

**3R - 004**

**ANNUAL  
MONITORING  
REPORT**

**05/01/2009**

**BLAGG ENGINEERING, INC.**

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

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

32004

RECEIVED

2009 MAY 4 AM 9 43

May 1, 2009

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  
Boyd GC # 1A, Unit A, Sec. 8, T31N, R10W, NMPM  
San Juan County, New Mexico**

**NMOCD Administrative/Environmental Order #: 3RP-4-0**

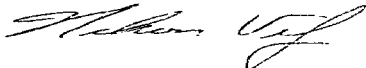
Dear Mr. von Gonten:

BP America Production Company (**BP**) has retained Blagg Engineering, Inc. (**BEI**) to conduct environmental monitoring of groundwater at the Boyd GC #1A.

The last formal correspondence to NMOCD was conducted with letter dated, January 28, 2008. 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, Environmental Specialist, NMOCD District III Office, Aztec, NM  
Mr. Larry Schlotterback, Environmental Coordinator, BP, Farmington, NM

**RECEIVED**  
**BP AMERICA PRODUCTION CO.**  
2009 MAY 11 AM 9 43

**GROUNDWATER REMEDIATION REPORT**

**BOYD GC #1A  
(A) SECTION 8, T31N, R10W, NMPM  
SAN JUAN COUNTY, NEW MEXICO**

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

**APRIL 2009**

**PREPARED BY:  
BLAGG ENGINEERING, INC.**

**Consulting Petroleum / Reclamation Services  
P.O. Box 87  
Bloomfield, New Mexico 87413**

**BP AMERICA PRODUCTION COMPANY**  
**BOYD GC # 1A**  
**NE/4 NE/4, Sec. 8, T31N, R10W**

**Monitor Well Installation Dates:** 10/31/2002 (MW #2), 12/13/2002 (MW #1, MW #3), 1/16/2003 (MW #4), 7/24/2006 (MW #5)

**Monitor Well Sampling Dates:** 4/15/08, 6/24/08, 8/27/08, 12/20/08

## **Site History:**

Groundwater was encountered at a depth of approximately 24 feet below surface grade during excavation of impacted soils from a separator/dehydrator (sep/dehy) pit in July/August 1994. Impacted soils at a site compressor pit with a 21 barrel steel tank were encountered during pit closure activities in October 2002. Potential groundwater impact was identified within the compressor pit source area via installation of a monitor well in November 2002 (MW #2). Documentation for this work and subsequent groundwater monitoring data for the site have previously been submitted for New Mexico Oil Conservation Division (**NMOCD**) review. Continued annual and/or quarterly sampling and testing pursuant to BP's NMOCD approved groundwater management plan (**GMP**) was suggested within the report. The reporting herein is for site monitoring in 2008 only.

## **Groundwater Monitor Well Sampling Procedures:**

Each monitor well was developed by hand-bailing, using new disposable bailers after installation. Prior to sample collections, each monitor well was purged approximately three (3) well bore volumes with new disposable bailers. 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 or 8260 was conducted.

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

## **Groundwater Quality & Flow Direction Information:**

Sampling of the groundwater monitor wells has been ongoing since November, 2002. Test results for MW #1, MW #3, and MW #5 were discussed in the previous annual report. Groundwater at the site of the prior compressor pit (MW #2) has tested benzene and total xylenes in excess of New Mexico Water Quality Control Commission (**NMWQCC**) standards since 2002. MW #4 has tested benzene levels fluctuating above and below NMWQCC standards since quarterly sampling was initiated in June 2003. A summary of BTEX laboratory analytical results is included within the table on the following pages. Field data sheets, laboratory reports, and laboratory quality assurance/quality control information are also included.

Groundwater contour maps of relative water table elevations have consistently been measure to flow in the west to northwest direction (Figure 2 through Figure 5). It was noted within the previous annual report, a significant fluctuation (4± feet) in seasonal depth to water levels is likely due to crop irrigation and ditch flow between April – October.

## **Summary and/or Recommendations:**

Bi-annual sampling of MW #2 and the continuation of quarterly sampling of MW #4 is currently suggested unless circumstances dictate otherwise. This site will continue to have sampling and testing pursuant to BP's NMOCD approved GMP. If warranted, alternative remedial actions will be evaluated.

# BP AMERICA PROD. CO. GROUNDWATER LAB RESULTS

SUBMITTED BY BLAGG ENGINEERING, INC.

**BOYD GC # 1A**

**UNIT A, SEC. 8, T31N, R10W**

REVISED DATE: January 8, 2009

FILENAME: ( B1A-4Q08.WK4 ) NJV

								BTEX EPA METHOD 8021B ( ppb )			
SAMPLE DATE	WELL NAME or No.	D.T.W. (ft)	T.D. (ft)	TDS (mg/L)	COND. umhos	pH	PRODUCT (ft)	Benzene	Toluene	Ethyl Benzene	Total Xylene
04-Oct-02	<b>GAINES</b>	NA	NA					ND	ND	ND	ND
10-Aug-06		NA	NA					ND	ND	ND	ND
31-Oct-02	<b>HARRIS</b>	NA	NA					ND	ND	ND	ND
09-Jun-03	MW #1	23.31	29.50		700	6.96		ND	ND	ND	ND
20-Aug-03		19.00			900	7.21		ND	ND	ND	ND
11-Nov-03		22.84			900	7.17		ND	ND	ND	ND
27-May-04		26.49			900	6.80		ND	ND	ND	ND
28-Sep-04		19.59			900	7.20		ND	ND	ND	ND
13-Nov-02	MW #2	23.31	29.50		700	6.84		<b>705</b>	597	60	<b>959</b>
09-Jun-03		23.06			700	6.89		<b>830</b>	110	170	<b>1,800</b>
20-Aug-03		18.11			700	6.94		<b>58</b>	ND	60	<b>800</b>
27-May-04		26.76			1,000	6.67		<b>940</b>	ND	200	<b>1,200</b>
23-Jun-05		22.31			1,100	6.82		<b>1,400</b>	21	490	<b>5,500</b>
28-Jun-06		18.59			800	6.88		<b>75</b>	ND	ND	<b>1,600</b>
24-Jun-08		24.04			900	6.98		<b>553</b>	ND	117	<b>1,590</b>
27-Aug-08		22.41			700	6.81		<b>410</b>	ND	170	<b>2,400</b>
09-Jun-03	MW #3	26.46	29.50		600	6.92		ND	ND	ND	ND
20-Aug-03		23.11			900	7.08		ND	ND	ND	ND
11-Nov-03		26.23			900	7.17		ND	ND	ND	ND
28-Sep-04		23.17			800	7.17		ND	ND	ND	ND
09-Jun-03	MW #4	28.09	34.50		1,000	6.69		<b>15</b>	ND	4.5	0.75
20-Aug-03		25.26			1,000	6.80		<b>460</b>	71	100	88
11-Nov-03		28.08			1,000	7.00		<b>270</b>	ND	310	440
27-May-04		30.52			1,000	6.87		<b>5.1</b>	ND	14	51
28-Sep-04		25.13			700	6.91		<b>140</b>	ND	18	9.1
23-Jun-05		27.81			1,000	6.73		<b>0.68</b>	0.59	2.0	ND
20-Sep-05		27.28			800	6.70		<b>120</b>	3.4	120	130
28-Jun-06		26.96			900	6.80		<b>ND</b>	ND	ND	ND
15-Nov-06		28.74			800	7.08		<b>29</b>	ND	38	200
24-Jan-07		31.17			800	7.14		<b>40</b>	ND	140	<b>1,300</b>
18-Apr-07		32.44			800	6.98		<b>ND</b>	ND	1.6	<b>ND</b>
24-Jul-07		27.82			700	7.01		<b>ND</b>	ND	ND	<b>ND</b>
23-Oct-07		28.73			1,000	6.93		<b>26</b>	ND	20	<b>120</b>
15-Apr-08		32.09			800	7.11		<b>1.0</b>	ND	50.9	<b>186</b>
24-Jun-08		28.90			800	7.10		<b>ND</b>	ND	3.2	<b>ND</b>
27-Aug-08		27.68			900	7.15		<b>ND</b>	ND	ND	<b>ND</b>
20-Dec-08		29.54			800	7.21		<b>120</b>	ND	150.0	<b>570</b>
NMWQCC GROUNDWATER STANDARDS								<b>10</b>	<b>750</b>	<b>750</b>	<b>620</b>

# BP AMERICA PROD. CO. GROUNDWATER LAB RESULTS

SUBMITTED BY BLAGG ENGINEERING, INC.

BOYD GC #1A

UNIT A, SEC. 8, T31N, R10W

REVISED DATE: January 8, 2009

FILENAME: ( B1A-4Q08.WK4 ) NJV

								BTEX EPA METHOD 8021B ( ppb )			
SAMPLE DATE	WELL NAME or No.	D.T.W. (ft)	T.D. (ft)	TDS (mg/L)	COND. umhos	pH	PRODUCT (ft)	Benzene	Toluene	Ethyl Benzene	Total Xylene
10-Aug-06	MW #5	23.90	36.30		1,100	6.84		<b>23</b>	ND	11	15
15-Nov-06		26.20			900	7.05		<b>6.8</b>	ND	2.9	ND
24-Jan-07		28.35			800	7.13		<b>1.3</b>	ND	ND	ND
18-Apr-07		29.29			900	6.90		<b>ND</b>	ND	ND	ND
24-Jul-07		25.25			1,500	6.74		<b>ND</b>	ND	ND	ND
NMWQCC GROUNDWATER STANDARDS								<b>10</b>	<b>750</b>	<b>750</b>	<b>620</b>

- NOTES:
- 1) GAINES WATER WELL CURRENTLY CATEGORIZED AS UP GRADIENT FROM MW #2.
  - 2) HARRIS WATER WELL CURRENTLY CATEGORIZED AS LATERAL GRADIENT FROM MW #2.
  - 3) MW #2 LOCATED WITHIN COMPRESSOR PIT, IDENTIFIED WITH SOIL HYDROCARBON CONTAMINATION ON 10/2/02.
  - 4) RESULTS IN BOLD RED TYPE INDICATE EXCEEDING NMWQCC STANDARDS.
  - 5) RESULTS IN BOLD BLUE TYPE INDICATE BELOW NMWQCC STANDARDS AFTER PRECEDING SAMPLING EXCEEDED.
  - 6) ND INDICATES NOT DETECTED AT THE REPORTING LIMITS ( less than regulatory standards of at least a magnitude of 10 ).

**FIGURE 1**

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



**WELL HEAD**



MW # 5

**JULY-AUGUST 1994  
EXCAVATION**

METER HOUSE  
&  
SALES LINE

MW # 1

MW # 3

MW # 4



COMPR.

**SOUND  
WALLS**

ABOVE GROUND  
POWER LINE

FENCE

MW # 2

**ACCESS ROAD**

**CR 2470**

1 INCH = 35 FT.

0 35 70 FT.

**BP AMERICA PRODUCTION COMPANY**

BOYD GC # 1A

NE/4 NW/4 SEC. 8, T31N, R10W, NMPM

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

DRAFTED BY: NJV

FILENAME: BOYD GC 1A-SM3.SKF

REVISED: 04-21-09 NJV

**SITE  
MAP**

03/09

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

FIGURE 2



WELL HEAD



JULY-AUGUST 1994 EXCAVATION

METER HOUSE & SALES LINE

MW # 5 (69.72)

APPARENT GROUNDWATER FLOW DIRECTION ~ S64W

71.00

MW # 3 (DRY)

72.00

MW # 1 (73.91)

73.00

MW # 4 (70.29)

~ S71.5W

FENCE

BERM

TANK PIT

SEPR

COMPR.

SOUND WALLS

ABOVE GROUND POWER LINE

COMPRESSOR PIT

BERM DIMENSION 14 x 12 FT.

MW # 2 (72.34)

TEST HOLE ADVANCED 10/02/02 TIME: 1238

CR 2470

1 INCH = 35 FT.  
0 35 70 FT.

	Top of Well Elevation
MW #1	(102.08)
MW #2	(101.93)
MW #3	(101.91)
MW #4	(102.38)
MW #5	(98.68)
MW #1 (73.91)	Groundwater Elevation as of 4/15/08.

BP AMERICA PRODUCTION COMPANY

BOYD GC # 1A

NE/4 NW/4 SEC. 8, T31N, R10W, NMPM

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

GROUNDWATER CONTOUR MAP

PROJECT: MW SAMPLING

DRAFTED BY: NJV

FILENAME: 04-15-08-GW.SKF

REVISED: 04-15-08 NJV

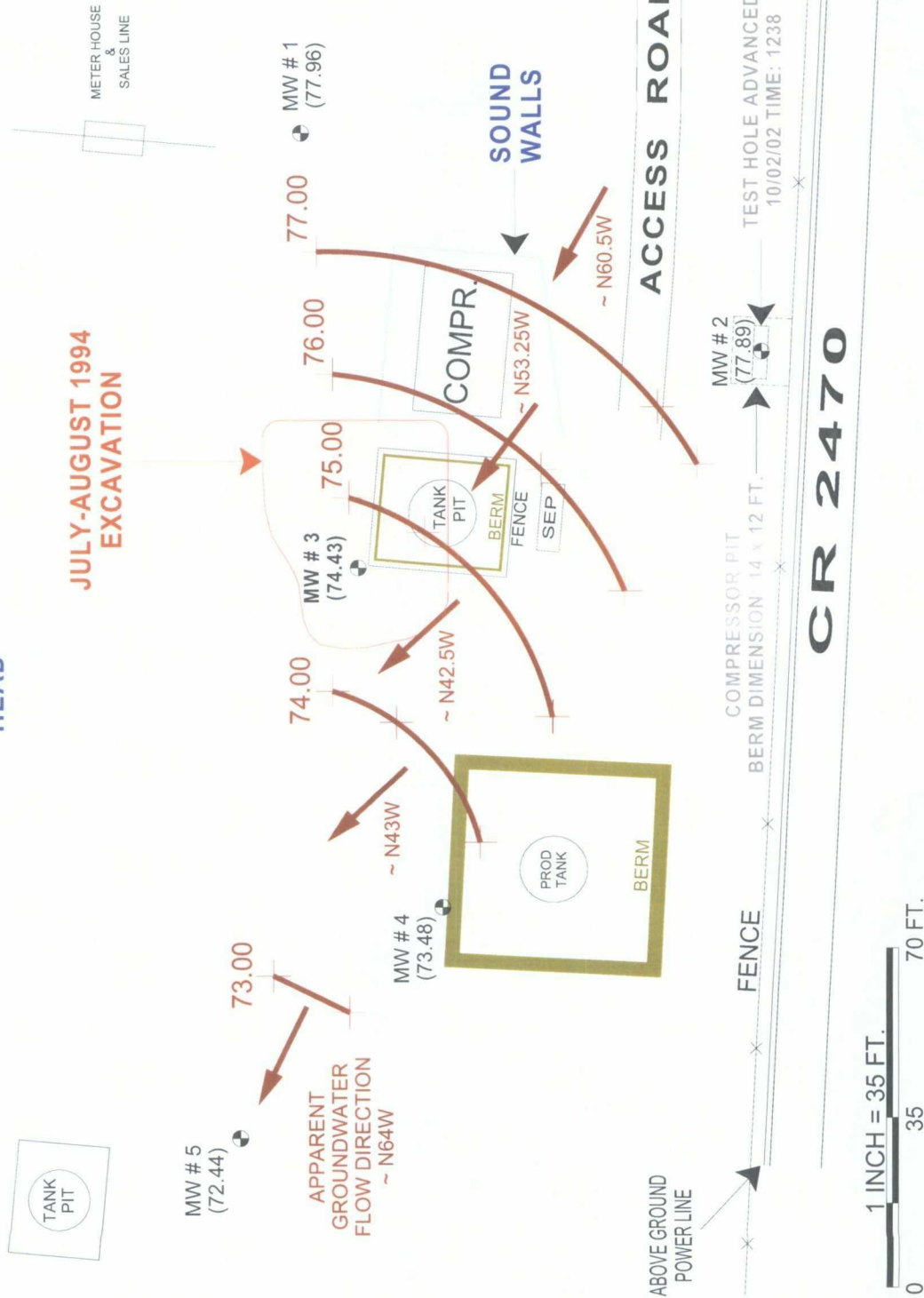
04/08

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (TAPE MEASURE, LASER RANGE FINDER, & BRUNTON COME ALONG). ALL OTHER STRUCTURES DISPLAYED ON THE SCHEMATIC ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

FIGURE 3



WELL HEAD



BP AMERICA PRODUCTION COMPANY  
BOYD GC # 1A  
NE/4 NW/4 SEC. 8, T31N, R10W, NMPM  
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  
DRAFTED BY: NJV  
FILENAME: 06-24-08-GW.SKF  
REVISED: 06-25-08 NJV

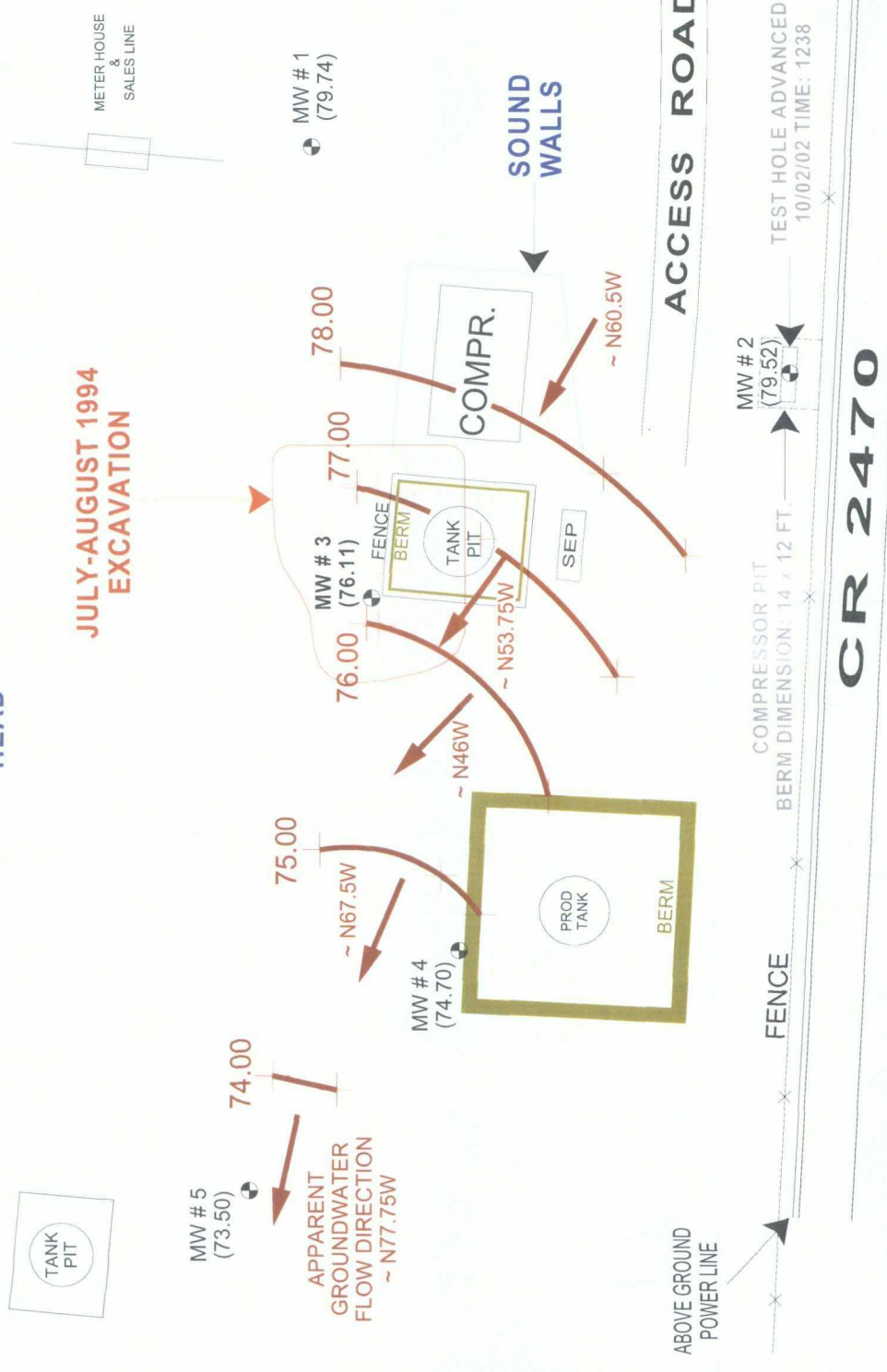
GROUNDWATER  
CONTOUR  
MAP  
06/08

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

FIGURE 4



WELL HEAD



	Top of Well Elevation
MW #1	(102.08)
MW #2	(101.93)
MW #3	(101.91)
MW #4	(102.38)
MW #5	(98.68)
MW #1 (79.74)	Groundwater Elevation as of 8/27/08.

# GROUNDWATER CONTOUR MAP

08/08

PROJECT: MW SAMPLING  
 DRAFTED BY: NJV  
 FILENAME: 08-27-08-GW.SKF  
 REVISED: 08-28-08 NJV

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

**BP AMERICA PRODUCTION COMPANY**  
 BOYD GC # 1A  
 NE/4 NW/4 SEC. 8, T31N, R10W, NM/PM  
 SAN JUAN COUNTY, NEW MEXICO

# FIGURE 5

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



WELL HEAD



MW # 5  
(71.89)

JULY-AUGUST 1994  
EXCAVATION

74.00

APPARENT  
GROUNDWATER  
FLOW DIRECTION  
~ N89.5W

MW # 4  
(72.84)

PROD  
TANK

BERM

~ N80.5W

MW # 3  
(73.76)

FENCE

BERM  
TANK  
PIT

SEP

COMPR.

~ N74.75W

MW # 1  
(77.40)

SOUND  
WALLS

ACCESS ROAD

MW # 2  
(77.10)

COMPRESSOR PIT

BERM DIMENSION: 14 x 12 FT.

TEST HOLE ADVANCED  
10/02/02 TIME: 1238

CR 2470

FENCE

ABOVE GROUND  
POWER LINE

1 INCH = 35 FT.  
0 35 70 FT.

	Top of Well Elevation
MW #1	(102.08)
MW #2	(101.93)
MW #3	(101.91)
MW #4	(102.38)
MW #5	(98.68)
MW #1 (77.40)	Groundwater Elevation as of 12/20/08.

BP AMERICA PRODUCTION COMPANY

BOYD GC # 1A

NE/4 NW/4 SEC. 8, T31N, R10W, NM/PM

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

GROUNDWATER  
CONTOUR  
MAP

PROJECT: MW SAMPLING  
DRAFTED BY: NJV  
FILENAME: 12-20-08-GW.SKF  
REVISED: 12-20-08 NJV

12/08

**BLAGG ENGINEERING, INC.**  
**MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA**

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

CHAIN-OF-CUSTODY # : **156397**

**BOYD GC # 1A - COMPRESSOR PIT**  
**UNIT A, SEC. 8, T31N, R10W**

LABORATORY (S) USED : **PACE ANALYTICAL**

Date : **April 15, 2008**

SAMPLER : **N J V**

Filename : **04-15-08.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.)
MW - 1	102.08	73.91	28.17	29.50	-	-	-	-	-
MW - 2	101.93	72.34	29.59	29.50	-	-	-	-	-
MW - 3	101.91	-	DRY	29.50	-	-	-	-	-
MW - 4	102.38	70.29	32.09	34.50	1435	7.11	800	21.2	1.25
MW - 5	98.68	69.72	28.96	36.30	-	-	-	-	-

INSTRUMENT CALIBRATIONS =

4.01/7.00/10.00

2,800

DATE & TIME =

04/14/08

0800

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  $r = (1/12) \text{ ft.}$   $h = 1 \text{ ft.}$ ) (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 ".

**Fair recovery in MW #4 . Purged to TD , then allowed recovery . Collected sample from MW #4 for BTEX analysis only .**

Top of casing MW #1 ~ 2.20 ft. , MW #2 ~ 2.50 ft. , MW #3 ~ 2.00 ft. , MW #4 ~ 3.05 ft. , MW #5 ~ 2.20 ft. above grade .

## ANALYTICAL RESULTS

Project: BOYD GC #1A  
Pace Project No.: 6038713

Sample: MW #4		Lab ID: 6038713001	Collected: 04/15/08 14:35	Received: 04/16/08 08:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST, Water</b>		Analytical Method: EPA 8260						
Benzene	1.0 ug/L		1.0	1		04/18/08 18:42	71-43-2	
Ethylbenzene	50.9 ug/L		1.0	1		04/18/08 18:42	100-41-4	
Toluene	ND ug/L		1.0	1		04/18/08 18:42	108-88-3	
Xylene (Total)	186 ug/L		3.0	1		04/18/08 18:42	1330-20-7	
Dibromofluoromethane (S)	97 %		85-114	1		04/18/08 18:42	1868-53-7	
Toluene-d8 (S)	105 %		82-114	1		04/18/08 18:42	2037-26-5	
4-Bromofluorobenzene (S)	102 %		85-119	1		04/18/08 18:42	460-00-4	
1,2-Dichloroethane-d4 (S)	99 %		81-118	1		04/18/08 18:42	17060-07-0	
Preservation pH	1.0		1.0	1		04/18/08 18:42		

Date: 04/23/2008 04:49 PM

## REPORT OF LABORATORY ANALYSIS

Page 5 of 8

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..





# Chain of Custody Record

Project Name:

BOYD GC #1A

BP BU/AR Region/Enfos Segment:

SAN JUAN CO SOUTH

State or Lead Regulatory Agency:

NMDCD

Requested Due Date (mm/dd/yy):

4/29/08

156397

Page 1 of 1

On-site Time: 2:07 Temp: 77°F

Off-site Time: 2:50 Temp: 78°F

Sky Conditions: sunny

Meteorological Events:

Wind Speed: 0-10 6-15 7-10 Direction: SW

Lab Name: PACE ANALYTICAL		BP/AR Facility No.: WR192144		Consultant/Contractor: BLAKE WRS														
Address: 9608 LOIRET BLVD.		BP/AR Facility Address:		Address: 110 N. FOREST ST.														
LEWEXA, KS 66219		Site Lat/Long:		Bloomfield, NM 87413														
Lab PM: MARY JANE WALKS		California Global ID No.:		Consultant/Contractor Project No.: 41008710														
Tele/Fax: (913) 599-3665 FAX: (913) 599-1759		Enfos Project No.: 00188		Consultant/Contractor PM: NELSON VELEZ														
BP/AR PM Contact: MIKE WHELAN, PG		Provision or RCOP (circle one)		Tele/Fax: (505) 632-1199 FAX: (505) 632-3903														
Address: 501 WESTLAKE PARK BLVD.		Phase/WBS:		Report Type & QC Level: STANDARD														
Rm. 28.144B Houston TX 77079		Sub Phase/Task:		E-mail EDD To: b1929-njvc@yahoo.com														
Tele/Fax: (281) 366-7485 FAX: (281) 366-7094		Cost Element: 01		Invoice to: Consultant or BP of Atlantic Richfield Co. (circle one)														
Lab Bottle Order No: 15752		Matrix		Requested Analysis														
Item No.	Sample Description	Time	Date	Water/Liquid	Soil/Solid	Air	Laboratory No.	No. of Containers	Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	Methanol	BTEX/TPH	BTEX/Oxy/TPH	EPA 8260	EPA 8270	Sample Point Lat/Long and Comments
1	MW #4	1435	4/15/08	✓				3				✓						6038713
2	Water																	3(DG-4H) 6038713
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
Sampler's Name: NELSON VELEZ		Relinquished By / Affiliation		Date		Time		Accepted By / Affiliation		Date		Time						
Sampler's Company: BLAKE ENGINEERING, INC.		Nelson Velez		4/15/08		1546		Nelson Velez		4/16		830						
Shipment Date: APRIL 15, 2008																		
Shipment Method: FED EX OVERNITE																		
Shipment Tracking No: 4994348726																		
Special Instructions: REPORT BTEX CONSTITUENTS ONLY.																		
Custody Seals In Place Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Temp Blank Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Cooler Temperature on Receipt 61.1°F		Trip Blank Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>												

## SAMPLE SUMMARY

Project: BOYD GC #1A  
Pace Project No.: 6038713

Lab ID	Sample ID	Matrix	Date Collected	Date Received
6038713001	MW #4	Water	04/15/08 14:35	04/16/08 08:30

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE ANALYTE COUNT

Project: BOYD GC #1A  
Pace Project No.: 6038713

Lab ID	Sample ID	Method	Analysts	Analytes Reported
6038713001	MW #4	EPA 8260	GEZ	9

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: BOYD GC #1A  
Pace Project No.: 6038713

---

**Method:** EPA 8260  
**Description:** 8260 MSV UST, Water  
**Client:** BP-Blagg Engineering  
**Date:** April 23, 2008

**General Information:**

1 sample was analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

Page 4 of 8

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## QUALITY CONTROL DATA

Project: BOYD GC #1A

Pace Project No.: 6038713

QC Batch: MSV/14089

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV UST-WATER

Associated Lab Samples: 6038713001

METHOD BLANK: 314296

Associated Lab Samples: 6038713001

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Benzene	ug/L	ND	1.0	
Ethylbenzene	ug/L	ND	1.0	
Toluene	ug/L	ND	1.0	
Xylene (Total)	ug/L	ND	3.0	
1,2-Dichloroethane-d4 (S)	%	97	81-118	
4-Bromofluorobenzene (S)	%	92	85-119	
Dibromofluoromethane (S)	%	101	85-114	
Toluene-d8 (S)	%	101	82-114	

LABORATORY CONTROL SAMPLE: 314297

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	10	10.7	107	87-117	
Ethylbenzene	ug/L	10	11.1	111	84-123	
Toluene	ug/L	10	11.0	110	81-124	
Xylene (Total)	ug/L	30	32.4	108	83-125	
1,2-Dichloroethane-d4 (S)	%			95	81-118	
4-Bromofluorobenzene (S)	%			95	85-119	
Dibromofluoromethane (S)	%			99	85-114	
Toluene-d8 (S)	%			103	82-114	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 314298

314299

Parameter	6038782001		MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
	Units	Result	Spike Conc.	Spike Conc.								
Benzene	ug/L	ND	10	10	10.3	9.7	101	96	30-162	6	22	
Ethylbenzene	ug/L	ND	10	10	9.3	9.8	92	96	37-154	4	18	
Toluene	ug/L	ND	10	10	9.8	10.6	93	101	49-143	8	20	
Xylene (Total)	ug/L	ND	30	30	28.9	30.2	91	96	32-154	4	15	
1,2-Dichloroethane-d4 (S)	%						113	115	81-118			
4-Bromofluorobenzene (S)	%						95	100	85-119			
Dibromofluoromethane (S)	%						106	108	85-114			
Toluene-d8 (S)	%						97	101	82-114			
Preservation pH		1.0			1.0	1.0				0		

Date: 04/23/2008 04:49 PM

## REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: BOYD GC #1A

Pace Project No.: 6038713

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BOYD GC #1A  
Pace Project No.: 6038713

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
6038713001	MW #4	EPA 8260	MSV/14089		



# Sample Condition Upon Receipt

Client Name: BP BLAZE

Project # 6038713

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other \_\_\_\_\_

Tracking #: \_\_\_\_\_

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other \_\_\_\_\_

Thermometer Used T-168 / ~~T-169~~

Type of Ice: Wet Blue None

☐ Samples on ice, cooling process has begun

Cooler Temperature 0-7

Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Comments:

Date and Initials of person examining contents: BW 4/16  
S: 1511 E: 1522

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>Wt</u>		
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: <u>VOA</u> colliform, TOC, O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>031708</u>		

## Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review:

MW 4/16/08

Date: \_\_\_\_\_

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

**BLAGG ENGINEERING, INC.**  
**MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA**

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

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

**BOYD GC # 1A - COMPRESSOR PIT**  
**UNIT A, SEC. 8, T31N, R10W**

LABORATORY (S) USED : **PAGE ANALYTICAL**

Date : **June 24, 2008**

SAMPLER : **N J V**

Filename : **06-24-08.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.)
<b>MW - 1</b>	102.08	77.96	24.12	29.50	-	-	-	-	-
<b>MW - 2</b>	101.93	77.89	24.04	29.50	1420	6.98	900	21.6	2.75
<b>MW - 3</b>	101.91	74.43	27.48	29.50	-	-	-	-	-
<b>MW - 4</b>	102.38	73.48	28.9	34.50	1335	7.10	800	21.2	1.75
<b>MW - 5</b>	98.68	72.44	26.24	36.30	-	-	-	-	-

INSTRUMENT CALIBRATIONS =

4.01/7.00/10.00

2,800

DATE & TIME =

06/23/08

0634

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".

Fair recovery in MW # 2 & # 4 . Purged to TD , then allowed recovery . Collected samples from MW # 2 & # 4 for BTEX analysis only .

Top of casing MW # 1 ~ 2.20 ft . , MW # 2 ~ 2.50 ft . , MW # 3 ~ 2.00 ft . , MW # 4 ~ 3.05 ft . , MW # 5 ~ 2.20 ft. above grade .

on-site	12:57	temp	93 F
off-site	2:45	temp	93 F
sky cond.	Sunny		
wind speed	0-5	direct.	West

## ANALYTICAL RESULTS

Project: BOYD GC 1A

Pace Project No.: 6042423

Sample: MW #2		Lab ID: 6042423002	Collected: 06/24/08 14:20	Received: 06/25/08 09:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST, Water</b>		Analytical Method: EPA 8260						
Benzene	553	ug/L	10.0	10		06/27/08 14:00	71-43-2	
Ethylbenzene	117	ug/L	10.0	10		06/27/08 14:00	100-41-4	
Toluene	ND	ug/L	10.0	10		06/27/08 14:00	108-88-3	
Xylene (Total)	1590	ug/L	30.0	10		06/27/08 14:00	1330-20-7	
Dibromofluoromethane (S)	91	%	85-114	10		06/27/08 14:00	1868-53-7	
Toluene-d8 (S)	98	%	82-114	10		06/27/08 14:00	2037-26-5	
4-Bromofluorobenzene (S)	100	%	85-119	10		06/27/08 14:00	460-00-4	
1,2-Dichloroethane-d4 (S)	89	%	81-118	10		06/27/08 14:00	17060-07-0	
Preservation pH	1.0		1.0	10		06/27/08 14:00		

Date: 07/01/2008 02:43 PM

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: BOYD GC 1A  
Pace Project No.: 6042423

Sample: MW #4		Lab ID: 6042423001	Collected: 06/24/08 13:35	Received: 06/25/08 09:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV UST, Water</b>		Analytical Method: EPA 8260						
Benzene	ND	ug/L	1.0	1		06/27/08 13:44	71-43-2	
Ethylbenzene	3.2	ug/L	1.0	1		06/27/08 13:44	100-41-4	
Toluene	ND	ug/L	1.0	1		06/27/08 13:44	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		06/27/08 13:44	1330-20-7	
Dibromofluoromethane (S)	91	%	85-114	1		06/27/08 13:44	1868-53-7	
Toluene-d8 (S)	98	%	82-114	1		06/27/08 13:44	2037-26-5	
4-Bromofluorobenzene (S)	103	%	85-119	1		06/27/08 13:44	460-00-4	
1,2-Dichloroethane-d4 (S)	90	%	81-118	1		06/27/08 13:44	17060-07-0	
Preservation pH	1.0		1.0	1		06/27/08 13:44		

Date: 07/01/2008 02:43 PM

## REPORT OF LABORATORY ANALYSIS

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# Atlantic Richfield Company

522

A BP affiliated company

## Chain of Custody Record

Project Name: BOYD GC 1A  
 BP BU/AR Region/Enfos Segment: STOC SOUTH  
 State or Lead Regulatory Agency: NMDCD  
 Requested Due Date (mm/dd/yy): 2/1/08

On-site Time: 12:57 Temp: 93°F  
 Off-site Time: 2:45 Temp: 93°F  
 Sky Conditions: SUNNY  
 Meteorological Events:  
 Wind Speed: 0-5 Direction: WEST

Lab Name: Pace Analytical Services, Inc.				BP/AR Facility No.:				Consultant/Contractor: Blagg/URS																																																																							
Address: 9609 Loiret Blvd				BP/AR Facility Address:				Address: 110 N. Forth St.																																																																							
Lenexa, KS 66219				Site Lat/Long:				Bloomfield, NM 87413																																																																							
Lab PM: MJ Walls				California Global ID No.:				Consultant/Contractor Project No.:																																																																							
Tele/Fax: 913-563-1401				Enfos Project No.:				Consultant/Contractor PM: Nelson Velez																																																																							
BP/AR EMB: Mike Whelan				Provision or OOC (circle one)				Tele: (505) 632-1199 Fax: (505) 632-3903																																																																							
Address: 501 Westlake Park Blvd.				Phase/WBS:				Report Type & QC Level: STD																																																																							
Rm28, 144B Houston, TX 77079				Sub Phase/Task:				E-Mail EDD To: blagg-nj@yahoo.com																																																																							
Tele: (281) 366-7485 Fax: (281) 366-7094				Cost Element:				Invoice to: Consultant or BP or Atlantic Richfield Co. (circle one)																																																																							
Lab Bottle Order No: 17702				Matrix				Requested Analysis																																																																							
Item No.	Sample Description	Time	Date	Soil/Solid	Water/Liquid	Air	Laboratory No.	No. of Containers	Preservative	Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	Methanol	BTX (8260)	Sample Point Lat/Long and Comments																																																															
1	MW #4	1335	6/24/08	✓				3	✓						✓	3(D-944)	6042473																																																														
2	MW #2	1420	6/24/08	✓				3	✓						✓		SSJ																																																														
3																	OR																																																														
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9																																																																															
10																																																																															
Sampler's Name: Nelson Velez				Relinquished By: Affiliation				Date				Time				Accepted By: Affiliation				Date				Time																																																							
Sampler's Company: Blagg Energy, Inc.				Nelson Velez				6/24/08				1645				Nelson Velez				6/25/08																																																											
Shipment Date: 6/24/08																																																																															
Shipment Method: FedEx																																																																															
Shipment Tracking No: 8643 6004 9420																																																																															
Special Instructions: REPORT BTX CONSTITUENTS ONLY.																SAN JUAN COUNTY, NM.																																																															
Custody Seals In Place: Yes/No																Temp Blank: Yes/No																Cooler Temp on Receipt: 5.5 °F/C																Trip Blank: Yes/No																MS/MSD Sample Submitted: Yes/No															

## SAMPLE SUMMARY

Project: BOYD GC 1A

Pace Project No.: 6042423

Lab ID	Sample ID	Matrix	Date Collected	Date Received
6042423001	MW #4	Water	06/24/08 13:35	06/25/08 09:00
6042423002	MW #2	Water	06/24/08 14:20	06/25/08 09:00

## REPORT OF LABORATORY ANALYSIS

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**SAMPLE ANALYTE COUNT**

Project: BOYD GC 1A  
Pace Project No.: 6042423

Lab ID	Sample ID	Method	Analysts	Analytes Reported
6042423001	MW #4	EPA 8260	JKL	9
6042423002	MW #2	EPA 8260	JKL	9

**REPORT OF LABORATORY ANALYSIS**

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## PROJECT NARRATIVE

Project: BOYD GC 1A  
Pace Project No.: 6042423

---

**Method:** EPA 8260  
**Description:** 8260 MSV UST, Water  
**Client:** BP-Blagg Engineering  
**Date:** July 01, 2008

**General Information:**

2 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MSV/15397

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: BOYD GC 1A  
Pace Project No.: 6042423

QC Batch: MSV/15397 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER  
Associated Lab Samples: 6042423001, 6042423002

METHOD BLANK: 344792

Associated Lab Samples: 6042423001, 6042423002

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Benzene	ug/L	ND	1.0	
Ethylbenzene	ug/L	ND	1.0	
Toluene	ug/L	ND	1.0	
Xylene (Total)	ug/L	ND	3.0	
1,2-Dichloroethane-d4 (S)	%	93	81-118	
4-Bromofluorobenzene (S)	%	106	85-119	
Dibromofluoromethane (S)	%	95	85-114	
Toluene-d8 (S)	%	104	82-114	

LABORATORY CONTROL SAMPLE: 344793

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	10	8.9	89	87-117	
Ethylbenzene	ug/L	10	9.8	98	84-123	
Toluene	ug/L	10	9.5	95	81-124	
Xylene (Total)	ug/L	30	28.3	94	83-125	
1,2-Dichloroethane-d4 (S)	%			94	81-118	
4-Bromofluorobenzene (S)	%			96	85-119	
Dibromofluoromethane (S)	%			94	85-114	
Toluene-d8 (S)	%			101	82-114	

## QUALIFIERS

Project: BOYD GC 1A  
Pace Project No.: 6042423

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

### BATCH QUALIFIERS

Batch: MSV/15397

[1] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BOYD GC 1A  
Pace Project No.: 6042423

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
6042423001	MW #4	EPA 8260	MSV/15397		
6042423002	MW #2	EPA 8260	MSV/15397		



## Sample Condition Upon Receipt

Client Name: BP BLACCProject # 0042423Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other \_\_\_\_\_Tracking #: 0N COCCustody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ noPacking Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other \_\_\_\_\_Thermometer Used T-169 / ~~2-179~~Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begunCooler Temperature 3.5

Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Comments:

Optional

Proj. Due Date:

Proj. Name:

7/8Boyd SC 1ADate and Initials of person examining contents: BW 6/255:1006 E 1015

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>4 DAY</u>
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>WT</u>		
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: <u>VOA</u> , coliform, TOC, O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	16.
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: mw 6/26/08

Date: \_\_\_\_\_

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

# BLAGG ENGINEERING, INC.

## MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

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

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

**BOYD GC #1A - COMPRESSOR PIT  
UNIT A, SEC. 8, T31N, R10W**

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

Date : **August 27, 2008**

SAMPLER : **N J V**

Filename : **08-27-08.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.)
MW - 1	102.08	79.74	22.34	29.50	-	-	-	-	-
MW - 2	101.93	79.52	22.41	29.50	0930	6.81	700	16.5	1.75
MW - 3	101.91	76.11	25.80	29.50	-	-	-	-	-
MW - 4	102.38	74.70	27.68	34.50	0850	7.15	900	17.2	3.50
MW - 5	98.68	73.50	25.18	36.30	-	-	-	-	-

INSTRUMENT CALIBRATIONS = 4.01/7.00/10.00 2,800  
DATE & TIME = 08/25/08 0730

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".

**Excellent recovery in MW # 4 , poor / fair in MW # 2 . Purged MW # 2 to TD , then allowed recovery .  
Collected samples from MW # 2 & # 4 for BTEX analysis only .**

Top of casing MW # 1 ~ 2.20 ft. , MW # 2 ~ 2.50 ft. , MW # 3 ~ 2.00 ft. , MW # 4 ~ 3.05 ft. , MW # 5 ~ 2.20 ft. above grade .

on-site	8:10	temp	65
off-site	9:45	temp	75
sky cond.	Mostly sunny		
wind speed	0-5	direct.	East

**Hall Environmental Analysis Laboratory, Inc.**

Date: 09-Sep-08

**CLIENT:** Blagg Engineering  
**Project:** Boyd GC #1A**Lab Order:** 0808455**Lab ID:** 0808455-01**Collection Date:** 8/27/2008 9:30:00 AM**Client Sample ID:** MW #2**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: DAM
Benzene	410	10		µg/L	10	9/6/2008 4:25:35 PM
Toluene	ND	10		µg/L	10	9/6/2008 4:25:35 PM
Ethylbenzene	170	10		µg/L	10	9/6/2008 4:25:35 PM
Xylenes, Total	2400	40		µg/L	20	9/8/2008 5:39:49 PM
Surr: 4-Bromofluorobenzene	110	65.9-130		%REC	10	9/6/2008 4:25:35 PM

**Lab ID:** 0808455-02**Collection Date:** 8/27/2008 8:50:00 AM**Client Sample ID:** MW #4**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: DAM
Benzene	ND	1.0		µg/L	1	9/6/2008 4:55:48 PM
Toluene	ND	1.0		µg/L	1	9/6/2008 4:55:48 PM
Ethylbenzene	ND	1.0		µg/L	1	9/6/2008 4:55:48 PM
Xylenes, Total	ND	2.0		µg/L	1	9/6/2008 4:55:48 PM
Surr: 4-Bromofluorobenzene	93.2	65.9-130		%REC	1	9/6/2008 4:55:48 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level
- E Value above quantitation range
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- RL Reporting Limit

Turn-Around Time: ☒ Standard ☐ Rush

☒ Standard ☐ Rush

BOYD GC #1A

Project #:

Project Manager: SA ✓

品

✓ 7750 / ✓ 7750

Sampler: Nelson 1/2/57

Or Ice ☒ Yes ☐ No

Container Type and #	Preservative Time	HEAL No.
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Container	Preservative	HEAI No

Container	Preservative	HEAI No

2-40m	HCl & cool	1
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2-40m	HK1 & cool	2
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Received by:	<i>[Signature]</i>
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Received by:	11/33
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Received by:	11/33
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Received by:	<i>[Signature]</i>
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Received by:	11/33
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If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

## QA/QC SUMMARY REPORT

Client: Blagg Engineering  
Project: Boyd GC #1A

Work Order: 0808455

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

Sample ID: 5ML RB

MBLK

Batch ID: R30092 Analysis Date: 9/5/2008 9:01:25 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: B

MBLK

Batch ID: R30121 Analysis Date: 9/8/2008 11:06:35 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: R30092 Analysis Date: 9/6/2008 5:56:41 PM

Benzene	17.37	µg/L	1.0	86.9	85.9	113
Toluene	16.25	µg/L	1.0	81.2	86.4	113
Ethylbenzene	17.54	µg/L	1.0	87.7	83.5	118
Xylenes, Total	52.19	µg/L	2.0	87.0	83.4	122

S

Sample ID: 100NG BTEX LCSD

LCSD

Batch ID: R30092 Analysis Date: 9/6/2008 6:27:14 PM

Benzene	17.39	µg/L	1.0	87.0	85.9	113	0.115	27
Toluene	16.48	µg/L	1.0	82.4	86.4	113	1.39	19
Ethylbenzene	17.67	µg/L	1.0	88.4	83.5	118	0.738	10
Xylenes, Total	52.43	µg/L	2.0	87.4	83.4	122	0.455	13

S

## Qualifiers:

E Value above quantitation range  
J Analyte detected below quantitation limits  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits

# Hall Environmental Analysis Laboratory, Inc.

## Sample Receipt Checklist

Client Name BLAGG

Date Received:

8/28/2008

Work Order Number 0808455

Received by: AT

Sample ID labels checked by:

Checklist completed by:

Signature

Date

Matrix:

Carrier name UPS

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° 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**

**BOYD GC # 1A - COMPRESSOR PIT**  
**UNIT A, SEC. 8, T31N, R10W**

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

Date : **December 20, 2008**

SAMPLER : **N J V**

Filename : **12-20-08.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.)
MW - 1	102.08	77.40	24.68	29.50	-	-	-	-	-
MW - 2	101.93	77.10	24.83	29.50	-	-	-	-	-
MW - 3	101.91	73.76	28.15	29.50	-	-	-	-	-
MW - 4	102.38	72.84	29.54	34.50	1140	7.21	800	11.2	1.75
MW - 5	98.68	71.89	26.79	36.30	-	-	-	-	-

INSTRUMENT CALIBRATIONS =

4.01/7.00/10.00	2,800
12/19/08	1515

DATE & TIME =

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".

Fair / good recovery in MW # 4 . Collected sample from MW # 4 for BTEX analysis only .

Top of casing MW # 1 ~ 2.20 ft. , MW # 2 ~ 2.50 ft. , MW # 3 ~ 2.00 ft. , MW # 4 ~ 3.05 ft. , MW # 5 ~ 2.20 ft. above grade .

on-site	10:59	temp	38 F
off-site	11:56	temp	42 F
sky cond.	Mostly cloudy		
wind speed	0-5	direct.	West

**Hall Environmental Analysis Laboratory, Inc.**

Date: 05-Jan-09

**CLIENT:** Blagg Engineering  
**Lab Order:** 0812496  
**Project:** Boyd GC #1A  
**Lab ID:** 0812496-01

**Client Sample ID:** MW #4  
**Collection Date:** 12/20/2008 11:40:00 AM  
**Date Received:** 12/23/2008  
**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: DAM
Benzene	120	5.0		µg/L	5	1/1/2009 11:30:56 AM
Toluene	ND	1.0		µg/L	1	12/30/2008 5:19:50 PM
Ethylbenzene	150	5.0		µg/L	5	1/1/2009 11:30:56 AM
Xylenes, Total	570	10		µg/L	5	1/1/2009 11:30:56 AM
Surr: 4-Bromofluorobenzene	98.2	65.9-130		%REC	1	12/30/2008 5:19:50 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- RL Reporting Limit



## QA/QC SUMMARY REPORT

Client: Blagg Engineering  
Project: Boyd GC #1A

Work Order: 0812496

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

Sample ID: 5ML RB

MBLK

Batch ID: R31821 Analysis Date: 12/30/2008 9:43:24 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: R31821 Analysis Date: 12/30/2008 7:54:57 PM

Benzene	21.74	µg/L	1.0	109	85.9	113
Toluene	21.32	µg/L	1.0	107	86.4	113
Ethylbenzene	20.84	µg/L	1.0	104	83.5	118
Xylenes, Total	61.77	µg/L	2.0	103	83.4	122

## Qualifiers:

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

# Hall Environmental Analysis Laboratory, Inc.

## Sample Receipt Checklist

Client Name **BLAGG**

Date Received:

12/23/2008

Work Order Number **0812496**

Received by: **TLS**

Sample ID labels checked by:

Checklist completed by:

Signature

Date

Initials

Matrix:

Carrier name **UPS**

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° C Acceptable

If given sufficient time to cool.

COMMENTS:

Client contacted

Date contacted:

Person contacted

Contacted by:

Regarding:

Comments:

Corrective Action