.14
MW-1	04/12/96	5716.63	35.39	NR		5681.24
MW-1	07/26/96	5716.63	35.61	NR		5681.02
MW-1	10/18/96	5716.63	35.79	NR		5680.84
MW-1	01/21/97	5716.63	35.80	NR		5680.83
MW-1	04/16/97	5716.63	35.99	NR		5680.64
MW-1	07/11/97	5716.63	36.05	NR		5680.58
MW-1	09/04/97	5716.63	35.18	NR		5681.45
MW-1	10/22/97	5716.63	35.14	NR		5681.49
MW-1	01/06/98	5716.63	35.10	NR		5681.53
MW-1	04/23/98	5716.63	35.15	NR		5681.48
MW-1	04/19/99	5716.63	35.10	NR		5681.53
MW-1	04/13/00	5716.63	34.70	NR		5681.93
MW-1	05/30/01	5716.63	34.97	NR		5681.66
MW-1	10/08/01	5716.63	35.19	NR		5681.44
MW-1	05/16/02	5716.63	35.11	NR		5681.52
MW-1	05/21/03	5716.63	35.26	ND		5681.37
MW-1	11/16/04	5716.63	34.84	ND		5681.79
MW-1	11/08/05	5716.63	33.87	ND		5682.76
MW-1	11/08/06	5716.63	34.02	ND		5682.61
MW-1	11/29/07	5716.63	33.29	ND		5683.34
MW-1	11/18/08	5716.63	33.41	ND		5683.22
MW-1	11/04/09	5716.63	33.64	ND		5682.99
MW-1	06/03/10	5716.63	33.46	ND		5683.17
MW-1	11/09/10	5716.63	32.94	ND		5683.69
MW-1	11/16/11	5716.63	33.28	ND		5683.35
MW-1	06/08/13	5716.63	33.67	ND		5682.96
MW-1	09/09/13	5716.63	33.78	ND		5682.85
MW-1	12/12/13	5716.63	33.80	ND		5682.83
MW-1	04/02/14	5716.63	33.85	ND		5682.78
MW-1	10/23/14	5716.63	34.04	ND		5682.59
MW-1	05/30/15	5716.63	34.19	ND		5682.44
MW-1	11/20/15	5716.63	34.33	ND		5682.30
MW-1	04/19/16	5716.63	34.52	ND		5682.11
MW-1	10/16/16	5716.63	34.17	ND		5682.46

TABLE 2 - GROUNDWATER ELEVATION RESULTS

Sandoval GC A #1A						
Location	Date	TOC	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)	GW Elevation (ft.)
MW-2	11/20/15	5717.56	35.29	ND		5682.27
MW-2	04/19/16	5717.56	35.49	ND		5682.07
MW-2	10/16/16	5717.56	36.03	35.60	0.43	5681.85
MW-3	11/20/15	5718.73	37.16	ND		5681.57
MW-3	04/19/16	5718.73	42.25	ND		5676.48
MW-3	10/16/16	5718.73	44.19	ND		5674.54
MW-4	11/20/15	5718.15	Dry	ND		Dry
MW-4	11/23/15	5718.15	44.93	ND		5673.22
MW-4	04/19/16	5718.15	44.84	ND		5673.31
MW-4	10/16/16	5718.15	45.02	ND		5673.13
MW-5	11/20/15	5714.35	Dry	ND		Dry
MW-5	11/23/15	5714.35	41.16	ND		5673.19
MW-5	04/19/16	5715.35	41.15	ND		5674.20
MW-5	10/16/16	5715.35	42.25	ND		5673.10

Notes:

"ft" = feet

"TOC" = Top of casing

"LNAPL" = Light non-aqueous phase liquid

"ND" = LNAPL not detected

"NR" = LNAPL not recorded

FIGURES

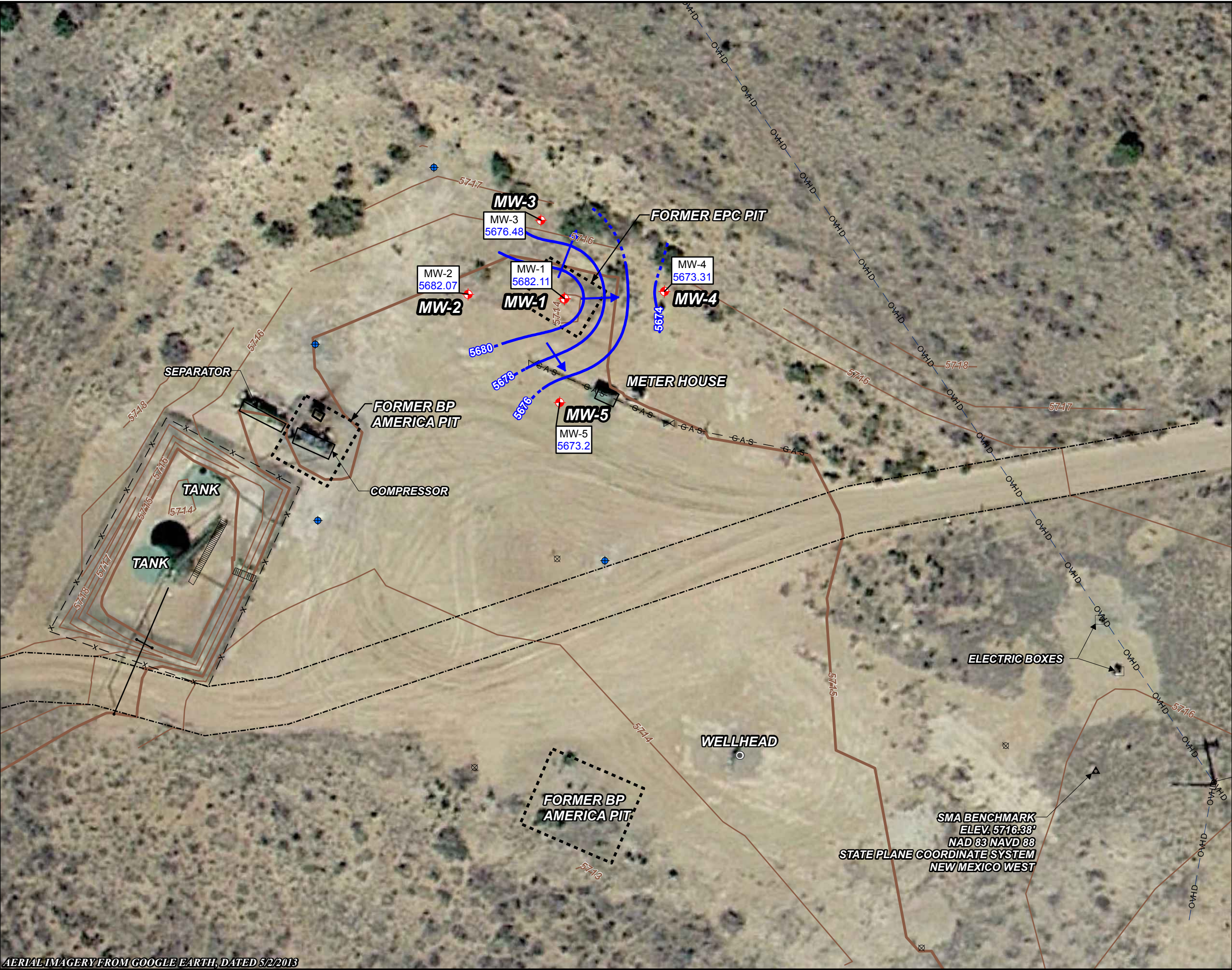
FIGURE 1: APRIL 19, 2016 GROUNDWATER ANALYTICAL RESULTS MAP

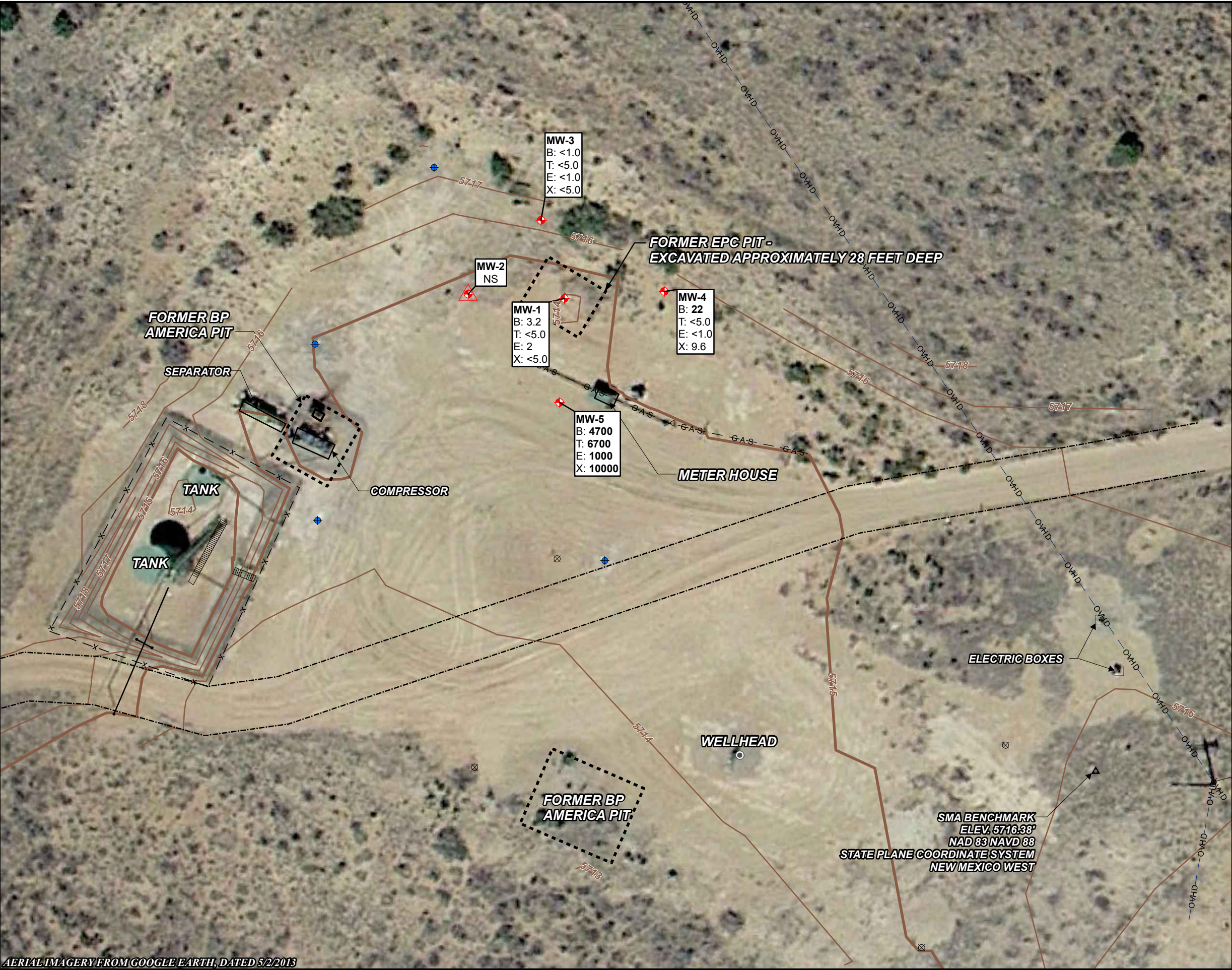
FIGURE 2: APRIL 19, 2016 GROUNDWATER ELEVATION MAP

FIGURE 3: OCTOBER 16, 2016 GROUNDWATER ANALYTICAL RESULTS MAP

FIGURE 4: OCTOBER 16, 2016 GROUNDWATER ELEVATION MAP







APPENDIX A

MAY 4, 2016 GROUNDWATER SAMPLING ANALYTICAL REPORT

OCTOBER 28, 2016 GROUNDWATER SAMPLING ANALYTICAL REPORT

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: 400-120552-1

Client Project/Site: Sandoval GC A#1

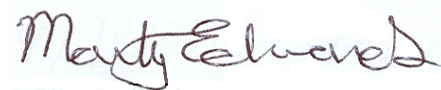
For:

MWH Americas Inc

11153 Aurora Avenue

Des Moines, Iowa 50322-7904

Attn: Steve Varsa



Authorized for release by:

5/4/2016 4:28:12 PM

Marty Edwards, Manager of Project Management

(850)474-1001

marty.edwards@testamericainc.com

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

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

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



Table of Contents

Cover Page	1
Table of Contents	2
Definitions	3
Case Narrative	4
Detection Summary	5
Sample Summary	6
Client Sample Results	7
QC Association	13
QC Sample Results	14
Chronicle	16
Certification Summary	18
Method Summary	19
Chain of Custody	20
Receipt Checklists	21

Definitions/Glossary

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.

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)

Case Narrative

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Job ID: 400-120552-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative 400-120552-1

Comments

No additional comments.

Receipt

The samples were received on 4/20/2016 9:06 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.0° C.

Receipt Exceptions

The container labels for the following samples id the voas as preserved w/ HCl. The COC indicates that these two samples were unpreserved. Logged in by the COC.

GC VOA

Method 8021B: Due to the high concentration of Benzene in the parent sample, the matrix spike / matrix spike duplicate (MS/MSD) for batch 304253 exceeded the linear range of the instrument. The percent recoveries and RPD met acceptance criteria. Therefore, the MS/MSD were reported.

Method 8021B: The following sample was diluted due to the abundance of non-target analytes: MW-1 (400-120552-1). Elevated reporting limits (RLs) are provided.

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

Detection Summary

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Client Sample ID: MW-1

Lab Sample ID: 400-120552-1

No Detections.

Client Sample ID: MW-2

Lab Sample ID: 400-120552-2

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Benzene	3.2		1.0	ug/L	1		8021B	Total/NA
Xylenes, Total	10		5.0	ug/L	1		8021B	Total/NA

Client Sample ID: MW-3

Lab Sample ID: 400-120552-3

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.6		1.0	ug/L	1		8021B	Total/NA
Ethylbenzene	1.8		1.0	ug/L	1		8021B	Total/NA
Xylenes, Total	40		5.0	ug/L	1		8021B	Total/NA

Client Sample ID: MW-4

Lab Sample ID: 400-120552-4

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Benzene	6600		50	ug/L	50		8021B	Total/NA
Ethylbenzene	1200		50	ug/L	50		8021B	Total/NA
Toluene	8200		250	ug/L	50		8021B	Total/NA
Xylenes, Total	16000		250	ug/L	50		8021B	Total/NA

Client Sample ID: MW-5

Lab Sample ID: 400-120552-5

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Benzene	5800		20	ug/L	20		8021B	Total/NA
Ethylbenzene	680		20	ug/L	20		8021B	Total/NA
Toluene	1600		100	ug/L	20		8021B	Total/NA
Xylenes, Total	6100		100	ug/L	20		8021B	Total/NA

Client Sample ID: TRIP BLANK

Lab Sample ID: 400-120552-6

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Pensacola

Sample Summary

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-120552-1	MW-1	Water	04/19/16 08:00	04/20/16 09:06
400-120552-2	MW-2	Water	04/19/16 08:05	04/20/16 09:06
400-120552-3	MW-3	Water	04/19/16 08:10	04/20/16 09:06
400-120552-4	MW-4	Water	04/19/16 08:15	04/20/16 09:06
400-120552-5	MW-5	Water	04/19/16 08:20	04/20/16 09:06
400-120552-6	TRIP BLANK	Water	04/19/16 00:00	04/20/16 09:06

Client Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Client Sample ID: MW-1
Date Collected: 04/19/16 08:00
Date Received: 04/20/16 09:06

Lab Sample ID: 400-120552-1
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<2.0		2.0	ug/L			05/02/16 18:09	2
Ethylbenzene	<2.0		2.0	ug/L			05/02/16 18:09	2
Toluene	<10		10	ug/L			05/02/16 18:09	2
Xylenes, Total	<10		10	ug/L			05/02/16 18:09	2
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	99		78 - 124				05/02/16 18:09	2

Client Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Client Sample ID: MW-2
Date Collected: 04/19/16 08:05
Date Received: 04/20/16 09:06

Lab Sample ID: 400-120552-2
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	3.2		1.0	ug/L			04/29/16 19:16	1
Ethylbenzene	<1.0		1.0	ug/L			04/29/16 19:16	1
Toluene	<5.0		5.0	ug/L			04/29/16 19:16	1
Xylenes, Total	10		5.0	ug/L			04/29/16 19:16	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	101		78 - 124				04/29/16 19:16	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Client Sample ID: MW-3
Date Collected: 04/19/16 08:10
Date Received: 04/20/16 09:06

Lab Sample ID: 400-120552-3
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.6		1.0	ug/L			04/30/16 08:16	1
Ethylbenzene	1.8		1.0	ug/L			04/30/16 08:16	1
Toluene	<5.0		5.0	ug/L			04/30/16 08:16	1
Xylenes, Total	40		5.0	ug/L			04/30/16 08:16	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	93		78 - 124				04/30/16 08:16	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Client Sample ID: MW-4
Date Collected: 04/19/16 08:15
Date Received: 04/20/16 09:06

Lab Sample ID: 400-120552-4
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	6600		50	ug/L			05/02/16 13:39	50
Ethylbenzene	1200		50	ug/L			05/02/16 13:39	50
Toluene	8200		250	ug/L			05/02/16 13:39	50
Xylenes, Total	16000		250	ug/L			05/02/16 13:39	50
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	118		78 - 124				05/02/16 13:39	50

Client Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Client Sample ID: MW-5
Date Collected: 04/19/16 08:20
Date Received: 04/20/16 09:06

Lab Sample ID: 400-120552-5
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	5800		20	ug/L			05/02/16 14:42	20
Ethylbenzene	680		20	ug/L			05/02/16 14:42	20
Toluene	1600		100	ug/L			05/02/16 14:42	20
Xylenes, Total	6100		100	ug/L			05/02/16 14:42	20
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	106		78 - 124				05/02/16 14:42	20

Client Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Client Sample ID: TRIP BLANK

Date Collected: 04/19/16 00:00

Date Received: 04/20/16 09:06

Lab Sample ID: 400-120552-6

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	ug/L			04/30/16 10:14	1
Ethylbenzene	<1.0		1.0	ug/L			04/30/16 10:14	1
Toluene	<5.0		5.0	ug/L			04/30/16 10:14	1
Xylenes, Total	<5.0		5.0	ug/L			04/30/16 10:14	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	105		78 - 124				04/30/16 10:14	1

QC Association Summary

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

GC VOA

Analysis Batch: 304034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-120437-A-5 MS	Matrix Spike	Total/NA	Water	8021B	
400-120437-A-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8021B	
400-120552-2	MW-2	Total/NA	Water	8021B	
400-120552-3	MW-3	Total/NA	Water	8021B	
400-120552-6	TRIP BLANK	Total/NA	Water	8021B	
LCS 400-304034/1001	Lab Control Sample	Total/NA	Water	8021B	
MB 400-304034/2	Method Blank	Total/NA	Water	8021B	

Analysis Batch: 304253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-120552-1	MW-1	Total/NA	Water	8021B	
400-120552-4	MW-4	Total/NA	Water	8021B	
400-120552-5	MW-5	Total/NA	Water	8021B	
400-120552-5 MS	MW-5	Total/NA	Water	8021B	
400-120552-5 MSD	MW-5	Total/NA	Water	8021B	
LCS 400-304253/1001	Lab Control Sample	Total/NA	Water	8021B	
MB 400-304253/2	Method Blank	Total/NA	Water	8021B	

QC Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 400-304034/2

Matrix: Water

Analysis Batch: 304034

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	ug/L			04/29/16 11:06	1
Ethylbenzene	<1.0		1.0	ug/L			04/29/16 11:06	1
Toluene	<5.0		5.0	ug/L			04/29/16 11:06	1
Xylenes, Total	<5.0		5.0	ug/L			04/29/16 11:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	104		78 - 124		04/29/16 11:06	1

Lab Sample ID: LCS 400-304034/1001

Matrix: Water

Analysis Batch: 304034

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	47.3		ug/L		95	85 - 115
Ethylbenzene	50.0	46.2		ug/L		92	85 - 115
Toluene	50.0	47.0		ug/L		94	85 - 115
Xylenes, Total	150	141		ug/L		94	85 - 115

Surrogate	LCS %Recovery	LCS Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	102		78 - 124

Lab Sample ID: 400-120437-A-5 MS

Matrix: Water

Analysis Batch: 304034

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<1.0		50.0	44.5		ug/L		89	44 - 150
Ethylbenzene	<1.0		50.0	43.7		ug/L		87	70 - 142
Toluene	<5.0		50.0	44.4		ug/L		89	69 - 136
Xylenes, Total	<5.0		150	134		ug/L		89	68 - 142

Surrogate	MS %Recovery	MS Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	102		78 - 124

Lab Sample ID: 400-120437-A-5 MSD

Matrix: Water

Analysis Batch: 304034

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<1.0		50.0	45.5		ug/L		91	44 - 150	2	16
Ethylbenzene	<1.0		50.0	45.6		ug/L		91	70 - 142	4	16
Toluene	<5.0		50.0	45.4		ug/L		91	69 - 136	2	16
Xylenes, Total	<5.0		150	137		ug/L		91	68 - 142	2	15

Surrogate	MSD %Recovery	MSD Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	102		78 - 124

TestAmerica Pensacola

QC Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

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

Lab Sample ID: MB 400-304253/2

Matrix: Water

Analysis Batch: 304253

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	ug/L			05/02/16 12:35	1
Ethylbenzene	<1.0		1.0	ug/L			05/02/16 12:35	1
Toluene	<5.0		5.0	ug/L			05/02/16 12:35	1
Xylenes, Total	<5.0		5.0	ug/L			05/02/16 12:35	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	92		78 - 124		05/02/16 12:35	1

Lab Sample ID: LCS 400-304253/1001

Matrix: Water

Analysis Batch: 304253

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	46.1		ug/L		92	85 - 115
Ethylbenzene	50.0	47.0		ug/L		94	85 - 115
Toluene	50.0	47.4		ug/L		95	85 - 115
Xylenes, Total	150	139		ug/L		92	85 - 115

Surrogate	LCS %Recovery	LCS Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	100		78 - 124

Lab Sample ID: 400-120552-5 MS

Matrix: Water

Analysis Batch: 304253

Client Sample ID: MW-5

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	5800		1000	7030	E 4	ug/L		124	44 - 150
Ethylbenzene	680		1000	1690		ug/L		101	70 - 142
Toluene	1600		1000	2650		ug/L		104	69 - 136
Xylenes, Total	6100		3000	9030		ug/L		98	68 - 142

Surrogate	MS %Recovery	MS Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	105		78 - 124

Lab Sample ID: 400-120552-5 MSD

Matrix: Water

Analysis Batch: 304253

Client Sample ID: MW-5

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	5800		1000	6680	E 4	ug/L		90	44 - 150	5	16
Ethylbenzene	680		1000	1650		ug/L		98	70 - 142	2	16
Toluene	1600		1000	2510		ug/L		90	69 - 136	5	16
Xylenes, Total	6100		3000	8950		ug/L		95	68 - 142	1	15

Surrogate	MSD %Recovery	MSD Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	104		78 - 124

TestAmerica Pensacola

Lab Chronicle

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Client Sample ID: MW-1

Date Collected: 04/19/16 08:00

Date Received: 04/20/16 09:06

Lab Sample ID: 400-120552-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		2	5 mL	5 mL	304253	05/02/16 18:09	MKA	TAL PEN
Instrument ID: CH_CAROL										

Client Sample ID: MW-2

Date Collected: 04/19/16 08:05

Date Received: 04/20/16 09:06

Lab Sample ID: 400-120552-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	304034	04/29/16 19:16	MKA	TAL PEN
Instrument ID: ETHYL										

Client Sample ID: MW-3

Date Collected: 04/19/16 08:10

Date Received: 04/20/16 09:06

Lab Sample ID: 400-120552-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	304034	04/30/16 08:16	MKA	TAL PEN
Instrument ID: ETHYL										

Client Sample ID: MW-4

Date Collected: 04/19/16 08:15

Date Received: 04/20/16 09:06

Lab Sample ID: 400-120552-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		50	5 mL	5 mL	304253	05/02/16 13:39	MKA	TAL PEN
Instrument ID: CH_CAROL										

Client Sample ID: MW-5

Date Collected: 04/19/16 08:20

Date Received: 04/20/16 09:06

Lab Sample ID: 400-120552-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		20	5 mL	5 mL	304253	05/02/16 14:42	MKA	TAL PEN
Instrument ID: CH_CAROL										

Client Sample ID: TRIP BLANK

Date Collected: 04/19/16 00:00

Date Received: 04/20/16 09:06

Lab Sample ID: 400-120552-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	304034	04/30/16 10:14	MKA	TAL PEN
Instrument ID: ETHYL										

TestAmerica Pensacola

Lab Chronicle

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Laboratory References:

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

1
2
3
4
5
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8
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10
11
12
13
14

Certification Summary

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Laboratory: TestAmerica Pensacola

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40150	06-30-16
Arizona	State Program	9	AZ0710	01-11-17
Arkansas DEQ	State Program	6	88-0689	09-01-16
California	ELAP	9	2510	03-31-18
Florida	NELAP	4	E81010	06-30-16
Georgia	State Program	4	N/A	06-30-16
Illinois	NELAP	5	200041	10-09-16
Iowa	State Program	7	367	07-31-16
Kansas	NELAP	7	E-10253	05-31-16 *
Kentucky (UST)	State Program	4	53	06-30-16
Kentucky (WW)	State Program	4	98030	12-31-16
Louisiana	NELAP	6	30976	06-30-16
Maryland	State Program	3	233	09-30-16
Massachusetts	State Program	1	M-FL094	06-30-16
Michigan	State Program	5	9912	06-30-16
New Jersey	NELAP	2	FL006	06-30-16
North Carolina (WW/SW)	State Program	4	314	12-31-16
Oklahoma	State Program	6	9810	08-31-16
Pennsylvania	NELAP	3	68-00467	01-31-17
Rhode Island	State Program	1	LAO00307	12-30-16
South Carolina	State Program	4	96026	06-30-16
Tennessee	State Program	4	TN02907	06-30-16
Texas	NELAP	6	T104704286-15-9	09-30-16
USDA	Federal		P330-13-00193	07-01-16
Virginia	NELAP	3	460166	06-14-16
West Virginia DEP	State Program	3	136	06-30-16

* Certification renewal pending - certification considered valid.

TestAmerica Pensacola

Method Summary

Client: MWH Americas Inc
Project/Site: Sandoval GC A#1

TestAmerica Job ID: 400-120552-1

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	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

[illegible]

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 400-120552-1

Login Number: 120552

List Source: TestAmerica Pensacola

List Number: 1

Creator: Benforado, Jessica L

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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	0.0°C IR-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.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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

TestAmerica Job ID: 400-128859-1

Client Project/Site: Sandoval GC A #1A

For:

MWH Americas Inc
1560 Broadway
Suite 1800
Denver, Colorado 80202

Attn: Ms. Sarah Gardner

Madonna Myers

Authorized for release by:

10/28/2016 9:47:08 AM

Madonna Myers, Project Manager II

(615)796-1870

madonna.myers@testamericainc.com

Designee for

Carol Webb, Project Manager II

(850)471-6250

carol.webb@testamericainc.com

LINKS

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www.testamericainc.com

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

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

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

Table of Contents

Cover Page	1
Table of Contents	2
Definitions	3
Case Narrative	4
Detection Summary	5
Sample Summary	6
Client Sample Results	7
QC Association	12
QC Sample Results	13
Chronicle	14
Certification Summary	15
Method Summary	16
Chain of Custody	17
Receipt Checklists	18



Definitions/Glossary

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Case Narrative

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Job ID: 400-128859-1

Laboratory: TestAmerica Pensacola

Narrative

Job Narrative
400-128859-1

Comments

No additional comments.

Receipt

The samples were received on 10/18/2016 9:11 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.1° C.

GC VOA

Method(s) 8021B: The sample was collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, when verified by the laboratory, the pH was greater than 2 and the following samples were analyzed after 7 days from sampling: MW-3 (400-128859-2).

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

VOA Prep

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

Detection Summary

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Client Sample ID: MW-1

Lab Sample ID: 400-128859-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Benzene	3.2		1.0	ug/L	1		8021B	Total/NA
Ethylbenzene	2.0		1.0	ug/L	1		8021B	Total/NA

Client Sample ID: MW-3

Lab Sample ID: 400-128859-2

No Detections.

Client Sample ID: MW-4

Lab Sample ID: 400-128859-3

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Benzene	22		1.0	ug/L	1		8021B	Total/NA
Xylenes, Total	9.6		5.0	ug/L	1		8021B	Total/NA

Client Sample ID: MW-5

Lab Sample ID: 400-128859-4

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Benzene	4700		100	ug/L	100		8021B	Total/NA
Ethylbenzene	1000		100	ug/L	100		8021B	Total/NA
Toluene	6700		500	ug/L	100		8021B	Total/NA
Xylenes, Total	10000		500	ug/L	100		8021B	Total/NA

Client Sample ID: TB

Lab Sample ID: 400-128859-5

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Pensacola

Sample Summary

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-128859-1	MW-1	Water	10/16/16 10:22	10/18/16 09:11
400-128859-2	MW-3	Water	10/16/16 10:28	10/18/16 09:11
400-128859-3	MW-4	Water	10/16/16 10:34	10/18/16 09:11
400-128859-4	MW-5	Water	10/16/16 10:40	10/18/16 09:11
400-128859-5	TB	Water	10/16/16 00:00	10/18/16 09:11

Client Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Client Sample ID: MW-1

Date Collected: 10/16/16 10:22

Date Received: 10/18/16 09:11

Lab Sample ID: 400-128859-1

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	3.2		1.0	ug/L			10/26/16 02:04	1
Ethylbenzene	2.0		1.0	ug/L			10/26/16 02:04	1
Toluene	<5.0		5.0	ug/L			10/26/16 02:04	1
Xylenes, Total	<5.0		5.0	ug/L			10/26/16 02:04	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	83		78 - 124				10/26/16 02:04	1

TestAmerica Pensacola

Client Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Client Sample ID: MW-3
Date Collected: 10/16/16 10:28
Date Received: 10/18/16 09:11

Lab Sample ID: 400-128859-2
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	ug/L			10/26/16 02:31	1
Ethylbenzene	<1.0		1.0	ug/L			10/26/16 02:31	1
Toluene	<5.0		5.0	ug/L			10/26/16 02:31	1
Xylenes, Total	<5.0		5.0	ug/L			10/26/16 02:31	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	106		78 - 124				10/26/16 02:31	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Client Sample ID: MW-4
Date Collected: 10/16/16 10:34
Date Received: 10/18/16 09:11

Lab Sample ID: 400-128859-3
Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	22		1.0	ug/L			10/26/16 07:36	1
Ethylbenzene	<1.0		1.0	ug/L			10/26/16 07:36	1
Toluene	<5.0		5.0	ug/L			10/26/16 07:36	1
Xylenes, Total	9.6		5.0	ug/L			10/26/16 07:36	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
<i>a,a,a-Trifluorotoluene (pid)</i>	98		78 - 124				10/26/16 07:36	1

Client Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Client Sample ID: MW-5

Date Collected: 10/16/16 10:40

Date Received: 10/18/16 09:11

Lab Sample ID: 400-128859-4

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	4700		100	ug/L			10/26/16 08:05	100
Ethylbenzene	1000		100	ug/L			10/26/16 08:05	100
Toluene	6700		500	ug/L			10/26/16 08:05	100
Xylenes, Total	10000		500	ug/L			10/26/16 08:05	100
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	101		78 - 124				10/26/16 08:05	100

Client Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Client Sample ID: TB

Date Collected: 10/16/16 00:00

Date Received: 10/18/16 09:11

Lab Sample ID: 400-128859-5

Matrix: Water

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	ug/L			10/26/16 09:27	1
Ethylbenzene	<1.0		1.0	ug/L			10/26/16 09:27	1
Toluene	<5.0		5.0	ug/L			10/26/16 09:27	1
Xylenes, Total	<5.0		5.0	ug/L			10/26/16 09:27	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	98		78 - 124				10/26/16 09:27	1

QC Association Summary

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

GC VOA

Analysis Batch: 328265

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-128859-1	MW-1	Total/NA	Water	8021B	
400-128859-2	MW-3	Total/NA	Water	8021B	
400-128859-3	MW-4	Total/NA	Water	8021B	
400-128859-4	MW-5	Total/NA	Water	8021B	
400-128859-5	TB	Total/NA	Water	8021B	
MB 400-328265/38	Method Blank	Total/NA	Water	8021B	
LCS 400-328265/1037	Lab Control Sample	Total/NA	Water	8021B	
400-128859-4 MS	MW-5	Total/NA	Water	8021B	
400-128859-4 MSD	MW-5	Total/NA	Water	8021B	

QC Sample Results

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 400-328265/38

Matrix: Water

Analysis Batch: 328265

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	ug/L			10/26/16 09:00	1
Ethylbenzene	<1.0		1.0	ug/L			10/26/16 09:00	1
Toluene	<5.0		5.0	ug/L			10/26/16 09:00	1
Xylenes, Total	<5.0		5.0	ug/L			10/26/16 09:00	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	99		78 - 124		10/26/16 09:00	1

Lab Sample ID: LCS 400-328265/1037

Matrix: Water

Analysis Batch: 328265

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	48.3		ug/L		97	85 - 115
Ethylbenzene	50.0	46.6		ug/L		93	85 - 115
Toluene	50.0	47.8		ug/L		96	85 - 115
Xylenes, Total	150	139		ug/L		93	85 - 115

Surrogate	LCS %Recovery	LCS Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	99		78 - 124

Lab Sample ID: 400-128859-4 MS

Matrix: Water

Analysis Batch: 328265

Client Sample ID: MW-5

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	4700		5000	10300		ug/L		112	44 - 150
Ethylbenzene	1000		5000	6450		ug/L		109	70 - 142
Toluene	6700		5000	12000		ug/L		107	69 - 136
Xylenes, Total	10000		15000	26200		ug/L		106	68 - 142

Surrogate	MS %Recovery	MS Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	97		78 - 124

Lab Sample ID: 400-128859-4 MSD

Matrix: Water

Analysis Batch: 328265

Client Sample ID: MW-5

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	4700		5000	10100		ug/L		108	44 - 150	2	16
Ethylbenzene	1000		5000	6240		ug/L		105	70 - 142	3	16
Toluene	6700		5000	11700		ug/L		101	69 - 136	3	16
Xylenes, Total	10000		15000	25200		ug/L		100	68 - 142	4	15

Surrogate	MSD %Recovery	MSD Qualifier	Limits
a,a,a-Trifluorotoluene (pid)	97		78 - 124

TestAmerica Pensacola

Lab Chronicle

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Client Sample ID: MW-1

Date Collected: 10/16/16 10:22

Date Received: 10/18/16 09:11

Lab Sample ID: 400-128859-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	328265	10/26/16 02:04	GRK	TAL PEN
Instrument ID: CH_RITA										

Client Sample ID: MW-3

Date Collected: 10/16/16 10:28

Date Received: 10/18/16 09:11

Lab Sample ID: 400-128859-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	328265	10/26/16 02:31	GRK	TAL PEN
Instrument ID: CH_RITA										

Client Sample ID: MW-4

Date Collected: 10/16/16 10:34

Date Received: 10/18/16 09:11

Lab Sample ID: 400-128859-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	328265	10/26/16 07:36	GRK	TAL PEN
Instrument ID: CH_RITA										

Client Sample ID: MW-5

Date Collected: 10/16/16 10:40

Date Received: 10/18/16 09:11

Lab Sample ID: 400-128859-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		100	5 mL	5 mL	328265	10/26/16 08:05	GRK	TAL PEN
Instrument ID: CH_RITA										

Client Sample ID: TB

Date Collected: 10/16/16 00:00

Date Received: 10/18/16 09:11

Lab Sample ID: 400-128859-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	5 mL	5 mL	328265	10/26/16 09:27	GRK	TAL PEN
Instrument ID: CH_RITA										

Laboratory References:

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

TestAmerica Pensacola

Certification Summary

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Laboratory: TestAmerica Pensacola

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40150	06-30-17
Arizona	State Program	9	AZ0710	01-11-17
Arkansas DEQ	State Program	6	88-0689	09-01-17
California	ELAP	9	2510	03-31-18
Florida	NELAP	4	E81010	06-30-17
Georgia	State Program	4	N/A	06-30-17
Illinois	NELAP	5	200041	10-09-17
Iowa	State Program	7	367	08-01-18
Kansas	NELAP	7	E-10253	10-31-17
Kentucky (UST)	State Program	4	53	06-30-17
Kentucky (WW)	State Program	4	98030	12-31-16
Louisiana	NELAP	6	30976	06-30-17
Maryland	State Program	3	233	09-30-17
Massachusetts	State Program	1	M-FL094	06-30-17
Michigan	State Program	5	9912	05-06-17
New Jersey	NELAP	2	FL006	06-30-17
North Carolina (WW/SW)	State Program	4	314	12-31-16
Oklahoma	State Program	6	9810	08-31-17
Pennsylvania	NELAP	3	68-00467	01-31-17
Rhode Island	State Program	1	LAO00307	12-30-16
South Carolina	State Program	4	96026	06-30-16 *
Tennessee	State Program	4	TN02907	06-30-17
Texas	NELAP	6	T104704286-16-10	09-30-17
USDA	Federal		P330-16-00172	05-24-19
Virginia	NELAP	3	460166	06-14-17
Washington	State Program	10	C915	05-15-17
West Virginia DEP	State Program	3	136	06-30-17

* Certification renewal pending - certification considered valid.

TestAmerica Pensacola

Method Summary

Client: MWH Americas Inc
Project/Site: Sandoval GC A #1A

TestAmerica Job ID: 400-128859-1

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	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

[illegible]

Login Sample Receipt Checklist

Client: MWH Americas Inc

Job Number: 400-128859-1

Login Number: 128859

List Source: TestAmerica Pensacola

List Number: 1

Creator: Perez, Trina M

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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	2.1°C IR -6
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 (excluding tests with immediate HTs)	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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	