3R - 74

REPORTS

DATE:

2002

BURLINGTON RESOURCES
SAN JUAN DIVISION

April 14, 2003

Certified: 70993400001842167708

Bill Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

RE: 2002 Annual Groundwater Investigation and Remediation Reports
San Juan Basin, New Mexico

Dear Mr. Olson:

As required in Burlington Resources' approved Groundwater Investigation and Remediation Plan dated August, 1998, enclosed are the 2002 annual reports for Burlington's groundwater impact sites in the San Juan Basin. Separate reports are enclosed for the following locations:

Cozzens B#1
Hampton #4M
Johnson Federal #4 Metering Station
Standard Oil Com #1
Maddox Com 1A

If you have questions or additional information is needed, please contact me at (505) 326-9537.

Sincerely,

Gregg Wurtz
Sr. Environmental Representative

Attachments - Groundwater Investigation and Remediation Reports

cc: Denny Foust - NMOCD Aztec
Bruce Gantner - BR
WFS - Mark Harvey (Cozzens B#1, Hampton #4M)
EPFS - Scott Pope (Johnson Fed. #4, Standard Oil Com.#1)
Facility and Correspondence Files

BURLINGTON RESOURCES 2002 ANNUAL GROUNDWATER REPORT

Standard Oil Com. #1

SITE DETAILS

Location: Unit Letter N, Section 36, Township 29N, Range 9 W; San Juan County, New Mexico
Land Type: State

PREVIOUS ACTIVITIES

El Paso Field Services excavated approximately 60 cubic yards from their pit at this location in 1994 and installed a monitoring well in 1995.

Burlington Resources conducted the initial site assessment of our pit in August, 1998. Excavation of approximately 1140 cubic yards of impacted soil to a depth of 31 feet occurred in December, 1998.

1999 ACTIVITIES

Clean overburden was used to partially backfill the excavation. The landfarm associated with the pit closure work tested below cleanup standards and was used to completely backfill the excavation. Vertical extent drilling encountered groundwater at approximately 26 feet and a ground water monitoring well was installed on August 11, 1999. After developing the well and allowing it to stabilize for one week, the well was purged and sampled on August 18, 1999.

2001ACTIVITIES

Quarterly groundwater monitoring continued through 2001. Groundwater analytical data are presented in Table 1.

2001ACTIVITIES

Quarterly groundwater monitoring continued through 2002. Groundwater analytical data are presented in Table 1. A site map is presented as Figure 1.

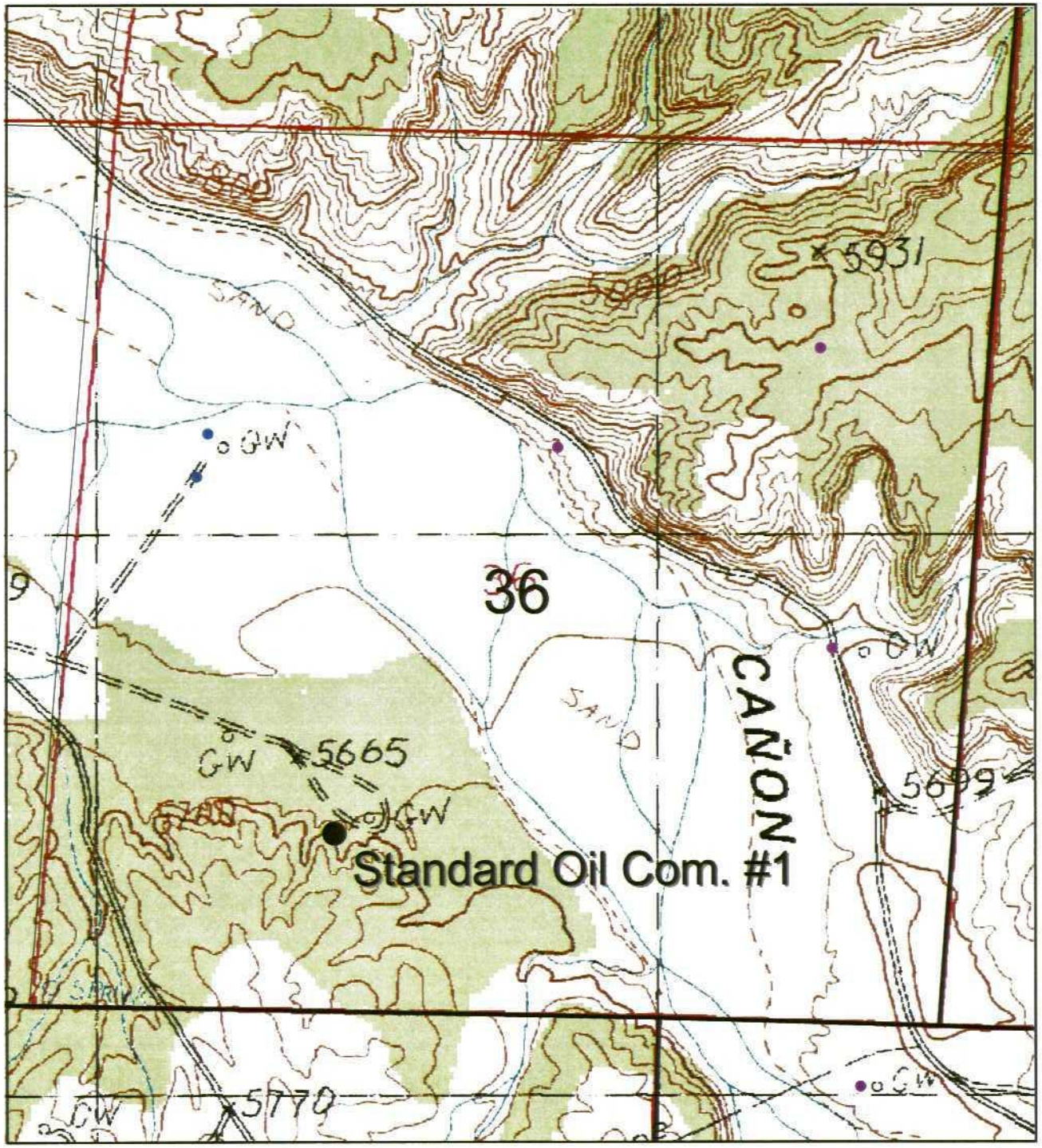
CONCLUSIONS

Analytical results of groundwater sampling from the monitoring well in 2001 and 2002 show no levels above New Mexico Groundwater Standards. The analytical results suggest the levels of constituents of concern have naturally degraded and the site is recommended for clean closure and no additional monitoring will be performed.

RECOMMENDATIONS

Burlington Resources proposes to discontinue sampling at this site and recommends clean closure granted for the area under BR responsibility, which includes the area disturbed surrounding the well location. A separate closure reported will be submitted.

Attachments: Figure 1 - Site Map
Table 1 - Groundwater Sampling Results Summary
2001 Groundwater Analytical
Letter to Olson dated September 10, 1999 including the Drilling Log/Wellbore Diagram



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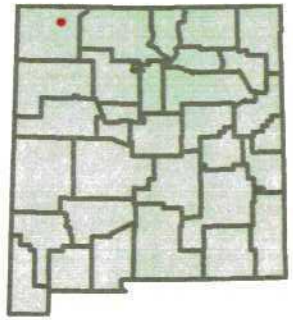
BURLINGTON RESOURCES PLAT

300 0 300 600 Feet



BURLINGTON RESOURCES
San Juan Division

Standard Oil Com. # 1
Sec. 36, T29N-R9W
San Juan Co., NM

Transverse Mercator
UTM - 1927 ; Zone 13

1:10750

Prepared By: Cheryl Groth Date: 03/27/2002
File No: <Please enter file number> Revised: <Revision date>
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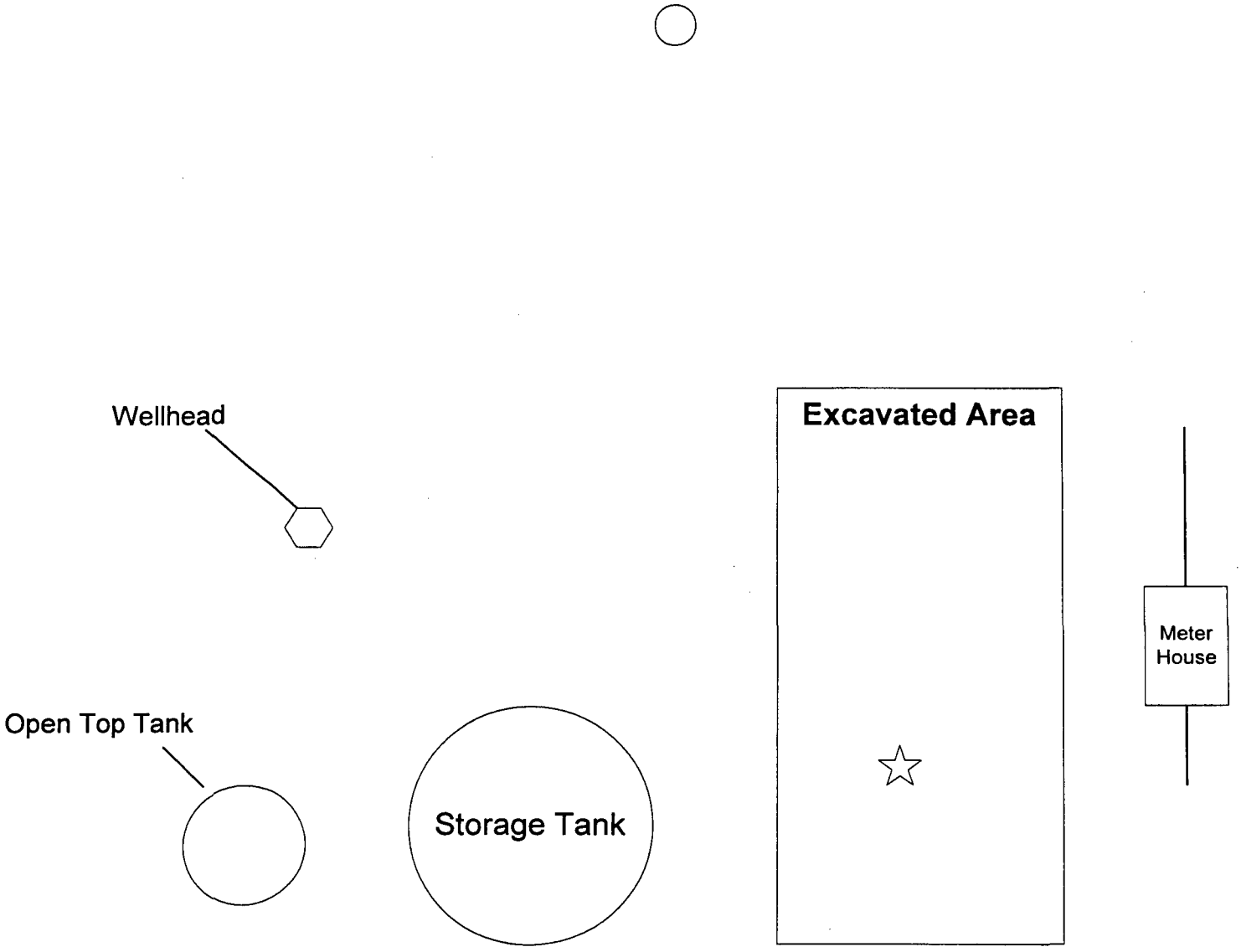
Standard Oil Com. #1



2002 GROUNDWATER ANALYTICAL RESULTS

Table 1

Groundwater Monitoring Well Sampling

Well Name	MW #	Sample Date	B (ppb)	T (ppb)	E (ppb)	X (ppb)	BTEX (ppb)	DTW (ft)
Standard			*10*	*750*	*750*	*620*		
Standard Oil Com #1 (EPNG)	1	8/18/1999	**1500**	135	106	586	2327	
		12/1/1999	**78**	170	100	**1300**	1648	28.14
		1/19/2000	**180**	**1100**	610	**5200**	7090	28.14
		5/18/2000	**14**	3.1	29	110	156.1	27.97
		9/21/2000	**13**	4.5	51	290	358.5	
		12/13/2000	**19**	18	93	570	700	26.37
		3/27/2001	5.4	1.3	11.2	24.5	42.4	lost
	H2s odor	6/28/2001	3.7	1.8	5.3	6.7	17.5	28.28
		9/17/2001	4 J	5	20	116	141	28.47
		12/19/2001	3.9	3.8	13.1	86.9	107.7	28.34
		3/25/2002	3.8	1.3	0.9	6.2	12.2	28.17
		6/25/2002	4.8	0.7	4.6	3.7	13.8	28.65
		9/25/2002	5.4	0.6	6.1	2.8	14.9	29.02
		12/29/2002	4.3	0.6	6.8	20.1	31.8	28.6

WELL OBSERVATION DATA

Project Name: BR Groundwater Sampling

Project No.: 151700138*

Project Mngr: Don Fernald

Task: 6

Client Co.: Burlington Resources

Date: 12-29-02

Site Name: Standard Oil #1

Well or Piezometer	Time	Reason Not Measured	Depth to Floating Product (Feet)	Depth to Water (Feet)	Total Well Depth (Feet)	Floating Product Thickness	Comments
MW-1	3:30			28.16	36.45		cloudy Black w/ No oil Sheen
							Took Sample from MW Labeled "E" - Yellow - closest to meter run

Reason Not Measured: D = Dry; O = Obstructed; N = Not Accessible

Comments: Well bailed dry at approx 2.5 gal, waited, bailed again Went dry at approx 1 gal, Bailed again approx. ½ gal Sampled 4:50

Signature: James Flores

Date: 12-29-02

1230 1300

☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW1

Page 1 of 1

Project Name B.R well Sampling

Project Manager Lisa Winn

Project No. 157000

Client Company Burlington Resources

Site Name STANDARD Oil #1

Site Address Rural San Juan CO.

Development Criteria

☑ 3 to 5 Casing Volumes of Water Removal
☑ Stabilization of Indicator Parameters
☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 37.05
Initial Depth to Water (feet) 28.17
Height of Water Column in Well (feet) 8.88
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	8.88	1.44x3	4.32
Gravel Pack			
Drilling Fluids			
Total			4.32

Instruments

	Serial No. (If applicable)
☑ pH Meter	YSI 63
☐ DO Monitor	
☑ Conductivity Meter	YSI 63
☑ Temperature Meter	YSI 63
☐ Other	

Methods of Development

Pump
☐ Centrifugal
☐ Submersible
☐ Peristaltic

Bailer
☑ Bottom Valve
☐ Double Check Valve
☐ Stainless-steel Kemmerer

☐ Other

Water Disposal

ON site in pit

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
3-25-02	1233		X				1	1			14.4	6.97	5.35		Cloudy light Brown mild Septic odor
	1236		X				1	2			14.3	6.97	5.43		" "
	1239		X				1	3			14.5	7.01	5.50		" "
	1247		X			35.95	1	4			14.1	7.16	5.49		No Change

Comments After Bailing Approximately 4 gal Bailed well Dry Let Recover Sampled for BTEX 1255

Developer's Signature(s) [signature] Date 3-25-02 Reviewer [signature] Date 3/28/02

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: STANDARD OIL MW1

ACZ ID: ***L36252-05***
Date Sampled: *03/25/02 12:55*
Date Received: *03/27/02*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021**
Extract Method: **Method**

Analyst: *mwb*
Extract Date: *04/03/02 22:45*
Analysis Date: *04/03/02 22:45*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	3.8		ug/L	0.2	0.5
Ethylbenzene	000100-41-4	0.9	JB	ug/L	0.2	1
Toluene	000108-88-3	1.3		ug/L	0.2	1
Xylenes	0001330-207	6.2	B	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	105	%	80	120

Note: PBW contains Ethylbenzene at 0.3ug/L and for Xylenes at 1.4ug/L.

☐ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW-1 Page 1 of 1

Project Name BR WELL SAMPLING Project Manager LISA WINN Project No. 1517000138

Client Company BURLINGTON RESOURCES

Site Name STANDARD OIL COM #1 Site Address RURAL SAN JUAN COUNTY

Development Criteria

☒ (3) to 5 Casing Volumes of Water Removal
☒ Stabilization of Indicator Parameters
☐ Other _____

Methods of Development

Pump	Bailer
☐ Centrifugal	☒ Bottom Valve
☐ Submersible	☐ Double Check Valve
☐ Peristaltic	☐ Stainless-steel Kemmerer

☐ Other _____

Water Volume Calculation

Initial Depth of Well (feet) 37.05' TOR
Initial Depth to Water (feet) 28.65' TOR
Height of Water Column in Well (feet) 8.40
Diameter (inches): Well 2" Gravel Pack ____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	8.40	1.37	1.37 x 3
Gravel Pack			
Drilling Fluids			
Total			3.90

Instruments

	Serial No. (If applicable)
☒ pH Meter	YSI 63
☐ DO Monitor	
☒ Conductivity Meter	YSI 63
☒ Temperature Meter	YSI 63
☐ Other _____	

Water Disposal

ON SITE IN PIT

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
6-25-02	1415		X				0	0			19.3	6.93	5.85		CLOUDY
6-25-02	1421		X				1	1			16.5	7.06	5.87		LIGHT BROWN-SILTY

Comments WELL BAILED DRY AT APPROXIMATELY 1.5 GAL. LET RECHARGE AND SAMPLED FOR BTEX AT 1446.

Developer's Signature(s) Pat Champson Date 6-25-02 Reviewer _____ Date 7/2/02

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: STANDARD OIL COM#1

ACZ ID: ***L37484-01***
Date Sampled: *06/25/02 14:46*
Date Received: *07/02/02*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B**
Extract Method: **Method**

Analyst: *cbr/km on*
Extract Date: *07/03/02 21:48*
Analysis Date: *07/03/02 21:48*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	4.8		ug/L	0.2	1
Ethylbenzene	000100-41-4	4.6		ug/L	0.2	1
m p xylene	01330 20 7	2.4		ug/L	0.2	2
o xylene	00095-47- 6	1.3		ug/L	0.2	1
Toluene	000108-88-3	0.7	J	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	93.9	%	80	120

See case narrative.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: STANDARD OIL#1 MW1

ACZ ID: ***L38684-05***
Date Sampled: *09/25/02 10:00*
Date Received: *09/27/02*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *09/27/02 22:08*
Analysis Date: *09/27/02 22:08*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	5.4		ug/L	0.2	1
Ethylbenzene	000100-41-4	6.1		ug/L	0.2	1
m p Xylene	01330 20 7	2.8		ug/L	0.2	2
o Xylene	00095-47- 6		U	ug/L	0.2	1
Toluene	000108-88-3	0.6	J	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	110	%	84	114

See case narrative.

☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 1

Page 1 of 1

Project Name B.R. well SAMPling

Project Manager LISA WINN

Project No 157000158

Client Company Burlington Resources

Site Name STANDARD Oil #1

Site Address Rural SAN JUAN CO.

Development Criteria

☑ 3 to 5 Casing Volumes of Water Removal
☐ Stabilization of Indicator Parameters
☐ Other _____

Methods of Development

Pump	Bailer
☐ Centrifugal	☑ Bottom Valve
☐ Submersible	☐ Double Check Valve
☐ Peristaltic	☐ Stainless-steel Kemmerer

☐ Other _____

Water Volume Calculation

Initial Depth of Well (feet) 37.05
Initial Depth to Water (feet) 29.02
Height of Water Column in Well (feet) 8.03
Diameter (inches): Well ____ Gravel Pack ____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	8.03	1.31 X 3	3.93
Gravel Pack			
Drilling Fluids			
Total			3.93

Instruments

	Serial No. (If applicable)
☑ pH Meter	YSI 63
☐ DO Monitor	
☑ Conductivity Meter	YSI 63
☑ Temperature Meter	YSI 63
☐ Other	

Water Disposal

ON SITE in PIT

Water Removal Data

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons)		Product Volume Removed (gallons)		Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Bailer				Increment	Cumulative	Increment	Cumulative					
9 25 02	0945		X				1	1			16.8	6.89	6.55		Cloudy Tan in color Mild Septic Odor
	0950		X			36.80	.5	.5			—	—	—		no change

Comments AFTer Bailing Approximately 1.5 gal Bailed well Dry LET Recover Sampled For BTEX 1000

Developer's Signature(s) [signature] Date 9-25-02 Reviewer [signature] Date 9/30/02

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: MW-1 STANDARD OIL #1

ACZ ID: ***L39827-01***
Date Sampled: *12/29/02 16:50*
Date Received: *01/02/03*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **Method**

Analyst: *km*
Extract Date: *01/07/03 19:30*
Analysis Date: *01/07/03 19:30*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	4.3		ug/L	0.3	1
Ethylbenzene	000100-41-4	6.8		ug/L	0.2	1
m p Xylene	01330 20 7	16.3		ug/L	0.4	2
o Xylene	00095-47- 6	3.8		ug/L	0.2	1
Toluene	000108-88-3	0.6	J	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	100	%	84	114

WELL DEVELOPMENT AND PURGING DATA

Well Number MW-1 ☐ Development ☒ Purging

Serial No. WDPD-

Page 1 of 1

Project Name Burlington Resources Groundwater Sampling | Project Manager Don Fernald | Project No. 151700138*

Client Company Burlington Resources | Phase.Task No. 6

Site Name Standard Oil #1 | Site Address Rural San Juan County

Development Criteria

☒ ~~☒~~ 3 to 5 Casing Volumes of Water Removal
☐ Stabilization of Indicator Parameters
☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 36.45
Initial Depth to Water (feet) 28.10
Height of Water Column in Well (feet) 8.35
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	8.35	1.36X3	4.08
Gravel Pack			
Drilling Fluids			
Total			4.08

Instruments

Instruments	Serial No. (if applicable)
☒ PH Meter	YSI 63
☐ DO Monitor	~~YSI 63~~
☒ Conductivity Meter	YSI 63
☒ Temperature Meter	YSI 63
☐ Other	

Methods of Development

Pump
☐ Centrifugal
☐ Submersible
☐ Peristaltic

Bailer
☒ Bottom Valve
☐ Double Check Valve
☐ Stainless-steel Kemmerer

☐ Other

Water Disposal

On Site Pit

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
12-27-02			X				2.5	2.5			14.0	6.91	1742		
			X				1	3.5			13.6	7.40	2761		
			X			36.95	.5	4			12.4	7.42	2994		

Circle the date and time that the development criteria are met.

Comments Well Bailed dry at approx. 2.5 gal waited, Bailed again approx 1gal-dry, Bailed approx ½gal take samples at 4:50

Developer's Signature (s) James Hoover Date 12-29-02 Reviewer _____ Date _____

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3R-74

BURLINGTON RESOURCES

SAN JUAN DIVISION

March 27, 2001

Certified: 70993400001842165308

RECEIVED

APR 01 2002

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Bill Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

RE: 2001 Annual Groundwater Investigation and Remediation Reports
San Juan Basin, New Mexico

Dear Mr. Olson:

As required in Burlington Resources' approved Groundwater Investigation and Remediation Plan dated August, 1998, enclosed are the 2001 annual reports for Burlington's groundwater impact sites in the San Juan Basin. Separate reports are enclosed for the following locations:

Cozzens B#1
Hampton #4M
Johnson Federal #4 Metering Station
Standard Oil Com. #1
Maddox Com 1A

If you have questions or additional information is needed, please contact me at (505) 326-9537.

Sincerely,

Gregg Wurtz
Sr. Environmental Representative

Attachments - Groundwater Investigation and Remediation Reports

cc: Denny Foust - NMOCD Aztec
Bruce Gantner - BR
WFS - Mark Harvey (Cozzens B#1, Hampton #4M)
EPFS - Scott Pope (Johnson Fed. #4, Standard Oil Com.#1)
Facility and Correspondence Files

3401 East 30th Street, 87402-8807, P.O. Box 4289, Farmington, New Mexico 87499-4289, Telephone 505-326-9700, Fax 505-326-9833

RECEIVED
APR 01 2002
ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

BURLINGTON RESOURCES 2001 ANNUAL GROUNDWATER REPORT

Standard Oil Com. #1

SITE DETAILS

Location: Unit Letter N, Section 36, Township 29N, Range 9 W; San Juan County, New Mexico
Land Type: State

PREVIOUS ACTIVITIES

El Paso Field Services excavated approximately 60 cubic yards from their pit at this location in 1994 and installed a monitoring well in 1995.

Burlington Resources conducted the initial site assessment of our pit in August, 1998. Excavation of approximately 1140 cubic yards of impacted soil to a depth of 31 feet occurred in December, 1998.

1999 ACTIVITIES

Clean overburden was used to partially backfill the excavation. The landfarm associated with the pit closure work tested below cleanup standards and was used to completely backfill the excavation. Vertical extent drilling encountered groundwater at approximately 26 feet and a ground water monitoring well was installed on August 11, 1999. After developing the well and allowing it to stabilize for one week, the well was purged and sampled on August 18, 1999.

2001ACTIVITIES

Quarterly groundwater monitoring continued through 2001. Groundwater analytical data are presented in Table 1. A site map is presented as Figure 1.

CONCLUSIONS

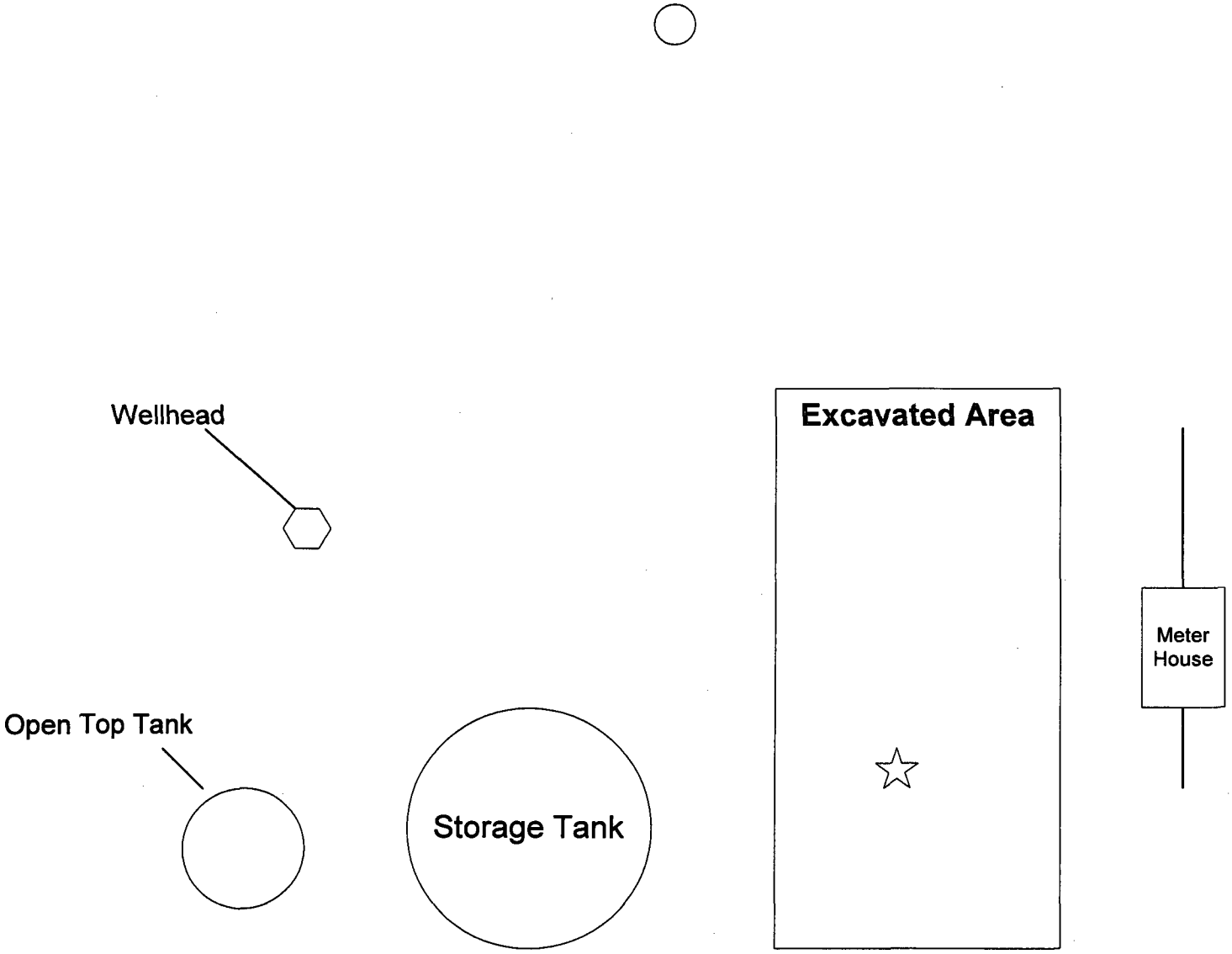
Analytical results of groundwater sampling from the monitoring well in 2001 show no levels above New Mexico Groundwater Standards for four quaters. The analytical results suggest the levels of constituents of concern have naturally degraded and the site is recommended for clean closure and no additional monitoring will be performed.

RECOMMENDATIONS

Burlington Resources proposes to discontinue sampling at this site and recommends clean closure granted for the area under BR responsibility, which includes the area disturbed surrounding the well location

Attachments: Figure 1 - Site Map
Table 1 - Groundwater Sampling Results Summary
2001 Groundwater Analytical

Standard Oil Com. #1



2001 GROUNDWATER ANALYTICAL RESULTS

Table 1

Groundwater Monitoring Well Sampling

Well Name	MW #	Sample Date	B (ppb)	T (ppb)	E (ppb)	X (ppb)	BTEX (ppb)	DTW (ft)
Standard			*10*	*750*	*750*	*620*		
Standard Oil Com #1 (EPNG)	1	8/18/1999	**1500**	135	106	586	2327	
		12/1/1999	**78**	170	100	**1300**	1648	28.14
		1/19/2000	**180**	**1100**	610	**5200**	7090	28.14
		5/18/2000	**14**	3.1	29	110	156.1	27.97
		9/21/2000	**13**	4.5	51	290	358.5	
		12/13/2000	**19**	18	93	570	700	26.37
		3/27/2001	5.4	1.3	11.2	24.5	42.4	lost
	H2s odor	6/28/2001	3.7	1.8	5.3	6.7	17.5	28.28
		9/17/2001	4 J	5	20	116	141	28.47
		12/19/2001	3.9	3.8	13.1	86.9	107.7	28.34

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Burlington Resources, Inc.

Project ID: B.R. Well Sampling
Sample ID: Standard Oil MW 1

ACZ ID: *L31380-01*
Date Sampled: 03/27/01 56:00
Date Received: 03/31/2001
Sample Matrix: Ground Water

Benzene, Toluene, Ethylbenzene & Xylenes

Analysis Method: M8020
Extract Method: Method

Analyst: smp
Extract Date: 4/2/01
Analysis Date: 4/2/01
Dilution Factor: 1

Compound

Parameter	CAS	Result	Qual	Units	MDL	PQL
Benzene	000071-43-2	5.4		ug/L	0.2	0.5
Ethylbenzene	000100-41-4	11.2		ug/L	0.2	1
Toluene	000108-88-3	1.3		ug/L	0.2	1
Xylenes	001330-20-7	24.5		ug/L	0.2	1

Surrogate Recoveries

Parameter	CAS	Result	Qual	Units	MDL	PQL
Bromofluorobenzene	00000460004	122		%	80	120

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Quote #: **ACZ Project #:**

CLIENT INFORMATION

Name to appear on Report and Invoice

Burlington Resources
P.O. Box 4289
Farmington N.M. 87499-4289
Attn: Greg Wurtz Tel:(505)326-9537

Email:

Carbon Copy: Report X **Invoice** ___

GOLDEN Environmental MGT.
906 San Juan BLVD. Suite D
Farmington N.M. 87401
Attn: Lisa Winn Tel:(505)566-9116

Email:

PROJECT INFORMATION

Client Project name and/or PO#:
B.R. well Sampling

Shipping Company:
Tracking #:

ANALYSES REQUESTED *(required or attach bid/list)*

*SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	BTEX 8021							
STANDARD Oil Com #1-MW 1	6-29-01 1300	H_2O	2	X							

Matrix Options: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water)
SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

RELINQUSIHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Chris A Mayer	6-29-01 1300		

PAGE 1 of 1

FRMQA021.01.00.03

White - Return with sample. Yellow - Retain for your records.

Well Development and Purging Data

Project No. G178
Task No. —
Well No. MW1

Development ☐
Purging ☑

Site Name/Identification STANDARD Oil #1
Site Address Rural San Juan CO
Client/Project Name Burlington Resources BR well Sampling
Project Manager LISA Winn

Development Criteria
☑ (3) to 5 Casing Volumes of Water Removal
☐ Stabilization of Indicator Parameters
☐ Other

Water Volume Calculation
Initial Depth of Well (feet) 37.05
Initial Depth to Water (feet) 28.28
Height of Water Column in Well (feet) 8.77
Diameter (inches): Well 2" Gravel Pack

Instruments / Serial No. (if applicable)
☑ PH Meter — Hydac
☐ DO Monitor
☑ Conductivity Meter — Hydac
☑ Temperature Meter — Hydac
☐ Other

Methods of Development

Pump
☐ Centrifugal
☐ Submersible
☐ Peristaltic
☐ Other

Bailer
☒ Bottom Valve
☐ Double Check Valve
☐ Stainless-steel Kemmerer

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	8.77	1.43x3	4.29
Gravel Pack			
Drilling Fluids			
Total			4.29

Water Disposal
On Site in pit

Sampling Activities
Type of Container VOA No. of Containers 2
Parameters Sampled For BTEX

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
6-28-01	1234		X				1	1			24.3	6.92	5210		Cloudy, slight odor
	1237		X				1	2			20.5	7.03	5060		Cloudy, Brown, slight static oil
	1241		X			36.43	1	3			20.2	7.07	5000		no Change

Circle the date and time that the development criteria are met.

Comments After Bailing Approximately 3 gal Bailed well Dry Let recover Sampled for BTEX 1300

Developer's Signature (s) [signature] Date 6 28-01 Reviewer [signature] Date 7/3/01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Burlington Resources, Inc.
Project ID: B.R. well sampling
Sample ID: Standard Com #1-MW 1

ACZ ID: *L32735-04*
Date Sampled: *06/28/01 13:00*
Date Received: *06/30/01*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021**
Extract Method: **Method**

Analyst: *smp*
Extract Date: *07/12/01 19:53*
Analysis Date: *07/12/01 19:53*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	3.7		ug/L	0.2	0.5
Ethylbenzene	000100-41-4	5.3		ug/L	0.2	1
Toluene	000108-88-3	1.8		ug/L	0.2	1
Xylenes	001330-20-7	6.7		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	110	%	80	120

Well Development and Purging Data

Project No. 6178 Development ☐

Task No. Purging ☐

Page 1 of 1

Well No. MW1 Site Name/Identification STANDARD OIL #1 Site Address Rural San Juan Co

Client/Project Name Burlington Resources BR well sampling Project Manager Lisa Winn

Development Criteria

☑ 3 to 5 Casing Volumes of Water Removal

☑ Stabilization of Indicator Parameters

☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 37.05

Initial Depth to Water (feet) 28.47

Height of Water Column in Well (feet) 8.58

Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	8.58	1.40X3	4.2
Gravel Pack			
Drilling Fluids			
Total			4.2

Instruments

	Serial No. (if applicable)
☑ PH Meter	Hydac
☐ DO Monitor	
☑ Conductivity Meter	Hydac
☑ Temperature Meter	Hydac
☐ Other	

Methods of Development

Pump

☐ Centrifugal
☐ Submersible
☐ Peristaltic

Bailer

☒ Bottom Valve
☐ Double Check Valve
☐ Stainless-steel Kemmerer

☐ Other

Water Disposal

On site in pit

Sampling Activities

Type of Container VOA No. of Containers 2

Parameters Sampled For BTEX

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
9-17-01	1434		X				1	1			22.6	6.47	6680		Cloudy Light Brown Silty Sand
	1437		X				1	2			19.4	6.64	6560		No Change
	1440					36.66	.25	2.25			—	—	—		

Circle the date and time that the development criteria are met.

Comments AFTer Bailing Approximately 2.25 gal. Bailed well Dry LET Recover Sampled For BTEX 1500

Developer's Signature (s) Chris A. Offerman Date 9/17/01 Reviewer [signature] Date 9/27/01

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Quote #: **ACZ Project #:**

CLIENT INFORMATION

Name to appear on Report and Invoice

Burlington Resources
P.O. BOX 4289
Farmington N.M. 87499-4289
Attn: Greg Wurtz Tel: (505) 326 9537
Email:

Carbon Copy: Report ____ Invoice ____

G.E.M.
906 San Juan BLVD Suite D
Farmington N.M. 87401
Attn: Lisa Winn Tel: (505) 566-9116
Email:

PROJECT INFORMATION

Client Project name and/or PO#:

BR well Sampling

Shipping Company:
Tracking #:

ANALYSES REQUESTED *(required or attach bid/list)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	BTEX 8021							
FOZZENIS MW 4	9-17-01 1610	H_2O	2	X							
JOHNSTON FED MW 4	9-17-01 1140	H_2O	2	X							
MADDOX Com #1A MW 1	9-17-01 1245	H_2O	2	X							
MADDOX Com #1A MW 2	9-17-01 1345	H_2O	2	X							
MADDOX Com. #1A MW 3	9-17-01 1315	H_2O	2	X							
STANDARD OIL #1 MW 1	9-17-01 1500	H_2O	2	X							
Trip Blank	9-1-01	H_2O	1	X							

Matrix Options: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

RELINQUSIHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME	PAGE
Chris Winn	9-19-01 1000			___ of ___

FRMQA021.01.00.03

White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Burlington Resources, Inc.
Project ID: BR Well Sampling
Sample ID: STANDARD OIL #1 MW1

ACZ ID: ***L33990-06***
Date Sampled: *09/17/01 15:00*
Date Received: *09/20/01*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021**
Extract Method: **Method**

Analyst: *smp*
Extract Date: *09/27/01 19:43*
Analysis Date: *09/27/01 19:43*
Dilution Factor: *10*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	4	J	ug/L	2	5
Ethylbenzene	000100-41-4	20		ug/L	2	10
Toluene	000108-88-3	5	J	ug/L	2	10
Xylenes	0001330-207	116		ug/L	2	10

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	108	%	80	120

☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 1

Project Name B.R. Well Sampling Project Manager Lisa Winn Project No. 15170000138

Client Company Burlington Resources

Site Name STANDARD Oil #1 Site Address Rural San Juan Co.

Development Criteria

☑ 3 to 5 Casing Volumes of Water Removal
☑ Stabilization of Indicator Parameters
☐ Other _____

Methods of Development

Pump	Bailer
☐ Centrifugal	☑ Bottom Valve
☐ Submersible	☐ Double Check Valve
☐ Peristaltic	☐ Stainless-steel Kemmerer

☐ Other _____

Water Volume Calculation

Initial Depth of Well (feet) 37.05
Initial Depth to Water (feet) 28.34
Height of Water Column in Well (feet) 8.71
Diameter (inches): Well 2" Gravel Pack _____

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	8.71	1.42x3	4.26
Gravel Pack			
Drilling Fluids			
Total			

Instruments

	Serial No. (If applicable)
☑ pH Meter	YSI 63
☐ DO Monitor	
☑ Conductivity Meter	YSI 63
☑ Temperature Meter	YSI 63
☐ Other _____	

Water Disposal

On site in pit

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
12-19-01	1255		X				1	1			16	6.87	5.65		Cloudy Light Brown Sporty Sheen, mild Sour Odor
	1259		X				1	2			15.6	6.87	5.73		" "
	1304		X			36.5	1	3			15.2	7.10	5.85		no change

Comments After Bailing Approximately 3 gal Bailed well Dry, Let Recover Sampled for BTEX 1315

Developer's Signature(s) Chris A. May Date 12-19-01 Reviewer L Winn Date 12/21/01

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Greg Wurtz	Address: P.O. Box 4289
Company: Burlington Resources	Farmington N.M. 87499-4289
E-mail: Gwurtz@br-inc.com	Telephone: (505) 326-9700

Copy of Report to:

Name: Lisa Winn	E-mail: Lisa.winn@amec.com
Company: AMEC	Telephone: (505) 327-7928

Invoice to:

Name: Greg Wurtz	Address: P.O. Box 4289
Company: Burlington Resources	Farmington, N.M. 87499-4289
E-mail: Gwurtz@br-inc.com	Telephone: (505) 326-9700

PROJECT INFORMATION

Quote #:	
Project/PO #:	15170000138
Shipping Co.:	
Tracking #:	
Reporting State for compliance testing:	

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	BTEX 8021								
JOHNSTON FED #4 MW 4	12/19/01 0934	H_2O	2	X								
MADDOX MW 1	12/19/01 1043	H_2O	2	X								
MADDOX MW 2	12/19/01 1200	H_2O	2	X								
MADDOX MW 3	12/19/01 1120	H_2O	2	X								
STANDARD OIL #1 MW 1	12/19/01 1315	H_2O	2	X								
COZZENS B-1 MW 4	12/19/01 1425	H_2O	2	X								
COZZENS B-1 MW 5	12/19/01 1445	H_2O	2	X								
Trip Blank		H_2O	2	X								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME	PAGE
	12-19-01/1600			Of

FRMQA021.10.01.04

White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: Standard Oil #1 MW 1

ACZ ID: ***L35290-05***
Date Sampled: *12/19/01 13:15*
Date Received: *12/20/01*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021**
Extract Method: **Method**

Analyst: *mwb*
Extract Date: *12/29/01 2:39*
Analysis Date: *12/29/01 2:39*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	3.9		ug/L	0.2	0.5
Ethylbenzene	000100-41-4	13.1		ug/L	0.2	1
Toluene	000108-88-3	3.8		ug/L	0.2	1
Xylenes	0001330-207	86.9		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	117	%	80	120

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: Trip Blank

ACZ ID: ***L35290-08***
Date Sampled: *12/19/01 0:00*
Date Received: *12/20/01*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021**
Extract Method: **Method**

Analyst: *mwb*
Extract Date: *12/29/01 7:14*
Analysis Date: *12/29/01 7:14*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2		U	ug/L	0.2	0.5
Ethylbenzene	000100-41-4	1.2		ug/L	0.2	1
Toluene	000108-88-3		U	ug/L	0.2	1
Xylenes	0001330-207		U	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	99	%	80	120

Note: Due to sample carry over, Ethylbenzene was high in CCV at 127%.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
LCL	Lower Control Limit
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
UCL	Upper Control Limit
Sample	Value of the Sample of interest

QC Sample Types

SURR	Surrogate	*LFM*	Laboratory Fortified Matrix
INTS	Internal Standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
LCSS	Laboratory Control Sample - Soil	*MS/MSD*	Matrix Spike/Matrix Spike Duplicate
LCSW	Laboratory Control Sample - Water	*PBS*	Prep Blank - Soil
LFB	Laboratory Fortified Blank	*PBW*	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

B	Analyte detected in daily blank
H	Analysis exceeded method hold time.
J	Analyte concentration detected at a value between MDL and PQL
R	Poor spike recovery accepted because the other spike in the set fell within the given limits.
T	High Relative Percent Difference (RPD) accepted because sample concentrations are less than 10x the MDI
U	Analyte was analyzed for but not detected at the indicated MDL
V	High blank data accepted because sample concentration is 10 times higher than blank concentration
W	Poor recovery for Silver quality control is accepted because Silver often precipitates with Chloride.
X	Quality contreol sample is out of control.
Z	Poor spike recovery is accepted because sample concentration is four times greater than spike concentratic
P	Analyte concentration differs from second detector by more than 40%.
D	A non-SPCC or non-CCC compound in CCV exceeds 20 % Difference (%D) from the initial calibration curve.
M	Analyte concentration is estimated due to matrix interferences.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/4-90/020. Methods for the Determination of Organic Compounds in Drinking Water (I), July 1990.
(3)	EPA 600/R-92/129. Methods for the Determination of Organic Compounds in Drinking Water (II), July 1990.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December, 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculat
(2)	Organic analyses are reported on an "as received" basis.

BURLINGTON RESOURCES

SAN JUAN DIVISION
March 27, 2001

Certified: 709932200028981 4004

RECEIVED
MAR 29 2001
OIL CONSERVATION DIV.

Bill Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

RE: 2000 Annual Groundwater Investigation and Remediation Reports
San Juan Basin, New Mexico

Dear Mr. Olson:

As required in Burlington Resources' approved Groundwater Investigation and Remediation Plan dated August, 1998, enclosed are the 2000 annual reports for Burlington's groundwater impact sites in the San Juan Basin. Separate reports are enclosed for the following locations:

Cozzens B#1
Fogelson #4-1
Hampton #4M
Johnson Federal #4 Metering Station
Standard Oil Com. #1
Taylor Com. #2A
Maddox Com 1A

If you have questions or additional information is needed, please contact me at (505) 326-9537.

Sincerely,

Gregg Wurtz
Sr. Environmental Representative

Attachments - Groundwater Investigation and Remediation Reports

cc: Denny Foust - NMOCD Aztec
Bruce Gantner - BR
WFS - Mark Harvey (Cozzens B#1, Hampton #4M)
EPFS - Scott Pope (Fogelson #4-1, Johnson Fed. #4, Standard Oil Com.#1)
Facility and Correspondence Files

BURLINGTON RESOURCES 2000 ANNUAL GROUNDWATER REPORT

Standard Oil Com. #1

SITE DETAILS

Location: Unit Letter N, Section 36, Township 29N, Range 9 W; San Juan County, New Mexico
Land Type: State

PREVIOUS ACTIVITIES

El Paso Field Services excavated approximately 60 cubic yards from their pit at this location in 1994 and installed a monitoring well in 1995.

Burlington Resources conducted the initial site assessment of our pit in August, 1998. Excavation of approximately 1140 cubic yards of impacted soil to a depth of 31 feet occurred in December, 1998.

1999 ACTIVITIES

Clean overburden was used to partially backfill the excavation. The landfarm associated with the pit closure work tested below cleanup standards and was used to completely backfill the excavation. Vertical extent drilling encountered groundwater at approximately 26 feet and a ground water monitoring well was installed on August 11, 1999. After developing the well and allowing it to stabilize for one week, the well was purged and sampled on August 18, 1999.

2000 ACTIVITIES

Quarterly groundwater monitoring continued through 2000. Groundwater analytical data are presented in Table 1. A site map is presented as Figure 1.

CONCLUSIONS

Analytical results of groundwater sampling from the monitoring well in the 4th quarter of 2000 show only levels of benzene above New Mexico Groundwater Standards. The analytical results suggest the levels of constituents of concern are trending downward.

RECOMMENDATIONS

- Burlington Resources proposes to continue quarterly sampling at this site.
- Burlington Resources will initiate discussions with El Paso Field Service to assure proper assessment and closure of this site.

Attachments: Figure 1 - Site Map
Table 1 - Groundwater Sampling Results Summary
2000 Groundwater Analytical

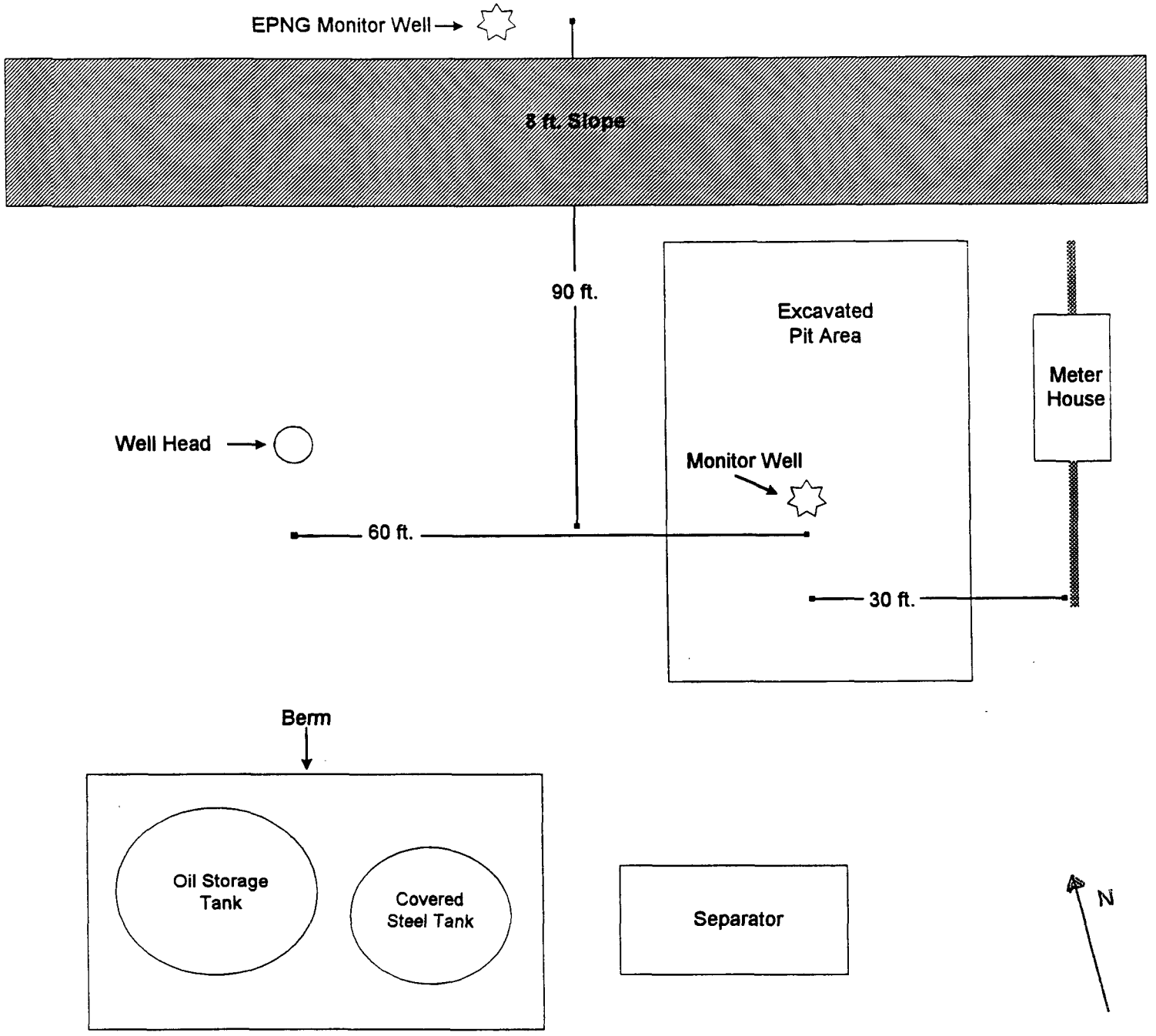
Letter to Olson dated September 10, 1999 including the Drilling Log/Wellbore Diagram

Figure 1

BURLINGTON RESOURCES

STANDARD OIL COM NO. 1

MONITOR WELL INSTALLATION



Not to scale - distances are approximate

stdoil1.vsd 9/10/99

Table 1

Groundwater Monitoring Well Sampling

Well Name	MW #	Sample Date	B (ppb)	T (ppb)	E (ppb)	X (ppb)	BTEX (ppb)	DTW (ft)
Standard			*10*	*750*	*750*	*620*		
Standard Oil Com #1 (EPNG)	1	8/18/1999	**1500**	135	106	586	2327	
		12/1/1999	**78**	170	100	**1300**	1648	28.14
		1/19/2000	**180**	**1100**	610	**5200**	7090	28.14
		5/18/2000	**14**	3.1	29	110	156.1	27.97
		9/21/2000	**13**	4.5	51	290	358.5	
		12/13/2000	**19**	18	93	570	700	26.37

2000 GROUNDWATER ANALYTICAL RESULTS

PHILIP ENVIRONMENTAL

Well Number 1 ☐ Development ☐ Purging

WELL DEVELOPMENT AND PURGING DATA

Serial No. WDPD-

Project Name Burlington Drilling Project Manager C Irby Project No. 62800025

Client Company Burlington Phase.Task No. 3.5

Site Name Standard 01 Com #1 Site Address T29N R9W S36

Development Criteria

☒ 3 to 5 Casing Volumes of Water Removal
☐ Stabilization of Indicator Parameters
☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 40.7
Initial Depth to Water (feet) 28.14
Height of Water Column in Well (feet)
Diameter (inches): Well Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	12.56/.64	2	6
Gravel Pack			
Drilling Fluids			
Total			

Instruments

	Serial No. (if applicable)
☒ pH Meter	
☐ DO Monitor	
☒ Conductivity Meter	
☒ Temperature Meter	
☐ Other	

Methods of Development

Pump	Bailer
☐ Centrifugal	☒ Bottom Valve
☐ Submersible	☐ Double Check Valve
☐ Peristaltic	☐ Stainless-steel Kemmerer

☐ Other

Water Disposal

On-site

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Incremental	Water Volume Removed (gallons): Cumulative	Residual Volume Removed (gallons): Incremental	Residual Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
1-19-00	11:27						2	2			12.2	6.2	9680		
								4			12.3	6.4	9540		
								6			11.1	6.1	9410		

Circle the date and time that the development criteria are met.

Comments Sample SOC 0001 MW1-1

Developer's Signature(s) Cecil Gf Date 1-19-00 Reviewer Date

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number **001040**
January 24, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name BURLINGTON DRILLING
Project Number 62800025

Attention: CECIL IRBY

On 01/20/00 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

Kimberly D. McNeill
Project Manager

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE LABORATORIES

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Albuquerque, New Mexico 87107
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Fax (505) 344-4413

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 001040
PROJECT #	: 62800025	DATE RECEIVED	: 01/20/00
PROJECT NAME	: BURLINGTON DRILLING	REPORT DATE	: 01/24/00

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	COZ0001MW1-1	AQUEOUS	01/19/00
02	SOC0001MW1-1	AQUEOUS	01/19/00
03	TAY0001MW3-1	AQUEOUS	01/19/00
04	TAY0001MW2-1	AQUEOUS	01/19/00
05	TAY0001MW1-1	AQUEOUS	01/19/00

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GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800025
PROJECT NAME : BURLINGTON DRILLING

PINNACLE I.D.: 001040

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	COZ0001MW1-1	AQUEOUS	01/19/00	NA	01/20/00	1
02	SOC0001MW1-1	AQUEOUS	01/19/00	NA	01/20/00	10
03	TAY0001MW3-1	AQUEOUS	01/19/00	NA	01/20/00	1

PARAMETER	DET. LIMIT	UNITS	COZ0001MW1-1	SOC0001MW1-1	TAY0001MW3-1
BENZENE	0.5	**UG/L**	**1.7**	**180**	< 0.5
TOLUENE	0.5	**UG/L**	**13**	**1100**	< 0.5
ETHYLBENZENE	0.5	**UG/L**	**7.6**	**610**	< 0.5
TOTAL XYLENES	0.5	**UG/L**	**28**	**5200**	< 0.5
SURROGATE:					
BROMOFLUOROBENZENE (%)			90	102	95
SURROGATE LIMITS	(80 - 120)				

CHEMIST NOTES:
N/A

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GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800025
PROJECT NAME : BURLINGTON DRILLING

PINNACLE I.D.: 001040

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	TAY0001MW2-1	AQUEOUS	01/19/00	NA	01/20/00	1
05	TAY0001MW1-1	AQUEOUS	01/19/00	NA	01/20/00	1

PARAMETER	DET. LIMIT	UNITS	TAY0001MW2-1	TAY0001MW1-1
BENZENE	0.5	**UG/L**	< 0.5	**0.6**
TOLUENE	0.5	**UG/L**	< 0.5	**1.9**
ETHYLBENZENE	0.5	**UG/L**	< 0.5	**0.8**
TOTAL XYLENES	0.5	**UG/L**	< 0.5	**3.3**

SURROGATE:			
BROMOFLUOROBENZENE (%)		96	97
SURROGATE LIMITS	(80 - 120)		

CHEMIST NOTES:
N/A

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Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 001040
BLANK I. D.	: 012000	DATE EXTRACTED	: N/A
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 01/20/00
PROJECT #	: 62800025	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BURLINGTON DRILLING		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
SURROGATE:		
BROMOFLUOROBENZENE (%)		95
SURROGATE LIMITS:	(80 - 120)	

CHEMIST NOTES:
N/A

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GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST	: EPA 8021 MODIFIED		
MSMSD #	: 012000	PINNACLE I.D.	: 001040
CLIENT	: PHILIP ENVIRONMENTAL	DATE EXTRACTED	: N/A
PROJECT #	: 62800025	DATE ANALYZED	: 01/21/00
PROJECT NAME	: BURLINGTON DRILLING	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	20.8	104	21.6	108	4	(80 - 120)	20
TOLUENE	<0.5	20.0	19.3	97	19.4	97	1	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.9	105	20.9	105	0	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	60.9	102	59.4	99	2	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Chain of Custody Record

PHILIP ENVIRONMENTAL

4000 Monroe Road
Farmington, NM 87401
(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2484

Project Name: Burlington Drilling
Project Number: 62800025 Phase . Task 35
Samplers: Cecil Irby
Laboratory Name: Pinnacle Labs
Laboratory Location: Albuquerque

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: BTEX (8021)	Comments
CO2 0001 MW1-1	1-19-00	10:10	W	2	✓	-01
SOC 0001 MW1-1	1-19-00	11:50	W	2	✓	-02
TAY 0001 MW3-1	1-19-00	1:30	W	2	✓	-03
TAY 0001 MW2-1	1-19-00	2:10	W	2	✓	-04
TAY 0001 MW1-1	1-19-00	2:33	W	2	✓	-05

001040

Relinquished by:

Signature	Date	Time
Cecil	1-19-00	4:00

Received By:

Signature	Date	Time
[signature]	1/20/00	9:15

Samples Iced: ☐ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Cyanide ..... Sodium hyroxide (NaOH)
- ☑ Volatile Organic Analysis ..... Hydrochloric acid (HCl)
- ☐ Metals ..... Nitric acid (HNO_3)
- ☐ TPH (418.1) ..... Sulfuric acid (H_2SO_4)
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

Carrier:

Airbill No.

Shipping and Lab Notes:

on ice 4.9°C

PF-176 4/95

PHILIP ENVIRONMENTAL

Well Number MW-01 ☐ Development ☒ Purging

Serial No. WDPD-

WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

Project Name BR WELL SAMPLING Project Manager ROBERT THOMPSON Project No. 62800228

Client Company BURLINGTON RESOURCES Phase.Task No. 0301

Site Name STANDARD OIL COM #1 Site Address RURAL SAN JUAN CO.

Development Criteria

☒ ③ to 5 Casing Volumes of Water Removal
☒ Stabilization of Indicator Parameters
☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 34.96 TOR
Initial Depth to Water (feet) 27.97 TOR
Height of Water Column in Well (feet) 6.99
Diameter (inches): Well 2 Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	6.99	1.14 x 3	3.42
Gravel Pack			
Drilling Fluids			
Total			3.42

Instruments

	Serial No. (If applicable)
☒ pH Meter	HYDAC
☐ DO Monitor	
☒ Conductivity Meter	HYDAC
☒ Temperature Meter	HYDAC
☐ Other	

Methods of Development

Pump: ☐ Centrifugal ☐ Submersible ☐ Peristaltic
Bailer: ☒ Bottom Valve ☐ Double Check Valve ☐ Stainless-steel Kemmerer
☐ Other

Water Disposal

ON GROUND ON SITE

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
5/18/00	1518		X				1	1			20.8	7.06	7120		CLOUDY
5/18/00	1523		X				1	2			19.9	7.11	6730		BLACK
5/18/00	1527		X				1	3			18.5	6.97	7250		BLACKISH/BROWN
5/18/00	1530		X				1	4			18.1	7.05	6670		BLACKISH/BROWN
5/18/00	1534		X				1	5			18.0	7.13	7330		BROWN

Circle the date and time that the development criteria are met.

Comments SAMPLED AT 1540.

Developer's Signature(s) Robert Thompson Date 5/18/00 Reviewer Date

PINNACLE LABORATORIES

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Fax (505) 344-4413

Pinnacle Lab ID number **005082**
May 26, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name BR WELL SAMPLING
Project Number 62800228

Attention: ROBERT THOMPSON

On 05/19/00 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 005082
PROJECT #	: 62800228	DATE RECEIVED	: 05/19/00
PROJECT NAME	: BR WELL SAMPLING	REPORT DATE	: 05/26/00

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	STANDARD OIL COM#1 MW1	AQUEOUS	05/18/00

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800228
PROJECT NAME : BR WELL SAMPLING

PINNACLE I.D.: 005082

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	STANDARD OIL COM#1 MW1	AQUEOUS	05/18/00	NA	05/23/00	2

PARAMETER	DET. LIMIT	UNITS	STANDARD OIL COM#1 MW1
BENZENE	0.5	**UG/L**	**14**
TOLUENE	0.5	**UG/L**	**3.1**
ETHYLBENZENE	0.5	**UG/L**	**29**
TOTAL XYLENES	0.5	**UG/L**	**110**

SURROGATE:
BROMOFLUOROBENZENE (%) 118
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 005082
BLANK I. D.	: 052300	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 05/23/00
PROJECT #	: 62800228	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BR WELL SAMPLING		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
SURROGATE:		
BROMOFLUOROBENZENE (%)		106
SURROGATE LIMITS:	(80 - 120)	

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

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Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST	: EPA 8021 MODIFIED		
MSMSD #	: 005081-02	PINNACLE I.D.	: 005082
CLIENT	: PHILIP ENVIRONMENTAL	DATE EXTRACTED	: NA
PROJECT #	: 62800228	DATE ANALYZED	: 05/23/00
PROJECT NAME	: BR WELL SAMPLING	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	20.4	102	20.1	101	1	(80 - 120)	20
TOLUENE	<0.5	20.0	20.5	103	20.6	103	0	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.8	104	20.8	104	0	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	63.0	105	62.1	104	1	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

0C5082

PHILIP ENVIRONMENTAL

Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401
(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2549

Project Name: BR WELL SAMPLING
Project Number: 62800228 Phase . Task: 0301.
Samplers: R. THOMPSON
Laboratory — Name: PINNACLE LABS
Location: ALBUQUERQUE, NM

Type of Analysis and Bottle: BTEX 8021

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	BTEX 8021	Comments
STANDARD OIL COM#1 MW 1	5/18/00	1540	H_2O	2	X	

Relinquished by:

Signature	Date	Time
[signature]	5/19/00	0825

Received By:

Signature	Date	Time
[signature]	5/19	16:45

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)
- ☐ Cyanide .... Sodium hyroxide (NaOH)
- ☒ Volatile Organic Analysis .... Hydrochloric acid (HCl)
- ☐ Metals .... Nitric acid (HNO_3)
- ☐ TPH (418.1) .... Sulfuric acid (H_2SO_4)
- ☐ Other (Specify) ______
- ☐ Other (Specify) ______

Carrier: GREYHOUND LINES
Airbill No. GLI 1606650760

Shipping and Lab Notes: PLEASE SEND MORE GREYHOUND AIRBILLS

"ON ICE" 4.4 °C

PE-176 4/95

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

OCT 2 2000

Pinnacle Lab ID number **009129**
September 28, 2000

PHILIP ENVIRONMENTAL
4000 MONROE ROAD
FARMINGTON, NM 87401

Project Name B.R. WELL SAMPLING
Project Number 62800228

Attention: ROBERT THOMPSON

On 09/26/00 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE LABORATORIES

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Albuquerque, New Mexico 87107
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Fax (505) 344-4413

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 009129
PROJECT #	: 62800228	DATE RECEIVED	: 09/26/00
PROJECT NAME	: B.R. WELL SAMPLING	REPORT DATE	: 09/29/00

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	STANDARD OIL COM #1-MW01	AQUEOUS	09/21/00

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : PHILIP ENVIRONMENTAL
PROJECT # : 62800228
PROJECT NAME : B.R. WELL SAMPLING

PINNACLE I.D.: 009129

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	STANDARD OIL COM #1-MW01	AQUEOUS	09/21/00	NA	09/27/00	1

PARAMETER	DET. LIMIT	UNITS	STANDARD OIL COM #1-MW01
BENZENE	0.5	**UG/L**	**13**
TOLUENE	0.5	**UG/L**	**4.5**
ETHYLBENZENE	0.5	**UG/L**	**51**
TOTAL XYLENES	0.5	**UG/L**	**290**

SURROGATE:
BROMOFLUOROBENZENE (%) 162*
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
* = Sample was analyzed twice.
Surrogate high due to matrix interference.

PINNACLE LABORATORIES

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Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 009129
BLANK I. D.	: 092700	DATE EXTRACTED	: NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	: 09/27/00
PROJECT #	: 62800228	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: B.R. WELL SAMPLING		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
SURROGATE:		
BROMOFLUOROBENZENE (%)		103
SURROGATE LIMITS:	(80 - 120)	

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

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Albuquerque, New Mexico 87107
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Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST	: EPA 8021 MODIFIED		
MSMSD #	: 009128-02	PINNACLE I.D.	: 009129
CLIENT	: PHILIP ENVIRONMENTAL	DATE EXTRACTED	: NA
PROJECT #	: 62800228	DATE ANALYZED	: 09/27/00
PROJECT NAME	: B.R. WELL SAMPLING	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	18.5	93	19.4	97	5	(80 - 120)	20
TOLUENE	<0.5	20.0	20.4	102	21.0	105	3	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	21.1	106	21.5	108	2	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	63.6	106	64.4	107	1	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

009129

Chain of Custody Record

PHILIP ENVIRONMENTAL

4000 Monroe Road
Farmington, NM 87401
(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2458

Project Name BR. well Sampling
Project Number C28000228 Phase . Task 0301 .
Samplers C. Maez
Laboratory Name PINNACLE
Location ALBQ NM.

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: BTEX 8021			Lab ID #									Comments
STANDARD oil COM #1-MW 01	09-21-00	1234	H2O	2	X			01									STANDARD oil Com. #1

Relinquished by:

Signature	Date	Time
Chris A. Maez	09-25-00	1500

Received By:

Signature	Date	Time
Jeanne Jimino	9/26/00	1135

Samples Iced: ☑ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Cyanide ..... Sodium hyroxide (NaOH)
- ☐ Volatile Organic Analysis ..... Hydrochloric acid (HCl)
- ☐ Metals ..... Nitric acid (HNO_3)
- ☐ TPH (418.1) ..... Sulfuric acid (H_2SO_4)
- ☑ Other (Specify) H_2SO_4
- ☐ Other (Specify) _____

Carrier: Grey Hound
Airbill No. GLI 160691 8687

Shipping and Lab Notes:

Rec'd @ 6° C Ice Present

PHILIP ENVIRONMENTAL

WELL DEVELOPMENT AND PURGING DATA

Well Number MW 01 ☐ Development ☑ Purging

Serial No. WDPD-

Project Name B.R. well Sampling Project Manager R. Thompson Project No. 62800228

Client Company Burlington Resources Phase.Task No. 0301

Site Name STANDARD Oil Com #1 Site Address Rural San Juan CO.

Development Criteria
- ☑ 3 to 5 Casing Volumes of Water Removal
- ☑ Stabilization of Indicator Parameters
- ☐ Other

Water Volume Calculation
- Initial Depth of Well (feet) 37.05
- Initial Depth to Water (feet) 26.37
- Height of Water Column in Well (feet) 10.68
- Diameter (inches): Well 2" Gravel Pack

Instruments — Serial No. (if applicable)
- ☑ pH Meter — Hydac
- ☐ DO Monitor
- ☑ Conductivity Meter — Hydac
- ☑ Temperature Meter — Hydac
- ☐ Other

Methods of Development

Pump
- ☐ Centrifugal
- ☐ Submersible
- ☐ Peristaltic

Bailer
- ☑ Bottom Valve
- ☐ Double Check Valve
- ☐ Stainless-steel Kemmerer

☐ Other

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	10.68	1.74X3	5.22
Gravel Pack			
Drilling Fluids			
Total			5.22

Water Disposal in pit on site

Water Removal Data

Date	Time	Development Method: Pump	Development Method: Bailer	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gallons): Increment	Water Volume Removed (gallons): Cumulative	Product Volume Removed (gallons): Increment	Product Volume Removed (gallons): Cumulative	Temperature (°C)	pH	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/l)	Comments
12-13-00	1439		X				1.25	1.25			11.4	6.52	11190		Cloudy gray petroleum odor
	1443		X				1.25	2.50			12.6	6.76	11750		" "
	1449		X				1.25	3.75			11.7	6.63	11870		no change
							1.25	5							
							1.25	6.25							

Circle the date and time that the development criteria are met.

Comments AFTer Bailing Approximately 3 gallons Bailed well Dry 1450 LeT Recover Collected Sample 1510

Developer's Signature(s) [signature] Date 12-13-00 Reviewer RT Date 12/18/00

ACZ Laboratories, Inc.

January 10, 2001

Robert Thompson
Philip Services
4000 Monroe Road
Farmington, NM 87401

Project: L30205

Dear Robert Thompson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 19, 2000. This project has been assigned to ACZ's project number, L30205. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 7.0. The enclosed results relate only to the samples received under L30205.

Please assess the enclosed report only in its entirety. ACZ prohibits the reproduction of this report, except in full, without the written approval of ACZ. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after February 10, 2001. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs.

If you have any questions, please contact your Project Manager or Customer Service Representative.

Sincerely,

Greta Coram

ACZ Laboratories, Inc.
Document Control

2773 Downhill Drive
Steamboat Springs, CO 80487

Phone (800) 334-5493
FAX No. (970) 879-2216

ACZ

Analytical Results

ACZ Laboratories, Inc.
2773 Downhill Drive
Steamboat Springs, CO 80487
(800) 334-5493

Lab Sample ID: ***L30205-02***
Client Sample ID: *Standard 1 MW01*
Client Project ID: *62800228*
ACZ Report ID: *RG137217*

Philip Services
4000 Monroe Road
Farmington, NM 87401
Robert Thompson

Date Sampled: *12/13/00 15:10*
Date Received: *12/19/00*
Date Reported: *12/31/00*

Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylenes

Analysis Method: **M8020**
Extract Method: **M5030**

Analyst: *smp*
Extract Date: *12/20/00*
Analysis Date: *12/20/00*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	19	U	ug/L	0.2	0.5
Toluene	000108-88-3	18	U	ug/L	0.2	1
Ethylbenzene	000100-41-4	93	U	ug/L	0.2	1
Xylenes (total)	001330-20-7	570	U	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
4-Bromofluorobenzene (Surr)	000460-00-4	170	%	80	120

Surrogate recovery elevated due to hydrocarbon coelution.

Organic Notes and Qualifiers

MDL = Method Detection Limit; PQL = Practical Quantitation Limit

LCL = Lower Control Limit; UCL = Upper Control Limit

Qualifiers: (Based on EPA CLP 3/90)

U = Analyte was analyzed for but not detected at the indicated MDL

J = Analyte concentration detected at a value between MDL and PQL

B = Analyte found in daily method blank

Organic Supervisor Paul Leschensky

L 30205.

PHILIP ENVIRONMENTAL

Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401
(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2842

Project Name B.R. well Sampling
Project Number 62900224 Phase . Task 0301.
Samplers C. Macz
Laboratory Name A.C.Z - LA135
Location Steam Boat Springs CO.

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle: BTEX 8021	Comments
STANDARD Oil Com. #1 MW 01	12-13-00	1510	H2O			STANDARD OIL Com. #1

Relinquished by:

Signature	Date	Time
Chris A. Macz	12 18 00	1500

Received By:

Signature	Date	Time
[illegible] / AC7.	12/19	10:30

Samples Iced: ☑ Yes ☐ No

Carrier: [illegible] U.P.S. Airbill No.

Preservatives (ONLY for Water Samples)

- ☐ Cyanide ..... Sodium hyroxide (NaOH)
- ☐ Volatile Organic Analysis ..... Hydrochloric acid (HCl)
- ☐ Metals ..... Nitric acid (HNO_3)
- ☐ TPH (418.1) ..... Sulfuric acid (H_2SO_4)
- ☑ Other (Specify) H_5C_6
- ☐ Other (Specify)

Shipping and Lab Notes:

20

PE-176 4/95

LETTER TO MR. OLSON
DATED SEPTEMBER 10, 1999

BURLINGTON RESOURCES

SAN JUAN DIVISION

September 10, 1999

Certified Mail: Z 186 732 855

Bill Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

RE: Standard Oil Com #1
Unit Letter N, Section 36, Township 29N, Range 9W
Notification of Groundwater Impact

Dear Mr. Olson:

As per the e-mail notification dated August 31, 1999 (Mr. Hasely to Mr. Olson), this letter is Burlington Resources' (BR) written notification of groundwater impact at the subject location. The final analytical results and final paperwork from the consultant did not make it to my attention until recently.

Due to El Paso having groundwater impacts at this location, BR conducted an initial assessment of an earthen pit that was no longer in use on the Standard Oil Com #1 location. The former separator/tank drain earthen pit had levels above closure standards and BR excavated soils to 31 feet below ground surface. Groundwater seeped into the excavation at this depth. Soil samples from the bottom of the excavation were collected and tested above pit closure standards. Clean overburden was pushed into the excavation to partially backfill the hole. The excavated soils were landfarmed until the soils tested below cleanup standards, and then the landfarmed soils were used to finish backfilling the excavation. BR conducted vertical extent determination in the center of BR's former earthen pit and encountered groundwater at approximately 26 feet. BR installed a temporary groundwater monitoring well. After developing the well and allowing it to stabilize for one week, the well was purged and sampled on August 18, 1999. The sample results are as follows:

Benzene	1500 ppb
Toluene	135 ppb
Ethylbenzene	106 ppb
Total Xylenes	586 ppb

Included with this letter are the original Pit Remediation and Closure Reports for the BR earthen pit along with the analytical results of the soil testing. Also attached are the groundwater lab analysis, the drilling log, the monitoring well installation record, and a location diagram.

3535 East 30th St., 87402-8801. P.O. Box 4289. Farmington. New Mexico 87499-4289. Telephone 505-326-9700. Fax 505-326-9833

The temporary monitoring well will be completed as permanent. BR will conduct future activities at the site pursuant to Burlington Resources' Groundwater Management Plan, and it is our intention to work in conjunction with El Paso to assure proper assessment and closure. If you have questions or additional information is needed, please contact me at (505) 326-9841.

Sincerely,

Ed Hasely
Sr. Staff Environmental Representative

Attachments: Pit Remediation and Closure Report
Drilling Log/Wellbore Diagram
Analytical Results - Groundwater
Location Diagram

cc: Denny Foust - NMOCD Aztec
Sandra Miller - El Paso
Ken Raybon
Ward Arnold
Bruce Gantner
Facility File
Correspondence

Pit Remediation and Closure Report

District I
P.O. Box 1980, Hobbs, NM
District II
P.O. Drawer DD, Artesia, NM 88211
District III
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBMIT 1 COPY TO APPROPRIATE DISTRICT OFFICE AND 1 COPY TO SANTA FE OFFICE

(Revised 3/9/94)

PIT REMEDIATION AND CLOSURE REPORT

Operator: Burlington Resources Telephone: (505) 326-9700

Address: 3535 E. 30th Farmington NM 87402

Facility Or: Standard Oil Com #1
Well Name

Location: Unit or Qtr/Qtr Sec N Sec 36 T 29N R 9W County San Juan

Pit Type: Separator X Dehydrator ___ Other Tank Drain

Land Type: BLM ___, State X, Fee ___, Other ___

Pit Location: (Attach diagram)

Pit dimensions: length 20, width 10, depth 1

Reference: wellhead X, other ___

Footage from reference: 60 ft

Direction from reference: 75 Degrees X East North ___ of ___ West South X

Depth To Ground Water: (Vertical distance from contaminants to seasonal high water elevation of ground water)	Less than 50 feet (20 points) 50 feet to 99 feet (10 points) Greater than 100 feet (0 Points)	20
Wellhead Protection Area: (Less than 200 feet from a private domestic water source, or; less than 1000 feet from all other water sources)	Yes (20 points) No (0 points)	0
Distance To Surface Water: (Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet (20 points) 200 feet to 1000 feet (10 points) Greater than 1000 feet (0 points)	0
	RANKING SCORE (TOTAL POINTS):	20

Date Remediation Started: 12/10/98 Date Completed: _____

Remediation Method: (Check all appropriate sections) Excavation X Approx. cubic yards 1140

Landfarmed X Insitu Bioremediation ___

Other _____

Remediation Location: (ie. landfarmed onsite, name and location of offsite facility) Onsite X Offsite Standard Oil Com #1A - E Sec 36-29N-9W

General Description Of Remedial Action: Soils were removed to an approximate depth of 31 ft which was practical extent. Soil samples were collected. Groundwater seeped into excavation. The excavation was partially backfilled with clean overburden, the completely backfilled with the remediated landfarm soil. A groundwater monitoring well was installed in the center of the former excavation.

Ground Water Encountered: No ___ Yes X Depth 31 ft

Final Pit: Closure Sampling: (if multiple samples, attach sample results and diagram of sample locations and depths)

Sample location Bottom of excavation

Sample depth 31 ft

Sample date 12/14/98 Sample time 2:30 pm

Sample Results

Benzene(ppm) 1.7

Total BTEX(ppm) 126.9

Field headspace(ppm) 321

TPH 2160

Ground Water Sample: Yes ___ No X (If yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 9/8/99

SIGNATURE Ed Hasely

PRINTED NAME AND TITLE Ed Hasely Sr. Staff Environmental Rep.

PHILIP SERVICES CORP

PRODUCTION PIT REMEDIATION FORM

WELL NAME: Standard Oil Com #1 WELL NO.: _____ DP NO.: _____

OPERATOR NAME: Burlington Resources P/L DISTRICT: _____

COORDINATES: LETTER: N SECTION: 36 TOWNSHIP: 029N RANGE: 009W

PIT TYPE: DEHYDRATOR: X LOCATION DRIP: _____ LINE DRIP: _____ OTHER: _____

FOREMAN NO.: ~~Wayne Ritter~~ Ward Arnold AREA: Largo Canyon

INITIAL REMEDIATION ACTIVITIES

DATE: 12-10-98 TIME: 7:00

GROUND WATER ENCOUNTERED? ☒ Y / N

INSIDE NMOCD ZONE

FINAL EXCAVATION DIMENSIONS: LENGTH: 53 WIDTH: 41 DEPTH: 31

APPROX. CUBIC YARDS: 2,642 FINAL PID READING: 321 ppm

REMEDIATION METHOD: ONSITE LANDFARM X 340 cu.yd

OFFSITE LANDFARM X LOCATION: Sundard Oil Com #1A 300 cu.yd

OTHER_

LANDFARM DIMENSIONS: LENGTH: _____ WIDTH: _____

OUTSIDE NMOCD ZONE

FINAL SAMPLE DEPTH: _____ FINAL PID READING: _____

EXCAVATION SAMPLING INFORMATION

IF PID READINGS ARE LESS THAN 100 PPM, SAMPLE TAKEN DURING EXCAVATION)

SAMPLE DATE: _____ SAMPLE NOS _____ _____

SAMPLE ANALYSIS: TPH METHOD 8015 MODIFIED

IF PID READINGS ARE GREATER THAN 100 PPM, NO SAMPLE WILL BE TAKEN DURING EXCAVATION. THE EXCAVATION WILL BE SAMPLED PRIOR TO BACKFILLING (SEE ADDITIONAL SAMPLING SECTION).

REMARKS: TPH - Bottom 1103 ppm
TPH - Composite 241 ppm
Contaminated Soil = 1,140 cu.yd.
Clean Soil = 1,502 cu.yd.

SIGNATURE: Robert Thompson DATE: 12/10/98

ADDITIONAL REMEDIATION ACTIVITIES

SOIL TILLING

DATE: _____ PID READING: _____ SIGNATURE: _____

REMARKS: _____

DATE: _____ PID READING: _____ SIGNATURE: _____

REMARKS: _____

DATE: _____ PID READING: _____ SIGNATURE: _____

REMARKS: _____

DATE: _____ PID READING: _____ SIGNATURE: _____

REMARKS: _____

ADDITIONAL SAMPLING INFORMATION

EXCAVATION SAMPLING(IF REQUIRED)

IF NO SAMPLE WAS TAKEN DURING EXCAVATION, THE EXCAVATION WILL BE SAMPLED BEFORE BACKFILLING).

SAMPLE DATE: _____ SAMPLE NOS _____ _____

SIGNATURE: _____

IF PID READINGS ARE LESS THAN 100 PPM , SAMPLE ANALYSIS: TPH METHOD 8015 MODIFIED

IF PID READINGS ARE GREATER THAN 100 PPM, SAMPLE ANALYSES: BTEX METHOD 8020 AND TPH METHOD 8015 MODIFIED

SOIL REMEDIATION VERIFICATION SAMPLE

SAMPLE DATE: _____ SAMPLE NOS _____ _____

SIGNATURE: _____

SAMPLE ANALYSIS: TPH METHOD 8015 MODIFIED

BACKFILLING INFORMATION

DATE: _____ TIME: _____

BACKFILL SOURCE: ONSITE LANDFARM: _____

OFFSITE SOURCE: _____ APPROX. VOLUME: _____

REMARKS: _____

_____

_____

SIGNATURE: **DATE:**

807 S. CARLTON AVE.
FARMINGTON. NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Certificate of Analysis No. 9812099-01a

Philip Environmental Services
4000 Monroe Road
Farmington, NM 87401
Attn: Robert Thompson

Date: 12/29/98

Project:	BR Pits	Project No:	20440
Site:	Farmington	Matrix:	Soil
Sampled By:	R. Thompson	Date Sampled:	12/14/98
Sample ID:	Standard Oil COM #1-BOT	Date Received:	12/15/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Benzene	1700	1000 (P)	µg/Kg
Toluene	23000	1000 (P)	µg/Kg
Ethylbenzene	9200	1000 (P)	µg/Kg
Total Xylene	93000	1000 (P)	µg/Kg
Total Volatile Aromatic Hydrocarbons	126900		µg/Kg

Surrogate	% Recovery
1,4,Difluorobenzene	100
4-Bromofluorobenzene	127

Method 8020A***
Analyzed by: AA
Date: 12/19/98

ND-Not Detected MI-Matrix Interference (P)-Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Comments: Sample contains petroleum hydrocarbons from C10 - C24 that do not resemble a diesel pattern. (C10 - C24)RR

Billy G. Rich, Lab Director

® Certificate of Analysis No. 9812099-01b

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Philip Environmental Services
4000 Monroe Road
Farmington, NM 87401
Attn: Robert Thompson

Date: 12/29/98

Project:	BR Pits	Project No:	20440
Site:	Farmington	Matrix:	Soil
Sampled By:	R. Thompson	Date Sampled:	12/14/98
Sample ID:	Standard Oil COM #1-BOT	Date Received:	12/15/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Gasoline Range Organics	2000	100 (P)	mg/kg
Surrogate	**% Recovery**		
1,4,Difluorobenzene	83		
4-Bromofluorobenzene	223MI		
Method 8015B*** for Gasoline			
Analyzed by: AA			
Date: 12/19/98			
Total Petroleum Hydrocarbons-Diesel	160	10 (P)	mg/kg
Surrogate	**% Recovery**		
n-Pentacosane	96		
Method 8015B*** for Diesel			
Analyzed by: RR			
Date: 12/18/98			

MI-Matrix Interference (P)-Practical Quantitation Limit ND-Not Detected

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Comments: Sample contains petroleum hydrocarbons from C10 - C24 that do not resemble a diesel pattern. (C10 - C24)RR

Billy G. Rich, Lab Director

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Certificate of Analysis No. 9812099-02a

Philip Environmental Services
4000 Monroe Road
Farmington, NM 87401
Attn: Robert Thompson

		Date:	12/29/98
Project:	BR Pits	Project No:	20440
Site:	Farmington	Matrix:	Soil
Sampled By:	R. Thompson	Date Sampled:	12/14/98
Sample ID:	Standard Oil COM #1-WALL	Date Received:	12/15/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Benzene	ND	5.0 (P)	µg/Kg
Toluene	5.5	5.0 (P)	µg/Kg
Ethylbenzene	44	5.0 (P)	µg/Kg
Total Xylene	540	5.0 (P)	µg/Kg
Total Volatile Aromatic Hydrocarbons	589.5		µg/Kg

Surrogate	% Recovery
1,4,Difluorobenzene	100
4-Bromofluorobenzene	133

Method 8020A***
Analyzed by: AA
Date: 12/16/98

ND-Not Detected MI-Matrix Interference (P)-Practical Quantitation Limit

Notes:
*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Comments: Sample contains petroleum hydrocarbons from C10 - C24 that do not resemble a diesel pattern. (C10 - C24) RR

Billy G. Rich, Lab Director

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Certificate of Analysis No. 9812099-02b

Philip Environmental Services
4000 Monroe Road
Farmington, NM 87401
Attn: Robert Thompson

Date: 12/29/98

Project:	BR Pits	Project No:	20440
Site:	Farmington	Matrix:	Soil
Sampled By:	R. Thompson	Date Sampled:	12/14/98
Sample ID:	Standard Oil COM #1-WALL	Date Received:	12/15/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Gasoline Range Organics	12	0.5 (P)	mg/kg
Surrogate	**% Recovery**		
1,4,Difluorobenzene	93		
4-Bromofluorobenzene	533MI		
Method 8015B*** for Gasoline			
Analyzed by: AA			
Date: 12/16/98			
Total Petroleum Hydrocarbons-Diesel	190	10 (P)	mg/kg
Surrogate	**% Recovery**		
n-Pentacosane	80		
Method 8015B*** for Diesel			
Analyzed by: RR			
Date: 12/18/98			

MI-Matrix Interference (P)-Practical Quantitation Limit D-Diluted, limits not applicable

Notes:
*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Comments: Sample contains petroleum hydrocarbons from C10 - C24 that do not resemble a diesel pattern. (C10 - C24) RR

Billy G. Rich, Lab Director

PHILIP

Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401
(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2327

Project Name

Project Number Phase . Task

Samplers

Laboratory Name

Location

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	Type of Analysis and Bottle													Comments
	12/14/98	14:37	soil	1	✓	✓												1178 PPM
	12/14/98	11:52	soil	1	✓	✓												521 PPM

Relinquished by:

Signature	Date	Time
	12/15/98	0700
	12/15/98	11:04 AM

Received By:

Signature	Date	Time
	12/15/98	11:04 AM
	12/15/98	

Samples Iced: ☑ Yes ☐ No

Preservatives (ONLY for Water Samples)

- ☐ Cyanide ..... Sodium hyroxide (NaOH)
- ☐ Volatile Organic Analysis ..... Hydrochloric acid (HCl)
- ☐ Metals ..... Nitric acid (HNO_3)
- ☐ TPH (418.1) ..... Sulfuric acid (H_2SO_4)
- ☐ Other (Specify)
- ☐ Other (Specify)

Carrier: Airbill No.

Shipping and Lab Notes:

PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 12-14-98
Operator: Paul Archuleta
Location: Stevens Oil Com #1

Calibration Time/Date: 200 12-14-98
Calibration Temperature: 37.5

No.	Sample ID	Weight	Time/Date	Reading (ppm)	DF[1]	RF[2]	Actual (ppm)	Comments
1	#1	10g	2:10	241 ppm				composite sample
2	#2	10g	2:20	1103 ppm				Duplicate Sample
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

[1]DF = Dilution Factor, e.g., for 5 gram soil sample DF=10g/5g=2, and actual concentration equals reading times DF (reading (ppm) x DF = actual concentration).

[2]RF = Response Factor, selected for the hydrocarbon contamination at the site.

PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 12/10/98 Calibration Time/Date: 10:30 12/10/98

Operator: Calibration Temperature: 23.5 C

Location: Standard Oil Can #1

No.	Sample ID	Weight	Time/Date	Reading (ppm)	DF[1]	RF[2]	Actual (ppm)	Comments
1	1	10 g	12:17 12/10/98	235 ppm				error Greater than 10° between Calibration
2	2	10 g	13:17 12/10/98	1276 ppm				and the sample.
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

[1]DF = Dilution Factor. e.g., for 5 gram soil sample DF=10g/5g=2. and actual concentration equals reading times DF (reading (ppm) x DF = actual concentration).

[2]RF = Response Factor. selected for the hydrocarbon contamination at the site.

PHILIP ENVIRONMENTAL

SITE SKETCH

Serial No. SS- _____ Title _____

Project Name BR PITS Project No. 20440

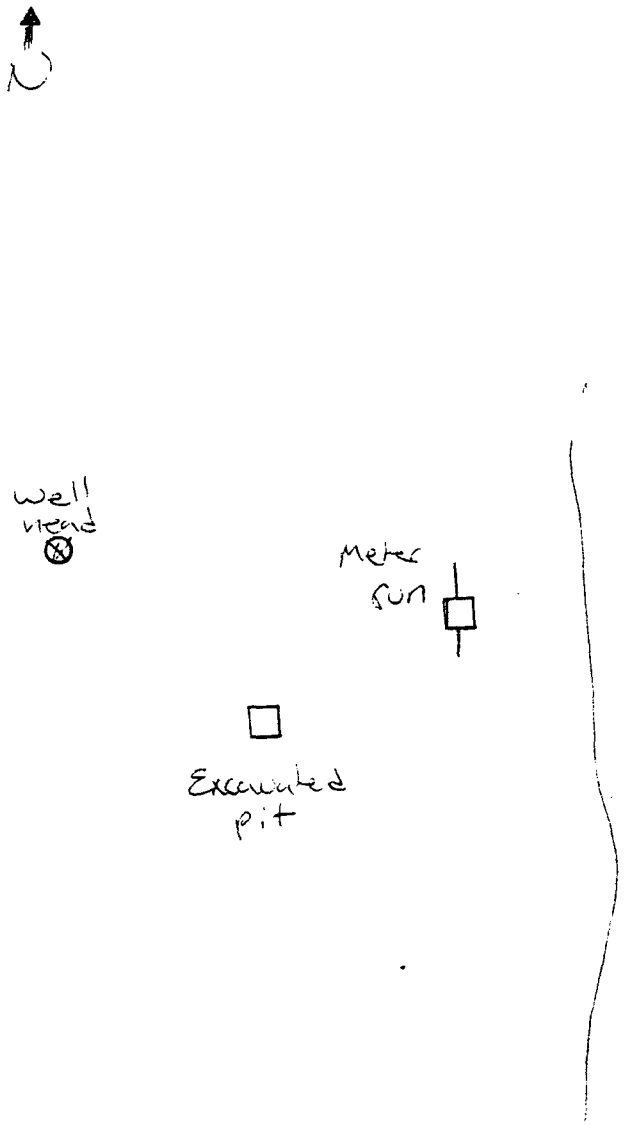
Project Manager Robert Thompson Phase.Task No. 4000.77

Client Company Burlington Resources

Site Name Standard oil Com #1

Site Address _____

(Include north arrow and scale or dimensions, if available, prepnnt CAD drawing of site on this form.)



Sketched by (signature) _____ Date _____

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

AGRA Earth & Environmental, Inc.
2060 Afton Place
Farmington, NM 87401
Tel: (505) 327-7928
Fax: (505) 326-5721

December 15, 1998
AEE Project No. 8529-000203

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401

Attention: **Mr. Robert Thompson**

Regarding: **Environmental Cleanup Excavation**
Burlington Resources Oil and Gas Company
Standard Oil Com # 1 Well Site
1090 Feet FSL and 1850 Feet FWL
Section 36 Township 29 North, Range 9 West, N.M.P.M.
Lease No. B-111221 - Elevation 5683
San Juan County, New Mexico

Ladies and Gentlemen:
In accordance with the request of Mr. Robert Thompson of Philip Environmental, AGRA Earth and Environmental, Inc. (AEE) personnel visited the referenced site on Friday, December 11, 1998. The purpose of this visit was to observe the existing excavation and provide guidelines for expanding the excavation. The excavation was about 31 feet deep at the time of our site visit. It is understood that the excavation will be expanded laterally until the contaminated soil is removed.

The soils observed consisted of a fairly loose silty sand which exhibited signs of sloughing in the open excavation. The west side of the excavation appeared to be sandstone. It is recommended that in all areas, where equipment will be working in the excavation, the sides of the excavation in the soil be laid-back at an angle not to exceed 2:1 (horizontal to vertical). The sandstone side of the excavation should be laid back at an angle not to exceed ¾:1 (horizontal to vertical). The equipment should not enter into the excavation any deeper than is absolutely necessary. In areas where existing facilities prevent the 2:1 layback, the sides may be benched at a minimum of 8 feet horizontal to 8 feet vertical. Work in areas where the benching is used should be for short periods of time as the instability of these areas will increase as the soils begin to dry. Spoils and equipment should be kept away from the edge of the excavation a distance at least equal to the depth of the excavation. The edges of the excavation should be checked regularly for tension cracks or other signs of possible slope failure. Any areas showing signs of slope failure should be repaired prior to personnel or equipment entering the excavation.

We appreciate the opportunity to be of service on this project. If you should have any questions, please do not hesitate to contact the undersigned.

Respectfully submitted,
AGRA Earth & Environmental, Inc.

Kim M. Preston, P.E.
Four Corners Area Manager

Copies: Addressee (3)

Drilling Log/Wellbore Diagram

ENVIROTECH INC.

FIELD BORING LITHOLOGY LOG **MW-1**

Soil Boring #	PROJECT #		CLIENT NAME: **Burlington Resources**		Page
MW-1	9219701		Standard Oil Com. #1		1 of 2
Date Started:	08/11/99	Location:	Largo Canyon, Blanco, New Mexico		
Date Completed:	08/11/99	Elevation:	TOC:		
Type of Drill:	Mobil B-61	Driller:	Matt Cain	Geotech:	James Cowles
Bit Size:	7" Hollow Stem Auger	Helper:	Donn Eisenhaure	Proj. Mg.:	James Cowles

Depth ft.	Completion: MW	Sample Type	TPH ppm (8015)	OVM PPM	Lithology	Description
0.0		A				0.0'- 1.0' fill dirt/ material
		A				
		A				
2.0		A				
		A				brown sand and silt, moist, loose, no odor.
		A				
		A				
4.0		SS		0.0		
		SS				
		A				
		A				
6.0		A				
		A				
		A				
		A				
8.0		A				
		A				
		SS		0.0		brown sand and silt, moist, loose, no odor.
		SS				
10.0		A				
		A				
		A				
		A				
12.0		A				
		A				
		A				
		A				
14.0		SS		4.0		brown sand and silt, moist, loose, no odor.
		SS				
		A				
		A				
16.0		A				
		A				
		A				
		A				
18.0		A				
		A				
		A				
		SS		0.0		brown sand and silt, moist, loose, no odor.
20.0		SS				
		A				
		A				
		A				
22.0		A				
		A				
		A				
		A				
24.0		SS				brown sand and silt, very moist, loose, no odor.
		SS				
		A				
		A				
26.0		A				
		A				
		A				
		A				Native Soil, clayey sands, very moist, gray-black, odor.
28.0		A				loose, sandy clay
		SS		320.0		
		SS				
30.0						
32.0						

Legend		Lithology		Monitor Well Completion
A	Auger Samples		Fill:	Cement Grout
SS	Split Spoon		Cobble	Screen PVC
CS	Continuous Sampler		Sand	Blank PVC Screen
AR	Air Rotary Cuttings		clay	Sand Pack
			silt	Bentonite Seal

Note: All depths are below ground level

ENVIROTECH INC.

FIELD BORING LITHOLOGY LOG **MW-1**

Soil Boring #	PROJECT =		CLIENT NAME: **Burlington Resources**	Page
MW-1	**9219701**		Standard Oil Com. #1	2 of 2
Date Started:	**08/11/99**	Location:	Largo Canyon, Blanco, New Mexico	
Date Completed:	**08/11/99**	Elevation:	TOC:	
Type of Drill:	Mobil B-61	Driller:	Matt Cain	Geotech: James Cowles
Bit Size:	7" Hollow Stem Auger	Helper:	Donn Eisenhaure	Proj. Mg.: James Cowles

Depth ft.	Completion: MW	Sample Type	TPH ppm (8015)	OVM PPM	Lithology	Description
32.0		A				
		A				
		A				
34.0		SS				Native Soil, clayey sands, dry, gray, no odor.
		SS				hard sandy clay
		A				
		A				
36.0		A		27.0		
		A				
		A				
		A				
38.0		A				
		A				TD 39', Native Soil, clayey sands, dry, gray, no odor.
39.0		SS				very hard

Legend:

Sample type:
- A Auger Samples
- SS Split Spoon
- CS Continuous Sampler
- AR Air Rotary Cuttings

Lithology
- Fill:
- Cobble
- Sand
- clay
- silt

Monitor Well Completion
- Cement Grout
- Screen PVC
- Blank PVC Screen
- Sand Pack
- Bentonite Seal

Note: All depths are below ground level

Analytical Results - Groundwater

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Burlington	Project #:	219701
Sample ID:	WS - 1	Date Reported:	08-19-99
Chain of Custody:	7285	Date Sampled:	08-18-99
Laboratory Number:	F932	Date Received:	08-18-99
Sample Matrix:	Water	Date Analyzed:	08-19-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**1,500**	**10**	**1.8**
Toluene	**135**	**10**	**1.7**
Ethylbenzene	**106**	**10**	**1.5**
p,m-Xylene	**409**	**10**	**2.2**
o-Xylene	**177**	**10**	**1.0**
Total BTEX	**2,330**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**99 %**
	Bromofluorobenzene	**99 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **Standard Oil Com #1.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	08-19-BTEX QA/QC	Date Reported:	08-19-99
Laboratory Number:	F932	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	08-19-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	3.6219E-001	3.6335E-001	**0.32%**	**ND**	**0.2**
Toluene	2.7867E-002	2.7872E-002	**0.02%**	**ND**	**0.2**
Ethylbenzene	4.1931E-002	4.1981E-002	**0.12%**	**ND**	**0.2**
p,m-Xylene	3.6569E-002	3.6576E-002	**0.02%**	**ND**	**0.2**
o-Xylene	3.1955E-002	3.2051E-002	**0.30%**	**ND**	**0.1**

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	**1,500**	**1,430**	**4.7%**	**0 - 30%**
Toluene	**135**	**130**	**3.8%**	**0 - 30%**
Ethylbenzene	**106**	**102**	**3.8%**	**0 - 30%**
p,m-Xylene	**409**	**408**	**0.4%**	**0 - 30%**
o-Xylene	**177**	**170**	**4.0%**	**0 - 30%**

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	**1,500**	**50.0**	**1,540**	**99%**	**39 - 150**
Toluene	**135**	**50.0**	**187**	**101%**	**46 - 148**
Ethylbenzene	**106**	**50.0**	**157**	**101%**	**32 - 160**
p,m-Xylene	**409**	**100.0**	**507**	**100%**	**46 - 148**
o-Xylene	**177**	**50.0**	**228**	**101%**	**46 - 148**

ND - Parameter not detected at the stated detection limit.

* - Administrative Limits set at 80 - 120%.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for sample F932.**

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PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client:	Burlington	Project #:	219701
Sample ID:	WS - 2	Date Reported:	08-19-99
Laboratory Number:	F933	Date Sampled:	08-18-99
Chain of Custody:	7285	Date Received:	08-18-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	08-19-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	**7.10**	s.u.		
Conductivity @ 25° C	**16,170**	umhos/cm		
Total Dissolved Solids @ 180C	**8,070**	mg/L		
Total Dissolved Solids (Calc)	**7,930**	mg/L		
SAR	**18.5**	ratio		
Total Alkalinity as CaCO3	**780**	mg/L		
Total Hardness as CaCO3	**1,850**	mg/L		
Bicarbonate as HCO3	**780**	mg/L	12.78	meq/L
Carbonate as CO3	**<1**	mg/L	0.00	meq/L
Hydroxide as OH	**<1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**10.5**	mg/L	0.17	meq/L
Nitrite Nitrogen	**1.72**	mg/L	0.04	meq/L
Chloride	**192**	mg/L	5.42	meq/L
Fluoride	**1.46**	mg/L	0.08	meq/L
Phosphate	**8.6**	mg/L	0.27	meq/L
Sulfate	**4,700**	mg/L	97.85	meq/L
Iron	**0.038**	mg/L		
Calcium	**650**	mg/L	32.44	meq/L
Magnesium	**53.7**	mg/L	4.42	meq/L
Potassium	**8.5**	mg/L	0.22	meq/L
Sodium	**1,830**	mg/L	79.61	meq/L
Cations			116.68	meq/L
Anions			116.61	meq/L
Cation/Anion Difference			**0.06%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Standard Oil Com #1.**

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PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 1311
TOXICITY CHARACTERISTIC LEACHING PROCEDURE
TRACE METAL ANALYSIS

Client:	Burlington	Project #:	219701
Sample ID:	WS - 3	Date Reported:	08-19-99
Laboratory Number:	F934	Date Sampled:	08-18-99
Chain of Custody:	7285	Date Received:	08-18-99
Sample Matrix:	Water	Date Analyzed:	08-19-99
Preservative:	Cool	Date Extracted:	N/A
Condition:	Cool & Intact	Analysis Needed:	TCLP metals

Parameter	Concentration (mg/L)	Det. Limit (mg/L)	Regulatory Level (mg/L)
Arsenic	**ND**	**0.001**	**5.0**
Barium	**5.20**	**0.01**	**21**
Cadmium	**ND**	**0.001**	**0.11**
Chromium	**0.05**	**0.01**	**0.60**
Lead	**ND**	**0.05**	**0.75**
Mercury	**ND**	**0.0001**	**0.025**
Selenium	**ND**	**0.001**	**5.7**
Silver	**ND**	**0.01**	**0.14**

ND - Parameter not detected at the stated detection limit.

References: Method 1311, Toxicity Characteristic Leaching Procedure, SW-846, USEPA, December 1996.

Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, December 1996.

Methods 7060, 7080, 7131, 7191, 7470, 7421, 7740, 7761 Analysis of Metals by GFAA and Cold Vapor Techniques, SW-846, USEPA. December 1996.

Note: Regulatory Limits based on 40 CFR part 261 subpart C section 261.24, August 24, 1998.

Comments: **Standard Oil Com #1.**

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PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 1311
TOXICITY CHARACTERISTIC LEACHING PROCEDURE
TRACE METAL ANALYSIS
Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	08-19-TCM QA/QC	Date Reported:	08-19-99
Laboratory Number:	F925	Date Sampled:	N/A
Sample Matrix:	TCLP Extract	Date Received:	N/A
Analysis Requested:	TCLP Metals	Date Analyzed:	08-19-99
Condition:	N/A	Date Extracted:	N/A

Blank & Duplicate Conc. (mg/L)	Instrument Blank	Method Blank	Detection Limit	Sample	Duplicate	% Diff.	Acceptance Range
Arsenic	ND	ND	0.001	ND	ND	0.0%	0% - 30%
Barium	ND	ND	0.01	0.20	0.20	0.0%	0% - 30%
Cadmium	ND	ND	0.001	ND	ND	0.0%	0% - 30%
Chromium	ND	ND	0.01	0.01	0.01	0.0%	0% - 30%
Lead	ND	ND	0.05	ND	ND	0.0%	0% - 30%
Mercury	ND	ND	0.0001	ND	ND	0.0%	0% - 30%
Selenium	ND	ND	0.001	ND	ND	0.0%	0% - 30%
Silver	ND	ND	0.01	ND	ND	0.0%	0% - 30%

Spike Conc. (mg/L)	Spike Added	Sample	Spiked Sample	Percent Recovery	Acceptance Range
Arsenic	0.100	ND	0.098	98.0%	80% - 120%
Barium	1.00	0.20	1.20	100.0%	80% - 120%
Cadmium	0.500	ND	0.490	98.0%	80% - 120%
Chromium	0.50	0.01	0.51	100.0%	80% - 120%
Lead	2.00	ND	2.00	100.0%	80% - 120%
Mercury	0.0250	ND	0.0248	99.2%	80% - 120%
Selenium	0.100	ND	0.097	97.0%	80% - 120%
Silver	0.50	ND	0.49	98.0%	80% - 120%

ND - Parameter not detected at the stated detection limit.

References: Method 1311, Toxicity Characteristic Leaching Procedure, SW-846, USEPA, Dec. 1996

Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: **QA/QC for samples F925, F928, F931, F934 and F922.**

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CHAIN OF CUSTODY RECORD

7285

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
Burlington	Standard Oil Com #1	
Sampler: James A. Coules	Client No. 92197-01	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	8021 BTEX	Anion/Cation	RCRA 8 RCP Metals				Remarks
WS-1	8-18-99	9:30	F932	Water	2	X						
WS-2	8-18-99	9:35	F933	Water	1		X					
WS-3	8-18-99	9:40	F934	Water	1			X				

	Date	Time		Date	Time
Relinquished by: (Signature) James Coules	8-18-99	11:00a	Received by: (Signature) Ellen P. Greer	8.18.99	11:00
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.

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Farmington, New Mexico 87401
(505) 632-0615

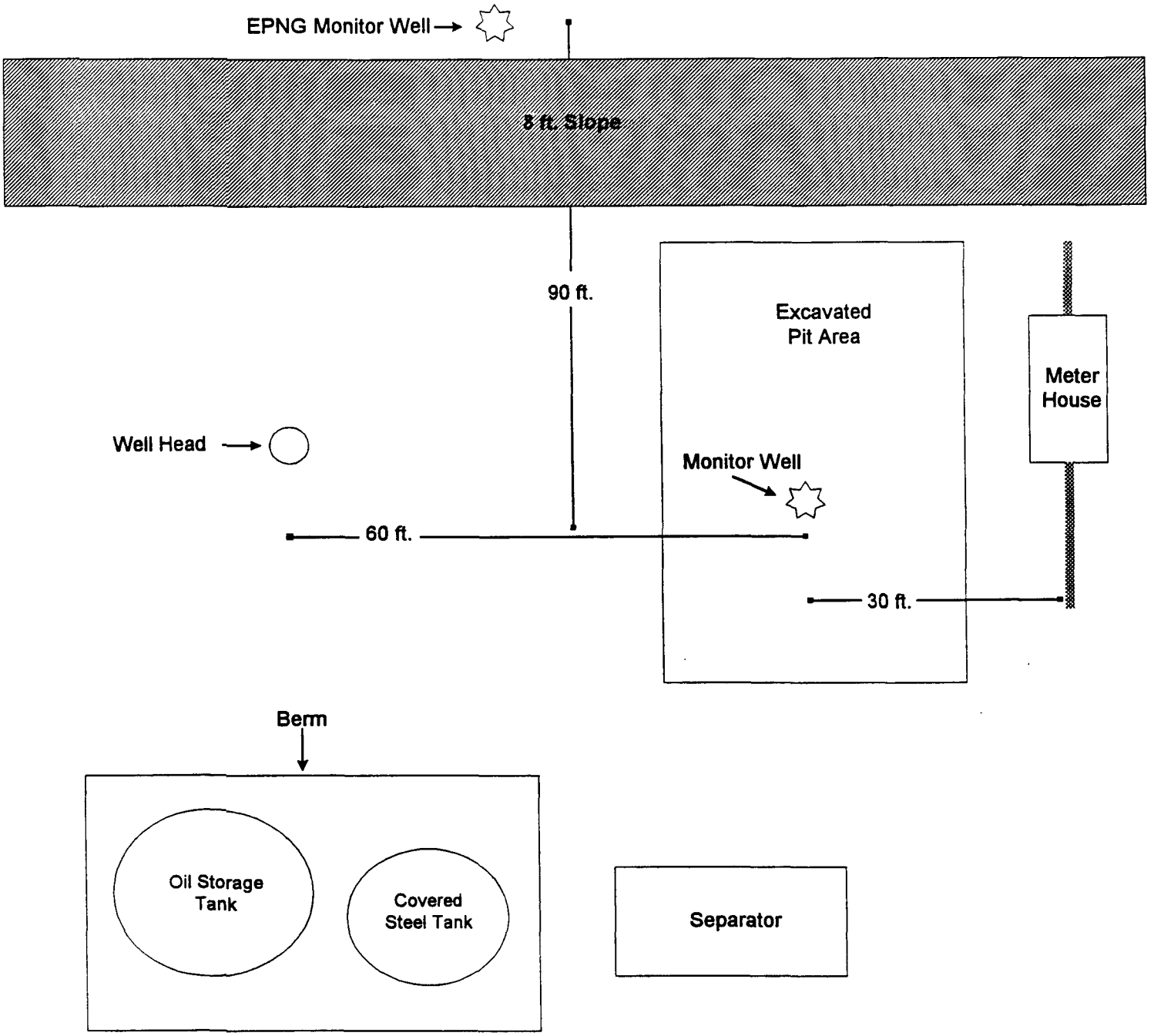
Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

Location Diagram

BURLINGTON RESOURCES

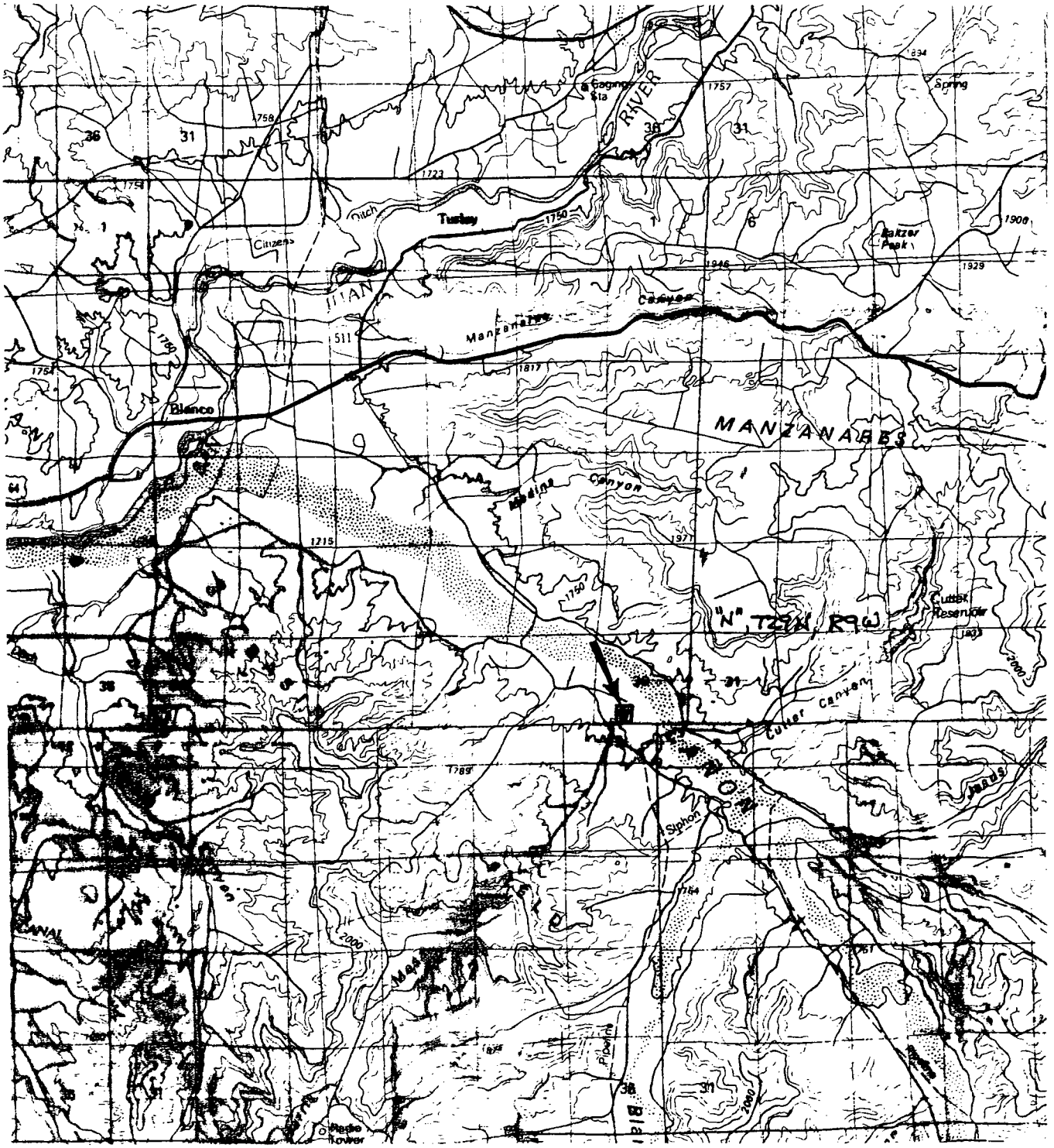
STANDARD OIL COM NO. 1

MONITOR WELL INSTALLATION



Not to scale - distances are approximate

stdoil1.vsd 9/10/99



All angles, directions, and distances determined by sighting and pacing from existing site features. Accuracy of measurementis implied only to the degree of accuracy of method.

Burlington Resources Standard Oil Com #1 Monitor Well Installation Largo Canyon Blanco, New Mexico San Juan County, NM	Envirotech Inc. Environmental Scientists & Engineers 5796 US Highway 64 Farmington, New Mexico	Vicinity Map
Project No.: 92197-01		Figure 1 | Date: 08/99 DRW: JAC | PRJ MGR: JAC