

3R - 035

AGWMR

AUGUST 2010

3R035

BP AMERICA PRODUCTION CO.

GROUNDWATER REMEDIATION REPORT

**JONES A LS #3
(G) SECTION 15, T28N, R8W, NMPM
SAN JUAN COUNTY, NEW MEXICO**

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

AUGUST 2010

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

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

**BP AMERICA PRODUCTION COMPANY
JONES A LS # 3 - Dehydrator Pit
SW/4 NE/4, Sec. 15, T28N, R8W**

Remediation via Excavation Date: 6/3/09

Monitor Well Installation Dates: 10/20/09 (MW # 2R)

Monitor Well Sampling Dates: 5/16/09, 10/26/09, 2/27/10, 5/11/10

Site History:

A site dehydrator pit closure was initiated in March 2003. Potential groundwater impact was identified within the source area via installation of a monitor well in May 2004 (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. The reporting herein is for site monitoring from May 2009 to May 2010.

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

Soil and Groundwater Abatement:

On June 3, 2009, excavation of the source area was conducted using a trackhoe (Figure 2). Groundwater depth was recorded at approximately twelve (12) feet below surface grade during the removal of impacted soils. The excavation perimeter was measured at approximately 22 X 28 X 13 feet depth with approximately seven (7) feet of non-impacted overburden. Approximately 84 cubic yards of soil were removed and transported to BP's Crouch Mesa Facility.

MW #2R was installed on October 20, 2009 and quarterly sampling was initiated thereafter. Boring log of MW #2R along with its well completion information is contained within this report.

Groundwater Quality & Flow Direction Information:

MW #2R has tested below the New Mexico Water Quality Control Commission (NMWQCC) standards for four (4) consecutive sampling events. Down gradient delineation appears to have been achieved, based on test results of MW #3. A summary of BTEX laboratory analytical results is included within the table on the following page. Field data sheets, laboratory reports, and laboratory quality assurance/quality control information are also included.

Groundwater contour maps (Figure 3 through Figure 6) reveal the relative elevations from the site wells have consistently shown an apparent southwest flow direction toward MW #3.

Summary and/or Recommendations:

Hydrocarbon impacted soils and groundwater at the site appear to have been remediated via excavation. All site monitor wells tested at non-detectable or below NMWQCC's standards for BTEX for at least four (4) consecutive sampling events; therefore, meeting sections 2.1, 2.3, and 2.7 of BP's Groundwater Management Plan (GMP). Permanent site closure is recommended. Following approval by the NMOCD, site monitor wells will be abandoned pursuant to the approved GMP.

BP AMERICA PROD. CO. GROUNDWATER LAB RESULTS

SUBMITTED BY BLAGG ENGINEERING, INC.

JONES A LS # 3 - DEHY. PIT

UNIT G, SEC. 15, T28N, R8W

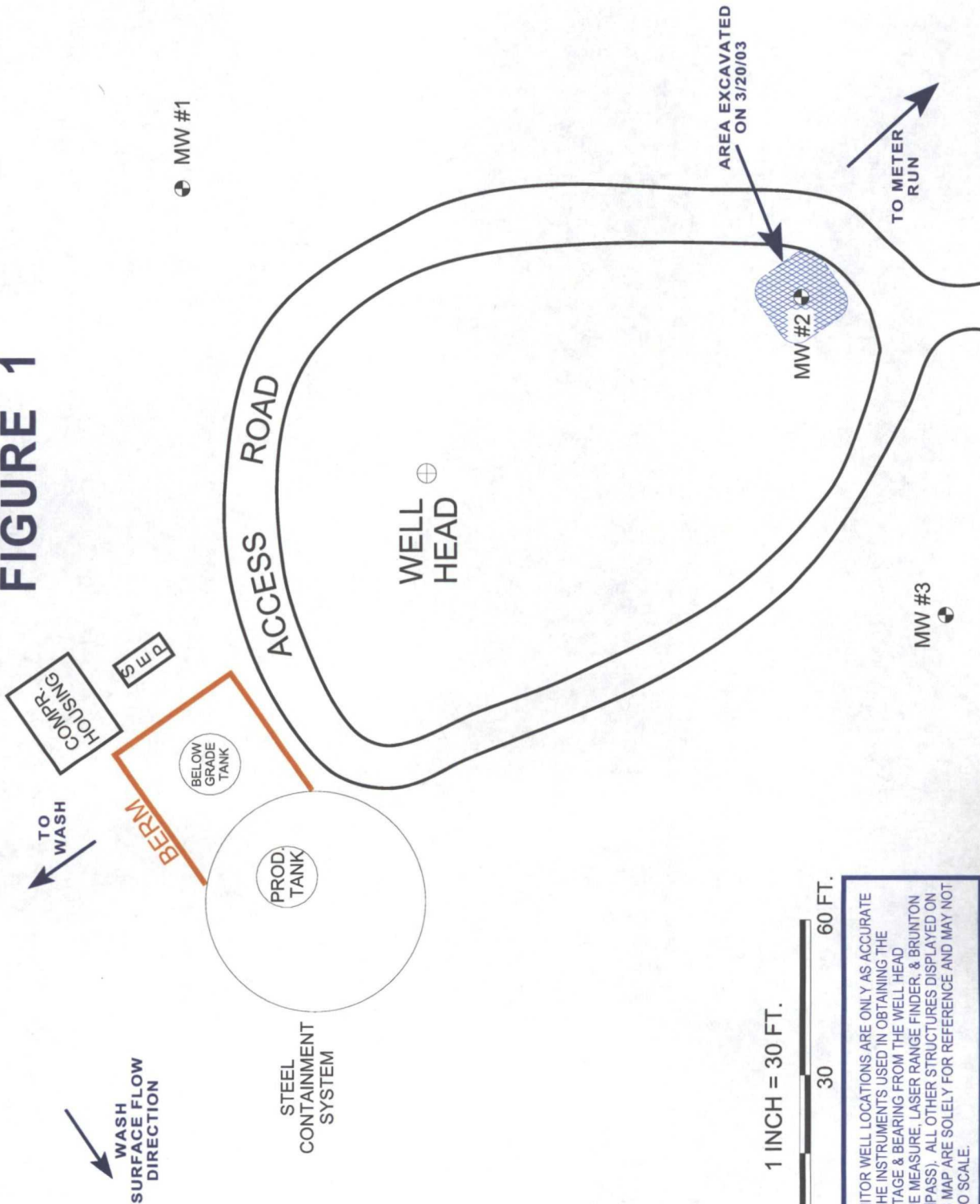
REVISED DATE: May 26, 2010

FILENAME: (J3-2Q10.WK4) NJV

SAMPLE DATE	WELL NAME or No.	D.T.W. (ft)	T.D. (ft)	TDS (mg/L)	COND. umhos	pH	PRODUCT (ft)	BTEX EPA METHOD 8021B (ppb)			
								Benzene	Toluene	Ethyl Benzene	Total Xylene
07-Jun-06	MW #1	11.04	20.00	828	1,100	7.08		ND	ND	ND	ND
23-Aug-06		11.34			900	7.15		ND	ND	ND	ND
14-Jun-04	MW #2	10.78	20.00		2,400	7.14		290	780	52	470
29-Dec-04		10.53			N/A	N/A		7.8	11	2.5	13
28-Mar-05		9.97			2,100	7.02		720	4,800	640	6,800
23-Jun-05		10.85			2,100	6.93		140	220	30	570
07-Jun-06		12.88	21.52	2,600	2,400	6.98		32	11	4.0	17
23-Aug-06		13.28			2,100	6.97		9.9	ND	1.2	3.9
16-Nov-06		12.25			2,400	6.96		24	18	4.9	20
25-Jan-07		11.01			900	7.34		4.0	4.3	1.4	7.9
25-Apr-07		12.05			2,300	7.06		8.4	4.7	2.2	10
19-Jul-07		13.15			2,200	6.91		60	35	7.3	32
09-Oct-07		11.98			2,200	6.95		4.8	12	3.7	22
01-Apr-08		11.45			2,300	7.01		3.5	1.3	1.7	5.3
26-Jun-08		12.19			1,400	7.21		18	6.6	5.3	22
25-Aug-08		13.01			2,100	7.04		63	46	14	37
16-May-09		11.70			1,100	7.55		9.1	ND	3.5	4.2
26-Oct-09		12.68			1,500	7.37		9.9	ND	13	ND
24-Feb-10		11.10			1,900	7.27		ND	ND	ND	ND
11-May-10		11.20			1,900	7.10		ND	ND	ND	ND
07-Jun-06	MW #3	12.59	20.06	2,310	2,300	7.00		ND	ND	ND	ND
23-Aug-06		13.01			1,900	7.03		ND	ND	ND	ND
16-Nov-06		11.94			2,000	6.98		1.1	ND	2.1	7.5
25-Jan-07		12.64			1,100	7.52		ND	ND	1.7	4.0
25-Apr-07		11.76			2,200	7.06		ND	ND	6.7	17
19-Jul-07		12.84			2,100	7.00		ND	ND	ND	ND
11-May-10		11.13			1,500	7.40		ND	ND	9.9	16
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



1 INCH = 30 FT.



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

BP AMERICA PRODUCTION CO.

JONES A LS # 3

SW/4 NE/4 SEC. 15, T28N, R8W

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

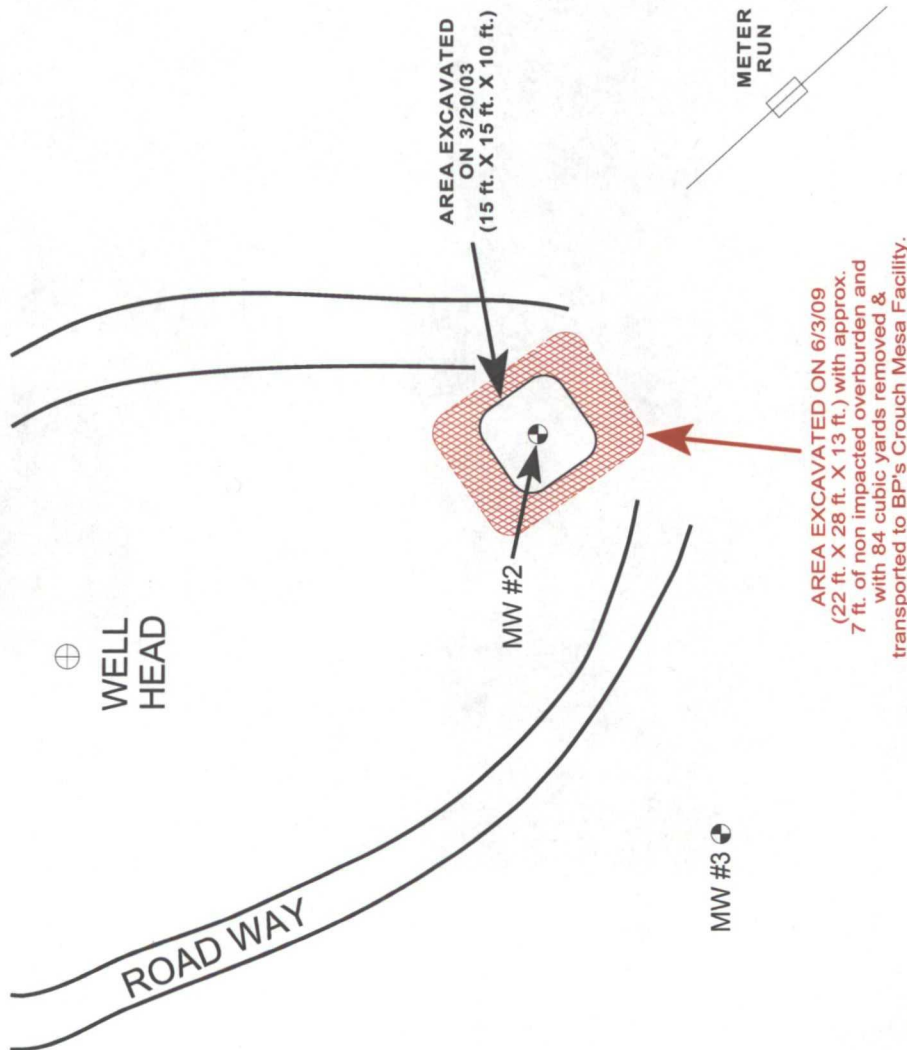
FILENAME: JONES A LS 3-SM2.SKF

REVISED: 08-04-10 NJV

SITE MAP

05/09

FIGURE 2



1 INCH = 30 FT.



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

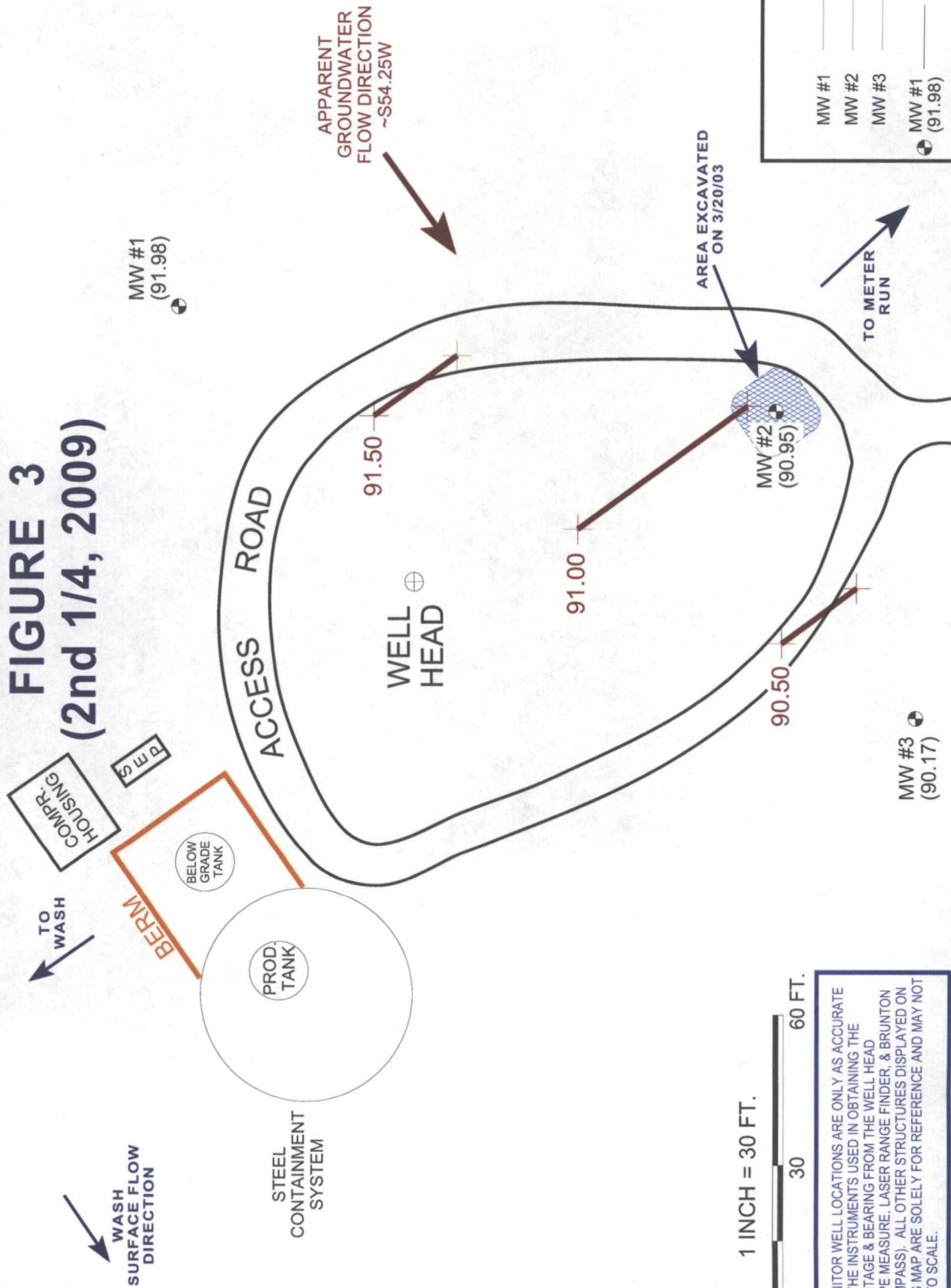
BP AMERICA PRODUCTION CO.
JONES A LS # 3
SW/4 NE/4 SEC. 15, T28N, R8W
SAN JUAN COUNTY, NEW MEXICO

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

PROJECT: REMEDIATION
DRAWN BY: NJV
FILENAME: JONES A LS 3 -RM-1A.SKF
REVISED: 08-07-09 NJV

SOIL/GROUNDWATER REMEDIATION SCHEMATIC
06/09

FIGURE 3 (2nd 1/4, 2009)



	Top of Well Elevation
MW #1	(101.69)
MW #2	(102.65)
MW #3	(101.64)
MW #1	Groundwater Elevation as of 5/16/09.

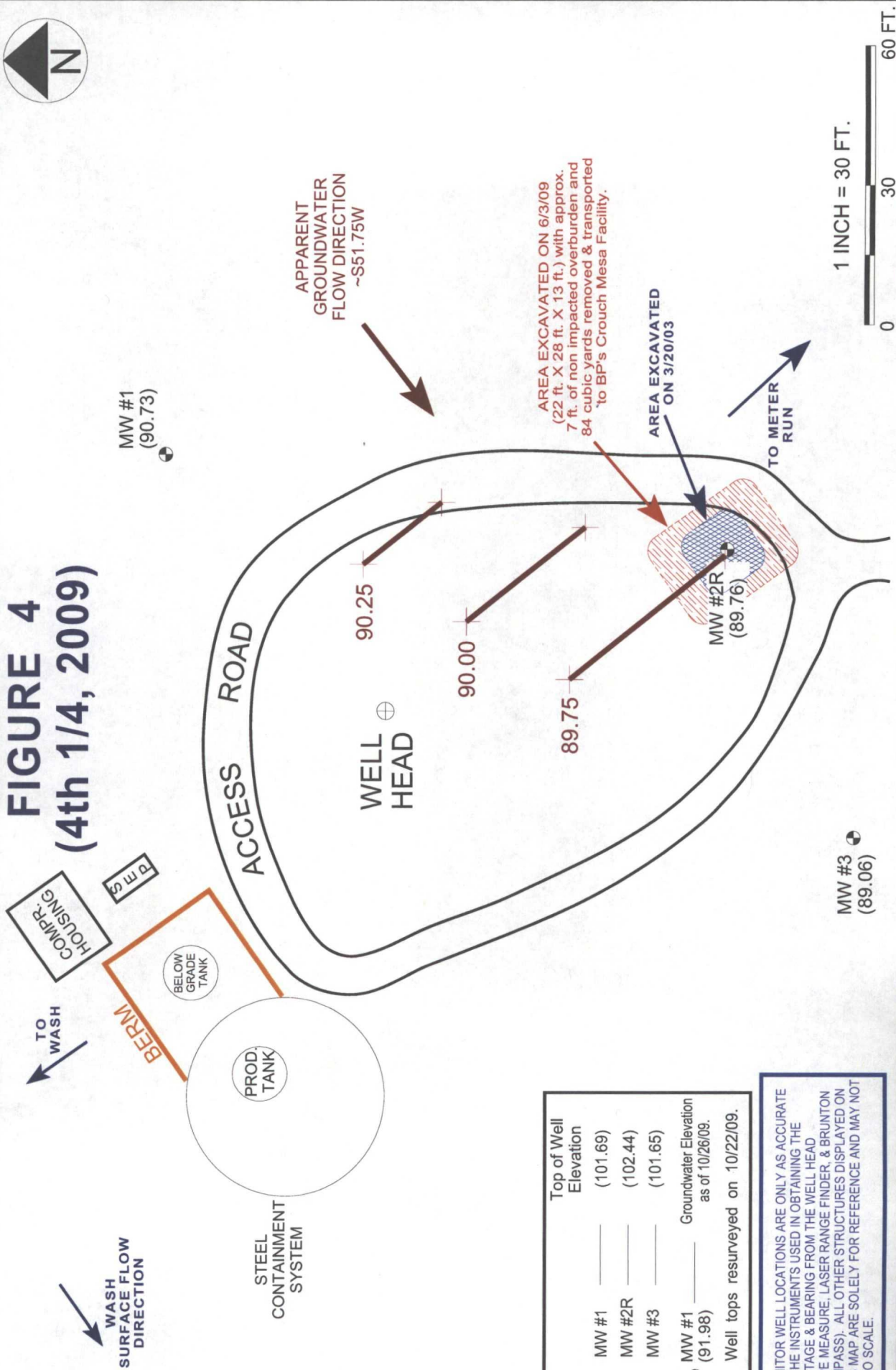
BP AMERICA PRODUCTION CO.
JONES A LS # 3
SW/4 NE/4 SEC. 15, T28N, R8W
SAN JUAN COUNTY, NEW MEXICO

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: 05-16-09-GW.SKF
REVISED: 05-23-09 NJV

GROUNDWATER CONTOUR MAP
05/09

FIGURE 4
(4th 1/4, 2009)



Top of Well Elevation	
MW #1	(101.69)
MW #2R	(102.44)
MW #3	(101.65)
MW #1 (91.98)	Groundwater Elevation as of 10/26/09.

Well tops resurveyed on 10/22/09.

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

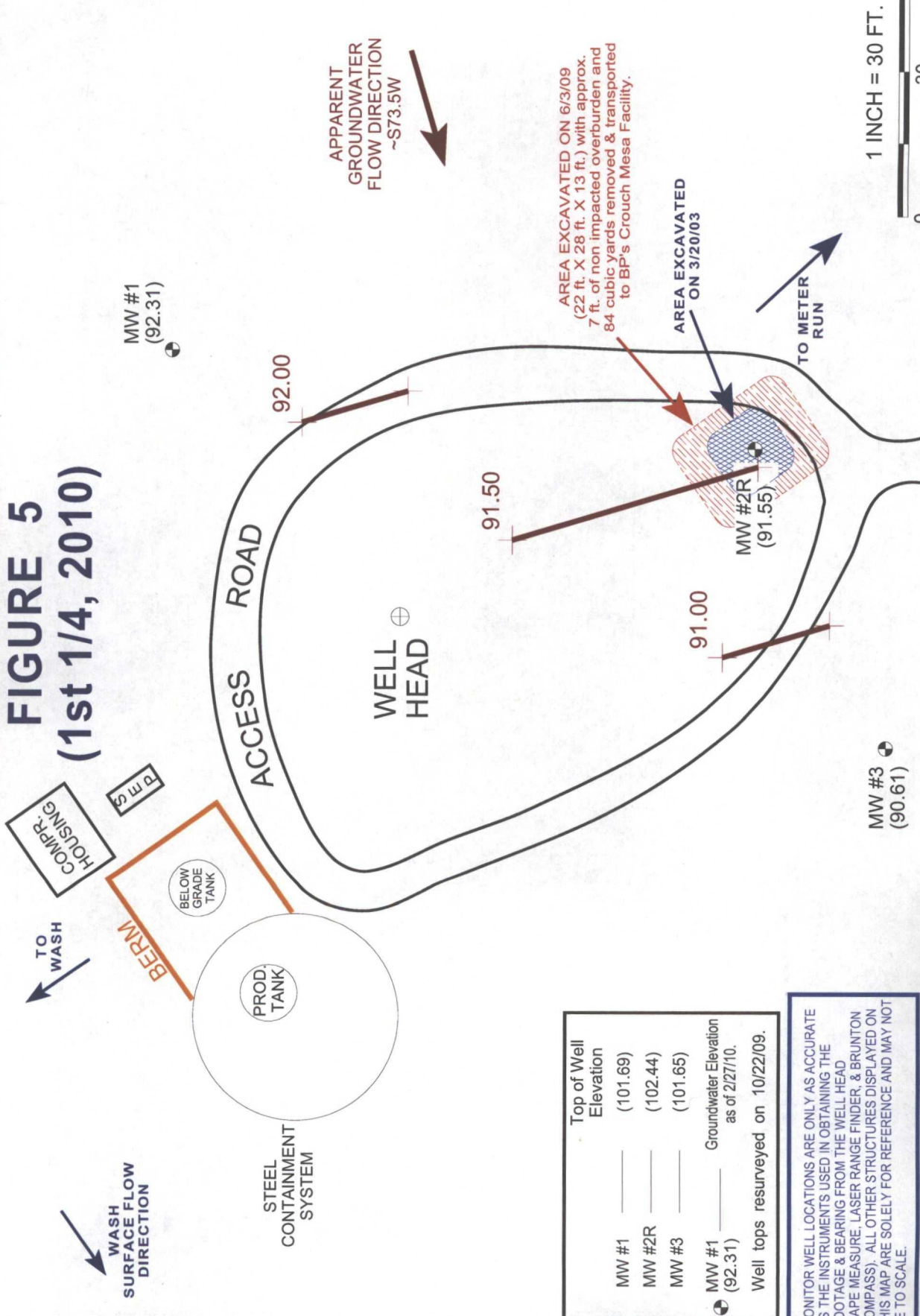
BP AMERICA PRODUCTION CO.
JONES A LS # 3
SW/4 NE/4 SEC. 15, T28N, R8W
SAN JUAN COUNTY, NEW MEXICO

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: 10-26-09-GW.SKF
REVISED: 10-26-09 NJV

GROUNDWATER CONTOUR MAP
10/09

FIGURE 5 (1st 1/4, 2010)



Top of Well Elevation	Groundwater Elevation as of 2/27/10.
MW #1 (101.69)	
MW #2R (102.44)	
MW #3 (101.65)	
MW #1 (92.31)	

Well tops resurveyed on 10/22/09.

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

1 INCH = 30 FT.
0 30 60 FT.

BP AMERICA PRODUCTION CO. JONES A LS # 3 SW1/4 NE1/4 SEC. 15, T28N, R8W 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: 02-27-10-GW.SKF REVISED: 02-27-10 NJV GROUNDWATER CONTOUR MAP 02/10
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FIGURE 6
(2nd 1/4, 2010)



WASH
SURFACE FLOW
DIRECTION

BERM

BELOW
GRADE
TANK

PROD.
TANK

STEEL
CONTAINMENT
SYSTEM

ACCESS ROAD

WELL
HEAD

91.75

91.25

90.75

MW #1
(92.25)

APPARENT
GROUNDWATER
FLOW DIRECTION
~S51.25W

AREA EXCAVATED ON 6/3/09
(22 ft. X 28 ft. X 13 ft.) with approx.
7 ft. of non impacted overburden and
84 cubic yards removed & transported
to BP's Crouch Mesa Facility.

AREA EXCAVATED
ON 3/20/03

MW #2R
(91.24)

TO METER
RUN

MW #3
(90.52)

1 INCH = 30 FT.

0 30 60 FT.

Top of Well Elevation	
MW #1	(101.69)
MW #2R	(102.44)
MW #3	(101.65)
MW #1	Groundwater Elevation (92.25) as of 5/11/10.

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

BP AMERICA PRODUCTION CO.

JONES A LS # 3

SW/4 NE/4 SEC. 15, T28N, R8W

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: 05-11-10-GW.SKF

REVISED: 05-11-10 NJV

GROUNDWATER
CONTOUR
MAP

05/10

BLAGG ENGINEERING, Inc.

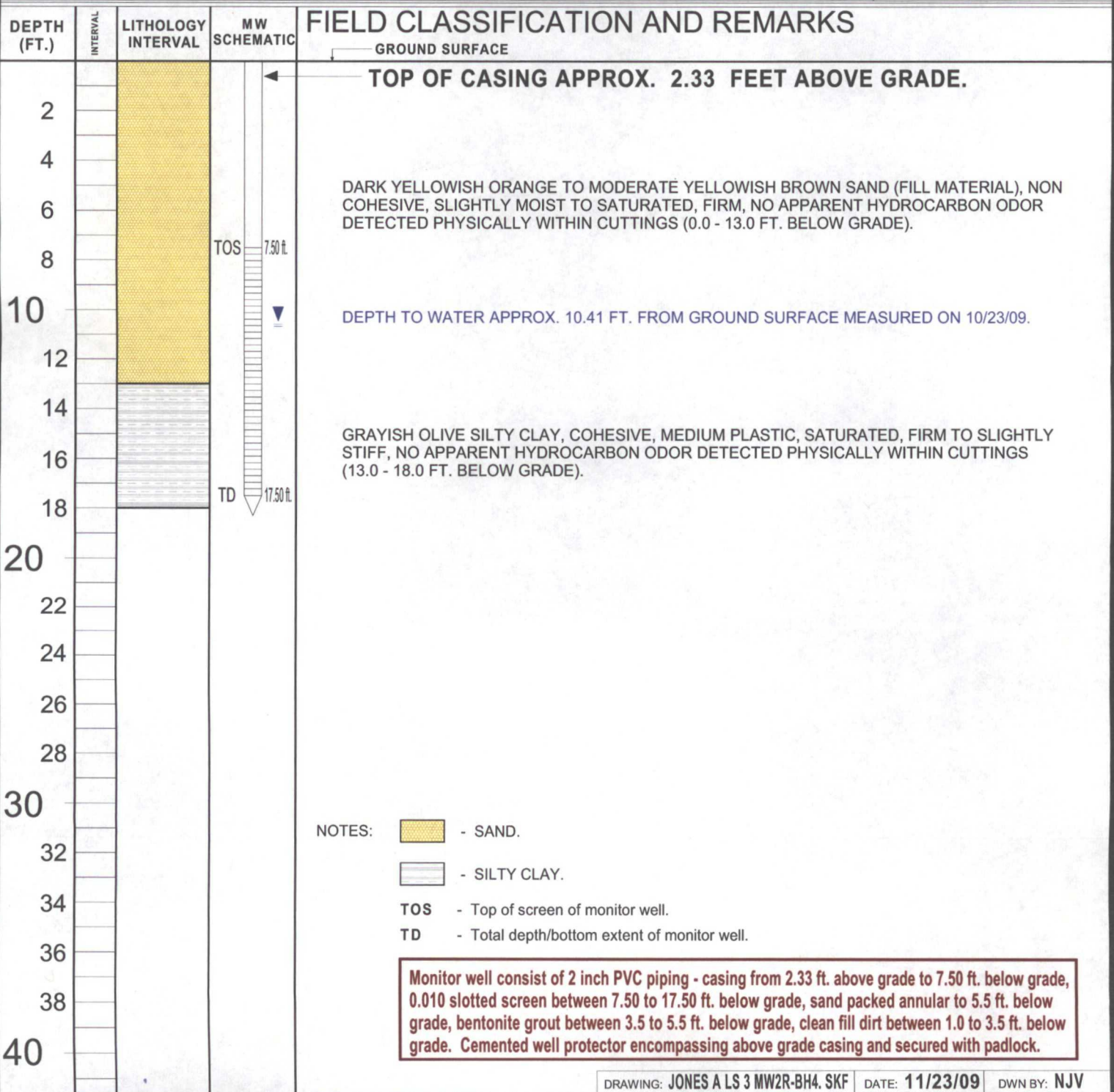
P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

MW #2R

BORE / TEST HOLE REPORT

CLIENT: BP AMERICA PRODUCTION CO.
LOCATION NAME: JONES A LS # 3 UNIT G, SEC. 15, T28N, R8W
CONTRACTOR: BLAGG ENGINEERING, INC. / KYVEK ENERGY SERVICES, INC.
EQUIPMENT USED: MOBILE DRILL RIG (CME 75)
BORING LOCATION: 82 FEET, S25E FROM WELL HEAD.

BORING #..... BH - 4
MW #..... 2R
PAGE #..... 4
DATE STARTED 10/20/09
DATE FINISHED 10/20/09
OPERATOR..... KP
PREPARED BY NJV



BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT: BP AMERICA PROD. CO.

CHAIN-OF-CUSTODY #: N / A

JONES A LS #3 - DEHY. PIT
UNIT G, SEC. 15, T28N, R8W

LABORATORY (S) USED: HALL ENVIRONMENTAL

Date: May 16, 2009

SAMPLER: N J V

Filename: 05-16-09.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	101.69	91.98	9.71	20.00	-	-	-	-	-
MW - 2	102.65	90.95	11.70	21.52	0815	7.55	1,100	13.1	4.75
MW - 3	101.64	90.17	11.47	20.06	-	-	-	-	-

INSTRUMENT CALIBRATIONS =	4.01/7.00/10.00	2,800
DATE & TIME =	05/16/09	0810

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 #2. Collected sample for BTEX per US EPA Method 8021B from MW #2 only.

Top of casing MW #1 ~ 1.95 ft., MW #2 ~ 3.00 ft., MW #3 ~ 1.80 ft. above grade.

on-site	7:44	temp	56 F
off-site	8:26	temp	63 F
sky cond.	Partly cloudy		
wind speed	0 - 5	direct.	N

Hall Environmental Analysis Laboratory, Inc.

Date: 29-May-09

CLIENT: Blagg Engineering
Lab Order: 0905358
Project: Jones A LS #3
Lab ID: 0905358-01

Client Sample ID: MW #2
Collection Date: 5/16/2009 8:15:00 AM
Date Received: 5/20/2009
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: DAM
Benzene	9.1	1.0		µg/L	1	5/28/2009 11:56:29 PM
Toluene	ND	1.0		µg/L	1	5/28/2009 11:56:29 PM
Ethylbenzene	3.5	1.0		µg/L	1	5/28/2009 11:56:29 PM
Xylenes, Total	4.2	2.0		µg/L	1	5/28/2009 11:56:29 PM
Surr: 4-Bromofluorobenzene	89.3	65.9-130		%REC	1	5/28/2009 11:56:29 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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Project #:

Project Manager: /

ct Manager: Nelson Velez

Sampler: Nelson Vertz

Fax #:	
Sample Temperature:	3.2

Date	Time	Matrix	Sample I.D. No.	Number/Volume
------	------	--------	-----------------	---------------

Date _____ Time _____

Matrix

Sample I.D. No.

Number/Volume

Preservative

3	1	2
---	---	---

HEAL No.

000000

5/16/09	0815	water	MW #2	2-40m	✓	+
---------	------	-------	-------	-------	---	---

T

Received By: (Signature)

28
20
5

Received By: (Signature)

ANALYSIS REQUEST

BTEX + MTBE + TPA (Gasoline Only)

TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO ₂ , NO ₃ , PO ₄ , SO ₄)	8081 Pesticides / PCB's (8082)	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles or Headspace (Y or N)
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Remarks:

QA/QC SUMMARY REPORT

Client: Blagg Engineering
 Project: Jones A LS #3

Work Order: 0905358

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
---------	--------	-------	-----	------	----------	-----------	------	----------	------

Method: EPA Method 8021B: Volatiles

Sample ID: 5ML RB MBLK

Batch ID: R33871 Analysis Date: 5/28/2009 8:39:43 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: R33871 Analysis Date: 5/29/2009 3:29:31 AM

Benzene	20.76	µg/L	1.0	104	85.9	113
Toluene	20.87	µg/L	1.0	102	86.4	113
Ethylbenzene	21.00	µg/L	1.0	104	83.5	118
Xylenes, Total	63.28	µg/L	2.0	105	83.4	122

Sample ID: 100NG BTEX LCSD

LCSD

Batch ID: R33871 Analysis Date: 5/29/2009 4:00:07 AM

Benzene	20.80	µg/L	1.0	104	85.9	113	0.183	27
Toluene	20.71	µg/L	1.0	101	86.4	113	0.750	19
Ethylbenzene	20.97	µg/L	1.0	104	83.5	118	0.152	10
Xylenes, Total	62.85	µg/L	2.0	105	83.4	122	0.685	13

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:

5/20/2009

Work Order Number 0905358

Received by: **TLS**

Checklist completed by:

Signature

5/20/09

Date

Sample ID labels checked by:

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 ☒

Number of preserved bottles checked for pH:

<2 >12 unless noted below.

Container/Temp Blank temperature?

3.8°

<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

JONES A LS #3 - DEHY. PIT
UNIT G, SEC. 15, T28N, R8W

LABORATORY (S) USED : HALL ENVIRONMENTAL

Date : October 26, 2009

DEVELOPER / SAMPLER : N J V

Filename : 10-26-09.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.)
1	101.69	90.73	10.96	20.00	-	-	-	-	-
2R	102.44	89.76	12.68	19.83	1040	7.37	1,500	13.5	3.50
3	101.65	89.06	12.59	20.06	-	-	-	-	-

INSTRUMENT CALIBRATIONS =

4.01/7.00/10.00	2,800
10/26/09	1030

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".

MW #2R - excellent recovery , dark yellowish orange color in appearance . Collected sample from MW #2R and analyzed for BTEX per US EPA Method 8021B .

Monitor well top elevations surveyed on 10 / 22 / 09 .

Top of casing MW # 1 ~ 1.95 ft. , MW # 2 ~ 2.33 ft. , MW # 3 ~ 1.80 ft. above grade .

on-site	10:05	temp	37 F
off-site	10:50	temp	42 F
sky cond.	sunny		
wind speed	0 - 5	direct.	E

Hall Environmental Analysis Laboratory, Inc.

Date: 30-Oct-09

CLIENT: Blagg Engineering

Client Sample ID: MW #2R

Lab Order: 0910477

Collection Date: 10/26/2009 10:40:00 AM

Project: Jones A LS #3

Date Received: 10/27/2009

Lab ID: 0910477-01

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	9.9	1.0		µg/L	1	10/29/2009 11:04:30 PM
Toluene	ND	1.0		µg/L	1	10/29/2009 11:04:30 PM
Ethylbenzene	13	1.0		µg/L	1	10/29/2009 11:04:30 PM
Xylenes, Total	ND	2.0		µg/L	1	10/29/2009 11:04:30 PM
Surr: 4-Bromofluorobenzene	90.3	65.9-130		%REC	1	10/29/2009 11:04:30 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: Jones A LS #3

Work Order: 0910477

Analyte	Result	Units	PQL	SPK Va	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
---------	--------	-------	-----	--------	---------	------	----------	-----------	------	----------	------

Method: EPA Method 8021B: Volatiles

Sample ID: 5ML RB

MBLK

Batch ID: R35953 Analysis Date: 10/29/2009 8:23:38 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: R35953 Analysis Date: 10/30/2009 3:36:59 AM

Benzene	18.39	µg/L	1.0	20	0	91.9	85.9	113			
Toluene	18.18	µg/L	1.0	20	0	90.9	86.4	113			
Ethylbenzene	17.96	µg/L	1.0	20	0	89.8	83.5	118			
Xylenes, Total	52.51	µg/L	2.0	60	0	87.5	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:

10/27/2009

Work Order Number **0910477**

Received by: **TLS**

Checklist completed by:

Signature

Date

Sample ID labels checked by:

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?

1.9°

<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**

JONES A LS #3 - DEHY. PIT
UNIT G, SEC. 15, T28N, R8W

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

Date: **February 24, 2010**

DEVELOPER / SAMPLER: **N J V**

Filename: **02-24-10.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.)
1	101.69	92.31	9.38	20.00	-	-	-	-	-
2R	102.44	91.34	11.10	19.83	0925	7.27	1,900	9.7	4.25
3	101.65	90.62	11.03	20.06	-	-	-	-	-

INSTRUMENT CALIBRATIONS =

4.01/7.00/10.00	2,800
02/23/10	1000

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".

MW #2R - excellent recovery, dark yellowish orange color in appearance. Collected sample from MW #2R to analyze for BTEX per US EPA Method 8021B.

Top of casing MW #1 ~ 1.95 ft., MW #2 ~ 2.33 ft., MW #3 ~ 1.80 ft. above grade.

on-site	8:44	temp	32 F
off-site	9:32	temp	35 F
sky cond.	Mostly cloudy		
wind speed	0 - 10	direct.	E

Hall Environmental Analysis Laboratory, Inc.

Date: 09-Mar-10

CLIENT: Blagg Engineering
Lab Order: 1003071
Project: Jones A LS #3
Lab ID: 1003071-01

Client Sample ID: MW #2R
Collection Date: 2/27/2010 9:25:00 AM
Date Received: 3/3/2010
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	1.0		µg/L	1	3/8/2010 2:23:39 PM
Toluene	ND	1.0		µg/L	1	3/8/2010 2:23:39 PM
Ethylbenzene	ND	1.0		µg/L	1	3/8/2010 2:23:39 PM
Xylenes, Total	ND	2.0		µg/L	1	3/8/2010 2:23:39 PM
Surr: 4-Bromofluorobenzene	105	65.9-130		%REC	1	3/8/2010 2:23:39 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: Jones A LS #3

Work Order: 1003071

Analyte	Result	Units	PQL	SPK Va	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8021B: Volatiles											
Sample ID: 5ML RB		MBLK				Batch ID: R37664	Analysis Date: 3/5/2010 9:16:26 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 5		MBLK				Batch ID: R37677	Analysis Date: 3/8/2010 11:21:44 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: R37664	Analysis Date: 3/5/2010 8:43:42 PM				
Benzene	19.65	µg/L	1.0	20	0	98.3	85.9	113			
Toluene	19.01	µg/L	1.0	20	0	95.0	86.4	113			
Ethylbenzene	18.98	µg/L	1.0	20	0	94.9	83.5	118			
Xylenes, Total	57.39	µg/L	2.0	60	0	95.7	83.4	122			
Sample ID: 100NG BTEX LCS		LCS				Batch ID: R37677	Analysis Date: 3/8/2010 8:58:22 PM				
Benzene	21.82	µg/L	1.0	20	0	109	85.9	113			
Toluene	21.28	µg/L	1.0	20	0	106	86.4	113			
Ethylbenzene	20.95	µg/L	1.0	20	0	105	83.5	118			
Xylenes, Total	62.35	µg/L	2.0	60	0	104	83.4	122			
Sample ID: 100NG BTEX LCSD		LCSD				Batch ID: R37664	Analysis Date: 3/5/2010 9:13:58 PM				
Benzene	19.07	µg/L	1.0	20	0	95.4	85.9	113	3.02	27	
Toluene	18.37	µg/L	1.0	20	0	91.8	86.4	113	3.43	19	
Ethylbenzene	18.16	µg/L	1.0	20	0	90.8	83.5	118	4.39	10	
Xylenes, Total	55.07	µg/L	2.0	60	0	91.8	83.4	122	4.14	13	

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:

3/3/2010

Work Order Number **1003071**

Received by: **TLS**

Checklist completed by:

Signature

Date

Sample ID labels checked by:

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?

1.9°

<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

JONES A LS #3 - DEHY. PIT
UNIT G, SEC. 15, T28N, R8W

LABORATORY (S) USED : HALL ENVIRONMENTAL

Date : May 11, 2010

DEVELOPER / SAMPLER : N J V

Filename : 05-11-10.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.)
1	101.69	92.25	9.44	20.00	-	-	-	-	-
2R	102.44	91.24	11.20	19.83	1030	7.10	1,900	14.5	4.25
3	101.65	90.52	11.13	20.06	0950	7.40	1,500	14.0	4.50

INSTRUMENT CALIBRATIONS =

4.01/7.00/10.00	2,800
DATE & TIME = 05/10/10	0915

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".

MW #2R - excellent recovery, dark yellowish orange color in appearance.

MW #3 - excellent recovery, grayish tint color in appearance. Collected samples
from MW #2R & #3 to analyze for BTEX per US EPA Method 8021B.

Top of casing MW #1 ~ 1.95 ft., MW #2 ~ 2.33 ft., MW #3 ~ 1.80 ft. above grade.

on-site	9:22	temp
off-site	10:44	temp
sky cond.	Sunny	
wind speed		direct.

Hall Environmental Analysis Laboratory, Inc.

Date: 17-May-10

CLIENT: Blagg Engineering
Project: Jones A LS #3**Lab Order:** 1005288**Lab ID:** 1005288-01**Collection Date:** 5/11/2010 10:30:00 AM**Client Sample ID:** MW #2**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	1.0		µg/L	1	5/15/2010 8:05:24 AM
Toluene	ND	1.0		µg/L	1	5/15/2010 8:05:24 AM
Ethylbenzene	ND	1.0		µg/L	1	5/15/2010 8:05:24 AM
Xylenes, Total	ND	2.0		µg/L	1	5/15/2010 8:05:24 AM
Surr: 4-Bromofluorobenzene	107	65.9-130		%REC	1	5/15/2010 8:05:24 AM

Lab ID: 1005288-02**Collection Date:** 5/11/2010 9:50:00 AM**Client Sample ID:** MW #3**Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	1.0		µg/L	1	5/15/2010 8:35:37 AM
Toluene	ND	1.0		µg/L	1	5/15/2010 8:35:37 AM
Ethylbenzene	9.9	1.0		µg/L	1	5/15/2010 8:35:37 AM
Xylenes, Total	16	2.0		µg/L	1	5/15/2010 8:35:37 AM
Surr: 4-Bromofluorobenzene	99.0	65.9-130		%REC	1	5/15/2010 8:35:37 AM

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

Chain-of-Custody Record

Client: BLAZE ENTER. / BP AMERICA

Mailing Address: P.O. BOX 87

Phone #: 505 632-1199

email or Fax#:

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other

☐ EDD (Type)

Date	Time	Matrix	Sample Request ID
5/11/10	1030	WATER	MW #2
5/11/10	0950	WATER	MW #3

Container Type and #	Preservative Type	HEAT No.
2-40ml	HEAT	1
2-40ml	HEAT	2

On Ice: ☒ Yes ☐ No

Sample Temperature: 34

Sampler: Nelson Velez

Project Manager: Nelson Velez

Project #:

Project Name: JONES A LS #3

Turn-Around Time:

☒ Standard ☐ Rush

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

☒ BTEX + MTBE + TMBs (8021B)	☐ TPH Method 8015B (Gas/Diesel)	☐ TPH (Method 418.1)	☐ EDB (Method 504.1)	☐ 8310 (PNA or PAH)	☐ RCRA 8 Metals	☐ Anions (F, Cl, NO ₃ , NO ₂ , PO ₄ , SO ₄)	☐ 8081 Pesticides / 8082 PCBs	☐ 8260B (VOA)	☐ 8270 (Semi-VOA)	☐ Air Bubbles (Y or N)
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Remarks:

Date: <u>5/11/10</u>	Time: <u>1615</u>	Received by: <u>[Signature]</u>	Date: <u>5/12/10</u>	Time: <u>1815</u>	Received by: <u>[Signature]</u>
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QA/QC SUMMARY REPORT

Client: Blagg Engineering
Project: Jones A LS #3

Work Order: 1005288

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: R38716 Analysis Date: 5/14/2010 9:21:44 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: R38716 Analysis Date: 5/15/2010 1:02:19 AM

Benzene	17.76	µg/L	1.0	20	0	88.8	87.9	121
Toluene	17.65	µg/L	1.0	20	0	88.3	83	124
Ethylbenzene	17.57	µg/L	1.0	20	0	87.9	81.7	122
Xylenes, Total	53.27	µg/L	2.0	60	0	88.8	85.6	121

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:

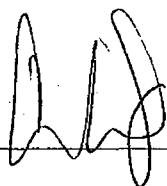
5/12/2010

Work Order Number **1005288**

Received by: **ARS**

Checklist completed by:

Signature



5/12/10
Date

Sample ID labels checked by:

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 ☒

Number of preserved
bottles checked for
pH:

<2 >12 unless noted
below.

Container/Temp Blank temperature?

3.4°

<6° C Acceptable

If given sufficient time to cool.

COMMENTS:

Client contacted

Date contacted:

Person contacted

Contacted by:

Regarding:

Comments:

Corrective Action