3R - 285

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

Maddox Com. 1A

SITE DETAILS

Location: Unit Letter I, Section 17, Township 30N, Range 8W; San Juan County, New Mexico
Land Type: Federal

2000 ACTIVITIES

A spill occurred at Burlington Resources (BR) Maddox Com 1A on 12/5/99. The spill released approximately 170 bbls of condensate with 110 bbls being recovered. The spill was contained on location. The NMOCD was notified on 12/17/00 of a possible impact to the groundwater at the site. A soil remediation program was started immediately to remediate the site. In the process of soil excavation a second source of contamination was identified and most likely a historic pit. Ground water was encountered at 15 feet during the excavation process. BR is in contact with the potentially responsible parties for sharing the environmental responsibility. Approximately 2000 cu. yds. of impacted soil was removed from the location south and southeast of the current storage tank and wellhead. The excavation was approximately 40 yds x 20 yds x 15 feet deep at the deepest. Impacted soils were excavated until all apparent source materials had been removed except for an area under the south side of the current storage tank location. Prior to backfilling, a potassium permanganate solution (i.e., Trade name Oxy-1) chemical was applied to the bottom and sides of the excavation to increase the passive remediation.

BR installed a source monitoring well (MW-1) in May 2000 within the area excavated and two downgradient wells MW-2 and MW-3 in January 2000. Groundwater data has been collected quarterly and is provided in Table 1 including laboratory reports. The source well was analyzed in the second quarter for a complete list of WCCC parameters incorrectly and a new analysis was performed in the forth quarter of 2000. A map of the site is included as Figure 1. A new laboratory, ACZ Laboratories in Steamboat, Colorado, was added for analysis of samples starting in the fourth quarter.

Activities 2001 and 2002

The quarterly ground water monitoring and trend analysis was completed.

CONCLUSIONS

Analytical results of ground water sampling from the monitoring wells in 2000 showed that in MW-1 (i.e., source well) initial levels of benzene, toluene, ethylbenzene and total xylenes were above New Mexico Groundwater Standards and the downgradient wells MW-2 and MW-3 were non-detect. Subsequent sampling events for the remaining quarters in 2000 showed that the levels of benzene, toluene, ethylbenzene and total xylenes were below the New Mexico Groundwater Standards in all wells. The general chemistry analysis completed in 2000 for the source well shows elevated levels for Chloride, TDS, and Sulfate. These are typical elevated concentrations for sodium sulfate type water that naturally occurs in this area and are not considered potential impacts from BR operations.

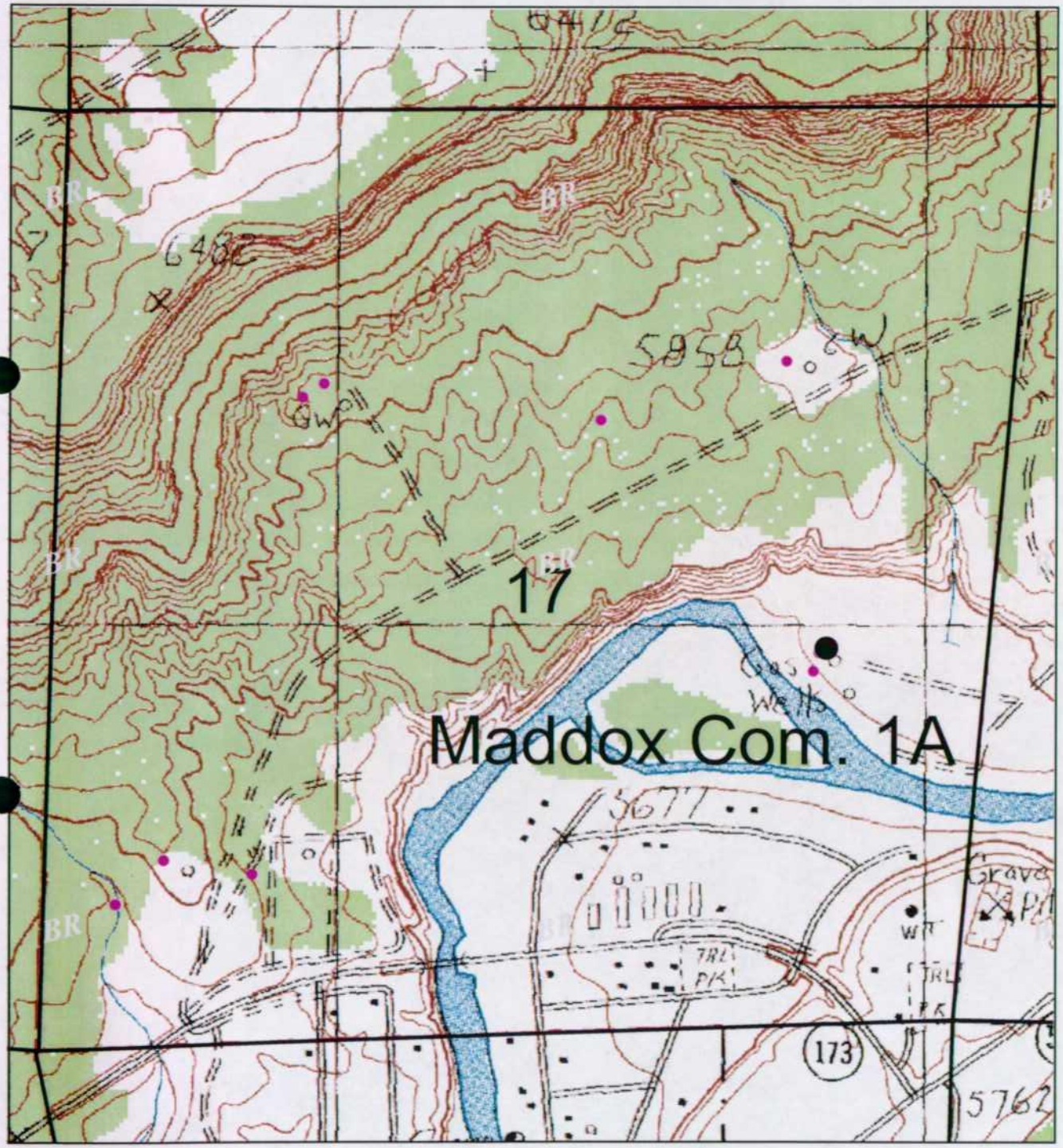
The quarterly ground water analyses completed in 2001 show a minor increasing trend of total BTEX in MW-1 with two elevated results of benzene in the third and forth quarters of 2001. The downgradient wells detected levels of constituents of concern that are below the NM standards. No trend could be determined.

The quarterly ground water analyses completed in 2002 show a decreasing trend of total BTEX in all the wells. No constituents of concern were detected above New Mexico Groundwater Standards in all four quarters of sampling. Based on the available data it appears that natural remediation of the soils and ground water have been an effective remediation approach at this location. The location is considered clean and no further ground water monitoring is necessary.

RECOMMENDATIONS

- Burlington Resources proposes to stop quarterly ground water monitoring at this site and submit the location for closure. A separate request for closure will be submitted.

Attachments: Figure 1 - Site Map
Table 1 - Groundwater Sampling Results Summary
2001 Groundwater Analytical Results
Spill report, excavation log, and Drilling Log/Wellbore Diagrams



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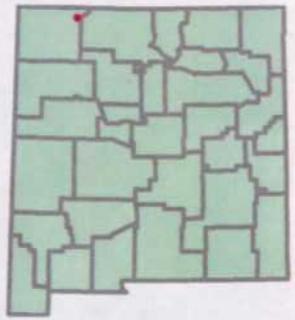
BURLINGTON RESOURCES PLAT

300 0 300 600 Feet



BURLINGTON RESOURCES
San Juan Division

Maddow Com. 1 A
Sec. 17, T30N-R8W
San Juan Co., NM

Transverse Mercator
UTM - 1927 ; Zone 13

1:10437

Prepared By: Cheryl Groth Date: 04/01/2002
File No: <Please enter file number> Revised: <Revision date>
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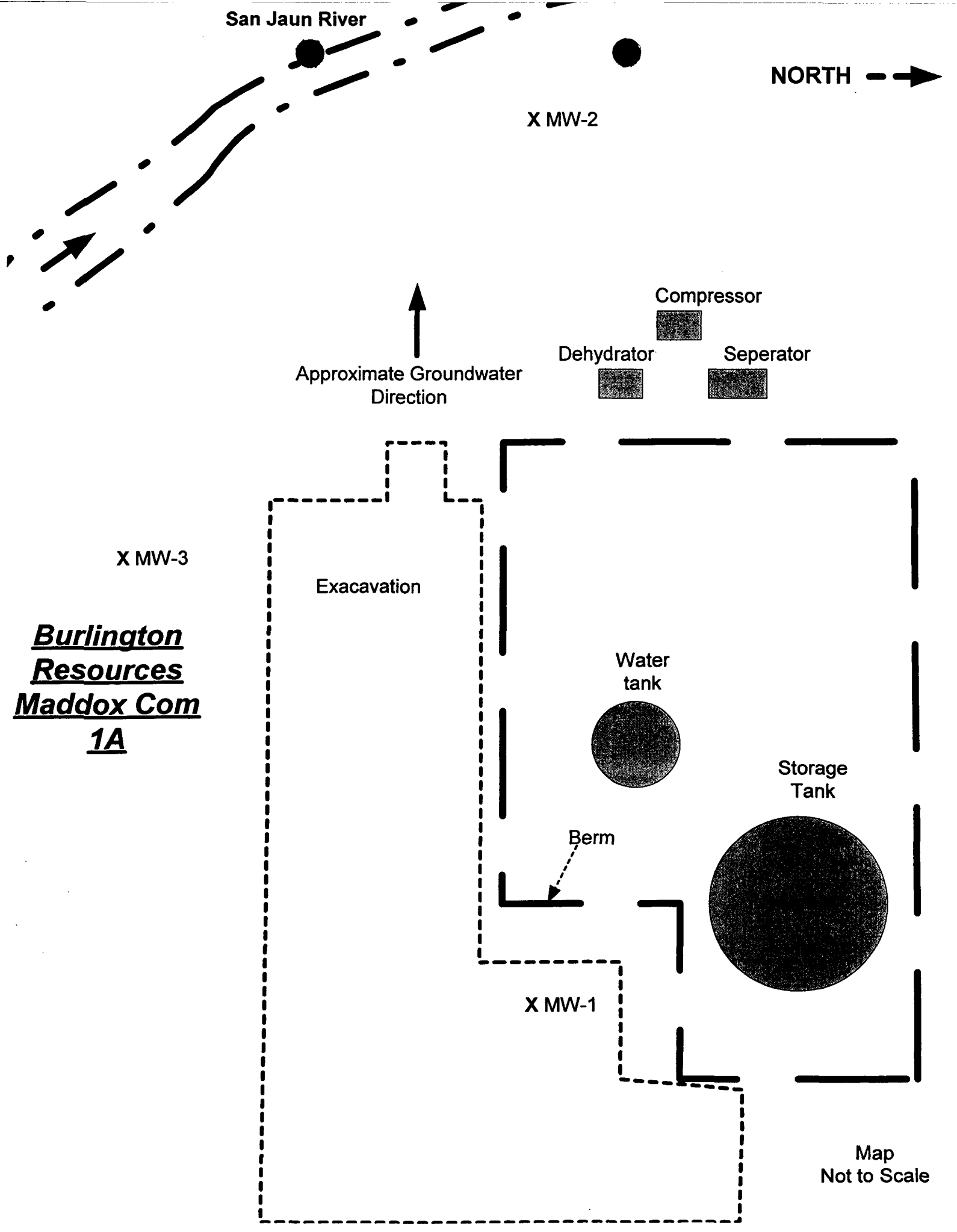
San Jaun River
NORTH
X MW-2
Compressor
Dehydrator
Seperator
Approximate Groundwater Direction
X MW-3
Exacavation
Burlington Resources Maddox Com 1A
Water tank
Storage Tank
Berm
X MW-1
Map Not to Scale

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 (1) (ft)
Standard			*10*	*750*	*750*	*620*		
Maddox Com1A	MW-1	Well not installed						
		5/16/2000	**1700**	500	**2200**	**19000**	23400	13.47
		9/22/2000	16	10	43	34	103	13.85
ACZ labs		12/18/2000	<0.5	<1.0	<1.0	<1.0	0	13.57
ACZ labs		3/28/2001	9.8	<0.2	1.3	2.4	13.5	lost
ACZ labs	h2s odor	6/29/2001	8.3	0.7	<0.2	1.5	10.5	12.75
ACZ labs	h2s odor	9/17/2001	**24.7**	<0.2	0.9	2.5	28.1	13.64
ACZ labs	h2s odor	12/19/2001	**17.2**	2.3	<0.2	13.9	33.4	13.61
ACZ labs	Product odor	3/25/2002	8	0.9	0.8	5.5	15.2	13.59
ACZ labs		6/27/2002	6	ND	0.2	1.4	7.6	13.87
ACZ labs	septic odor	9/24/2002	5.7	ND	ND	0.5	6.2	14.06
ACZ labs		12/30/2002	1.2	0.2	ND	ND	1.4	13.85
	MW-2	1/18/2000	<0.5	<0.5	<0.5	<0.5	0	12.71
		5/16/2000	<0.5	<0.5	<0.5	<0.5	0	15.63
		9/22/2000	<0.5	<0.5	<0.5	<0.5	0	15.53
ACZ labs		12/18/2000	<0.5	<1.0	<1.0	<1.0	0	15.55
ACZ labs		3/28/2001	<0.2	<0.2	<0.2	<0.2	<0.2	Lost
ACZ labs	h2s odor	6/29/2001	0.6	9.5	1	10.4	21.5	14.59
ACZ labs		9/17/2001	<0.2	0.6J	<0.2	1	1	15.47
ACZ labs		12/19/2001	2.4	1.3	9.1	38.4	51.2	15.57
ACZ labs		3/25/2002	ND	0.3	0.3	1.6	2.2	15.57
ACZ labs		6/27/2002	ND	ND	ND	ND	0	
ACZ labs		9/24/2002	ND	ND	ND	ND	0	15.96
ACZ labs		12/30/2002	ND	ND	ND	ND	0	15.75
	MW-3	1/18/2000	<0.5	<0.5	<0.5	<0.5	0	10.98
		5/16/2000	<0.5	<0.5	<0.5	<0.5	0	13.40
		9/22/2000	<0.5	<0.5	<0.5	<0.5	0	13.70
ACZ labs		12/18/2000	<0.5	<1.0	<1.0	<1.0	0	13.69
ACZ labs		3/28/2001	<0.2	<0.2	<0.2	<0.2	<0.2	Lost
ACZ labs		6/29/2001	<0.2	<0.2	<0.2	<0.2	<0.2	12.64
ACZ labs	h2s odor	9/17/2001	<0.2	0.3 J	<0.2	0.5 J	<0.2	13.59
ACZ labs		12/19/2001	<0.2	<0.2	<0.2	20.9	20.9	13.59
ACZ labs		3/25/2002	ND	0.6	0.5	1.7	2.8	13.57
ACZ labs		6/27/2002	0.3	ND	ND	0.5	0.8	13.81
ACZ labs		9/24/2002	ND	ND	ND	ND	0	14.00
ACZ labs		12/30/2002	1.9	2.9	0.6	2.2	7.6	13.8

J = Analyte concentration detected as a value between MDL and PQL
B= indicates that prep blank showed positive hits for this analyte
U= Analyte was analyzed for but not detected at the indicated MDL
(1) measured from top of casing

☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 1 Page 1 of 1

Project Name B-R well Sampling Project Manager [illegible] Project No. 517000

Client Company Burlington Resources

Site Name Maddox Com 1A 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) 20.94
Initial Depth to Water (feet) 13.59
Height of Water Column in Well (feet) 7.35
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	7.35	1.19 X 3	3.57
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
3-25-02	1000		X				.75	.75			12.6	7.14	4.59		Cloudy Gray petroleum odor
	1002		X				.75	1.5			12.4	6.99	4.95		cloudy, Dark Gray petroleum odor
	1004		X				.75	2.25			12.5	7.03	5.17		" "
	1006		X				.75	3			12.4	7.04	5.19		" "
	1008		X			14.24	.75	3.75			12.5	7.04	5.32		No Change

Comments Sampled for BTEX 1018

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

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amec

☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW2

Page 1 of 1

Project Name B.R well Sampling Project Manager Lisa Winn Project No. 157000

Client Company Burlington Resources

Site Name MADDOX Com. #1A 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) 22.35
Initial Depth to Water (feet) 15.57
Height of Water Column in Well (feet) 6.78
Diameter (inches): Well 2" Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	6.78	1.10 X 3	3.3
Gravel Pack			
Drilling Fluids			
Total			3.3

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					
3-25-02	1059		X				.75	.75			12.3	7.14	4142		Cloudy Light Brown, Red Mist No Odor
	1101		X				.75	1.5			12.3	7.08	4307		"
	1103		X				.75	2.25			12.6	7.21	4370		"
	1105						.75	3.0			12.6	7.33	4740		"
	1107					17.04	.75	3.75			12.6	7.43	4.86		no Change

Comments Sampled for BTEX 1115

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

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☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 3

Project Name B.R. well Sampling Project Manager LISA winn Project No.

Client Company Burlington Resources

Site Name MADDOX COM. #1A 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) 22.45
Initial Depth to Water (feet) 13.57
Height of Water Column in Well (feet) 8.88
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	8.88	1.44 X 3	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	

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	1031		X				1	1			11.5	7.82	5.07		cloudy Light Brown no odor
	1033		X				1	2			11.4	7.90	5.31		" "
	1035		X				1	3			11.5	7.76	5.70		" "
	1037		X				1	4			11.7	7.60	5.95		" "
	1039		X			13.92	1	5			11.7	7.54	6.13		No Change

Comments Samples for BTEX 1045

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: MADDOX MW1

ACZ ID: ***L36252-02***
Date Sampled: *03/25/02 10:18*
Date Received: *03/27/02*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

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

Analyst: *mbw*
Extract Date: *04/04/02 18:14*
Analysis Date: *04/04/02 18:14*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	8	B	ug/L	0.2	0.5
Ethylbenzene	000100-41-4	0.8	JB	ug/L	0.2	1
Toluene	000108-88-3	0.9	JB	ug/L	0.2	1
Xylenes	0001330-207	5.5	B	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	107	%	80	120

B indicates that prep blank showed positive hits for this analyte.

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

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: MADDOX MW2

ACZ ID: ***L36252-03***
Date Sampled: *03/25/02 11:15*
Date Received: *03/27/02*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

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

Analyst: *mbw*
Extract Date: *04/04/02 18:59*
Analysis Date: *04/04/02 18:59*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2		UB	ug/L	0.2	0.5
Ethylbenzene	000100-41-4	0.3	JB	ug/L	0.2	1
Toluene	000108-88-3	0.3	JB	ug/L	0.2	1
Xylenes	0001330-207	1.6	B	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	103	%	80	120

B indicates that prep blank showed positive hits for this analyte.

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

Organic Analytical Results

Burlington Resources, Inc.
Project ID: 1517000138
Sample ID: MADDOX MW3

ACZ ID: ***L36252-04***
Date Sampled: *03/25/02 10:45*
Date Received: *03/27/02*
Sample Matrix: *Ground Water*

Benzene, Toluene, Ethylbenzene & Xylene

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

Analyst: *mbw*
Extract Date: *04/04/02 19:43*
Analysis Date: *04/04/02 19:43*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2		UB	ug/L	0.2	0.5
Ethylbenzene	000100-41-4	0.5	JB	ug/L	0.2	1
Toluene	000108-88-3	0.6	JB	ug/L	0.2	1
Xylenes	0001330-207	1.7	B	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	102	%	80	120

B indicates that prep blank showed positive hits for this analyte.

☐ 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 MADDOX COM #1A 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) 20.94' TOR
Initial Depth to Water (feet) 13.87' TOR
Height of Water Column in Well (feet) 7.07'
Diameter (inches): Well 2" Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	7.07'	1.15	1.15 x 3
Gravel Pack			
Drilling Fluids			
Total			3.45

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
6-27-02	1111		X				0	0			16.8	7.17	3680		GRAYISH - BLACK
6-27-02	1116		X				1	1			15.0	7.23	4770		GRAYISH - BLACK
6-27-02	1123		X				1	2			14.7	7.23	5030		GRAYISH - BLACK
6-27-02	1129		X				1	3			14.7	7.31	5380		GRAYISH - BLACK
6-27-02	1133		X				.5	3.5			14.8	7.38	5450		GRAYISH - BLACK

Comments SAMPLED FOR BTEX AT 1143

Developer's Signature(s) Scott Thompson Date 6-27-02 Reviewer [signature] Date 7/2/02

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☐ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

amec

Well Number MW-2

Page 1 of 1

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

Client Company BURLINGTON RESOURCES

Site Name MADDOX COM #1A 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) 22.35' TOR
Initial Depth to Water (feet) 15.63' TOR
Height of Water Column in Well (feet)
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	6.72	1.10	1.10 x 3
Gravel Pack			
Drilling Fluids			
Total			3.30

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
6-27-02	1253		X				0	0			17.7	6.93	7950		LIGHT BROWN
6-27-02	1255		X				1	1			14.4	7.02	8780		LIGHT BROWN
6-27-02	1257		X				1	2			13.9	7.20	7760		LIGHT BROWN
6-27-02	1301		X				1	3			13.8	7.35	5740		LIGHT BROWN
6-27-02	1304		X				.5	3.5			13.5	7.44	5570		

Comments SAMPLED FOR BTEX AT 1310.

Developer's Signature(s) Robert Thompson Date 6-27-02 Reviewed [signature] Date 7/2/02

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☐ Development
☒ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW-3

Project Name BR WELL SAMPLING Project Manager LISA WINN Project No. 151700038

Client Company BURLINGTON RESOURCES

Site Name MADDOX COM #1A Site Address RURAL SAN JUAN CO.

Development Criteria

☒ ~~3~~ 5 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) 22.45' TOR
Initial Depth to Water (feet) 13.81' TOR
Height of Water Column in Well (feet) 8.64
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	8.64	1.41	1.41 x 3
Gravel Pack			
Drilling Fluids			
Total			4.23

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					
6-27-02	1159		X				0	0			18.0	8.11	5430		CLEAR
6-27-02	1203		X				1	1			14.6	8.07	5360		CLEAR
6-27-02	1206		X				1	2			14.3	8.12	5420		CLOUDY - LIGHT BRN.
6-27-02	1212		X				1	3			14.1	8.06	5480		CLOUDY - LIGHT BRN.
6-27-02	1216		X				1	4			14.0	8.08	5510		CLOUDY - BROWN
6-27-02	1220		X				.5	4.5			13.9	8.07	5580		CLOUDY - LIGHT BRN.

Comments SAMPLED FOR BTEX AT 1227.

Developer's Signature(s) Robert Thompson Date 6-27-02 Reviewer [signature] 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: MADDOX COM #1A MW-1

ACZ ID: ***L37484-05***
Date Sampled: *06/27/02 11:43*
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: *07/04/02 0:41*
Analysis Date: *07/04/02 0:41*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	6		ug/L	0.2	1
Ethylbenzene	000100-41-4	0.2	J	ug/L	0.2	1
m p xylene	01330 20 7	0.6	J	ug/L	0.2	2
o xylene	00095-47- 6	0.8	J	ug/L	0.2	1
Toluene	000108-88-3		U	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	89.6	%	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: MADDOX COM #1A MW-2

ACZ ID: ***L37484-07***
Date Sampled: *06/27/02 13:10*
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: *07/04/02 2:09*
Analysis Date: *07/04/02 2:09*
Dilution Factor: *1*

Compound

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

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	102	%	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: MADDOX COM #1A MW-3

ACZ ID: ***L37484-06***
Date Sampled: *06/27/02 12:27*
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: *07/04/02 1:26*
Analysis Date: *07/04/02 1:26*
Dilution Factor: *1*

Compound

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

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	95.7	%	80	120

See case narrative.

☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

amec

Well Number MW 1

Page 1 of 1

Project Name B.R. well SAMPLING

Project Manager LISA WINN

Project No 517000158

Client Company BURLINGTON RESOURCES

Site Name MADDOX COM #1A

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) 20.94
Initial Depth to Water (feet) 14.06
Height of Water Column in Well (feet) 6.88
Diameter (inches): Well 2" Gravel Pack ____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	6.88	1.2 x 3	3.36
Gravel Pack			
Drilling Fluids			
Total			3.36

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					
9-24-02	1348		X				.75	.75			19.5	7.48	5.86		Cloudy/DARK Grey Septic Odor
	1351		X				.75	1.5			18.1	7.54	5.29		" "
	1353		X				.75	2.25			17.5	7.50	5.48		" "
	1355		X				.75	3			17.2	7.56	5.83		" "
	1357		X			14.64	.75	3.75			17.3	7.61	5.83		no Change

Comments SAMPLED FOR BTEX 1405

Developer's Signature(s) [signature] Date 9-24-02 Reviewer [signature] Date 9/30/02

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☐ Development
☑ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 2

Page 1 of 1

Project Name BR well Sampling

Project Manager LISA Winn

Project No. 151700015B

Client Company BURLINGTON RESOURCES

Site Name MADDOX COM #1A

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) 22.35
Initial Depth to Water (feet) 15.91
Height of Water Column in Well (feet) 6.44
Diameter (inches): Well 2" Gravel Pack _____

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	6.44	1.05X3	3.15
Gravel Pack			
Drilling Fluids			
Total			3.15

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
9-24-02	1454		X				.75	.75			15.8	7.80	6.03		Cloudy no odor
	1457		X				.75	1.5			15.0	7.63	5.72		" "
	1459		X				.75	2.25			14.1	7.65	55.8		" "
	1502		X				.75	3			14.8	7.66	5.56		" "
	1504		X			17.51	.25	3.75			14.7	7.69	5.64		no change

Comments SAMPLED FOR BTEX 1510

Developer's Signature(s) [signature] Date 9-24-02

Reviewer [signature] Date 9/30/02

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☐ Development
☐ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 3 Page 1 of 1

Project Name B.R. well SAMPling Project Manager LISA WINN Project No. 152000158

Client Company Burlington Resources

Site Name MADDOX COM. #1A 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) 14.2245
Initial Depth to Water (feet) 14.00
Height of Water Column in Well (feet) 8.45
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	8.45	1.37x3	4.11
Gravel Pack			
Drilling Fluids			
Total			4.11

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
9-24-02	1423						1	1			18.2	9.63	5.80		Cloudy Light Gray, no odor
	1426						1	2			16.0	9.49	5.73		" "
	1428						1	3			15.8	8.45	5.23		" "
	1430						1	4			15.8	8.41	5.68		" "
	1433					14.56	1	5			15.9	8.41	5.66		no Change

Comments SAMPLED For BTEX 1440

Developer's Signature(s) [signature] Date 9-24-02 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: MADDOX MW1

ACZ ID: ***L38684-02***
Date Sampled: *09/24/02 14:05*
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 19:15*
Analysis Date: *09/27/02 19:15*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	5.7		ug/L	0.2	1
Ethylbenzene	000100-41-4		U	ug/L	0.2	1
m p Xylene	01330 20 7	0.5	J	ug/L	0.2	2
o Xylene	00095-47- 6		U	ug/L	0.2	1
Toluene	000108-88-3		U	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	103	%	84	114

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: MADDOX MW2

ACZ ID: ***L38684-03***
Date Sampled: *09/24/02 15:10*
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 19:59*
Analysis Date: *09/27/02 19:59*
Dilution Factor: *1*

Compound

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

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	98.8	%	84	114

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: MADDOX MW3

ACZ ID: ***L38684-04***
Date Sampled: *09/24/02 14:40*
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 21:24*
Analysis Date: *09/27/02 21:24*
Dilution Factor: *1*

Compound

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

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	101	%	84	114

See case narrative.

amec

Well Number MW 1 ☐ Development ☒ Purging

Serial No. WDPD-

WELL DEVELOPMENT AND PURGING DATA

Page 1 of 1

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

Client Company Burlington Resources | Phase.Task No. 3

Site Name Maddox Com #1A | 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) 20.95
Initial Depth to Water (feet) 13.85
Height of Water Column in Well (feet) 7.1
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	7.1	1.16x3	3.47
Gravel Pack			
Drilling Fluids			
Total			3.47

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 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
12-30-02	230		X				5	5			14.4	7.33	4.66		cloudy gray no odor
						14.3									Sheen
															Conductivity not reading correctly

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

Comments Bailed 5 gal - took sample at 3:15

Developer's Signature (s) James Thomas Date 12-30-02 Reviewer _____ Date _____

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☐ Development
☐ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 2

Page 1 of 1

Project Name Burlington Resources Groundwater Project Manager Don Fernald

Project No. 151700138

Client Company Burlington Resources

Site Name Maddox Com # 1 A

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) 22.38
Initial Depth to Water (feet) 15.75
Height of Water Column in Well (feet) 6.63
Diameter (inches): Well 2" Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing	6.63	1.08x3	3.24
Gravel Pack			
Drilling Fluids			
Total			3.24

Instruments

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

Water Disposal

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
12-30-02	330		X				4	4			12.7	7.36	3295		cloudy Brown w/ no oil sheen
						16.05									
															Also has roots growing into well.

Comments Bailed 4 gal. - took sample at 4:00

Developer's Signature(s) James Hancock Date 12-30-02 Reviewer Date

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amec

☐ Development
☐ Purging

WELL DEVELOPMENT AND PURGING DATA FORM

Well Number MW 3

Page 1 of 1

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

Client Company Burlington Resources

Site Name Maddox Com #1A 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
☐ Centrifugal
☐ Submersible
☐ Peristaltic

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

☐ Other ______

Water Volume Calculation

Initial Depth of Well (feet) 22.5
Initial Depth to Water (feet) 13.8
Height of Water Column in Well (feet) 8.7
Diameter (inches): Well 2" Gravel Pack ______

Item	Water Volume in Well: Cubic Feet	Water Volume in Well: Gallons	Gallons to be Removed
Well Casing	8.7	1.42x3	4.25
Gravel Pack			
Drilling Fluids			
Total			4.25

Instruments

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

Water Disposal

______

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
12-30-02	4:15		X				5	5			12.9	7.69	4.62		Cloudy Gray w/ No oil Sheen
						14.3									

Comments Bailed 5 gal. took sample at 4:45

Developer's Signature(s) [signature] Date 12-30-02 Reviewer ______ Date ______

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 MADDOX COM #1A

ACZ ID: ***L39827-04***
Date Sampled: *12/30/02 15:15*
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 21:37*
Analysis Date: *01/07/03 21:37*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	1.2		ug/L	0.3	1
Ethylbenzene	000100-41-4		U	ug/L	0.2	1
m p Xylene	01330 20 7		U	ug/L	0.4	2
o Xylene	00095-47- 6		U	ug/L	0.2	1
Toluene	000108-88-3	0.2	J	ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	103	%	84	114

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-2 MADDOX COM #1A

ACZ ID: ***L39827-05***
Date Sampled: *12/30/02 16:00*
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 22:20*
Analysis Date: *01/07/03 22:20*
Dilution Factor: *1*

Compound

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

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	101	%	84	114

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-3 MADDOX COM #1A

ACZ ID: ***L39827-06***
Date Sampled: *12/30/02 16:45*
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 23:03*
Analysis Date: *01/07/03 23:03*
Dilution Factor: *1*

Compound

Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	1.9		ug/L	0.3	1
Ethylbenzene	000100-41-4	0.6	J	ug/L	0.2	1
m p Xylene	01330 20 7	1.5	J	ug/L	0.4	2
o Xylene	00095-47- 6	0.7	J	ug/L	0.2	1
Toluene	000108-88-3	2.9		ug/L	0.2	1

Surrogate Recoveries

Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	106	%	84	114

Spill report, Excavation Log, and Drilling Log/Wellbore Diagrams

PHILIP SERVICES CORP

PRODUCTION PIT REMEDIATION FORM

WELL NAME: MADDOX COM WELL NO.: 1A DP NO.:

OPERATOR NAME: BURLINGTON RESOURCES P/L DISTRICT: N/A

COORDINATES: LETTER: I SECTION: 17 TOWNSHIP: 30N RANGE: 8W

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

FOREMAN NO.: N/A AREA: N/A

INITIAL REMEDIATION ACTIVITIES

DATE: 12/16/99 TIME: 0700

GROUND WATER ENCOUNTERED? ☒Y / ☐N

INSIDE NMOCD ZONE

FINAL EXCAVATION DIMENSIONS: LENGTH: 101' WIDTH: 52' DEPTH: 15'

APPROX. CUBIC YARDS: 2917 FINAL PID READING: → NORTH WALL - 35 PPM
EAST WALL - 21.9 PPM
SOUTH WALL - 61 PPM

REMEDIATION METHOD: ONSITE LANDFARM X

OFFSITE LANDFARM X LOCATION: STILL PENDING

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: NO SAMPLE COLLECTED PER ED HASELY SAMPLE NOS N/A N/A

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: NO SAMPLES WERE COLLECTED FOR LABORATORY ANALYSIS PER ED HASELY SINCE THE WEST WALL DID NOT CLEAN UP. FURTHER REMEDIATION METHODS ARE PENDING. SOME SOIL WAS LAND-FARMED ON LOCATION AND THE REST WAS STOCKPILED PENDING TRANSPORT TO OTHER LOCATIONS OF THE SAME LEASE IN THE IMMEDIATE AREA. INITIAL REMEDIATION ACTIVITIES WERE STARTED BY CF&M OILFIELD SERVICE.

SIGNATURE: Mary Killion **DATE:** 1-21-00

RECORD OF SUBSURFACE EXPLORATION

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

Borehole # 1
Well # MW-2
Page of

Project Name: BR Maddox Drilling
Project Number: 62800132 Phase 35
Project Location: Maddox [illegible] #1A

Elevation:
Borehole Location:
GWL Depth:
Logged By: C Irby
Drilled By: K Padilla
Date/Time Started: 1-10-99 9 am
Date/Time Completed: 1-10-99 11:30 Am

Well Logged By: C Irby
Personnel On-Site:
Contractors On-Site:
Client Personnel On-Site: Ed [illegible]

Drilling Method: Hollow Stem Auger
Air Monitoring Method: PID

Depth (Feet)		Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ	BH	S	Drilling Conditions & Blow Counts
0			Split Spoon							Heated Headspace
				Tan - Brn Sandy Clay w/ [illegible] Snd + Thin [illegible], Root mar[illegible]					1.3	1.3 ppm
5	1		18"							cobbles - [illegible]
				Hit cobbles @ 8.5						
10	2		6	Tan Sand [illegible] No Staining/No Odor					1	1.0 ppm
		▽ water		Gravel/sand - wet - could not retrieve samples						
15										
20				TD @ 20' Gravel [illegible]						
25										
30										
35										
40										

Comments: 7 sack sand, 10' screen, 10' Blank, 5' Blank, Cap, Bottom Cap, well protector, 3 sack cement

Geologist Signature: Cecil Irby

MONITORING WELL INSTALLATION RECORD

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

Borehole # 1
Well # MW-2
Page 1 of ____

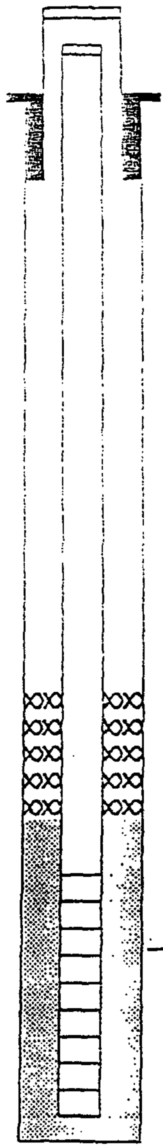
Project Name: BR Maddox Drilling
Project Number: 62800132 Phase: 35
Project Location: Maddox Com #1A

On-Site Geologist: [illegible]
Personnel On-Site: ____
Contractors On-Site: ____
Client Personnel On-Site: ED [illegible]

Elevation: ____
Well Location: ____
GWL Depth: ____
Installed By: [illegible]
Date/Time Started: 1-19-95
Date/Time Completed: 1-19-95

Depths in Reference to Ground Surface

Item	Material	Depth
Top of Protective Casing		
Bottom of Protective Casing		
Top of Permanent Borehole Casing		
Bottom of Permanent Borehole Casing		
Top of Concrete		
Bottom of Concrete		
Top of Grout		GS
Bottom of Grout		3'
Top of Well Riser		
Bottom of Well Riser		9
Top of Well Screen		9
Bottom of Well Screen		19
Top of Peltonite Seal		3
Bottom of Peltonite Seal		6
Top of Gravel Pack		6
Bottom of Gravel Pack		19
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		13.8
Total Depth of Borehole		19'



Top of Protective Casing ____
Top of Riser ____
Ground Surface ____
Top of Seal: 3
Top of Gravel Pack: 6
Top of Screen: 9
13.8' water
Bottom of Screen: 19'
Bottom of Borehole: 19'

Comments: ____

Geologist Signature: [signature]

RECORD OF SUBSURFACE EXPLORATION

Borehole # 2
Well # MW-3
Page of

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(505) 328-2282 FAX (505) 328-2388

Project Name BR Mallard Drilling
Project Number 62B00132 Phase 35
Project Location [illegible] Com #1A
T31N-R8W-S17

Elevation
Borehole Location
GWL Depth
Logged By
Drilled By
Date/Time Started 1-19-99 11:25AM
Date/Time Completed 1-20-99 1:00PM

Well Logged By
Personnel On-Site
Contractors On-Site
Client Personnel On-Site
Drilling Method
Air Monitoring Method PID

Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ	BH	S	Drilling Conditions & Blow Counts
0		Split Spoon							Heated Headspace
5			Tan-brown [illegible] Gr. Moist Cobbles @ 8'			0		0 ppm	0 ppm
10			No Staining / odor Sample too granular/wet TO Collect.			0			
15									
20			TD @ 20' Gravel + Cobbles						
25									
30									
35									
40									

Comments: 7 Sacks Sand 10' Screen, 9' Blank, Cap Bottom Cap, Well Protector 13 Sacks Cement

Geologist Signature [signature]

MONITORING WELL INSTALLATION RECORD

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

Borehole # 2
Well # MW-3
Page ____ of ____

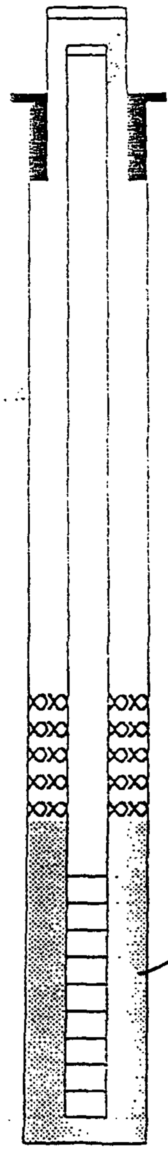
Project Name: BR Maddox Drilling
Project Number: 62800132 Phase: 35
Project Location: Maddox Com #1A

Elevation: ____
Well Location: ____
GWL Depth: ____
Installed By: [illegible]
Date/Time Started: 1-10-99 1:PM
Date/Time Completed: 1-10-99 2:PM

On-Site Geologist: [illegible]
Personnel On-Site: ____
Contractors On-Site: ____
Client Personnel On-Site: [illegible]

Depths in Reference to Ground Surface

Item	Material	Depth
Top of Protective Casing		
Bottom of Protective Casing		
Top of Permanent Borehole Casing		
Bottom of Permanent Borehole Casing		
Top of Concrete		
Bottom of Concrete		
Top of Grout		6S
Bottom of Grout		3
Top of Well Riser		
Bottom of Well Riser		9
Top of Well Screen		9
Bottom of Well Screen		19
Top of Peltonite Seal		3
Bottom of Peltonite Seal		6
Top of Gravel Pack		6
Bottom of Gravel Pack		20
Top of Natural Cave-In		
Bottom of Natural Cave-In		
Top of Groundwater		12.4
Total Depth of Borehole		20



Top of Protective Casing ____
Top of Riser ____
Ground Surface ____
Top of Seal 3
Top of Gravel Pack 6
Top of Screen 9
12'4"
Bottom of Screen 19'
Bottom of Borehole 19'

Comments: ____

Geologist Signature [illegible]

RECORD OF SUBSURFACE EXPLORATION

PHILIP SERVICES CORP.
4000 Monroe Road
Farmington, New Mexico 87401
(505) 326-2262 FAX (505) 326-2388

Borehole # ________
Well # 1
Page 1 of ____

Project Number 628135 Phase ________
Project Name Br Maddox
Project Location Cotton Nest

Elevation ________
Borehole Location ________
GWL Depth ~10.96
Drilled By R. R Padilla
Well Logged By M Nee
Date Started 4/27/00 0945
Date Completed 4/27/00 1112

Drilling Method 4 1/4 ID HSA
Air Monitoring Method PID

Depth (Feet)	Sample Number	Sample Interval	Sample Type & Recovery (Inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: PPM BZ	BH	S	Drilling Conditions & Blow Counts
0				0-11 backfill Material, light brown sand medium to Very fine with minor gravel.	SP					
5	1	5-6.5'	3"	Sand is moderately well sorted and unconsolidated. Sand appears saturated @ approx			0	0	0	
10	2	10-11.5	12"	11.3'. Minor root material @ 11.5 bgs small (<2") HC stains	CL		0	0	46	8 blowcounts
15	3	15-16.5	2"	brown clay. Saturated 15-20' cobbles, No sample recovery			0	0	0	18 refusal
20	4	20-21	0				0	0	0	22 refusal
25										
30										
35										
40										

Comments: ________

Geologist Signature [signature]

MONITOR WELL INSTALLATION FORM

Philip Services Corp.
4000 Monroe Rd.
Farmington, NM 87401
(505) 326-2262 FAX (505) 326-2388

Borehole #
Well # MW-1
Page 1 of 1

Project Name Br. Madden
Project Number 628-18 Phase
Site Location Cotton Wood Campground

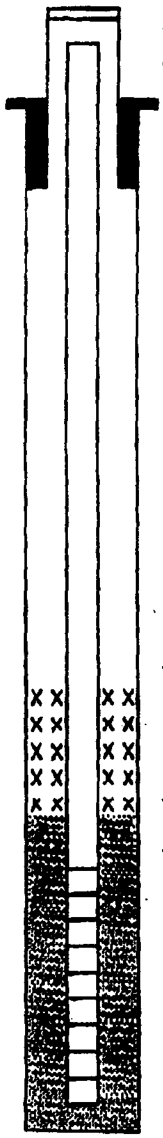
Elevation
Well Location
GWL Depth 10.92
Installed By K PADILLA

On-Site Geologist M Nee
Personnel On-Site Padilla Le Febre
Contractors On-Site
Client Personnel On-Site B Wurtz R Hasely

Date/Time Started 4-27 0845
Date/Time Complete 4-27 1117

Depths in Reference to Ground Surface

Item	Material	Depth (feet)
Top of Protective Casing	STEEL	2.67
Bottom of Protective Casing	STEEL	2.33
Top of Permanent Borehole Casing	NA	
Bottom of Permanent Borehole Casing	NA	
Top of Concrete	NA	
Bottom of Concrete	NA	
Top of Grout	NA	
Bottom of Grout	NA	
Top of Well Riser	PVC	2.33
Bottom of Well Riser	PVC	-4.92
Top of Well Screen	PVC	-4.92
Bottom of Well Screen	PVC	-19.92
Top of Bentonite Seal	3/4 chips	0
Bottom of Bentonite Seal	3/4 chips	-3
Top of Gravel Pack	10-20	-3
Bottom of Gravel Pack	10-20	-20
Top of Natural Cave-in		
Bottom of Natural Cave-in		
Top of Groundwater		-10.96
Total Depth of Borehole		20.00



Top of Protective Casing 2.67'
Top of Riser (survey elev.) 2.33'
Ground Surface 0
Top of Seal 0
Top of Gravel Pack -3
Top of Screen -4.92
Bottom of Screen 19.92
Bottom of Borehole 20.00

Comment

Geologist Signature

MWINSTAL.wk1