

BLAGG ENGINEERING, INC.

P.O. Box 87, Bloomfield, New Mexico 87413

Phone: (505)632-1199 Fax: (505)632-3903

January 30, 2012

Mr. Glenn von Gonten, Senior Hydrologist
New Mexico Oil Conservation Division-NMOCD
Environmental Bureau
1220 St. Francis Drive
Santa Fe, New Mexico 87505

**Re: BP America Production Company
Groundwater Monitoring Report
GCU # 153E, Unit C, Sec. 28, T29N, R12W, NMPM
San Juan County, New Mexico**

NMOCD Administrative/Environmental Order #: 3RP-17-0

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2012 JAN 31 P 1:53

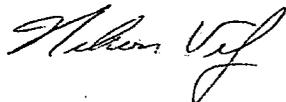
Dear Mr. von Gonten:

BP America Production Company (**BP**) has retained Blagg Engineering, Inc. (**BEI**) to conduct environmental monitoring of groundwater at the GCU # 153E.

The last formal correspondence to NMOCD was conducted with letter dated, February 1, 2011. Since then, BP has followed its NMOCD approved groundwater management plan and continues to monitor the site. No permanent closure is requested at this time.

If you have any questions concerning the enclosed documentation, please contact either myself or Jeffrey C. Blagg at (505) 632-1199. Thank you for your cooperation and assistance.

Respectfully submitted:
Blagg Engineering, Inc.



Nelson J. Velez
Staff Geologist

Attachment: Groundwater Report (2 copies)

cc: Mr. Brandon Powell, Inspection and Enforcement Supervisor, NMOCD District III Office, Aztec, NM
Mr. Jeff Peace, Environmental Advisor, BP, Farmington, NM

BP AMERICA PRODUCTION CO.

GROUNDWATER REMEDIATION REPORT

**GCU #153E
(C) SECTION 28, T29N, R12W, NMPM
SAN JUAN COUNTY, NEW MEXICO**

**PREPARED FOR:
NEW MEXICO OIL CONSERVATION DIVISION
1220 ST. FRANCIS DRIVE
SANTA FE, NEW MEXICO 87504**

DECEMBER 2011

**PREPARED BY:
BLAGG ENGINEERING, INC.
Consulting Petroleum / Reclamation Services
P.O. Box 87
Bloomfield, New Mexico 87413**

BP AMERICA PRODUCTION COMPANY
GCU # 153E
NE¹/₄ NW¹/₄, Sec. 28, T29N, R12W

Monitor Well Sampling Dates: 02/23/11, 06/01/11, 09/29/11, 12/21/11

Pit Closure & Background:

A site earthen dehydrator pit closure was initiated in December 1994 by removing impacted soils via excavation. Documentation for this work and subsequent groundwater monitoring data for the site was previously submitted to the New Mexico Oil Conservation Division (NMOCD) for review. The reporting herein is for site monitoring conducted in 2011.

Groundwater Monitor Well Sampling Procedures:

Groundwater monitor well MW#3R was purged of its well bore using a new disposable bailer, then given a sufficient amount of time to allow recovery prior to each sample collection. The groundwater samples were collected following US EPA: SW-846 protocol, were placed into laboratory supplied containers with appropriate preservative, and stored in an ice chest for express delivery to an analytical laboratory for testing under strict chain-of-custody procedures. Analytical testing for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by US EPA Method 8021B was conducted.

Fluids generated during monitor well purging were managed by discarding into the separator below-grade tank (BGT) located on the well site. The BGT contents are eventually disposed through approved NMOCD operational procedures for removal of produced fluids.

Water Quality and Gradient Information:

Quarterly sampling of the groundwater monitor well MW#3R was conducted in 2011. A historical summary of laboratory analytical results is included within the table on the following pages and field/laboratory reports are included.

Groundwater contour maps (Figure 2 through Figure 5) reveal the relative elevations from the site wells have consistently shown an apparent southwest flow direction..

Summary and/or Recommendations:

Continued site monitoring per BP's NMOCD approved Ground Water Management Plan is recommended. Hydrocarbon impacts still remain above the New Mexico Water Quality Control Commission's groundwater standard for benzene within monitor well MW #3R. Oxygen release compound (ORC) filter socks were initially introduced within MW #3R on March 25, 2011. Dissolved oxygen, pH, and temperature readings were collected immediately after removal to create a baseline for future determination of continued use. The ORC filter socks were removed at a minimum of two (2) days prior to each sampling event. Currently, no definitive conclusion(s) can be ascertained as to the ORC effectiveness at this time.

BP AMERICA PROD. CO. GROUNDWATER LAB RESULTS

SUBMITTED BY BLAGG ENGINEERING, INC.

GCU # 153E
UNIT C, SEC. 28, T29N, R12W

REVISED DATE: December 30, 2011

FILENAME: (15-4Q-11.WK4) NJV

SAMPLE DATE	MONITOR WELL No.	D.T.W. (ft)	T.D. (ft)	TDS (ft)	COND. (umhos/cm)	pH	PRODUCT (ft)	BTEX EPA METHOD 8021B (ppb)			
								Benzene	Toluene	Ethyl Benzene	Total Xylene
08-Mar-96	MW #1A	14.95	20.00	4,460	3,200	7.2		ND	0.73	ND	ND
12-Jan-93	MW #2A	11.50	15.83	4,460	5,700	6.6		11.5	12.1	ND	54.0
05-May-93		10.34			3,400	6.6		14.0	6.9	10.9	20.1
01-Sep-93		11.54			2,800	7.1		700	10.4	244	82.9
01-Dec-93		11.42			4,800	7.0		118	1.6	76.0	44.7
08-Mar-94		11.01			4,600	7.2		24.1	8.5	24.5	29.3
27-Jun-94		11.14			4,000	6.9		350	13.2	126	ND
21-Sep-94		11.80			3,500	6.9		328.7	13.3	140.8	1.5
16-Dec-94		11.55			3,800	7.1		6.7	9.6	1.1	8.7
15-Mar-95		11.15			4,400	6.8		1.7	5.0	ND	3.8
16-Jun-95		10.82			4,000	6.9		36.5	5.4	17.6	7.2
11-Sep-95		11.39			3,100	7.2		239	17.0	168	35.6
08-Dec-95		11.44			3,800	6.8		50.2	9.99	10.3	5.84
08-Mar-96		11.08			2,700	6.7		1.08	ND	2.71	0.87
17-Jun-96		11.30			2,700	6.9		230	10.2	77.7	32.54
25-Jun-97		10.52			2,600	6.8		522	6.6	82.6	44.6
12-Jun-98		10.59			2,400	7.3		125	7.3	22.7	44.7
28-May-99		10.05			2,700	6.8		185	47.8	44.1	73.4
26-May-00		10.10			3,500	7.0		220	ND	96	15
28-Jul-01		10.87			3,700	7.26		66	ND	24	31
11-Mar-02		10.80			4,600	6.86		ND	ND	2.1	ND
21-Jun-02		11.18			4,700	7.63		63	ND	28	29.8
30-Jun-03		10.74			2,900	6.81		41	5.3	30	36
25-Jun-04		10.78			2,900	6.81		7.6	ND	3.5	5.5
22-Dec-04		11.03			N/A	N/A		ND	ND	ND	ND
29-Mar-05		9.85			3,100	6.73		ND	ND	ND	ND
12-Jan-93	MW #3A	11.40			6,800	7.0		706,000	6,438,000	3,684,000	13,999,000
05-May-93		10.38			4,900	7.0		8,200	2,210	1,070	4,340
01-Sep-93		11.44	16.00		5,400	7.1		8,300	800	660	2,750
01-Dec-93		11.33					0.02				
08-Mar-94		11.03					0.03				
27-Jun-94							0.02				
21-Sep-94							0.01				
16-Dec-94		11.97					0.48				
28-Jun-95	WP #3B	11.73	15.00		6,500	7.4		1946.7	1734.5	434.3	3,150
11-Sep-95		12.14			8,400	7.8		752	102	427	1,386
08-Dec-95		12.15			4,800	6.2		772	70.1	208	2,070
08-Mar-96		11.78			4,000	6.1		775	156	259	2,480
17-Jun-96		11.77			4,800	6.4		764	196	184	1,515
25-Jun-97		11.25			3,400	6.3		1,940	167	143	727
12-Jun-98		11.22			3,700	6.6		276	68.4	85.3	457.8
28-May-99		11.56			3,900	6.5		178	98.0	50.5	250.3
NMWQCC GROUNDWATER STANDARDS								10	750	750	620

BP AMERICA PROD. CO. GROUNDWATER LAB RESULTS

SUBMITTED BY BLAGG ENGINEERING, INC.

GCU # 153E
UNIT C, SEC. 28, T29N, R12W

REVISED DATE: December 30, 2011

FILENAME: (15-4Q-11.WK4) NJV

SAMPLE DATE	MONITOR WELL No:	D.T.W. (ft)	T.D. (ft)	TDS (ft)	COND. (umhos/cm)	pH	PRODUCT (ft)	BTEX EPA METHOD 8021B (ppb)			
								Benzene	Toluene	Ethyl Benzene	Total Xylene
13-Jun-00	MW #3R	10.88	20.00		7,600	7.0		360	16	720	1,234
28-Jul-01		11.72			8,600	7.25		520	35	350	757
11-Mar-02		11.70			9,700	7.14		120	6.9	110	225
21-Jun-02		11.90			8,800	7.69		310	ND	300	551
30-Jun-03		11.39			5,200	7.11		300	ND	76	170
25-Jun-04		10.51			5,200	7.11		120	ND	44	63
27-Jun-05		10.78			6,200	7.00		160	12	54	84
29-Jun-06		11.51			7,800	6.93		470	39	170	180
25-Jun-07		10.70			6,000	6.94		180	ND	24	24
09-Jun-08		10.66			3,300	7.24		71.6	5.9	9.1	13.6
27-Aug-08		11.47			6,000	7.37		58	ND	4.7	9.3
26-May-09		11.10			5,200	7.50		63	ND	ND	ND
28-Dec-09		11.70			5,600	7.52		8.3	ND	ND	ND
02-Mar-10		11.05			4,400	7.53		66	ND	ND	ND
10-May-10		10.57			4,700	7.49		47	ND	ND	ND
21-Jul-10		11.45			7,900	7.48		38	ND	2.3	6.3
21-Oct-10		12.18			6,400	7.15		11	ND	1.6	3.3
23-Feb-11		11.43			3,600	7.45		3.8	ND	ND	2.9
01-Jun-11		11.33			8,900	7.41		160	10	25	37
29-Sep-11		12.23			8,900	7.39		47	ND	6.6	12
21-Dec-11		11.73			6,400	7.78		20	4.3	5.4	6.2
08-Mar-96	MW #4A	10.59	13.05		3,600	7.4		ND	ND	ND	ND
08-Mar-96	MW #5A	11.75	14.04		12,300	7.8		ND	1.14	ND	ND
12-Jan-93	MW #7A	12.42			12,400	7.3		ND	0.5	ND	1.1
05-May-93		10.56			10,600	7.5		ND	ND	ND	0.5
01-Sep-93		11.90	16.60		10,700	7.5		0.2	ND	ND	0.8
08-Mar-94		11.10			16,800	7.3		ND	ND	ND	ND
27-Jun-94		11.23			13,700	7.3		ND	ND	ND	ND
21-Sep-94		12.30			13,100	7.3		0.8	1	ND	2.2
16-Dec-94		11.69			9,600	7.5		ND	ND	ND	ND
15-Mar-95		11.21			18,400	7.5		ND	ND	ND	ND
16-Jun-95		10.88			12,200	7.4		ND	ND	ND	ND
11-Sep-95		11.64			11,200	7.7		1.1	0.6	0.5	1.0
08-Dec-95		11.50			10,800	7.4		ND	ND	ND	ND
08-Mar-96		11.18			8,300	7.3		ND	ND	ND	ND
17-Jun-96		11.28			9,000	7.4		ND	ND	ND	ND
28-Jul-01		10.87			8,300	7.59		ND	ND	ND	ND
08-Mar-96	MW #11A	12.10	20.17		3,100	6.9		ND	ND	ND	ND
08-Mar-96	MW #12A	10.76	19.79		2,800	7.0		ND	ND	ND	ND
NMWQCC GROUNDWATER STANDARDS								10	750	750	620

- NOTES :
- 1) RESULTS IN BOLD RED TYPE INDICATE EXCEEDING NMWQCC STANDARDS.
 - 2) RESULTS IN BOLD BLUE TYPE INDICATE BELOW NMWQCC STANDARDS AFTER PREVIOUS RESULTS IN BOLD RED TYPE EXCEEDED.
 - 3) ND INDICATES NOT DETECTED AT THE REPORTING LIMITS (less than regulatory standards of at least a magnitude of 10).
 - 4) NMWQCC INDICATES NEW MEXICO WATER QUALITY CONTROL COMMISSION.

FIGURE 1



0 25 50 FT.

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

WELL HEAD
⊕

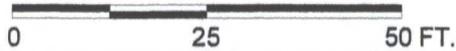
BP AMERICA PRODUCTION COMPANY
GCU #153E
NE/4 NW/4 SEC. 28, T29N, R12W
SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES
P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413
PHONE: (505) 632-1199

PROJECT: MW SAMPLING
DRAWN BY: NJV
FILENAME: GCU153E-SM-02-11.SKF
REVISED: 2/24/11 NJV

SITE MAP
02/11

FIGURE 2
(1st 1/4, 2011)



MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

WELL HEAD ⊕

Top of Well Elevation	
WELL HEAD FLANGE	(100.00)
MW #2A	(100.40)
MW #3R	(100.80)
MW #7A	(99.72)
MW #2A	Groundwater elevation as of 02/23/11.

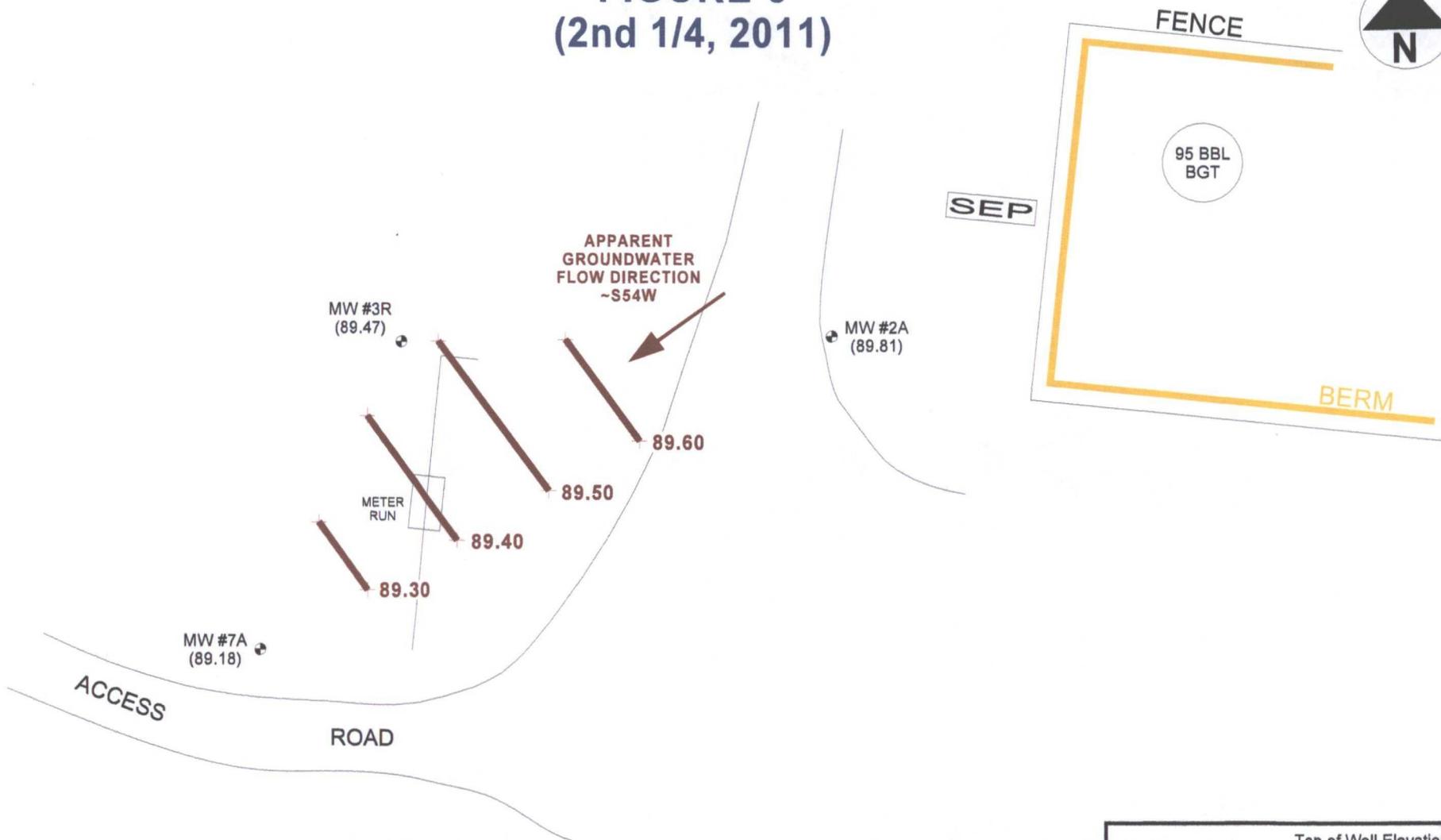
BP AMERICA PRODUCTION COMPANY
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PROJECT: MW SAMPLING
DRAWN BY: NJV
FILENAME: 02-23-11-GW.SKF
REVISED: 02/24/11 NJV

GROUNDWATER GRADIENT MAP
02/11

FIGURE 3
(2nd 1/4, 2011)



0 25 50 FT.

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

WELL HEAD ⊕

Top of Well Elevation	
WELL HEAD FLANGE	(100.00)
MW #2A	(100.40)
MW #3R	(100.80)
MW #7A	(99.72)
MW #2A (89.81)	Groundwater elevation as of 06/01/11.

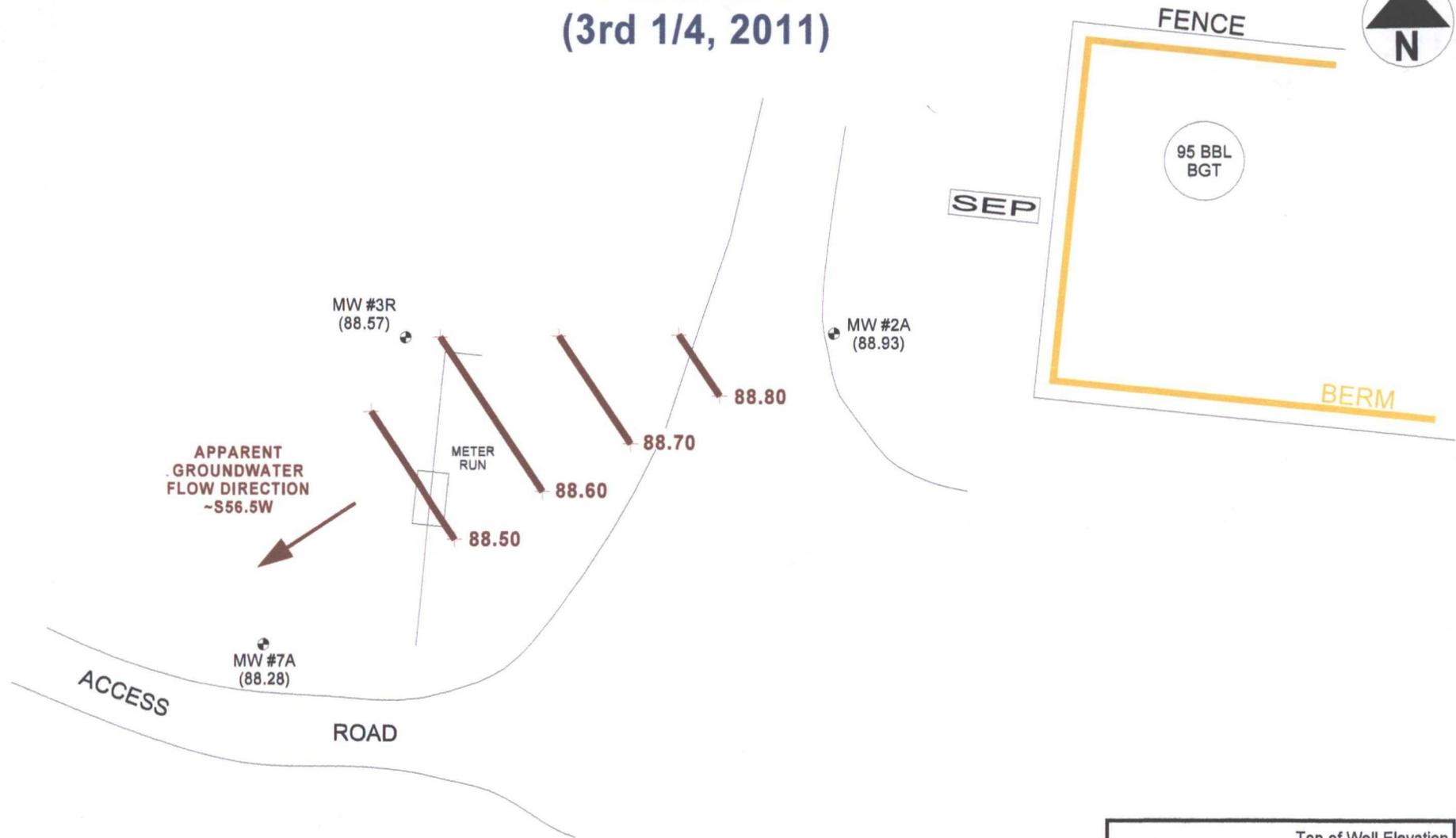
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SAN JUAN COUNTY, NEW MEXICO

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PROJECT: MW SAMPLING
DRAWN BY: NJV
FILENAME: 06-01-11-GW.SKF
REVISED: 06/01/11 NJV

GROUNDWATER GRADIENT MAP
06/11

FIGURE 4
(3rd 1/4, 2011)



MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

WELL HEAD ⊕

	Top of Well Elevation
WELL HEAD FLANGE	(100.00)
MW #2A	(100.40)
MW #3R	(100.80)
MW #7A	(99.72)
MW #2A (88.93)	Groundwater elevation as of 09/29/11.

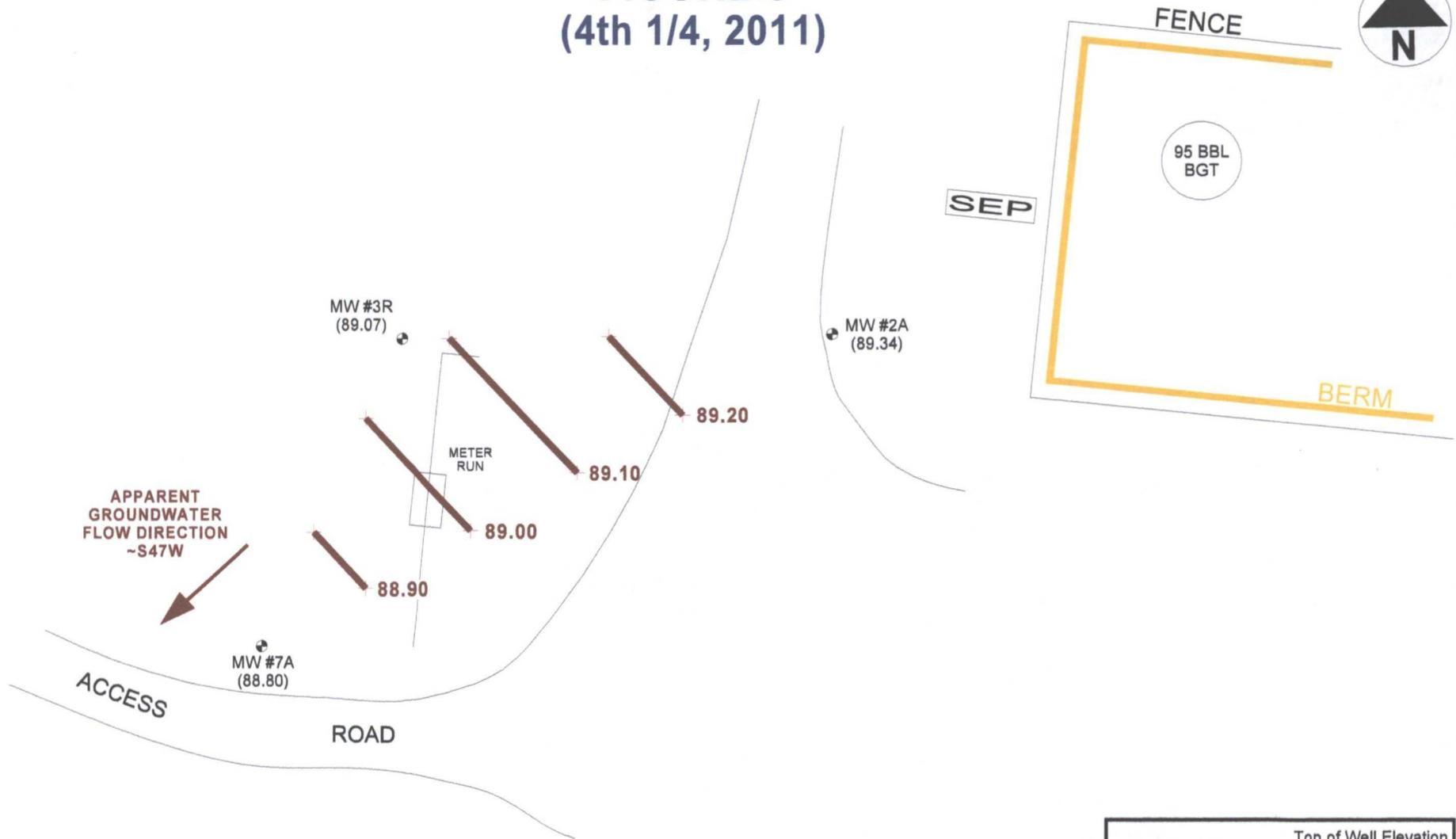
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PROJECT: MW SAMPLING
DRAWN BY: NJV
FILENAME: 09-29-11-GW.SKF
REVISED: 09/30/11 NJV

GROUNDWATER GRADIENT MAP
09/11

FIGURE 5
(4th 1/4, 2011)



APPARENT
GROUNDWATER
FLOW DIRECTION
~S47W

0 25 50 FT.

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

WELL HEAD ⊕

Top of Well Elevation	
WELL HEAD FLANGE	(100.00)
MW #2A	(100.40)
MW #3R	(100.80)
MW #7A	(99.72)
MW #2A	Groundwater elevation as of 12/21/11.

BP AMERICA PRODUCTION COMPANY
GCU #153E
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PROJECT: MW SAMPLING
DRAWN BY: NJV
FILENAME: 12-21-11-GW.SKF
REVISED: 12/21/11 NJV

**GROUNDWATER
GRADIENT
MAP
12/11**

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # : N / A

GCU # 153E
UNIT C, SEC. 28, T29N, R12W

LABORATORY (S) USED : HALL ENVIRONMENTAL

Date : February 23, 2011

SAMPLER : N J V

Filename : 02-23-11.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
2A	100.40	89.62	10.78	15.83	-	-	-	-	-
3R	100.80	89.37	11.43	20.00	1040	7.45	3,600	12.3	2.00
7A	99.72	89.00	10.72	16.31	-	-	-	-	-

INSTRUMENT CALIBRATIONS =	4.01/7.00/10.00	2,800
DATE & TIME =	02/22/2011	1010

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$.
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2".

Poor / fair recovery in MW # 3R. Bailed MW # 3R to total depth, then allowed recovery to approx.

13.00 ft. prior to collecting sample. Collected sample for BTEX per US EPA Method 8021B from
from MW # 3R only.

on-site	9:47	temp	37 F
off-site	10:53	temp	43 F
sky cond.	Sunny		
wind speed	0 - 10	direct.	E

Hall Environmental Analysis Laboratory, Inc.

Date: 03-Mar-11

CLIENT: Blagg Engineering
Lab Order: 1102777
Project: GCU #153E
Lab ID: 1102777-01**Client Sample ID:** MW #3R
Collection Date: 2/23/2011 10:40:00 AM
Date Received: 2/24/2011
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	3.8	1.0		µg/L	1	3/1/2011 6:27:28 PM
Toluene	ND	1.0		µg/L	1	3/1/2011 6:27:28 PM
Ethylbenzene	ND	1.0		µg/L	1	3/1/2011 6:27:28 PM
Xylenes, Total	2.9	2.0		µg/L	1	3/1/2011 6:27:28 PM
Surr: 4-Bromofluorobenzene	105	81.3-151		%REC	1	3/1/2011 6:27:28 PM

Qualifiers:

* Value exceeds Maximum Contaminant Level
E Estimated value
J Analyte detected below quantitation limits
NC Non-Chlorinated
PQL Practical Quantitation Limit

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
MCL Maximum Contaminant Level
ND Not Detected at the Reporting Limit
S Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Blagg Engineering
Project: GCU #153E

Work Order: 1102777

Analyte	Result	Units	PQL	SPK Val	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8021B: Volatiles											
Sample ID: 5ML RB		<i>MBLK</i>				Batch ID: R43890	Analysis Date: 3/1/2011 8:56:15 AM				
Benzene	ND	µg/L	1.0								
Toluene	ND	µg/L	1.0								
Ethylbenzene	ND	µg/L	1.0								
Xylenes, Total	ND	µg/L	2.0								
Sample ID: 100NG BTEX LCS		<i>LCS</i>				Batch ID: R43890	Analysis Date: 3/1/2011 7:58:00 PM				
Benzene	21.25	µg/L	1.0	20	0	106	93.4	120			
Toluene	21.86	µg/L	1.0	20	0	109	96.2	122			
Ethylbenzene	21.90	µg/L	1.0	20	0	109	95	121			
Xylenes, Total	66.25	µg/L	2.0	60	0	110	97.6	122			
Sample ID: 100NG BTEX LCSD		<i>LCSD</i>				Batch ID: R43890	Analysis Date: 3/1/2011 8:28:08 PM				
Benzene	20.68	µg/L	1.0	20	0	103	93.4	120	2.74	10.1	
Toluene	21.28	µg/L	1.0	20	0	106	96.2	122	2.69	14.3	
Ethylbenzene	21.17	µg/L	1.0	20	0	106	95	121	3.40	15.5	
Xylenes, Total	64.27	µg/L	2.0	60	0	107	97.6	122	3.02	10.4	

Qualifiers:

- E Estimated value
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- H Holding times for preparation or analysis exceeded
- NC Non-Chlorinated
- R RPD outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name **BLAGG**

Date Received:

2/24/2011

Work Order Number **1102777**

Received by: **AMG**

Checklist completed by:

[Handwritten Signature]
Signature

[Handwritten Date: 2/24/11]
Date

Sample ID labels checked by:

[Handwritten Initials: MG]
Initials

Matrix:

Carrier name: Greyhound

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present Not Shipped
- Custody seals intact on sample bottles? Yes No N/A
- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Water - VOA vials have zero headspace? No VOA vials submitted Yes No
- Water - Preservation labels on bottle and cap match? Yes No N/A
- Water - pH acceptable upon receipt? Yes No N/A
- Container/Temp Blank temperature? **6.4°** <6° C Acceptable
If given sufficient time to cool.

Number of preserved bottles checked for pH: _____
<2 >12 unless noted below.

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # : N / A

GCU # 153E
UNIT C, SEC. 28, T29N, R12W

LABORATORY (S) USED : HALL ENVIRONMENTAL

Date : June 1, 2011

SAMPLER : N J V

Filename : 06-01-11.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
2A	100.40	89.81	10.59	15.83	-	-	-	-	-
3R	100.80	89.47	11.33	20.00	1050	7.41	8,900	18.4	2.00
7A	99.72	89.18	10.54	16.31	-	-	-	-	-

INSTRUMENT CALIBRATIONS =	4.01/7.00/10.00	2,800
DATE & TIME =	05/31/2011	0855

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3$ (wellbores).
 (i.e. 2" MW $r = (1/12)$ ft. $h = 1$ ft.) (i.e. 4" MW $r = (2/12)$ ft. $h = 1$ ft.)

Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2".

Poor / fair recovery in MW # 3R. Bailed MW # 3R to total depth, then allowed recovery to approx.

12.00 ft. prior to collecting sample. Collected sample for BTEX per US EPA Method 8021B from
from MW # 3R only.

on-site	9:50	temp	73 F
off-site	11:00	temp	80 F
sky cond.	Mostly cloudy		
wind speed	0 - 10	direct.	SE

Hall Environmental Analysis Laboratory, Inc.

Date: 10-Jun-11
Analytical Report

CLIENT: Blagg Engineering Client Sample ID: MW #3R
Lab Order: 1106167 Collection Date: 6/1/2011 10:50:00 AM
Project: GCU #153E Date Received: 6/3/2011
Lab ID: 1106167-01 Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: RAA
Benzene	160	5.0		µg/L	5	6/8/2011 7:11:00 PM
Toluene	10	1.0		µg/L	1	6/7/2011 12:34:47 AM
Ethylbenzene	25	1.0		µg/L	1	6/7/2011 12:34:47 AM
Xylenes, Total	37	2.0		µg/L	1	6/7/2011 12:34:47 AM
Surr: 4-Bromofluorobenzene	122	96.8-145		%REC	5	6/8/2011 7:11:00 PM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Blagg Engineering
 Project: GCU #153E

Work Order: 1106167

Analyte	Result	Units	PQL	SPK Va	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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Method: EPA Method 8021B: Volatiles

Sample ID: 5ML RB

MBLK

Batch ID: R45761 Analysis Date: 6/6/2011 9:07:53 AM

Benzene	ND	µg/L	1.0								
Toluene	ND	µg/L	1.0								
Ethylbenzene	ND	µg/L	1.0								
Xylenes, Total	ND	µg/L	2.0								

Sample ID: 5ML RB

MBLK

Batch ID: R45808 Analysis Date: 6/8/2011 10:01:27 AM

Benzene	ND	µg/L	1.0								
Toluene	ND	µg/L	1.0								
Ethylbenzene	ND	µg/L	1.0								
Xylenes, Total	ND	µg/L	2.0								

Sample ID: 100NG BTEX LCS

LCS

Batch ID: R45761 Analysis Date: 6/6/2011 11:31:42 AM

Benzene	20.26	µg/L	1.0	20	0	101	93.4	120			
Toluene	20.49	µg/L	1.0	20	0	102	96.2	122			
Ethylbenzene	20.51	µg/L	1.0	20	0	103	95	121			
Xylenes, Total	61.59	µg/L	2.0	60	0	103	97.6	122			

Sample ID: 100NG BTEX LCS

LCS

Batch ID: R45808 Analysis Date: 6/8/2011 12:26:07 PM

Benzene	18.42	µg/L	1.0	20	0	92.1	80	120			
Toluene	18.66	µg/L	1.0	20	0	93.3	80	120			
Ethylbenzene	18.82	µg/L	1.0	20	0	94.1	80	120			
Xylenes, Total	56.36	µg/L	2.0	60	0	93.9	80	120			

Qualifiers:

- E Estimated value
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- H Holding times for preparation or analysis exceeded
- NC Non-Chlorinated
- R RPD outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name **BLAGG**

Date Received:

6/3/2011

Work Order Number **1106167**

Received by: **AMG**

Checklist completed by:

[Handwritten Signature]
Signature

6/3/11
Date

Sample ID labels checked by:

[Handwritten Initials]
Initials

Matrix:

Carrier name: Greyhound

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present Not Shipped
- Custody seals intact on sample bottles? Yes No N/A
- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Water - VOA vials have zero headspace? No VOA vials submitted Yes No
- Water - Preservation labels on bottle and cap match? Yes No N/A
- Water - pH acceptable upon receipt? Yes No N/A
- Container/Temp Blank temperature? **1.6°** <6° C Acceptable
If given sufficient time to cool.

Number of preserved bottles checked for pH: _____
<2 >12 unless noted below.

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & /OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # : **N / A**

GCU # 153E
UNIT C, SEC. 28, T29N, R12W

LABORATORY (S) USED : **HALL ENVIRONMENTAL**

Date : **September 29, 2011**

SAMPLER : **N J V**

Filename : **09-29-11.WK4**

PROJECT MANAGER : **N J V**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
2A	100.40	88.93	11.47	15.83	-	-	-	-	-
3R	100.80	88.57	12.23	20.00	1120	7.39	8,900	20.4	1.50
7A	99.72	88.28	11.44	16.31	-	-	-	-	-

INSTRUMENT CALIBRATIONS =	4.01/7.00/10.00	2,800
DATE & TIME =	09/28/2011	1030

NOTES : Volume of water purged from well prior to sampling; $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3$ (wellbores).
 (i.e. 2" MW $r = (1/12)$ ft. $h = 1$ ft.) (i.e. 4" MW $r = (2/12)$ ft. $h = 1$ ft.)

Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2".

Poor / fair recovery in MW # 3R. Bailed MW # 3R to total depth, then allowed recovery to approx. 13.00 ft. prior to collecting sample. Collected sample for BTEX per US EPA Method 8021B from from MW # 3R only.

Inserted 3 new ORC filter socks within MW # 3R water column after sample collection.

on-site	10:30	temp	68 F
off-site	11:40	temp	76 F
sky cond.	Sunny		
wind speed	0 - 5	direct.	SE

Hall Environmental Analysis Laboratory, Inc.

Date: 10-Oct-11

Analytical Report

CLIENT:	Blagg Engineering	Client Sample ID:	MW # 3R
Lab Order:	1109C36	Collection Date:	9/29/2011 11:20:00 AM
Project:	GCU #153E	Date Received:	9/30/2011
Lab ID:	1109C36-01	Matrix:	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: RAA
Benzene	47	5.0		µg/L	5	10/6/2011 7:15:16 PM
Toluene	ND	5.0		µg/L	5	10/6/2011 7:15:16 PM
Ethylbenzene	6.6	5.0		µg/L	5	10/6/2011 7:15:16 PM
Xylenes, Total	12	10		µg/L	5	10/6/2011 7:15:16 PM
Surr: 4-Bromofluorobenzene	92.6	76.5-115		%REC	5	10/6/2011 7:15:16 PM

Qualifiers:

* Value exceeds Maximum Contaminant Level	B Analyte detected in the associated Method Blank
E Estimated value	H Holding times for preparation or analysis exceeded
J Analyte detected below quantitation limits	MCL Maximum Contaminant Level
NC Non-Chlorinated	ND Not Detected at the Reporting Limit
PQL Practical Quantitation Limit	S Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Blagg Engineering

Project: GCU #153E

Work Order: 1109C36

Analyte	Result	Units	PQL	SPK Va	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8021B: Volatiles											
Sample ID: 6ML-RB		MBLK									
Benzene	ND	µg/L	1.0								
Toluene	ND	µg/L	1.0								
Ethylbenzene	ND	µg/L	1.0								
Xylenes, Total	ND	µg/L	2.0								
Sample ID: 100NG BTEX LCS		LCS									
Benzene	20.09	µg/L	1.0	20	0	100	80	120			
Toluene	20.37	µg/L	1.0	20	0	102	80	120			
Ethylbenzene	20.06	µg/L	1.0	20	0	100	80	120			
Xylenes, Total	60.62	µg/L	2.0	60	0	101	80	120			

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	NC	Non-Chlorinated
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name **BLAGG**

Date Received:

9/30/2011

Work Order Number **1109C36**

Received by: **AMF**

Checklist completed by:

[Signature]
Signature

Sample ID labels checked by:

[Signature]
Initials

Date **9/30/11**

Matrix:

Carrier name: Greyhound

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No	Not Present	
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No	Not Present	Not Shipped
Custody seals intact on sample bottles?	Yes <input checked="" type="checkbox"/>	No	N/A	
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No		
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No		
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No		
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No		
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No		
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No		
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No		Number of preserved bottles checked for pH:
Water - VOA vials have zero headspace?	No VOA vials submitted	Yes <input checked="" type="checkbox"/>	No	
Water - Preservation labels on bottle and cap match?	Yes	No	N/A <input checked="" type="checkbox"/>	
Water - pH acceptable upon receipt?	Yes	No	N/A <input checked="" type="checkbox"/>	<2 >12 unless noted below.
Container/Temp Blank temperature?	4.7°	<6° C Acceptable If given sufficient time to cool.		

COMMENTS:

Client contacted

Date contacted:

Person contacted

Contacted by:

Regarding:

Comments:

Corrective Action

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # : N / A

GCU # 153E
UNIT C, SEC. 28, T29N, R12W

LABORATORY (S) USED : HALL ENVIRONMENTAL

Date : December 21, 2011

SAMPLER : N J V

Filename : 12-21-11.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
2A	100.40	89.34	11.06	15.83	-	-	-	-	-
3R	100.80	89.07	11.73	20.00	1230	7.78	6,400	13.9	2.00
7A	99.72	88.80	10.92	16.31	-	-	-	-	-

INSTRUMENT CALIBRATIONS =	4.01/7.00/10.00	2,800
DATE & TIME =	12/21/2011	1100

NOTES : Volume of water purged from well prior to sampling; $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3$ (wellbores).
 (i.e. 2" MW $r = (1/12)$ ft. $h = 1$ ft.) (i.e. 4" MW $r = (2/12)$ ft. $h = 1$ ft.)

Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2".

Poor / fair recovery in MW # 3R. Bailed MW # 3R to total depth, then allowed recovery to approx. 13.00 ft. prior to collecting sample. Collected sample for BTEX per US EPA Method 8021B from from MW # 3R only.

Inserted 3 new ORC filter socks within MW # 3R water column after sample collection.

on-site	<u>12:54</u>	temp	<u>36 F</u>
off-site	<u>12:45</u>	temp	<u>36 F</u>
sky cond.	<u>Mostly cloudy</u>		
wind speed	<u>0 - 5</u>	direct.	<u>calm</u>

Hall Environmental Analysis Laboratory, Inc.

Date: 29-Dec-11
Analytical Report

CLIENT: Blagg Engineering	Client Sample ID: MW #3R
Lab Order: 1112953	Collection Date: 12/21/2011 12:30:00 PM
Project: GCU #153E	Date Received: 12/22/2011
Lab ID: 1112953-01	Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: RAA
Benzene	20	1.0		µg/L	1	12/28/2011 1:59:36 AM
Toluene	4.3	1.0		µg/L	1	12/28/2011 1:59:36 AM
Ethylbenzene	5.4	1.0		µg/L	1	12/28/2011 1:59:36 AM
Xylenes, Total	6.2	2.0		µg/L	1	12/28/2011 1:59:36 AM
Surr: 4-Bromofluorobenzene	168	76.5-115	S	%REC	1	12/28/2011 1:59:36 AM

Qualifiers:

- | | |
|--|--|
| * Value exceeds Maximum Contaminant Level | B Analyte detected in the associated Method Blank |
| E Estimated value | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits | MCL Maximum Contaminant Level |
| NC Non-Chlorinated | ND Not Detected at the Reporting Limit |
| PQL Practical Quantitation Limit | S Spike recovery outside accepted recovery limits |

QA/QC SUMMARY REPORT

Client: Blagg Engineering
 Project: GCU #153E

Work Order: 1112953

Analyte	Result	Units	PQL	SPK Va	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8021B: Volatiles											
Sample ID: 5ML-RB		MBLK									
Benzene	ND	µg/L	1.0								
Toluene	ND	µg/L	1.0								
Ethylbenzene	ND	µg/L	1.0								
Xylenes, Total	ND	µg/L	2.0								
Sample ID: 100NG BTEX LCS		LCS									
Benzene	19.22	µg/L	1.0	20	0	96.1	80	120			
Toluene	19.14	µg/L	1.0	20	0	95.7	80	120			
Ethylbenzene	19.94	µg/L	1.0	20	0	99.7	80	120			
Xylenes, Total	58.84	µg/L	2.0	60	0	98.1	78.6	121			

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	NC	Non-Chlorinated
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name **BLAGG**

Date Received:

12/22/2011

Work Order Number 1112953

Received by: **AMG**

Checklist completed by:

[Handwritten Signature]
Signature

12/22/11
Date

Sample ID labels checked by:

[Handwritten Initials]
Initials

Matrix:

Carrier name: **Courier**

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present Not Shipped
- Custody seals intact on sample bottles? Yes No N/A
- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Water - VOA vials have zero headspace? No VOA vials submitted Yes No
- Water - Preservation labels on bottle and cap match? Yes No N/A
- Water - pH acceptable upon receipt? Yes No N/A

Number of preserved bottles checked for pH:

<2 >12 unless noted below.

Container/Temp Blank temperature?

1.0°

<6° C Acceptable
If given sufficient time to cool.

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____