

REPORTS

DATE: 1998-2003

BURLINGTON RESOURCES 2002 ANNUAL GROUNDWATER REPORT

Cozzens B #1

SITE DETAILS

Location: Unit Letter L, Section 19, Township 29N, Range 11W; San Juan County, New Mexico Land Type: Fee

PREVIOUS ACTIVITIES

PNM had conducted pit closure work and installed monitoring wells on this site in 1996 and 1997. Burlington Resources also had participated in excavation of impacted soils.

In December 1997, Burlington Resources excavated approximately 334 cubic yards of impacted soil from an area near an oil storage tank that had leaked. No groundwater was encountered at this time. The excavation was backfilled with clean soils. A report prepared by Philip Services Corporation detailing the excavation work and soil sampling is attached.

1999 ACTIVITIES

Burlington installed a groundwater monitoring well (MW-1) near the oil storage tank on this location in May 1999. At the same time, a second monitoring well (MW-2) was installed at the toe of the slope immediately downgradient and south of location. Auger refusal was encountered at approximately 3 feet during the installation of the second monitoring well (MW-2). Due to the shallow depth of MW-2, we were unable to collect water samples during several of the quarterly sampling events. After developing the wells and allowing them to stabilize, the wells were purged and sampled on May 26, 1999. Water samples were collected from MW-2 during the 3rd and 4th quarters and results showed levels of benzene and xylene above standards.

2000, 2001, and 2002 ACTIVITIES

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

CONCLUSIONS

The ground water regime being monitored at this location appears to be artificially created and influenced by an irrigation ditch approximately 60 feet to the east and upgradient from the location. The irrigation ditch may be contributing water to the subsurface strata and artificially creating a shallow perched ground water zone. This perched zone may be the source of the ground water being monitored at the location. The irrigation ditch is flowing approximately April 15 through October 15 annually. Without the ditch influence there may not be any shallow groundwater beneath the location and none is expected upgradient of the ditch at these shallow depths. A project to clay line the ditch to prevent water seepage was started March 2001 by local residents concerned about water damage to near by residential properties from the ditch. The ground water gradient is approximated to be in a west/southwest

direction. The influence of the ditch water on MW-1 and MW-2 can be observed in the water level measurements collected and coincides with the water flow schedule of the ditch. An apparent lag in hydraulic conductivity between the ditch and the monitoring wells is assumed to be three months or more.

The analytical results of ground water sampling from the source monitoring well (MW-1) in May 1999 showed levels of benzene constituents above New Mexico Ground Water Standards. Since the initial sampling event in May 1999, six quarterly sampling events have shown all BTEX constituents below the standards in MW-1. However, sampling results for 2001 show elevated levels of BTEX. The effect of a minor condensate spill on 1/30/01 of approximately 1 bbl coupled with the soil being previously disturbed during the historic excavation activities may be responsible for the recent increase in the levels of BTEX in MW-1. Further monitoring may determine if this is related to a minor slug of contamination. No evidence of a change in the groundwater regime from the ditch lining project was observed MW-1 and it is possible the lining project did not impact the ditch reach adjacent and upgradient of the location. One detection of benzene identified in the second quarter from MW-1 was determined to be questionable. No additional analysis results in subsequent or historic monitoring detected similar elevated concentrations therefore the result is considered not valid.

The quarterly sampling results from MW-2 have shown BTEX constituents above the standards except for the third quarter of 2000. A trend of natural degradation of the hydrocarbons and of a downward trend in BTEX levels appears possible in well MW-2. Insufficient water prevented the collection of data from this well in 2001. In 2002 a downward trend in bezene and total BTEX concentration was established in the monitoring data. The concentration reported for MW-1 show a decrease in benzene. The concentrations reported for MW-2 show a decrease in benzene and total BTEX.

RECOMMENDATIONS

- Burlington Resources proposes to continue quarterly sampling at this site.
- Upon receiving analytical results below standards for one full year, Burlington Resources will request official closure of this site.

Attachments: Figure 1 - Site Map Table 1 - Groundwater Sampling Results Summary 2002Groundwater Analytical Results Drilling Logs/Wellbore Diagrams Philip Report on Excavation Work





Cozzens B#1 - Site Diagram



2002 GROUNDWATER ANALYTICAL RESULTS

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			Table 1								
	Groundwater Monitoring Well Sampling										
·	Grouna		onnonng			9					
		Sample	В	Т	F	X	BTEX	DTW			
Well Name	MW #	Date	(dqq)	(daa)	(daa)	(dqq)	(dqq)	(ft)			
Standard			10	750	750	620		<u>, , , , , , , , , , , , , , , , , , , </u>			
Oldinadia				,	700	020					
Cozzens B #1	M\A/-1	5/26/1999	28	11	23	99	161				
00220113 0 #1	(aka M\\/-4)	9/2/1999	2.5	21	56	22	32.2	2.31			
		12/2/1999	<0.5	11	5	27	43	4.43			
		1/19/2000	1.7	13	7.6	28	50.3	6.48			
		5/11/2000	6.8	1.2	2.6	14	24.6	4.03			
		9/7/2000	1.1	<0.5	6.2	10	17.3	3.8			
		12/15/2000	2	3	1	4	10	4.57			
		3/28/2001	50.3	<0.2	1.3	3.6	55.2	lost			
		6/28/2001	4170	<0.2	220	370	4760	5.26			
		9/17/2001	12.9	<0.2	0.5	4.3	17.7	3.51			
		12/19/2001	39.6	3.1	6.3	14.1	63.1	4.64			
		3/27/2002	50.8	4.5	5.9	21.1	82.3	7.81			
		6/25/2002	6	3.1	0.5	8.4	18	3.8			
		9/25/2002	0.8	0.6	0.5	0.6	2.5	8,05			
		12/30/2002	5.6	10.6	77	8.3	32.2	5.7			
	MW-2	5/26/1999	V	Vell was dry	<u>'.</u> N	lo Sample	e.				
	(aka MW-5)	9/2/1999	120	55	440	450	1065	1.28			
		12/2/1999	250	39	480	980	1749	4.35			
		1/19/2000	V	Vell was dry	<u>'.</u> N	lo Sampl	0				
		5/11/2000	550	140	830	2400	3920	3.53			
		9/7/2000	4.7	1.9	6.2	23	35.8	3.36			
		12/15/2000	65	4	25	59	153	3.63			
		3/28/2001		no s	ample colle	cted		Dry			
		6/28/2001		no s	ample colle	cted		Dry			
		9/17/2001		no s	ample colle	cted		3.74			
-		12/19/2001	31.8	3	18.9	29.9	83.6	3.87			
		3/27/2002		no san	nple collect	ed Dry					
		6/25/2002	22.3	6.5	7.4	9.5	45.7	3.8			
		9/25/2002	1.8	2.4	1.2	30.1	35.5	3.7			
		12/30/2002	No s	ample colle	cted			Diry			

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Developer's Signature(s)

Date 3-25-02 Reviewer MULL 3/28/02

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

Burlington Resources, Inc.

Project ID: 1517000138 Sample ID: COZZENS MW4

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Organic Analytical Results

ACZ ID:	L36252-06
Date Sampled:	03/25/02 14:20
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 23:29
Analysis Date:	04/03/02 23:29
Dilution Factor:	1

Compound					
Compound	CAS	Result Q	UAL Units	MDL	PQL
Benzene	000071-43-2	50.8	ug/L	0.2	0.5
Ethylbenzene	000100-41-4	5.9	B ug/L	0.2	1
Toluene	000108-88-3	4.5	ug/L	0.2	1
Xylenes	0001330-207	21.1	B ug/L	0.2	1
Surrogate Recoveries					
Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	112	%	80	120

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



□ Development WELL DEVELOPMENT AND PURGING DATA FORM M Purging MW-4 Well Number Paae_ BR WELL SAMPLING Project Manager LISA WINN Project No. 1517000138 Project Name Client Company BURLINGTON RESOURCES Site Name COZZENS Site Address RURAL SAN JUAN COUNTY **Development Criteria** Water Volume Calculation Instruments Serial No. (If applicable) 14.99' TOR 20 to 5 Casing Volumes of Water Removal Initial Depth of Well (feet) YST 63 M pH Meter Initial Depth to Water (feet) 3.80 Stabilization of Indicator Parameters TOP Height of Water Column in Well (feet) Other 11.19 DO Monitor Diameter (inches): Well 2" Gravel Pack YST 63 Conductivity Meter Methods of Development Water Volume in Well Gallons to be YSE 63 Pump Bailer Item Cubic Feet Gallons Removed ☑ Temperature Meter ☑ Bottom Valve Centrifugal Well Casina 1 19 82 183×3 Other ___ Submersible Double Check Valve Gravel Pack Stainless-steel Kemmerer Peristaltic Drilling Fluids Water Disposal □ Other Total 5.49 ON SITE IN PIT Water Removal Data Intake Depth Endina Conductivity Water Volume Removed Product Volume Temperature Dissolved Removal ρН (mmhos/cm) Developmen (feet) Water Dept Removed (gallons) Oxygen (°C) Rate (gallons) Comments (mg/L) Method (feet) (gal/min)

6-25-02 543 X 0 0 0 22.9 6.44 590 DUACESH-	GRAY
6-25-02 1548 X 2 2 17.7 6.93 1523 BLACKISH.	-GRAY
6-25-02 1553 X 2 4 17.3 6.88 1513 BLACKISH	- GRAY
6-25-02 1559 X 2 6 17.3 6.90 1500 BLACKISH	- GRAY

Comments SAMPLED FOR BTEX AT 1609	
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ACZ Laboratories, Inc.

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

Burlington Resources, Inc.

Project ID: 1517 Sample ID: COZ

1517000138 COZZENS B#1 MW-4

Organic Analytical Results

ACZ ID:	L37484-02
Date Sampled:	06/25/02 16:09
Date Received:	07/02/02
Sample Matrix:	Ground Water

Analyst: *cbr/km on* Extract Date: 07/05/02 12:01

Analysis Date: 07/05/02 12:01

Dilution Factor: 1

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: M8021B

Extract Method: Method

Compound						
Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	6		ug/L	0.2	1
Ethylbenzene	000100-41-4	0.5	J	ug/L	0.2	1
m p xylene	01330 20 7	6.8		ug/L	0.2	2
o xylene	00095-47- 6	1.6		ug/L	0.2	1
Toluene	000108-88-3	3.1		ug/L	0.2	1
Surrogate Recoveries						
Surrogate	CAS	% Recovery		Units	LCL	UCL
Bromofluorobenzene	000460-00-4	104		%	80	120

See case narrative.

ACZ Laboratories, Inc.

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

Burlington Resources, Inc.

Project ID: 1517000138 Sample ID: COZZENS B#1 MW-5

Organic Analytical Results

ACZ ID:	L37484-03
Date Sampled:	06/25/02 16:31
Date Received:	07/02/02
Sample Matrix:	Ground Water

Analyst: *cbr/km on* Extract Date: 07/03/02 23:15

Analysis Date: 07/03/02 23:15

Dilution Factor: 1

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: M8021B

Extract Method: Method

Compound					
Compound	CAS	Result	QUAL Units	MDL	PQL
Benzene	000071-43-2	22.3	ug/L	0.2	1
Ethylbenzene	000100-41-4	7.4	ug/L	0.2	1
m p xylene	01330 20 7	2.9	ug/L	0.2	2
o xylene	00095-47- 6	3	ug/L	0.2	1
Toluene	000108-88-3	6.5	ug/L	0.2	1
Surrogate Recoveries					
Surrogate	ICAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	43.6	%	80	120

See case narrative.

REPOR.01.01.01.02

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Dother_ /ater Rem Date	Time	ta Developr Metho Pump Bc	nent d d (gal/min)	intake Dep (feet)	th Ending Water Dep (feet)	Total Water Volu Increment	ume Removed allons) Cumutative 1.26 245 3.25	Product V. Removed (r	olume gaîlons) mutative	5.82 Temperature (°C) 19.6 19.1	PH 7.68 7.41 2.36	Conductivity (mmhas/cm)	Dissolved Oxygen (mg/L)	Comm Comm Cloudy (Gray Mill) 11	nents Sectic cod))
Dother_ /ater Rem Date	Time 110C 113 1113	ta Developr Metho Pump Bo	nent d (gal/min)	Intake Dep (feet)	th Ending Water Dep (feet)	Total Water Volu (g Increment), 25), 25	$\frac{1}{2}$	Product V/ Removed (p	olume gallons) mulative	$\frac{19.6}{19.1}$	PH 7.68 7.41 7.36 7.35	(ater Disp 20 517 Conductivity (mmhos/cm) 1177 1071 1073 1073 1073 1073	Dissolved Oxygen (mg/L)	Comm Cloudy C Gray Mills 11 11	nents 5567 cd 5607 c cd 1) 1) 1) 7)
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Dother Date	Time 110C 113 1113 1116 1119	ta Developr Metho Pump Bc	Removal Rate (gal/min)	Intake Dep (feet)	th Ending Water Dep (feet)	Total Water Volu fh (g Increment 1.25 1.25 1.25 1.25	$\frac{1}{2}$	Product V Removed (r	olume gallons) imutative	$\frac{5.82}{1000}$	PH 7. 6 % 7. 41 7. 36 7. 32	(ater Disp 20 517 Conductivity (mmhos/cm) 1071 1071 1073 1072 1072 1072	Dissolved Oxygen (mg/L)	Comm Cloudy L Grey Mills 11 11 11 11 11 11 11 11 11 11 11 11 11	nents 5 6 ())))))))))
Date	Time 110G 113 1113 1116	ta Developr Metho Pump Bo	nent d (gal/min) X X X	Intake Dep (feet)	th Ending Water Dep (feet) (feet)	Total Water Volu (g Increment), 25), 25), 25	$\begin{array}{c} \text{Imperative} \\ \text{Cumulative} \\ \hline 1, 2.6 \\ \hline 21.5 \\ \hline 3, 75 \\ \hline 5 \\ \hline 6, .25 \\ \hline \end{array}$	Product V/ Removed (r	olume gallons) imulative	$\frac{5.82}{19.6}$	PH 7.68 7.41 7.36 7.33 7.32	(ater Disp 20 517 (mmhos/cm) (177 1091 1093 1092 1092	Dissolved Oxygen (mg/L)	Comm Cloudy (Gray Mills 11 11 11 11 11 11 11 11 11 11 11 11 11	nents Scoric col I) I) 77
Date	Time 110C 110G 1113 1116 1116	ta Developr Metho Pump Bc	nent Removal Rate (gal/min) X X X X	Intake Dep (feet)	th Ending Water Dep (feet)	Total Water Volu (g Increment),25).25).25).25	ume Removed callons) Cumulative 1.26 21,5 3.75 5 6.25	Product V. Removed (r	olume gallons) 	5.82 Temperature (°C) 19.6 19.1 19.1 19.2 19.0	PH 7. 68 7. 41 7.36 7.32	Canductivity (mmhas/cm) 1177 1091 1093 1092 1092	Dissolved Oxygen (mg/L)	Comm Cloudy (Gray Mill) 11 11 11 11 10 Char	nents Segric code I) I) J)
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Developer's Signature(s)

Date 9-25-02 Reviewer MUBate 9/30/02 L:\forms\MW Dvlpmnt 2.dot 11/29/01

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☐ Development ✔ Purging	WELL	DEVELOPM	ENT AND	PURGIN	Ξ ΔΑΤΑ	Form		
Well Number MW 5							Page	of
Project Name B.R. well S	ampling	·	Project Ma	Inager L.5A	minn		Project No	5/2000/59
Client Company Burlingt	on Resource	es			· ·			
Site Name COZLENS	3-1		Site Addre	ss <u>Rura</u>	I SAN	JANN CO.		
Development Criteria 23 to 5 Casing Volumes of Wat Stabilization of Indicator Parar 0 Other Methods of Development Pump Bailer Centrifugal Bottom Va Submersible Double Ch Peristaltic Stainless-st	ter Removal neters lve neck Valve eel Kemmerer	Water Volu Initial Depth Initial Depth Height of Wa Diameter (in Item Well Casing Gravel Pack Drilling Fluids	me Calcula of Well (feet to Water (fe ster Column ches): Well Water Vol Cubic Feet /. OF	ation t) 4.45 eet) 5.37 in Well (feet) 2^{12} Gravel ume in Well (Gallons 0.12×3 (2 Pack Gallons to be Removed 0, 5)	Instruments	r itor tivity Meter ature Mete	Serial No. (If applicable) ySL 63 ySL 63 ySL 63 ySL 63 ySL 63 z
	······				0.5[au site	e in p	01/
Water Removal Data	Removal Intake Depth Rate (feet) Wo (gal/min)	Ending Water Volun ater Depth (gal	ne Removed lons)	Product Volume Removed (gallons)	Temperature (°C)	pH Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments
Date Time rump Baller					20	722 247		tondy,Black,
9-25-02 1156		115 100	<u>, 000</u>		$\alpha \cup \cup$			201701 Egg Odor
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						·	-	
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Comments AFTEr Bai for BTex 1150 Developer's Signature(s)	ling Appic	ximaTely	<u>~35 (</u>	gc (_ 134 	25= 0	- Reviewer	ST RCC JUDate L:\tor	9/30/02 ns\MW DVIpmnt 2.dot 11/29/01

AR 18

ACZ Laboratories, Inc.

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

Burlington Resources, Inc.

Project ID: 1517000138 Sample ID: COZZENS B-1 MW5

Organic Analytical Results

ACZ ID:	L38684-07
Date Sampled:	09/25/02 11:05
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 23:35

 Analysis Date:
 09/27/02 23:35

 Dilution Factor:
 1

Compound					
Compound	C/AS	Result	QUAL Units	MDL	PQL
Benzene	000071-43-2	1.8	ug/L	0.2	1
Ethylbenzene	000100-41-4	1.2	ug/L	0.2	1
m p Xylene	01330 20 7	10.7	ug/L	0.2	2
o Xylene	00095-47- 6	19.4	ug/L	0.2	1
Toluene	000108-88-3	2.4	ug/L	0.2	1
Surrogate Recoveries					
Surrogate	e AS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	107	%	84	114

See case narrative.

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

Burlington Resources, Inc.

Project ID: 1517000138 Sample ID: COZZENS B-1 MW4

Organic Analytical Results

ACZ ID:	L38684-06
Date Sampled:	09/25/02 10:25
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 22:52
Analysis Date:	09/27/02 22:52
Dilution Factor:	1

Compound						
Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	0.8	J	ug/L	0.2	1
Ethylbenzene	000100-41-4	0.5	J	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	LOL	UCL
Bromofluorobenzene	000460-00-4	93.6		%	84	114

See case narrative.

an	ne	C	We Ser	ell Numberrial No.	WDPD-	2 /		ז אל –] Develop: LPurging	ment V	VELL	DEVEL	OPME	NT ANI) PUR	GING DATA Page of
Project	Name	Bu	rlington	Resource	s Groundwa	ter Samj	oling	P	roject Mar	nager D	on Fernal	1			_ Project	No. 151700138*
Client (Compa	ny B	urlingto	n Resourc	es										Phase.T	Task No.
Site Na	me	_C	022	ens	ß#	/		s	ite Addres	s <u>R</u>	irah	San -	Juan	Count	ty	
Development Criteria Water Vo Stabilization of Indicator Removal Initial Dep Initial Dep						Volur epth of	ne Calcu f Well (fee Water (fe	lation	88		Inst X	truments PH Meter	5	Serial No. (if applicable)		
	Other						Height of Diameter	f Wate (inch	er Column es): Well	in Well (f	eet) _ 9 Gravel Pa	. / 8		OO Monitor		
Metho Pump	Aethods of Development						n	Water Cubic	Volume in Feet Ga	Well C	allons to be Removed	X	YSI 63			
□ Cen □ Sub □ Peri	Image: Spin of the system Image: Spin of the system Centrifugal Image: Spin of the system Submersible Image: Spin of the system Peristaltic Image: Spin of the system					e merer	Well Casing 9.18 1.419 Gravel Pack Image: Control of the state o					Meter <u>VSZ63</u>				
Oth	er							Tota	L			4.47	- vv a		on Si	te
Water	Remo	Devel Devel	Data	Removal Rate	Intake Denth	Endin Water D	ig Wat	er Volur	ne Removed	Product Vol	ume Removed	l Temperature		Conductivity	Dissolved Oxygen	
Date	Time	Pump	Bailer	(gal/min)	(feet)	(feet) Incr	ement	Cumulative	Increment	Cumulative	(°C)	pH	(mmhos/cm)	(mg/L)	Comments
12-30-02	0900	<u> </u>		 		6.70	5 5		5			8.7	6.99	///3		cloady gray W/no
																011 Sheen
Circle the	date and i	time that i	he developi	ment criteria a	re met.		<u>. </u>			<u></u>	•					
Develo	per's S	ignatu	re (s) _	fam	s The	wie	>			Date /2	2-30-0	2 Re	eviewer _		D	ate

L:\forms\WELLDEV.DOC

WELL OBSERVATION DATA



Project Name:	BR Ground	water Sampl	ing			Project No.:	151700138*
Project Mngr:	Don Fernald	d				Task:	1
Client Co.:	Burlington	Resources				Date:	12-30-02
Site Name:	Cozzens B#	£ <u>1</u>		<u></u>		······································	
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 I	0900			5.7	14.88		cloudy Gray w/no oil shoer
		i 					
·							
				-			
1		1				1	

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

Comments:	Took	samples	of mw	1 ins	ide 1	Berm	between	tanks	
at é	0930	•							
Signature:	Jam	es Ffan		- 		Date: _	12-30-	02	

ACZ Laboratories, Inc.

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

Burlington Resources, Inc.

Compound

Project ID: 1517000138 Sample ID: MW-1 COZZENS B #1

Organic Analytical Results

ACZ ID:	L39827-02
Date Sampled:	12/30/02 9:30
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 20:12
Analysis Date:	01/07/03 20:12
Dilution Factor:	1

Compound	CAS	Result	QUAL Units	MDL	PQL
Benzene	000071-43-2	5.6	ug/L	0.3	1
Ethylbenzene	000100-41-4	7.7	ug/L	0.2	1
m p Xylene	01330 20 7	6.8	ug/L	0.4	2
o Xylene	00095-47- 6	1.5	ug/L	0.2	1
Toluene	000108-88-3	10.6	ug/L	0.2	1
Surrogate Recoveries					
Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	101	%	84	114

Sample results should be considered estimated due to matrix interferences.

DRILLING LOGS/WELLBORE DIAGRAMS

S: / grndwatr/GW-Sites/Fogelson4-1/99Annual.doc

RECORD OF SUBSURFACE EXPLORAT

Philip	o Envir	onmental	Services	Corp.
4000	Monroe	Road		

Fermington, New Mexico 87401 (505) 326-2262 FAX (505) 326-2388

Elevation	
Borehole Location	CATZENS (MARA MONZAND)
GWL Depth	3'
Logged By	P. Chaney
Drilled By	K. Paulila
Date/Time Started	5/19 8800
Date/Time Comple	sted 5/14 18 10

	Page ; of ;
Project Name	
Project Number	21072 Phase , 500 99
Project Location	DEZENS (Mesa frommana)
Well Logged By Personnel On-Site Contractors On-Si	D. Chener <u>choner</u> , E. Padilla, D. Sadilla
Client Personnei C Drilling Method	
Air Monitoring Me	thed Pth

Borehole #

Well #

ţ

MW-1

(Foet)	Sample Interval	Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Lithology Change (feet)	Air Monitoring Units: NDU 87 84 S		Air Monitoring Unita: NDU BZBHS		Air Monitoring Unite: NDU BZ_BH_S		Air Monitoring Units: NDU BZ_BH_S_		Air Monitoring Units: NDU BZ_BH_S_		Air Monitoring Units: NDU BZ BH S		Air Monitoring Units: NDU BZ_BH_S_		Air Monitoring Units: NDU BZ_BH_S_		Air Monitoring Unita: NDU BZBHS		Air Monitoring Units: NDU BZBHS		Air Monitoring Unita: NDU BZ_BH_S		Air Monitoring Units: NDU BZBHS		Air Monitoring Unita: NDU BZ_BH_S		Air Monitoring Units: NDU BZBHS		Air Monitoring Unite: NDU BZBHS		Air Monitoring Units: NDU BZ BH		ing U S	Drilling Conditions & Blow Counts
	₹ 7 10 12		Fill to approx 15 (Ed Hastly Stip) is sumpt at 5-7' Brown medium to coarse crained poorly surred sand wipea gravel. wet at 3', blact staining at 5', no odor yellowish hrown silty clay. Low glasticity, Hard TD=13'. Set 10' screen from 13 to 3', sand to 1' hgs, bentonine to surface			0.5		7.6	Br = 8 s/its = 3.6 Br = 50 (10") s/its = 1%6																														
Comments:	<u>Inaten</u>	sals Sarts	1 silt trap, 1-10 screen	/-	<u>5' ris</u> .	<u></u>	6 4	sach	s silica sord.																														
			Geologiet Sid	Inature		0		.)																															

RECORD OF SUBSUI	RFACE E	XPLORATI			в	rehole #	2
Philip Environmental Servic 4000 Monroe Road	es Corp.	Cozzens B# 1			W Pe	ol # ge _/	ot j
Farmington, New Mexico 87401 (505) 328-2282 FAX (505) 328	-2388		Project Na Project Nu Project Lo	umber 2	2:17] Setins	Phase / mcse	1800.99 Manzang
Elevation Borehole Location GWL Depth			Well Logg Personnei Contracto	ed By On-Site Irs On-Site	P. ch cheney	ener .E. Par	Lilla D. Vuella C. Triv
Logged By <u>3. (h</u> Drilled By <u>1. ()</u> Date/Time Started	eney heney		Client Per Drilling M	sonnel On-S	Itand A	nger	5414
Date/Time Completed			Air Monit	oring Method	<u> </u>	·	
Depth Sample (Fest) Interval	Sample Type & Recovery ((inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Monitoring Units: NDU BZ BH	s	Dritting Conditions & Blow Counts
	(inches)	Hand Auger 10 3! mough sond .cookles and gravel. Auger refusal at 3! set 2'of screen nom 3' 101; sand 30 approx 0.5', heritonite to surface				2	

Comments:

Geologist Signature

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ITORING WELL INS	TALLATION F	RECORD				
Environmental Services Corp	١,				Page 1 cf 1	
ton, New Mexico 37401			Pro	oject Name		
26-2252 FAX 16061 326-2388					73	
			Pro	oject Location	2005 (Mesa Mon	<u>0.91</u> 12anu)
tion	<u></u>	-	Or	n-Site Geologist	? Chener	
Depin 7	· · · · · · · · · · · · · · · · · · ·	-	Co	ontractors On-Site	neney in Prodilla, K	Laville, C. Irby
led Sy M. Paulilla		-	Cii	ient Personnel On-Site	Ed Insely	
Time Started 5/19 Time Completed 5/19	0800	-				
pths in Reference to Ground S	Euriace			Top of Protective (Top of Fiser	Casing	
m	Materiai	ر تتعوير ا		Ground Surface		
o of Protective Casing	1					
nttom of Protective Casing po of Permanent Sprenole						
ation of Semianent Egrenole						i.
asing	<u> </u>					
of Concrete	1	NA.				
attom of Concrete	1	<i>N</i> .A.				
op of Grout	 	<u>IN.H.</u>				
ottom or Grout	<u></u>					
op of Weil Riser	1	2 (+)				
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op of Well Screen	1	3		Top of Sesi	Ground	
lottom of Well Screen		13		a	suffer C	
oo of Peltonite Seal		Surace		C Top of Gravei Par	sk j	
lottom of Petionite Seal	<u> </u>	/		Top of Screen	3 1	
op of Gravei Pack	 	,				
ottom of Gravel Pack	(13'				
op of Natural Cave-in		N.A				
ottom of Natural Cave-In		N.A.				
op of Grouncwater		3		Bottom of Screen	$\frac{13^{\prime}}{12^{\prime}}$	
otal Depth of Borehole		1/3' 1			<u>_/s</u>	
nmems: <u>TD= 13 '. Tr</u>	istalled 2	"screen hor	<u>n /3' 10</u>	3', Sund 10	1' bentimire	
		Geologi	ist Signature	Jal	d	

PHILIP REPORT ON EXCAVATION DATED 1/8/98

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Industrial Services Group Central Region January 8, 1998

Project 19914

Mr. Ed Hasely Burlington Resources Oil and Gas Company P.O. Box 4289 Farmington, New Mexico 87499-4289

RE: Report for work performed at the Cozzen B-1 site

Dear Mr. Hasely:

Philip Services Corporation (Philip) is pleased to submit to Burlington Resources Oil and Gas Company (Burlington) this report of the work performed at the Cozzen B-1 site approximately 3 miles east of Bloomfield, New Mexico.

SCOPE OF WORK

On November 21, 1997 Burlington requested Philip to perform the following scope of work at the Cozzen B-1 site:

- Provide technician, pickup truck and photoionization detector (PID) to monitor soil contamination levels at a previous spill.
- Provide loader, trackhoe and two operators to excavate contaminated soil from the tank pad across the road to an old reserve pit.
- Landfarm contaminated soil on site and backfill excavation using soil removed from location.

RESULTS

On December 9, 1997 at approximately 7:00 a.m. Philip began excavation activities at the spill area as designated by Burlington. At approximately 9:00 a.m. Burlington's representative arrived to observe the excavation. At approximately 10:00 a.m. Denny Foutz with the New Mexico Oil Conservation District (NMOCD) arrived. Philip field screened the excavated soil with a PID to monitor the extent of contamination. Results of the first screened readings were 192 parts per million (ppm) on the north side; 5 ppm on the east side; and 681 ppm and 573 ppm on the south side. Based on the field screening results, excavation continued to the south and west.

At 12:00 p.m. Philip collected heated headspace samples, with the following results: 179 ppm on the north side, 5 ppm on the east side and 480 ppm on the south side. Philip resumed excavation

Combining the Strengths of Philip Services Corp., Allwaste and Serv-Tech

Mr. Ed Hasely January 8, 1998 Page 2

on all sides. At 1:00 p.m. Philip collected samples for a second heated headspace analysis. The results were: 38 ppm and 32 ppm on the north side, 5 ppm on the east side, 81 ppm and 49 ppm on the south side and 118 ppm on the west side.

At the request of Denny Foutz, Philip collected two samples on the down gradient side of the excavation and sent them to Onsite Laboratory in Farmington, New Mexico. The samples were analyzed for Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) by USEPA method 8020, and Total Petroleum Hydrocarbons (TPH) by USEPA method 8015 modified for gasoline and diesel range. Sample No. Cozzen-01 was collected from the south side of the excavation and sample No. Cozzen-02 was collected from the west. Laboratory analysis indicated BTEX and TPH results to be below NMOCD standards for soil. Results of laboratory analysis are included in Attachment A.

The excavation was approximately 50 feet long, 30 feet wide and approximately 6 feet deep. Philip estimates 334 cubic yards of contaminated soil were removed. No groundwater was encountered. All impacted soil excavated was landfarmed on site.

Once the excavation was complete, Mr. Foutz approved backfilling to the sample locations. Once backfilling was completed, Philip personnel and equipment demobilized from the site.

Philip appreciates the opportunity to provide Burlington with professional services and looks forward to providing additional services in the future. If you have any questions or require additional information, please contact Robert Thompson or Martin Nee at (505) 326-2262.

Respectfully submitted, PHILIP SERVICES CORPORATION

Robert Thompson Project Manager

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Attachment A

Results of Laboratory Analysis

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	Scott Pope	Date:	12-Dec-97
Company:	Philip Environmental	COC No.:	G 3688
Address:	4000 Monroe Road	Sample No.:	17062
City, State	: Farmington, NM 87401	Job No.:	2-1000
Project Nar	ne: Burlington Resources - Cozzen B-1		

Durinigion riscoulous			
Cozzen-01			
DB	Date:	9-Dec-97 Time:	12:10
DC/HR	GRO Date:	10-Dec-97	
Soil	DRO Date:	11-Dec-97	
	Cozzen-01 DB DC/HR Soil	Cozzen-01DBDate:DC/HRGRO Date:SoilDRO Date:	Cozzen-01DBDate:DC/HRGRO Date:10-Dec-97SoilDRO Date:11-Dec-97

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Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.0	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD DRO QC No.: 0555-STD

Continuing Calibration Verification

	Method	Unit of	True	Analyzed		RPD
Parameter	Blank	Measure	Value	Value	RPD	Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: SW-846 EP.4 Method 8015.4 mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography

Approved by: Date: 12/12/13

P.O. BOX 2606 • FARMINGTON, NM 87499



LAB: (505) 325-1556

OFF: (505) 325-5667

ANALYTICAL REPORT

Attn: Company: Address: City, State:	Scott Pope Philip Enviro 4000 Monro Farmington,	nmenta pe Roai NM 8	al d 7401		Date: COC No.: Sample No.: Job No.:	G3688 17062 2-1000
Project Nan Project Loc Sampled by Analyzed b	ne: ation: y: y:	<i>Burling</i> <i>Cozze</i> DB DC	gton Resc n-01	Durces - Cozzen B-1 Date: Date:	9-Dec-97 Time: 10-Dec-97	12:10

Sample Matrix:	Soil

Laboratory Analysis

Porometer	'n.	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
rarameter					
_		19	uerke	2	ug/kg
Benzene		55	10/50	2	ug/kg
Toluene			<u>uz/kz</u>	2	
Ethvlbenzene		95	06/86		
		497	ug/kg	2	<u> </u>
		13	ug/kg	2	ug/kg
0-Xylene					
	TOTAL	679	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved by: Date:

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: 505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	Scott Pope	Date:	12-Dec-97
Company:	Philip Environmental	COC No.:	G 3688
Address:	4000 Monroe Road	Sample No.:	17063
City, State:	Farmington, NM 87401	Job No.:	2-1000

Burlington Resources -	Cozzen B-1		
Cozzen-02			
DB	Date:	9-Dec-97 Time:	12:12
DC/HR	GRO Date:	10-Dec-97	
Soil	DRO Date:	11-Dec-97	
	Burlington Resources - Cozzen-02 DB DC/HR Soil	Burlington Resources - Cozzen B-1Cozzen-02DBDate:DC/HRGRO Date:SoilDRO Date:	Burlington Resources - Cozzen B-1Cozzen-02DBDate:DC/HRGRO Date:SoilDRO Date:11-Dec-97

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.5	mg/kg	0.5	mg/kg
Diesei Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoine Range (CS - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Funge (C10 = C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography

Approved by: 12/12/97 Date:

P.O. BOX 2606 • FARMINGTON, NM 87499

provide the second state of provide and second states and second states and

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	Scott Pop	e			Date:	11-Dec-97	
Company:	Philip Env	ironment	al		COC No.:	G 3688	
Address:	4000 Mol	nroe Roa	d		Sample No.: 17		
City, State:	Farmingto	n, NM 8	7401		Job No.:	2-1000	
Project Nam	ne:	Burling	ton Reso	urces - Cozzen B-1			
Project Loca	ation:	Cozze	n-02				
Sampled by	:	DB		Date:	9-Dec-97 Time:	12:12	
Analyzed by	/:	DC	•	Date:	10-Dec-97		
Sample Mat	rix:	Soil					

Laboratory Analysis

		Results	Unit of	Limit of	Unit of
Parameter	`R	as Received	Measure	Quantitation	Measure
Benzene		96	ug/kg	2	ug/kg
Toluene		43	ug/kg	2	ug/kg
Ethylbenzene		133	ug/kg	2	ug/kg
m,p-Xylene		508	ug/kg	2	ug/kg
o-Xylene		16	ug/kg	2	ug/kg
	· ·		· · · · · · · · · · · · · · · · · · ·		
	TOTAL	796	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved by: Date: 12/11/97

OFF: (505) 325-5667

.



LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 10-Dec-97

Internal QC No.: 0559-STD Surrogate QC No.: 0556-STD Reference Standard QC No.: 0529/30-QC

Method Blank

		Unit of
Parameter	Result	Measure
Average Amount of All Analytes In Blank	< 1.0	ppb

Calibration Check

		Unit of	True	Analyzed		
Parameter	n	Measure	Value	Value	RPD	Limit
Benzene		ррв	60.0	62.1	3	15%
Toluene	'n.	ppb	60.0	63.3	5	15%
Ethylbenzene		ppb	60.0	62.0	3	15%
m,p-Xylene		ppb	120.0	120.9	· 1	15%
o-Xylene		ррь	60.0	62.1	3	15%

Matrix Spike

	1- Percent	2 - Percent				
Parameter	Recovered	Recovered	Limit	RPD	Limit	
Benzene	91	85	(39-150)	7	20%	
Toluene	88	83	(46-148)	6	20%	
Ethylbenzene	86	82	(32-160)	4	20%	
m,p-Xylene	75	70	(35-145)	6	20%	
o-Xylene	89	87	(35-145)	3	20%	

Surrogate Recoveries

	51	S2		S1	S2
	Percent	Percent		Percent	Percent
Laboratory Identification	Recovered	Recovered	Laboratory Identification	Recovered	Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
17062-G3688	84				
17063-G3688	84				
			+		
				yn,	(ne)
	I		1	12/15/97	17.11.197

S1: Flourobenzene



210 West Sand Bank Road P.O. Box 230 Columbia, IL 62236-0230

Chain of Custody Record - Nonchemical Samples (618) 281-5120 FAX

COC Serial No. **G** 3688

Project Name Burging Ton Reg Cozzen B.1			Lab Name OLSITE		NSITE
Project Number Phase . Task 2000 . 77				Location FARMiLETON	
Samplers DAUID BROW			Ana	alysis Type	
Sample Number Date Time Ma	trix	TPH	BTY	!	Comments
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Cozzen-02 12.9.97 12:12		X	X		17063 - L
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Shipping and Lab Notes:					
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March 27, 2001

Certified: 70993400001842165308

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

RECEIVED

JR66

APR 0 1 2002

ENVIRONMENTAL BUREAU OIL CONSERVATION DIVISION

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 Wenty

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


APR 0 1 2002

ENVIRONMENTAL BUREAU

OIL CONSERVATION DIVISION BURLINGTON RESOURCES 2001 ANNUAL GROUNDWATER REPORT

Cozzens B #1

SITE DETAILS

Location: Unit Letter L, Section 19, Township 29N, Range 11W; San Juan County, New Mexico Land Type: Fee

PREVIOUS ACTIVITIES

PNM had conducted pit closure work and installed monitoring wells on this site in 1996 and 1997. Burlington Resources also had participated in excavation of impacted soils.

In December 1997, Burlington Resources excavated approximately 334 cubic yards of impacted soil from an area near an oil storage tank that had leaked. No groundwater was encountered at this time. The excavation was backfilled with clean soils. A report prepared by Philip Services Corporation detailing the excavation work and soil sampling is attached.

1999 ACTIVITIES

Burlington installed a groundwater monitoring well (MW-1) near the oil storage tank on this location in May 1999. At the same time, a second monitoring well (MW-2) was installed at the toe of the slope immediately downgradient and south of location. Auger refusal was encountered at approximately 3 feet during the installation of the second monitoring well (MW-2). Due to the shallow depth of MW-2, we were unable to collect water samples during several of the quarterly sampling events. After developing the wells and allowing them to stabilize, the wells were purged and sampled on May 26, 1999. Water samples were collected from MW-2 during the 3rd and 4th quarters and results showed levels of benzene and xylene above standards.

2000 ACTIVITIES

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

2001 ACTIVITIES

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

CONCLUSIONS

The ground water regime being monitored at this location appears to be artificially created and influenced by an irrigation ditch approximately 60 feet to the east and upgradient from the location. The irrigation ditch acts as a losing stream contributing water to the subsurface and artificially creating the shallow ground water being monitored at the location. The irrigation ditch is flowing approximately

April 15 through October 15 annually. Without the ditch influence there may not be any shallow groundwater beneath the location and none is expected upgradient of the ditch. A project to clay line the ditch to prevent water seepage was started March 2001 by local residents concerned about water damage from the ditch. The ground water gradient is approximated to be in a west/southwest direction. The influence of the ditch water on MW-1 can be observed in the water level measurements collected and coincides with the water flow schedule of the ditch. An apparent lag in hydraulic conductivity is assumed to be three months or more.

The analytical results of ground water sampling from the source monitoring well (MW-1) in May 1999 showed levels of benzene constituents above New Mexico Ground Water Standards. Since the initial sampling event in May 1999, six quarterly sampling events have shown all BTEX constituents below the standards in MW-1. However, sampling results for 2001 show elevated levels of BTEX. The effect of a minor condensate spill on 1/30/01 of approximately 1 bbl coupled with the soil being previously disturbed during the historic excavation activities may be responsible for the increased level of BTEX in MW-1. Further monitoring may determine if this is related to a minor slug of contamination. No evidence of a change in the groundwater regime from the ditch lining project was observed MW-1 and it is possible the lining project did not impact the ditch reach adjacent and upgradient of the location. One detection of benzene identified in the second quarter from MW-1 was determined to be questionable. No additional analysis results in subsequent or historic monitoring detected similar concentrations therefore the result is not considered valid.

The quarterly sampling results from MW-2 have shown BTEX constituents above the standards except for the third quarter of 2000. A trend of natural degradation of the hydrocarbons and of a downward trend in BTEX levels appears possible in well MW-2. Insufficient water prevented the collection of data from this well in 2001.

RECOMMENDATIONS

- Burlington Resources proposes to continue quarterly sampling at this site.
- Upon receiving analytical results below standards for one full year, Burlington Resources will request official closure of this site.

Attachments: Figure 1 - Site Map Table 1 - Groundwater Sampling Results Summary 2001 Groundwater Analytical Results Drilling Logs/Wellbore Diagrams Philip Report on Excavation Work

Cozzens B#1 - Site Diagram



3/28/00 LEH

2001 GROUNDWATER ANALYTICAL RESULTS

S: / grndwatr/GW-Sites/Cozzens/99Annual.doc

Та	bl	е	1
		~	

Groundwater Monitoring Well Sampling

		Sample	В	Т	E	X	BTEX	DTW
Well Name	MW #	Date	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ft)
Standard			10	750	750	620		
Cozzens B #1	MW-1	5/26/1999	28	11	23	99	161	
	(aka MW-4)	9/2/1999	2.5	2.1	5.6	22	32.2	2.31
	;	12/2/1999	<0.5	11	5	27	43	4.43
		1/19/2000	1.7	13	7.6	28	<u>5</u> 0.3	6.48
		5/11/2000	6.8	1.2	2.6	14	24.6	4.03
		9/7/2000	1.1	<0.5	6.2	10	17.3	3.8
		12/15/2000	2	3	1	4	10	4.57
		3/28/2001	50.3	<0.2	1.3	3.6	55.2	lost
		6/28/2001	<u>41</u> 70	<0.2	220	370	4760	5.26
		9/17/2001	12.9	<0.2	0.5	4.3	17.7	3.51
		12/19/2001	39,6	3.1	6.3	14.1	63.1	4.64
	MW-2	5/26/1999	V	Vell was dry	v. No Sampl		e.	
	(aka MW-5)	9/2/1999	120	55	440	450	1065	1.28
		12/2/1999	250	39	480	980	1749	4.35
		1/19/2000	V	Vell was dry	/N	lo Sampl	0	
		5/11/2000	550	140	830	2400	3920	3.53
		9/7/2000	4.7	1.9	6.2	23	35.8	3.36
		12/15/2000	65	4	25	59	153	3.63
		3/28/2001	-		Dry			
		6/28/2001		no s	ample colle	cted		Dry
		9/17/2001		no s	ample colle	cted		3.74
		12/19/2001	31.8	3	18.9	29.9	83.6	3.87

ACZ 2773 Downhill Dr	Laboratories, Inc	C. 7 (800) 334-5493	Ore	ganic Ar Resu	alytic Its	cal			
Burlington Res	sources, Inc.		ACZ ID:	L31380-0	4				
Project ID:	B.R. Well Sampling		Date Sampled:	Date Sampled: 03/28/01 48:00					
Sample ID:	Cozzens MW 4		Date Received:	03/31/200	1				
-			Sample Matrix:	Ground W	ater				
Benzene, Tol Analysis Extract	luene, Ethylbenzene & Xy s Method: M8020 t Method: Method	lenes	Analyst: Extract Date: Analysis Date: Dilution Factor:	smp 4/2/01 4/2/01 1					
Compound									
Parameter	A STATE OF	CAS + +	Result Q	ual Units	MDL	PQL.			
Benzene		000071-43-2	50.3	ug/L	0.2	0.5			
Ethylbenzene		000100-41-4	1.3	ug/L	0.2	1			
Xylenes		001330-20-7	3.6	ug/L ug/L	0.2	1			
Surrogate Recover	eries								

ParameterCASResultQualUnitsMDLPQLBromofluorobenzene00000460004113%80120

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	4000 Monroe Road Farmington, NM 874	401	(505 (505	326-2262 326-2388	Phone FAX		c	2830								
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Other (Specify)																

4

PE-176 4/95

L31380: Page 28 of 30



Well Development and Purging Data

Project Task No	No	179	•		Developn Purging	nent											Page	/ of	1
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Client/P	roject Na	ame \underline{B}	urlin	lub	Resour	rces	f	SR h	e/I_S	x-pl	ine		Proj	ect N	lanager l	LISA	wind	2	
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Metho	ls of De	evelopr	nent					Water	Volume	in Well	Gallon	s to be		Othe	r				
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Client/Project Name S_VIV RC Development Criteria 23 o 5 Casing Volumes of Water Removal Stabilization of Indicator Parameters	Water Volume Calculation Initial Depth of Well (feet) Initial Depth to Water (feet) Height of Water Column in Well (feet) Diameter (inches): Well	Instruments Serial No. (if applicable) PH Meter Hydac Conductivity Meter Hydac
Methods of DevelopmentPumpBailerCentrifugalØ Bottom ValveSubmersibleDouble Check ValvePeristalticStainless-steel Kemmerer	Water Volume in Well Gallons to be Item Cubic Feet Gallons Well Casing Image: Comparison of the second secon	□ Other Water Disposal On SiTC in pit
Other Water Removal Data		Type of Container No. of Containers Parameters Sampled For
Development Method Date Time Pump Bailer (gal/min) (-24-011440	Ending Water Depth feet) Water Volume Removed (gallons) Product Volume Removed (gallons) Cumul Increment Cumul auve Cumul Temperate	ure (°C) pH Conductivity Dissolved Oxygen (mg/L) · Comments
Circle the date and time that the development criteria are met Comments D'10 MUT Sample Sample Developer's Signature (s) Officient M	Do hater To get hate Date 6-28-01 Rev	viewer Mun Date 7/3/01

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White - Return with sample.

Yellow - Retain for your records.



Laboratories, Inc.

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

Burlington Resources, Inc.

Project ID:	B.R. well sampling
Sample ID:	COZZENSB#1 MW 4

Organic Analytical Results

ACZ ID:	L32735-06								
Date Sampled:	06/28/01 14:30								
Date Received:	06/30/01								
Sample Matrix:	Ground Water								

Analyst: *smp* Extract Date: 07/12/01 21:23

Dilution Factor: 50

Analysis Date: 07/12/01 21:23

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: M8021 Extract Method: Method

Compound						
Compound	CAS	Result	QUAL	Units	MDL	PQL
Benzene	000071-43-2	4170		ug/L	10	30
Ethylbenzene	000100-41-4	220		ug/L	10	50
Toluene	000108-88-3		υ	ug/L	10	50
Xylenes	001330-20-7	370		ug/L	10	50
Surrogate Recoveries						
Surrogate	CAS	% Recovery		Units	LCL	UCL
Bromofluorobenzene	000460-00-4	102		%	80	120

REPOR.01.01.01.02

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Project No Task No Well No	178 W 4	1	?	Develop Purging Site Name/Identif	nent ication C	0 Ø DZZEA	15 <u>B</u> -	i	Site Addre	ess <u>1</u> 2	ural	<u>Se</u> r	- J	årn (50	Page of]
Client/Project N Development 3 to 5 Casin tabilization Other	ame ß Criteri g Volum n of India	a les of W cator Pa	Vater Re. arameter	<u>noval</u> s	W Ini Ini He Dia	ater Volu tial Depth tial Depth ight of Wa ameter (inc	Ime Calc of Well (fe to Water (f iter Column thes): Wel	211 Sa ulation et) neet) n in WeI 111	<u>14.9</u> <u>3.5</u> (feet) Gravel	5 9 1 Pack	14	Proje	ct Ma rum PH M DO M Condu Condu	anager ents eter lonitor lotivity Me erature Me	Se eter ter	rial No. (if applicable) Ly donc H: Jac Hyderc
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Water Remov	al Data						-					Parame	ters	Sampled F	or	
Date	Time	Devel Me Pwnp	ethod Bailer	Removal Rate (gal/min)	intake Depth (feet)	Ending Water Depth (feet)	Water V Removed (Increment	olume (gailons) Camul ative	Product Removed Increment	(gallons) Cumul auve	Temperar	ше(°С) р	H ()	Conductivity mmhos/cm)	Dissolved Oxygen (mg/L)	· Comments
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Task No.					Purging		ิต์									Page	/ or)
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\Box Centrifi	ugal			ottom V	alve	We	ell Casing	0.71	¢),//x3		N N	Vater	Disposal	~	~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	المح المح الح	
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Other							Toti	al [0,-	Sar Typ Par	nplir e of (amete	ng Activitie Container	es For	No.ofC	ontainers _	
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Laboratories, Inc.

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

Burlington Resources, Inc.

Project ID:	BR Well Sampling
Sample ID:	COZZENS MW4

Organic Analytical Results

ACZ ID:	L33990-01					
Date Sampled:	09/17/01 16:10					
Date Received:	09/20/01					
Sample Matrix:	Ground Water					

Benzene, Toluene, Ethylbenzene & Xylene, Analyst: smp Extract Date: 09/27/01 15:49 Analysis Method: M8021 Analysis Date: 09/27/01 15:49 Method Dilution Factor: **Extract Method:** 1 Compound Compound Result (a)()/.)_ Unite Mon CAS ----Benzene 000071-43-2 12.9 ug/L 0.2 0.5 000100-41-4 Ethylbenzene 0.5 ug/L 0.2 J 1 Toluene 000108-88-3 υ ug/L 0.2 1 0001330-207 **Xylenes** 4.3 ug/L 0.2 1 Surrogate Recoveries Surrogate 9.2.7 CASE) Receiver Un this LOL. Bromofluorobenzene 000460-00-4 106 % 80 120

Well Number Mw 4 Page
Project Name B. well Samplin
Client CompanyBulling Thing Tun Resources Site NameCOZZENS Site NameCozzENS Bevelopment Criteria Mater Volumes of Water Removal Participation of Indicator Parameters Dother Dothods of Development Pump Boiler Conductivity Meter Double Check Valve Dother Dother Double Check Valve Dother Dother Double Check Valve Dother Dother </td
Site NameCO2ZENS B_1 Site Address R. ural. Sac. fam. CO Development Criteria Mater Volumes of Water Removal Mater Volume Calculation Instruments Serial No. (If applicable) Particle Other Initial Depth of Well (feet) 1/2,35 Instruments Serial No. (If applicable) Methods of Development Pump Bailer Submersible Do Monitor Instruments Serial No. (If applicable) Pump Boiler Conductivity Meter VSI 63 Instruments Serial No. (If applicable) Pump Boiler Conductivity Meter VSI 63 Instruments Serial No. (If applicable) Imate Cubic Feet Callons to be Meter Volume in Well (feet) D.35 Conductivity Meter VSI 63 Imate Cubic Feet Callons to be Removed Removed Imate Volume Net Volume
Development Criteria Mater Volumes of Water Removal # 3 to 5 Casing Volumes of Water Removal Initial Depth of Well (feet) _4,99 # Stabilization of Indicator Parameters Initial Depth of Well (feet) _4,99 I Other
Pump Bailer Cubic Feet Gallons Removed Centrifugal Bottom Valve Well Casing D. 36 //68/3 S.04 Submersible Double Check Valve Gravel Pack Image: Signature of the signater of the signature of the signature of the signatere
Water Removal Data Image: Second Product Volume Removed Rate Depth Rate Depth Removed (gallons) Temperature (°C) pH Conductivity Dissolved Oxygen (mmhos/cm) Comments Date Time Pump Bailer (feet) Water Depth (feet) Water Volume Removed (gallons) Temperature (°C) pH Conductivity Oxygen (mmhos/cm) Comments Date Time Pump Bailer (feet) Vater Depth (feet) Increment Cumulative increment Cumulative III.9 2.09 (GOR Comments ID - 19 - 01 /409 Increment Increment Cumulative III.9 2.09 (GOR Mitde Second Codes 411 Increment Increment Increment Cumulative III.9 2.09 (GOR Mitde Second Codes 411 Increment I.25 2.5 III.5 7.04 S09 III III 1/413 Increment I.25 2.5 III.6 7.09 III.9 III III 1/415 Increment III.25 III.5 III.6 7.05 III.6 7.05 III.6 III
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1417 6.17 1.25 6.25 11.7 7.04 1526 no Change
Comments SAmpled for BTEX 1425 Developer's Signature(s) Class 6 M Date/2-19-01 Reviewer Ji M Bate 12/21/01

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Well Numbe	r MW	5						·					Page	of
Project Nam	ie <u>B.R.</u>	well	San	plin	ς		Project M	anager	<u>[.55</u>	1 min	<u>~</u>		Project N	7212000137
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Water Ren	noval Da		Removal	intake Depti	Ending	Water Volur	me Removed	Product	Volume	Temperature	рН	Conductivity	Dissolved	
Date	Time	Method Pump Bailer	t Rate (gal/min)	(reet)	(feet)	Increment	llons) Cumulative	Increment ((gailons) Cumulative			(mmnos/cm)	(mg/L)	Comments
12-19-01	1434	×			4.42	-26.	.25			8.6	7.25	2167	C	lower Rotton 859
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Developer's	Signature	e(s) // ;	\$ M	na /	· .			Date_	12 -	19-01	Re	viewer	UL Date_ L:\form	12/21/01 hs\MW Dvipmnt 2.dot 11/29/01

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

Burlington Resources, Inc.

Project ID: 1517000138 Sample ID: Cozzens B-1 MW 5

Organic Analytical Results

ACZ ID:	L35290-07
Date Sampled:	12/19/01 14:45
Date Received:	12/20/01
Sample Matrix:	Ground Water

Analyst: mwb Extract Date: 12/29/01 6:29

Analysis Date: 12/29/01 6:29

Dilution Factor: 1

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: M8021 Extract Method: Method

Compound					
Compound	CAS	Result	QUAL Units	MDL	PQL
Benzene	000071-43-2	31.8	ug/L	0.2	0.5
Ethylbenzene	000100-41-4	18.9	ug/L	0.2	1
Toluene	000108-88-3	3	ug/L	0.2	1
Xylenes	0001330-207	29.9	ug/L	0.2	1
Surrogate Recoveries					
Surrogate	CAS	% Recovery	Units	LCL	UCL .
Bromofluorobenzene	000460-00-4	115	%	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

Burlington Resources, Inc.

Project ID:1517000138Sample ID:Cozzens B-1 MW 4

Organic Analytical Results

ACZ ID:	L35290-06					
Date Sampled:	12/19/01 14:25					
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 3:25
Analysis Date:	12/29/01 3:25
Dilution Factor:	1

Compound					
Compound	CAS	Result Q	UAL Units	MDL	POL
Benzene	000071-43-2	39.6	ug/L	0.2	0.5
Ethylbenzene	000100-41-4	6.3	ug/L	0.2	1
Toluene	000108-88-3	3.1	ug/L	0.2	1
Xylenes	0001330-207	14.1	ug/L	0.2	1
Surrogate Recoveries					
Surrogate	CAS	% Recovery	Units	LCL	UCL
Bromofluorobenzene	000460-00-4	120	%	80	120

DRILLING LOGS/WELLBORE DIAGRAMS

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RECORD OF SUBSURFACE EXPLORATION

RECORD OF SUBSURFACE EXPLORATION		Borehole #	
Philin Environmental Services Corn		Weil # Page	11W-1
4000 Monroe Road		1)
Farmington, New Mexico 87401	Project Name		
(505) 326-2262 FAX (505) 328-2388	Project Number	21072 Phase	100 99
	Project Location	jozzens mes	a limenana i
Elevation	Weil Logged By	D. Chener	
Borehole Location Corzens / Mars Monzan) Personnei On-Site	chener, t. Parli	16. 1. Ludilla
GWL Depth 3'	Contractors On-Site		/
Logged By P. Chaney	Client Personnei On	-Site Eliz	se : Y
Drilled By <u>K. (autila</u> Date/Time Started <u>510</u>	Drilling Method	41 by " 1+8A	,
Date/Time Completed 5/19 / 0 60	Air Monitoring Meth	nod <u><i>PTN</i></u>	
Sample	Depth	1	
Depth Sample Type & Sam	ple Description USCS Lithology	Air Monitoring	Drilling Conditions

7

r T

Depth	Sample	Type &	Sample Description	USCS	Lithology	Air	Monitor	ing	Drilling Conditions		
(rost)	interval	(inches)	Classification System: USCS	SYMDO	(feet)	BZ	BH	s	g blow Colens		
	₹ 7 10 12		Fill to approx 15' (Ed Histly 5/19). I sumpt at 5-7' Brown, medium to coarse stained poorly surted sound w/pea gravel were at 3', blact staining at 5', no odor yellowish hrown silty clay. Low glashicity, Hard TD = 13'. Set 10' screen From 13 to 3', Sanvi to 1' hgs, bentonic to surjace		(feet)	ΒΖ (Δ.) (), 5	ВН	s 7.6 0.0	6c = 8 s/its = 3.6 Bc = 50 (10") s/its = 12.6		
Comments:	<u>Irair</u>	nicis	1 silt trap, 1-16 screen is idention in	/-	5' ris	er	6	sach	s silica sound,		
			Geologist Si	gnature	1 cr	. Ì	2 C	<u></u>	<u> </u>		

5/6/99\Drillog.xls

i.

RECORD OF SUBSURFACE EXPLO	RATION	
Philip Environmental Services Corp.	Cozzens B# 1	

Philip Environ	mental Services Corp.
4000 Monroe Ro	ad
Farmington, New	Mexico 87401
(505) 326-2262	FAX (606) 328-2388

Elevation	
Borehole Location	
GWL Depth	A `
Logged By). Cheney
Drilled By	P. Cheney
Date/Time Started	
Date/Time Complet	ted

	Borehole # $\frac{2}{M\omega-2}$ Weil # $M\omega-2$ Pege , of)
Project Name	227] Phase (200.9.9
Project Location	SETINS / MESS MONZAND
Well Logged By Personnel On-Site	P. chener chener, E. Padilla D. Vuella C. Erk
Contractors On-Site Client Personnel On-Sit	• <u>Est 1/2,5217</u>
Drilling Method Air Monitoring Method	Hand Anger

Depth (F cet)	Sample Interval	Type & Recovery	Sample Description Classification System: USCS	USCS Symbol	Lithology Change	Air Monitor ii Units: NDL	Na J	Drilling Conditions & Blow Counts
		(inches)			(feet)	BZ BH	s	
0			Hand Auger 10 3! moonin sond, coordes and gravel. Auger refusal at 3! Set 2'of screen from 3' 101, sand no approx 0.5', person te to surface					
10								
15								
20								
25								
30								
40								

Comments:

Geologist Signature

ch

DNITORING WELL INST	ALLATION RECORD				Borehoie #	nw-1	
ip Environmental Services Corp	,				Page _]	cf/	
Monroe Rom							
ington, New Mexico 37401			Project	Name			
326-2252 FAX 605: 326-2388			Cestare		73	2h	
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vation			On-Site	Geologist	<u>F</u> Chen	ev	- 1 11
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op of Groundwater				Bottom of Borel	nole	13	ł
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a -maile				1 1	1		
		Geologist Si	gnature	Jack	<u> </u>		

PHILIP REPORT ON EXCAVATION DATED 1/8/98

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Industrial Services Group Central Region January 8, 1998

Project 19914

Mr. Ed Hasely Burlington Resources Oil and Gas Company P.O. Box 4289 Farmington, New Mexico 87499-4289

RE: Report for work performed at the Cozzen B-1 site

Dear Mr. Hasely:

Philip Services Corporation (Philip) is pleased to submit to Burlington Resources Oil and Gas Company (Burlington) this report of the work performed at the Cozzen B-1 site approximately 3 miles east of Bloomfield, New Mexico.

SCOPE OF WORK

On November 21, 1997 Burlington requested Philip to perform the following scope of work at the Cozzen B-1 site:

- Provide technician, pickup truck and photoionization detector (PID) to monitor soil contamination levels at a previous spill.
- Provide loader, trackhoe and two operators to excavate contaminated soil from the tank pad across the road to an old reserve pit.
- Landfarm contaminated soil on site and backfill excavation using soil removed from location.

RESULTS

On December 9, 1997 at approximately 7:00 a.m. Philip began excavation activities at the spill area as designated by Burlington. At approximately 9:00 a.m. Burlington's representative arrived to observe the excavation. At approximately 10:00 a.m. Denny Foutz with the New Mexico Oil Conservation District (NMOCD) arrived. Philip field screened the excavated soil with a PID to monitor the extent of contamination. Results of the first screened readings were 192 parts per million (ppm) on the north side; 5 ppm on the east side; and 681 ppm and 573 ppm on the south side. Based on the field screening results, excavation continued to the south and west.

At 12:00 p.m. Philip collected heated headspace samples, with the following results: 179 ppm on the north side, 5 ppm on the east side and 480 ppm on the south side. Philip resumed excavation

Combining the Strengths of Philip Services Corp., Allwaste and Serv-Tech

Mr. Ed Hasely January 8, 1998 Page 2

on all sides. At 1:00 p.m. Philip collected samples for a second heated headspace analysis. The results were: 38 ppm and 32 ppm on the north side, 5 ppm on the east side, 81 ppm and 49 ppm on the south side and 118 ppm on the west side.

At the request of Denny Foutz, Philip collected two samples on the down gradient side of the excavation and sent them to Onsite Laboratory in Farmington, New Mexico. The samples were analyzed for Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) by USEPA method 8020. and Total Petroleum Hydrocarbons (TPH) by USEPA method 8015 modified for gasoline and diesel range. Sample No. Cozzen-01 was collected from the south side of the excavation and sample No. Cozzen-02 was collected from the west. Laboratory analysis indicated BTEX and TPH results to be below NMOCD standards for soil. Results of laboratory analysis are included in Attachment A.

The excavation was approximately 50 feet long, 30 feet wide and approximately 6 feet deep. Philip estimates 334 cubic yards of contaminated soil were removed. No groundwater was encountered. All impacted soil excavated was landfarmed on site.

Once the excavation was complete, Mr. Foutz approved backfilling to the sample locations. Once backfilling was completed, Philip personnel and equipment demobilized from the site.

Philip appreciates the opportunity to provide Burlington with professional services and looks forward to providing additional services in the future. If you have any questions or require additional information, please contact Robert Thompson or Martin Nee at (505) 326-2262.

Respectfully submitted, PHILIP SERVICES CORPORATION

Robert Thompson Project Manager

J:\19914\PM\cozzrpt.doc

Attachment A

Results of Laboratory Analysis

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	Scott Pope	Date:	12-Dec-97
Company:	Philip Environmental	COC No.:	G3688
Address:	4000 Monroe Road	Sample No.:	17062
City, State:	Farmington, NM 87401	Job No.:	2-1000

Burlington Resources - C	Cozzen B-1		
Cozzen-01			
DB	Date:	9-Dec-97 Time:	12:10
DC/HR	GRO Date:	10-Dec-97	
Soil	DRO Date:	11-Dec-97	
	Burlington Resources - C Cozzen-01 DB DC/HR Soil	Burlington Resources - Cozzen B-1Cozzen-01Date:DBDate:DC/HRGRO Date:SoilDRO Date:	Burlington Resources - Cozzen B-1Cozzen-01DBDate:DC/HRGRO Date:10-Dec-97SoilDRO Date:11-Dec-97

in in in in in its second s

Laboratory Analysis

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D	Results as	Unit of	Limit of	Unit of
	Received	Weasure	Quantitation	Ivieasure
Gasoline Range Organics (C5 - C9)	3.0	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography

Approved by: Date: 12/12/97

P.O. BOX 2606 • FARMINGTON, NM 87499

A second description of the second sec



OFF: (505) 325-5667

LAB: (505) 325-1556

ANALYTICAL REPORT

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Attn:	Scott Pope	Date:	11-Dec-97
Company:	Philip Environmental	COC No.:	G3688
Address:	4000 Monroe Road	Sample No.:	17062
City, State:	Farmington, NM 87401	Job No.:	2-1000
Project Nam	e: Burlington Resources - Cozzen B-1		

Project Location:	Cozzen-01			
Sampled by:	DB	Date:	9-Dec-97 Time:	12:10
Analyzed by:	DC ·	Date:	10-Dec-97	
Sample Matrix:	Soil			

Laboratory Analysis

		Results	Unit of	Limit of	Unit of	
Parameter	`	as Received	Measure	Quantitation	Measure	
	فهيد					
Benzene		19	ug kg	2	ug/kg	
Toluene		55	ug/kg	2	ug/kg	
Ethylbenzene		95	ug/kg	2	ug/kg	
m,p-Xylene		497	ug/ kg	2	ug/kg	
o-Xylene		13	ug/kg	2	ug/kg	
	TOTAL	679	ug/kg			

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved by: Date: Date: Date:

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: 505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

	Budinatan Deseures	Common P 1	
City, State:	Farmington, NM 87401	Job No.:	2-1000
Address:	4000 Monroe Road	Sample No.:	17063
Company:	Philip Environmental	COC No.:	G3 688
Attn:	Scott Pope	Date:	12-Dec-97

Project Name:	Burnington Reso	urces - Cozzen B-T		
Project Location:	Cozzen-02			
Sampled by:	DB	Date:	9-Dec-97 Time:	12:12
Analyzed by:	DC/HR	GRO Date:	10-Dec-97	
Sample Matrix:	Soil	DRO Date:	11-Dec-97	

and the second

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.5	mg/kg	0.5	mg/kg
Diesei Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoine Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Dieser Funge (CTD - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (CIO-C28)	95	98	(75-125)	3	20%

Method: SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography

Approved by: 12/12/57 Date:

P.O. BOX 2606 • FARMINGTON, NM 87499

 $p_{\rm eff}(z) = z_{\rm eff}(z) + z_{\rm eff}(z)$, we prove that the second
OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:	Scott Po	pe			Date:	11-Dec-97
Company:	Philip En	vironment	al		COC No.:	G3 688
Address:	40 00 M	onroe Roa	d		Sample No.:	17063
City, State:	Farming	ton, NM 8	7401		Job No.:	2-1000
Project Nan	ne:	Burling	gton Resou	rces - Cozzen B-1		
Project Loc	ation:	Cozze	n-02			
Sampled by	<i>ı</i> :	DB		Date:	9-Dec-97 Time:	12:12
Analyzed b	y:	DC	•	Date:	10-Dec-97	
Sample Ma	trix:	Soil				

Laboratory Analysis

Parameter		Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene		96	ug/kg	2	ug/kg_
Toluene		43	ug/kg	2	ug/kg
Ethylbenzene		133	ug/kg	2	ug/kg
m,p-Xylene		508	ug/kg	2	ug/kg
o-Xylene		16	ug/kg	2	ug/kg
	TOTAL	796	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved by: Date: 12/11/97

P.O. BOX 2606 • FARMINGTON, NM 87499



LAB: (505) 325-1556

OFF: (505) 325-5667

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 10-Dec-97

Internal QC No.:	0559-STD
Surrogate QC No.:	05 56 -STD
Reference Standard QC No.:	05 29 /30-00

Method Blank

		Unit of
arameter	Result	Measure
Average Amount of All Analytes In Blank	< 1.0	ppb

Calibration Check

		Unit of	True	Analyzed		
Parameter	т.	Measure	Value	Value	RPD	Limit
		.*				
Benzene		ppb	60.0	62.1	3	15%
Toluene)e	ppb	60.0	63.3	5	15%
Ethylbenzene		р рb	60.0	62.0	3	15%
m,p-Xylene		ppb	120.0	120.9	· 1	15%
o-Xylene		рръ	60.0	62.1	3	15%

Matrix Spike

	1- Percent	2 - Percent			
Parameter	Recovered	Recovered	Limit	RPD	Limit
Benzene	91	85	(39-150)	7	20%
Toluene	88	83	(46-148)	6	20%
Ethylbenzene	86	82	(32-160)	4	20%
m,p-Xylene	75	70	(35-145)	6	20%
o-Xylene	89	87	(35-145)	3	20%

Surrogate Recoveries

	51	S2		S1	S2
	Percent	Percent		Percent	Percent
Laboratory Identification	Recovered	Recovered	Laboratory Identification	Recovered	Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
17062-G3688	84		1		
17063-G3688	84				
				-Un	(ne)
				12/15/97	1771197

· • •

S1: Flourobenzene

P.O. BOX 2606 • FARMINGTON, NM 87499

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(618) 281-71**73 Phone** (618) 281-5120 FAX

COC Serial No. **G** 3688

Project Name Burging Ton Res. Cozza B.1		Lab		Name ONSITE			
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Samplers DAUTA REG.	~~ `			Ana	alysis Type		
Sample Number Date	e Time	Matrix	TPH	BTY		Comments	
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Carrier: Airbill No.							
Shipping and Lab Notes:							
Robert 326-2262 - Philip Services							



SAN JUAN DIVISION March 27, 2001

Bill Olson New Mexico Oil Conservation Division 2040 S. Pacheco Santa Fe, NM 87505 Certified: 709932200028981 4004

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

Cozzens B #1

SITE DETAILS

Location: Unit Letter L, Section 19, Township 29N, Range 11W; San Juan County, New Mexico Land Type: Fee

PREVIOUS ACTIVITIES

PNM had conducted pit closure work and installed monitoring wells on this site in 1996 and 1997. Burlington Resources also had participated in excavation of impacted soils.

In December 1997, Burlington Resources excavated approximately 334 cubic yards of impacted soil from an area near an oil storage tank that had leaked. No groundwater was encountered at this time. The excavation was backfilled with clean soils. A report prepared by Philip Services Corporation detailing the excavation work and soil sampling is attached.

1999 ACTIVITIES

Burlington installed a groundwater monitoring well (MW-1) near the oil storage tank on this location in May 1999. At the same time, a second monitoring well (MW-2) was installed at the toe of the slope immediately downgradient and south of location. Auger refusal was encountered at approximately 3 feet during the installation of the second monitoring well (MW-2). Due to the shallow depth of MW-2, we were unable to collect water samples during several of the quarterly sampling events. After developing the wells and allowing them to stabilize, the wells were purged and sampled on May 26, 1999. Water samples were collected from MW-2 during the 3rd and 4th quarters and results showed levels of benzene and xylene above standards.

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

The groundwater regime being monitored at this location is artificially created and influenced by an irrigation ditch approximately 60 feet to the east and upgradient from the location. The irrigation ditch acts as a losing stream contributing water and artificially creating the shallow groundwater being monitored at the location. The irrigation ditch is flowing approximately April 15 through October 15 annually. Without the ditch influence there would not be any shallow groundwater beneath the location. A project to line the ditch to prevent water seepage was started March 2001. The extent and effect this project will have on the monitoring wells has not been determined. The groundwater gradient is approximated to be in a west/southwest direction. Indications of the influence of the ditch water can be

project will have on the monitoring wells has not been determined. The groundwater gradient is approximated to be in a west/southwest direction. Indications of the influence of the ditch water can be observed in the water level measurements collected in the MW-1 well and coincide with the water flow schedule of the ditch.

Analytical results of groundwater sampling from the source monitoring well (MW-1) in May 1999 showed levels of benzene constituents above New Mexico Groundwater Standards. Since the initial sampling event, the quarterly sampling results from MW-1 have shown all BTEX constituents below the standards. The quarterly sampling results from MW-2 have shown BTEX constituents above the standards except for the third quarter of 2000. The beginning of a downward trend in BTEX levels appears possible in well MW-2.

RECOMMENDATIONS

- Burlington Resources proposes to continue Quarterly sampling only well MW-2 at this site.
- Upon receiving analytical results below standards for one full year, Burlington Resources will request official closure of this site.

Attachments: Figure 1 - Site Map Table 1 - Groundwater Sampling Results Summary 2000 Groundwater Analytical Results Drilling Logs/Wellbore Diagrams Philip Report on Excavation Work

Cozzens B#1 - Site Diagram




Groundwater Monitoring Well Sampling

		Sample	В	Т	E	X	BTEX	DTW
Well Name	MW #	Date	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ft)
Standard			10	750	750	620		
Cozzens B #1	1	5/26/1999	28	11	23	99	161	
		9/2/1999	2.5	2.1	5.6	22	32.2	2.31
		12/2/1999	<0.5	11	5	27	43	4.43
	()	1/19/2000	1.7	13	7.6	28	50.3	6.48
		5/11/2000	6.8	1.2	2.6	14	24.6	4.03
		9/7/2000	1.1	<0.5	6.2	10	17.3	3.8
		12/15/2000	2	3	1	4	10	4.57
	2	5/26/1999	V	Vell was dry	/.	No Sample.		
		9/2/1999	120	55	440	450	1065	1.28
		12/2/1999	250	39	480	980	1749	4.35
		1/19/2000		Vell was dry	<i>'</i>	No Sample	0	
		5/11/2000	550	140	830	2400	3920	3.53
		9/7/2000	4.7	1.9	6.2	23	35.8	3.36
	-	12/15/2000	65	4	25	59	153	3.63

2000 GROUNDWATER ANALYTICAL RESULTS

S: / grndwatr/GW-Sites/Cozzens/99Annual.doc

Project Nar	MENTAL ne_BR	ा इ. ()ध	Vell N erial Na LS	AMPLI	MW-0 NG	25		Project h	 Aanaç	WEL	L DEV	YELOF	MENT	AND H	Page of No 62800 228		
Client Com	pany <u>B</u>	URL	1167	TON R	esource	د٢								Phase.	ask No. 0301		
Site Name_	COZZEN	<u>s</u> è	s#1				sile Address Ryral SAN JUAN Co.										
Developm A Oto 5 C A Stabilizat Other	Development Criteria Development Criteria Stabilization of Indicator Parameters Other Development						Water Volume Calculation Initial Depth of Well (feet) <u>4.45</u> 70 <u>C</u> Initial Depth to Water (feet) <u>3.53' 70 <u>C</u></u> Height of Water Column in Well (feet) <u>92'</u> DO Moni Diameter (inches): Well <u>2"</u> Gravel Pack							s er hitor	serial No. (If applicable) FHYNAC tor		
Methods o Pump Centrif Subme Peristal	f Devela Be ugal R rsible tic	opme aller Bott Dou Stai	ent fom V ible C nless-	ʻalve Check Va steel Ker	ilve nmerer		llem Vell Casing Gravel Pack Irilling Fluid:	Water V Cubic Fee 0,92'	olume I 1 C 0.1	n Well Gallons 5 X 3	Gallons lot Removed .45		Ø Conduc Ø Temper □ Other _ Vater Disp	alure Meter <u>HYDAC</u> osal			
Water Rer	noval Di	ata				(_		<u>un</u>			- 42]	T	ANK C	IN SITE		
Dale	lime	Devel Me Pump	opmant thod Baiter	Removal Rale (gal/min)	Inlake Depil (feal)	Ending Wafer Depth (feet)	Water Voli (g	ume Removed allons) Crimulalive	Produc Remave	ct Volume ed (gallons) Cumulalive	Temperature (°C)	рН	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Comments		
5/11 (00	1510		×				,25	, 25			23.4	6.93	4140		BLACK		
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Project Name BR WELL SAMPUNG	Project /	Manager <u>R</u> .	THOMPS	SON		Project	Page <u>1</u> of <u>1</u> No. <u>62800728</u>		
Client Company BURLINGTON RESOURCE	<u>`</u>					Phase.	Task No. 0301		
site Name_COZZENS_B#1	Sile Add	liess RURAL	SAN J	TUAN	Co.				
Development Criteria A to 5 Casing Volumes of Water Removal Stabilization of Indicator Parameters Other	Water Volume Calco Initial Depth of Welt (f Initial Depth to Water Height of Water Colur Diameter (inches): W	Water Volume CalculationInstrumentsInitial Depth of Well (feel)15.00' TORInstrumentsInitial Depth Io Water (feel)4.03' TORImage: PackHeight of Water Column in Well (feet)10.97'DO MonitorDiameter (inches):Well2" Gravel Pack							
Methods of Development Pump Baller Centrifugal Bottom Valve Submersible Double Check Valve Peristaltic DStainless-steel Kemmerer Other	Ilem Water V Ubic Fee Well Casing Gravel Pack Drilling Fluids	'olume in Well el Gallons 1.79 ×3	Gallons to be Removed 5.37	e 🕅 Conductivity 🖄 Temperature Other Water Disposal			iter <u>HYDAC</u>		
Water Removal Data			5.51	_]	ON G	ROUND	ON SITE		
Development Rate (teet) Wate Date Time Pump Bailer	ding Depth self Increment Cumulative	Product Volume Removed (gallons) Incremen Cumulative	Temperature (°C)	рН	Conductivity (mmhos/cm)	Dissolved Oxygen , (mg/L)	Comments		
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s/11/00 1440 ×	1.5 6.0		19.9	7.24	2010		BLACK		
							· · · · · · · · · · · · · · · · · · ·		
Circle the date and time that the development criteria are met.		l	I.	l			L		



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

Pinnacle Lab ID number May 26, 2000 005079

PHILIP ENVIRONMENTAL 4000 MONROE ROAD FARMINGTON, NM 87401

Project NameBR WELL SAMPLINGProject Number62800228

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



× .



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

.E ID : 005079
CEIVED : 05/19/00
DATE : 05/26/00
DATE
K COLLECTED
JS 05/11/00
JS 05/11/00

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

GAS CHROMATOGRAPHY RESULTS

TEST CLIENT PROJECT # PROJECT NA	AME	: EPA 8021 MOD : PHILIP ENVIRC : 62800228 : BR WELL SAM	DIFIED DNMENTAL PLING		PINNACLE I.D.: 005079				
SAMPLE				DATE	DATE	DATE	DIL.		
ID. #(CLIENT I.D.		MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR		
01 (COZZENS B#1	MW4	AQUEOUS	05/11/00	NA	05/23/00	2		
02 (COZZENS B#1	MW5	AQUEOUS	05/11/00	NA	05/23/00	20		
PARAMETER	2	DET. LIMIT		UNITS	COZZENS B#1 MW4	COZZENS B#1 MW5			
BENZENE		0.5		UG/L	6.8	550			
TOLUENE		0.5		UG/L	1.2	140			
ETHYLBENZ	ENE	0.5		UG/L	2.6	830			
TOTAL XYLE	ENES	0.5		UG/L	14	2400			
SURROGATE BROMOFLUC	E: OROBENZENE E LIMITS	(%) (80 - 120)			110	120			

CHEMIST NOTES: N/A





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

GAS CHROMATOGRAPHY RESULTS REAGENT BLANK

TEST BLANK I. D. CLIENT PROJECT #	: EPA 8021 MODIFIED : 052300 : PHILIP ENVIRONMENTAL : 62800228	PINNACLE I.D. DATE EXTRACTED DATE ANALYZED SAMPLE MATRIX	: 005079 : NA : 05/23/00 : 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 (%) SURROGATE LIMITS:	(80 - 120)	106	
CHEMIST NOTES:			

N/A



1



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

GAS CHROMATOGRAPHY QUALITY CONTROL MSMSD

TEST	: EPA 8021 MC	DIFIED							
MSMSD #	: 005081-02				PINNACLE I	.D.	:	005079	
CLIENT	: PHILIP ENVI	RONMENTA	AL.		DATE EXTR	ACTED	:	NA	
PROJECT #	: 62800228				DATE ANAL	YZED	:	05/23/00	
PROJECT NAME	: BR WELL SA	MPLING			SAMPLE MA	:	AQUEOUS		
					UNITS		:	UG/L	
	SAMPLE	CONC	SPIKED	%	DUP	DUP		REC	RPD
PARAMETER	RESULT	SPIKE	SAMPLE	REC	SPIKE	% REC	RPD	LIMITS	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

----- X 100

CHEMIST NOTES: N/A

% Recovery =

(Spike Sample Result - Sample Result)

----- X 100

Spike Concentration

(Sample Result - Duplicate Result)

RPD (Relative Percent Difference) =

Average Result

	PHILI		hain of	f Cu	usto	dy I	Reco	ord						. (20	507	79	
	A SINVIRONMENT	400 Far	00 Monroe Roa mington, NM 8	ad 37401		(505 (505	i) 326-22 i) 326-23	82 Ph 88 FA	one X			CO	C Sei	rial N	o. C	2	547	
	Project Name BR WELL SAMP Project Number 62800228 Pha Samplers R. THOMPSON Laboratory Name PINNACLE Location AUBUQUE	UNG 1880. Task 030 LABS ERQUE, N	21. IM	tal Number of Bottles	Type of Analys and Bo	of sis ottle	21											
	Sample Number (and depth) Da	te Time	Matrix	۲	8	<u> </u>		\square			\square		\square	\square		\square	Comments	
	COZZENS B#1 MW4 5/11	00 1450	H20	2	X									 	ļ	ļ		
02	COZZENS B#1 MWS 5/11	00 1525	- H20	2	X											ļ		
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				<u> </u>														
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	Relinguished by:						Rece	ived	I By:									
	Signature		Date		Tin	ne		11	Sigr	ature			_	~1	Date	<u></u>	Time	
	tatel champse	∽	_5/19/0	0	08	25	917h	phel	the					5/1	7/0	0	16195	·
	· · · · · · · · · · · · · · · · · · ·					<u></u>						<u> </u>						
	Comulas lasti M Var		0.000	D C U L	10									A (T 11	0 6/507	
	Samples ICed: A Yes Preservatives (ONLY for Water Samples	1NO 3)	Shipping an	DKEY!	HOUNII		122				<u></u>			AITDIII	NO. 6'	10	U CRUSU/	60
	Cyanide	ium hyroxide (NaOH)	Shipping an		Votes.											0		
	Metals	. Nitric acid (HNO3)	1100	Ice	. И									۷	11	Ċ		
	TPH (418.1)	ulfuric acid (H ₂ SO4)												7	ها ب			
	Other (Specify) Other (Specify)																	

• PE-176 4/95

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PHILIP Well Number MW-0	L Development WELL DEVELOPMENT AND PURGING DATA
Serial No. WDPD-	Page of
Project Name Burlington	Project Manager & Thumpson Project No. 628 0022
Client Company Burtington Res	Phase, Task No. 0301
sile Name COZZENS B#1	sile Address Rural San Jann CO.
Development Criteria Ø (3) to 5 Casing Volumes of Water Removal Ø Stabilization of Indicator Parameters Other	Water Volume Calculation Initial Depth of Well (leet) 1499 Initial Depth Io Water (feet) 3.80 Height of Water Column in Well (feet) 1.19 Diameter (inches): Well 2.12 Gravel Pack Pack Place Plac
Rump Briller	Water Volume in Well Gallons to be
🗆 Centrifugal 🖉 Bottom Valve	Well Casing 11.19 1.52 x 3 5.46
Submersible Double Check Valve Stanlass steel Kemmoror	Grovel Pack
	Drilling Fluids
	I IN PIT ON SITE
VValer Kemoval Data Removol Intake Depth Development Rate (leel)	Ending Water Volume Removed Product Volume Temperature pH Conductivity Dissolved Water Depth (actions) Removed (gallons) (°C) (mmhos/cm) Oxygen Comments
Method (gal/min) Dote Time Pump Boiler	(leal) Increment Cumulative Increment Cumulative
040700 2:23 X	1:25 1.25 28,6 6,45 2540 Ervic Dieck
2:2 (X	1.25 2.50 264 6.282450 × W
2:29 ×	1.25 3.75 25.56.192430 7 1
	1.35 3 $24,76,70,70$ 7 11
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1.25 6 23 29.76.072420 Av Change
Circle the date and time that the development citeria are met	
Commonte Samolad for Brox	7:47
Comments Jarry 100 DIEX	a is pin
~ 1.0	1 ,
Developer's Signature(s) the H-M-	Date 09-02-00 Reviewer <u>RT</u> Date 9/19/00

'•,

Project Nar Client Com	ne <u>Rur</u> pany R	<u> </u>	ten	hel	l <u>Sa</u> Zeson	mph, rces	<u>.</u>	Project	Manage	R_	Thomp	150m		Projec Phase.	Page No. <u>625</u> Task No. 7	<u> </u>
Sile Name_	2027	Le	<u>^</u> 2	13≠				Sile Add	dress Ri	ra	50,	~ 7	aun l	$CO_{1}$		
Developm D 3 to 5 C Stabiliza D Other	velopment Criteria 3 to 5 Casing Volumes of Water Removal Stabilization of Indicator Parameters D Other						Nater Volume Calculation Instruments Serial No. III approximation   Initial Depth of Well (feet) 4.45 Ø pH Meter H, dac   Initial Depth to Water (feet) 3.36 Initial Depth to Water (feet) H, dac									). (Il applicable
Methods o Pump Centrif Subme Peristal	f Develo Bo ugal <b>2</b> sible D lic D	velopment Bajler Ø Bottom Valve Double Check Valve Stainless-steel Kemmerer					Diameter Ilem Well Casing Gravel Pac Drilling Fluia Ta	Diameter (inches): Well 2" Gravel Pack     Water Volume in Well   Gallons to be     Item   Cubic Feel   Gallons     Cubic Feel   Gallons   Removed     Vell Casing   1.09   1.7 X 3   0, 51     Gravel Pack   Imiling Fluids   Water Disposal							Jac 'xdac	
Alator Ron			••••••								0.37		IN PIT	ON S	172	
Dale	Time	Develo Me Pump	opmeni Ihod Boiler	Removol Rote (gal/min)	Inlake Depli (teel)	Ending Waler Dept (feat)	Water Vo (g	lume Removed gallons) Cumulative ·	Product Removed	/olume [gallons] umulative	Temperoture (°C)	рН	Conductivity (mmhos/cm)	Dissolved Oxygen (mg/L)	Con	nments
19-07-00	3:00		X				.11	.11	+		26.7	7.44	5350		Rotten C	55 Smell
	3:03		X				.11	.22			25.0	2.11	5220		11	1)
	3:05		Y	·			<u></u>	.33			23.9	2.17	5050		1	
<u>``````</u>	3.05	·	X				/I	.44			235	1.36	4960		Y	1)
	3107		1				<i> </i>	. 35			23.3	1.22	2000		Remaint	d the Same
														l		
ciè lhe dale (	nd lime th	of the	develo	pment crit	ena ore me	1. •••										

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SEP 1 5 2000

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

Pinnacle Lab ID number September 13, 2000 009049

PHILIP ENVIRONMENTAL 4000 MONROE ROAD FARMINGTON, NM 87401

Project NameBR WELL SAMPLINGProject Number62800228

Attention: ROBERT THOMPSON

On 09/08/00 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



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

CLIENT	: PHILIP ENVIRONMENTAL	PINNACLE ID	: 009049
PROJECT #	: 62800228	DATE RECEIVED	: 09/08/00
PROJECT NAME	: BR WELL SAMPLING	REPORT DATE	: 09/13/00
PIN	·		DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	COZZENS B#1-MW 01	AQUEOUS	09/07/00
02	COZZENS B#1-MW 02	AQUEOUS	09/07/00

File: '009049; COVEREP



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

### GAS CHROMATOGRAPHY RESULTS

TEST		: EPA 8021 MOD	IFIED				
CLIENT		: PHILIP ENVIRC	NMENTAL			PINNACLE I.D.	: 009049
PROJECT #		: 62800228					
PROJECT N	AME	: BR WELL SAM	PLING				
SAMPLE				DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	COZZENS B#1	-MW 01	AQUEOUS	09/07/00	NA	09/11/00	1
02	COZZENS B#1	-MW 02	AQUEOUS	09/07/00	NA	09/11/00	1
PARAMETE	R	DET. LIMIT		UNITS	COZZENS B#1- MW 01	COZZENS B#1- MW 02	
BENZENE		0.5		UG/L	1.1	4.7	
TOLUENE		0.5		UG/L	< 0.5	1.9	
ETHYLBEN	ZENE	0.5		UG/L	6.2	6.2	
TOTAL XYL	ENES	0.5		UG/L	10	23	
SURROGAT	E:						
BROMOFLU	OROBENZENE	(%)			120	120	
SURROGAT	E LIMITS	(80 - 120)					

CHEMIST NOTES: N/A



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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.	:	009049
BLANK I. D.	: 091100	DATE EXTRACTED	:	NA
CLIENT	: PHILIP ENVIRONMENTAL	DATE ANALYZED	:	09/11/00
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		
		104		
SUBBOGATE LIMITS	(80, 120)	104		
CHEMIST NOTES	(80-120)			
10/2				





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

# GAS CHROMATOGRAPHY QUALITY CONTROL MSMSD

TEST MSMSD # CLIENT PROJECT # PROJECT NAME	: EPA 8021 MC : 009051-01 : PHILIP ENVIF : 62800228 : BR WELL SA	DDIFIED RONMENTA MPLING	AL	PINNACLE I.D. DATE EXTRACTED DATE ANALYZED SAMPLE MATRIX UNITS				009049 NA 09/11/00 AQUEOUS UG/L	
	SAMPLE	CONC	SPIKED	%	DUP	DUP		REC	RPD
PARAMETER	RESULT	SPIKE	SAMPLE	REC	SPIKE	<u>% REC</u>	RPD		LIMITS
BENZENE	<0.5	20.0	20.1	101	19.7	99	2	( 80 - 120,)	20
TOLUENE	<0.5	20.0	21.0	105	21.1	106	0	( 80 - 120 )	20
ETHYLBENZENE	<0.5	20.0	22.1	111	21.7	109	2	( 80 - 120 )	20
TOTAL XYLENES	<0.5	60.0	66.0	110	65.7	110	0	(80 - 120)	20

---- X 100

CHEMIST NOTES: N/A

(Spike Sample Result - Sample Result)

% Recovery =

Spike Concentration

(Sample Result - Duplicate Result)

RPD (Relative Percent Difference) =

Average Result

<b>PHILIP</b>	hain of (	Cu	stod	ly R	eco	rd				,	00	9049
HAVINONMENTAL 400 Far	00 Monroe Road mington, NM 874	01		(505) 3 (505) 3	26-226 26-238	88 FAX	e		coc s	erial N	o. C	2449
Project Name BR Well Sampling Project Number 629 00228 Phase. Task OS Samplers C. Maez Laboratory Name DINNACLE	30).	I Number of Bottles	Type of Analysis and Bot		of the							
Sample Number (and depth) Date Time	Matrix	Tota	/ Þ	Y /		/ /	/ /		/ /			Comments
CO27 en5 B#1-MW 01 09.07-00 2:40,	m H20 :	2	X	(	01			[·				9122025 B#1
COZZENS B#1-MW 02 09-07-00 3:130	m H20 3	2	X		02							(022en5 B#1
						vod P						
Signature	Date		Time			veu E	Signature				Date	Time
Chir A. M. O	9-07-00	/5	30		Mu	MCW	i Ha	MU		9 8	00	1420
Samples iced:   Yes   No     Preservatives (ONLY for Water Samples)   Cyanide   Sodium hyroxide (NaOH)     Volatile Organic Analysis   Hydrochloric acid (HCI)	Carrier: Shipping and L	ab Not	tes:							Airbill	No.GL	I/60 6919654
☐ Metals   Nitric acid (HNO3)     ☐ TPH (418.1)   Sulfuric acid (H2SO4)     ☑ Other (Specify)   # 9 C / 2     ☐ Other (Specify)					Rec	:'d 6	24.1	° L	,			

PE-176 4/95

Client Company Burlin, Ton Res Sile Name COZZENS B#1	ung Ources	Propect Sile Ast	diess Ru	IRAL.	SAN.	JUAN (	Phase.T	ask No. 0301
Development Criteria 1/3 to 5 Casing Volumes of Water Removal 2/3 tabilization of Indicator Parameters 1/3 Other 1/4	Water Mo Initial Dep Initial Dep - Height of Dimmeter Item Wate ching Gravet Part	dume ( a) du of Vielt ( du lo Viale Water Colu (inches), V Crète fe 10 : 4 :	(1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1eel) (1ee	4.99 P. of Pack Remove S. /		DO Mo	s er nitor ctivity Mel cature Met	Serial No. III applicable <u>Hydac</u> ler <u>Hydac</u> er <u>Hydac</u>
D-Other	Drillicen floid Io			S.Z		Vater Disp ローク・ア	osal On S	5.70
Development Rate (ref) (	ling Wertige and Depth (1) all line amont	onie Peros, i od olitopi i contetto i	Product Volume Remotad (pollon noreigen Clandate	lamperature f f C)	рН	Conductivity Immhos/cau	Dissolved Oxygen (mg/L)	Comments z
-15-00841 0844 0848 0851	1,25 1,25 1,25	1,25 2,50 3,75 5 6,25		6,9 7,4 7,1 7,9	6.14 5.11 5.62 5.48 5.48	3000 2990 2990 3080 3140		1 11 1 11
				•				
sie the date and time that the development criteria are met. Imments Saturated for 13Tex O	913							
			()				-	

PHILIP	Chain of (	Custody <b>R</b>	lecord		L 302	-05
	4000 Monroe Road Farmington, NM 8740	(505) 01 (505)	326-2262 Phone 326-2388 FAX	coc s	erial No. C 2	2839
Project Name (S.R. Well Samp Project Number (2900228 Phase.Task Samplers C Maez Laboratory Name A.C.Z. [AI35 Location STEam BoaT Sample Number (and depth) Date (022ens 13.#1 MW112-15-00 0 (022ens 13.#1 MW212-15-00 0	$\frac{1}{200}$	Type of Analysis and Bottle Total Numper Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Control Contr				Comments 22675 /3#) 22675 /3#/
Relinquished by:	Date 12 /8 00	Time ) /5 00	Received By:	ure ACA.	Date (2/19	Time (6:3 e
Samples Iced:   Yes   No     Preservatives (ONLY for Water Samples)   Sodium hyroxide (     Cyanide   Sodium hyroxide (     Volatile Organic Analysis   Hydrochloric acli (     Metais   Nitric acid (     TPH (418.1)   Sulfuric acid (H)     Other (Specify)   H5CL 2     Other (Specify)   H5CL 2	NeOH) d (HCI) 12SO4)	t <del>y /to erro</del> ∫ l ab Notes:	rps		Airbill No.	

. PE-176 4/95

PROJECT Name B.R. Well Number MW OS serial No. WOPD. Project Name B.R. Well Sampling Client Company Burling Ton Resource	Project Hemogram R Thom	ELOPMENT AND PURGING DATA Pageof p50 Project No. <u>62800 228</u> Phase. Jask No. 0301
Sile Name <u>COZZENS</u> <u>B</u> [#] Development Criteria Dovelopment Criteria Dovelopment Criteria Dovelopment Other Methods of Development Pump Bailer Centrifugal Dovelopment Double Check Valve Double Check Valve Peristallic Dovelopment Cother	Sile oblicss Roral Sex     Water Volume to doubtion     Initial Depth of Wolfer (reel)     1 hilled Depth to Voler (reel)     3 - 63     Height of Water Column in Well (leed)     0.3.8     Diameter (inches)     Well Cosing     0.32     Orax33     Orax34     Unitional Pool     Difficient Pool     Online Rolds     Total	Jan CO. Instruments Serial No. (If opplicable) D pH Meter Hydac D DO Monitor Conductivity Meter Hydac Temperature Meter Hydac Other Water Disposal N_ p;T ON 5:76
Water Removal Data   Development Method   Dole   Time   Dole Time   Pump Boilor [feet]   Q-15-00 0%/6 X   Dole Tomp Boilor   Dole Tomp Boilor<	Median sodi med Page 1 Prode L'Sulone Lamperature   fig. df. r.g) Permeteri (gollout) 1.51   harronent 1.00 n.censen Epimilistice 1.51	PH Conductivity Dissolved Oxygen (mark) Comments Comments Comments Comments Cloudy 13/225 Cloudy 13/225 Comments Cloudy 13/225 Cloudy 13/25 Cloudy 13/
Comments <u>AFTER</u> Bailing 10 ge Sampled for BTex 090 Developer's Signature(s) <u>Chrs</u> A Mare Form A0101 Rev. 10/6/74	allons Bailes Well Dry 08 3 Dale 12-15-00	Reviewer RT Date 12/18/00

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ACZ				Analytica	al Kes	ulls
ACZ Laboratories, Inc. 2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493			Lab Sample ID: Client Sample ID: Client Project ID: ACZ Report ID:	<b>L30205-04</b> Cozzens B 1 MW. 62800228 RG137219	1	
Philip Services 4000 Monroe Road Farmington, NM 87401 Robert Thompson			Date Sampled: Date Received: Date Reported: Sample Matrix:	12/15/00 9:13 12/19/00 12/31/00		
Benzene, Toluene, E Analysis Method:	thylbenze M8020	ne & Xylenes	Analyst: Extract Date: Analysis Date:	smp 12/20/00 12/20/00		
Extract Method:	W15050		Dilution Factor:	1		
Companied Benzene Toluene Ethylbenzene Xylenes (total)		CAS 000071-43-2 000108-88-3 000100-41-4 001330-20-7	Result 2 3 1 4	QUAL Units ug/L ug/L ug/L ug/L	0.2 0.2 0.2 0.2 0.2	POL 0.5 1 1 1
Surrogate Recoveries		CIS	% Recovery	Units	en ci	UCL

000460-00-4

Organie 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

4-Bromofluorobenzene (Surr)

Organic Supervisor: Paul Leschensky

108

%

80

9

ACZ		)		Analy	vtica	l Res	ults
ACZ Laboratories, Inc.			Lab Sample ID:	L30205-05			
2773 Downhill Drive			Client Sample ID:	Cozzens B 1	MW2		
Steamboat Springs, CO 80487	,		Client Project ID:	62800228			
(800) 334-5493			ACZ Report ID:	RG137220			
Philip Services			Date Sampled:	12/15/00 9:(	03		
4000 Monroe Road			Date Received:	12/19/00			
Farmington, NM 87401			Date Reported:	12/31/00			
Robert Inompson			Sample Matrix:	Ground Wat	er		
Benzene, Toluene, E Analysis Method: Extract Method:	thylbenzen M8020 M5030	e & Xylenes	Analyst: Extract Date: Analysis Date: Dilution Factor:	smp 12/20/00 12/20/00 1			
Compound							
Compound		CAS	Result	QUAL	Units	MDL	PQL
Benzene		000071-43-2	65		ug/L	0.2	0.5
Toluene		000108-88-3	4		ug/L	0.2	1
Ethylbenzene		000100-41-4	25		ug/L	0.2	1
Xylenes (total)		001330-20-7	59		ug/L	0.2	1
Surrogate Recoveries							
Suprogate	1999	CAS	% Recovery		Lunis	- 1 C I	LICL

000460-00-4

124

Surrogate recovery elevated due to hydrocarbon coelution.

4-Bromofluorobenzene (Surr)

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 UU

%

80

# DRILLING LOGS/WELLBORE DIAGRAMS

S: / grndwatr/GW-Sites/Fogelson4-1/99Annual.doc

### RECORD OF SUBSURFACE EXPLORATION

Philip Environ	mental Services Corp.
4000 Monroe Ro	ad
Farmington, New	Mexico 87401
(505) 326-2262	FAX (505) 328-2388

|

i

Elevation Borehole Location <u>Cortecns</u> (MARA Monzano) GWL Depth <u>3'</u> Logged By <u>P. Chanay</u> Drilled By <u>K. Paula Ka</u> Date/Time Started <u>5/15</u> 0800 Date/Time Completed <u>5/15</u> 16 60

Project Name Project Number	21077 Phase /000 99
Project Location	COZZENS (Mesa Mentana
Well Logged By	P. Cheney
Personnel On-Site	cheney, F. Partilla, D. Pudilla
Contractors On-Site	
Client Personnel On-	Site Ed lasely
Drilling Method	4 4 1130
Air Monitoring Meth	od PIN

Borehole # Well #

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MW-

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of

0		(inches)	Classification System: USCS	Symbol	Change (feet)	Ui BZ	nite: ND BH	U S	& Blow Counts
	▼ 5 - 7 - 10 - 12 -		Fill to approx 15' (Ed Histly, 5/19). 1st sample at 5-3' Brown, medium to coarse stained poorly surted samd wilpea gravel. wet at 3', blact staining at 5', no odor yellowish trown silty clay. Low glashicity, Itard TV = 13'. Set 10' screen from 13 to 3', sand to 1' hgs, bentonike to surface			0.5		7.6	Br = 8 5/175 = 3.4 Br = 50 (10") 5/175 = 1/.6
Comments:	Mater	surt	1 silt trap, 1-10' screen s benjoning	<u>, / - :</u>	5 151	( <u>r</u>	65	acts	silica sond,
			Geologist Sig	gnature		P			



Philip Environmental Services Corp. 4000 Monroe Road Farmington, New Mexico 87401 (505) 326-2282 FAX (505) 326-2388

Elevation	
Borehole Location	······
GWL Depth	
Logged By	heney
Drilled By	chenty
Date/Time Started	
Date/Time Completed	

Project Name			
Project Number	2/07)	Phase	1000.99
Project Location	(seens	(mesa	Monzaro
Well Logged By Personnel On-Site	P. ch cheney	ener E. Paili	16 D. Puella C. Irb
Contractors On-Site			, , , , , , , , , , , , , , , , , , , ,
Client Personnel On-	Site	Ed 1/215	<u> </u>
Drilling Method Air Monitoring Metho	/and A	nger	

Borehole #

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Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air Mon Unite: BZ Bł	itoring NDU I S	Drilling Conditions & Blow Counts
			Hand Ruger 10 3! month sand, cobbles and gravel. Auger refusal at 3! Set 2'of screen from 3' 01; sand to approx 0.5', heriton.te to surface					

Comments:

**Geologist Signature** 

and

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MONITORING WELL INST	FALLATION RECO	DRD				Borehoie	#	
Phillip Environmental Services Corj	).		·			7Veii # Page <u>1</u>	of	
Fermington, New Mexico 87401				Proje	ct Name	·····		
(5061 326-2252 FAX (5061 326-2388				- Proje	ct Number	21073	Phase /	7000.91
Claustice					ite Geologia	1 czzers	Criesa J	(lontary)
Well Location OFFEns				Perso	onnel On-Site	e <u>cheney</u>	D. Pndilly	the Paulille, C. Irb
Installed By K. Ladilla				Clien	t Personnel	On-Site <u>E</u>	d trusely	· · · · ·
Date/Time Staned 5/19	0800						,	
Date/Time Completed	/015							
Depths in Reference to Ground s	Suriace				Top of Prot	tective Casing		
					Top of Rise	er	_21	
ltem	Material	Depth			Ground Su	Irface	<u> </u>	
Top of Protective Casing								a na ann an ann an ann an ann an ann an
Bottom of Protective Casing		•						al de la constante de la const
Top of Permanent Sorehole Casing			and the second se					
Bottom of Permanent Borehole Casing								
Top of Concrete		N.A.						
Bottom of Concrete		N.A.						
Top of Grout		N.A.						
Bottom of Grout		N.A.						
Top of Weil Riser		2'6	, ,					
Bottom of Weil Biser		3'	]					
Top of Well Screen		3'			Top of Sea	el	fronn	/
Bottom of Well Screen		13'	]	$\infty x x x x x x x x x x x x x x x x x x x$	•		surtar	ē
Top of Peltonite Seal		Ground	t e	$\infty x x x x x x x x x x x x x x x x x x x$				
Bottom of Petronite Seel		<u></u>	7	$\infty \infty$	Top of Gre	avel Pack		-
		/ /	-		Top of Sci	reen	3'	-
Bottom of Gravel Pack		13'						
Top of Natural Origina		N.A	-					
Bottom of Natural Cavala		N.A.						
Top of Groupowers		2 1			Rottom of	Screen	17	
Total Depth of Borcholo		13'	1		Bottom of	Borehole	13'	-
Comments: $TD = 12^{1}$	Incalled a"	screen	hom	13' 103	san.	A 10 1'	bennin	<u>_</u>
à suriare		,						
			Geologist S	ignature	Ja-	l d	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	

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# PHILIP REPORT ON EXCAVATION DATED 1/8/98

S: / grndwatr/GW-Sites/Fogelson4-1/99Annual.doc



Industrial Services Group Central Region January 8, 1998

Project 19914

Mr. Ed Hasely Burlington Resources Oil and Gas Company P.O. Box 4289 Farmington, New Mexico 87499-4289

### RE: Report for work performed at the Cozzen B-1 site

Dear Mr. Hasely:

Philip Services Corporation (Philip) is pleased to submit to Burlington Resources Oil and Gas Company (Burlington) this report of the work performed at the Cozzen B-1 site approximately 3 miles east of Bloomfield, New Mexico.

### **SCOPE OF WORK**

On November 21, 1997 Burlington requested Philip to perform the following scope of work at the Cozzen B-1 site:

- Provide technician, pickup truck and photoionization detector (PID) to monitor soil contamination levels at a previous spill.
- Provide loader, trackhoe and two operators to excavate contaminated soil from the tank pad across the road to an old reserve pit.
- Landfarm contaminated soil on site and backfill excavation using soil removed from location.

### RESULTS

On December 9, 1997 at approximately 7:00 a.m. Philip began excavation activities at the spill area as designated by Burlington. At approximately 9:00 a.m. Burlington's representative arrived to observe the excavation. At approximately 10:00 a.m. Denny Foutz with the New Mexico Oil Conservation District (NMOCD) arrived. Philip field screened the excavated soil with a PID to monitor the extent of contamination. Results of the first screened readings were 192 parts per million (ppm) on the north side; 5 ppm on the east side; and 681 ppm and 573 ppm on the south side. Based on the field screening results, excavation continued to the south and west.

At 12:00 p.m. Philip collected heated headspace samples, with the following results: 179 ppm on the north side, 5 ppm on the east side and 480 ppm on the south side. Philip resumed excavation

Combining the Strengths of Philip Services Corp., Allwaste and Serv-Tech

Mr. Ed Hasely January 8, 1998 Page 2

on all sides. At 1:00 p.m. Philip collected samples for a second heated headspace analysis. The results were: 38 ppm and 32 ppm on the north side, 5 ppm on the east side, 81 ppm and 49 ppm on the south side and 118 ppm on the west side.

At the request of Denny Foutz, Philip collected two samples on the down gradient side of the excavation and sent them to Onsite Laboratory in Farmington, New Mexico. The samples were analyzed for Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) by USEPA method 8020, and Total Petroleum Hydrocarbons (TPH) by USEPA method 8015 modified for gasoline and diesel range. Sample No. Cozzen-01 was collected from the south side of the excavation and sample No. Cozzen-02 was collected from the west. Laboratory analysis indicated BTEX and TPH results to be below NMOCD standards for soil. Results of laboratory analysis are included in Attachment A.

The excavation was approximately 50 feet long, 30 feet wide and approximately 6 feet deep. Philip estimates 334 cubic yards of contaminated soil were removed. No groundwater was encountered. All impacted soil excavated was landfarmed on site.

Once the excavation was complete, Mr. Foutz approved backfilling to the sample locations. Once backfilling was completed, Philip personnel and equipment demobilized from the site.

Philip appreciates the opportunity to provide Burlington with professional services and looks forward to providing additional services in the future. If you have any questions or require additional information, please contact Robert Thompson or Martin Nee at (505) 326-2262.

Respectfully submitted, PHILIP SERVICES CORPORATION

Robert Thompson Project Manager

J:\19914\PM\cozzrpt.doc

# Attachment A

**Results of Laboratory Analysis** 

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn:	Scott Pope	Date:	12-Dec-97
Company:	Philip Environmental	COC No.:	G3688
Address:	4000 Monroe Road	Sample No.:	17062
City, State:	Farmington, NM 87401	Job No.:	2-1000

Project Name:	Burlington Resources - Cozzen B-1			
Project Location:	Cozzen-01			
Sampled by:	DB	Date:	9-Dec-97 Time:	12:10
Analyzed by:	DC/HR	GRO Date:	10-Dec-97	
Sample Matrix:	Soil	DRO Date:	11-Dec-97	

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Laboratory Analysis

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Paramet <u>e</u> r	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.0	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD DRO QC No.: 0555-STD

Continuina	Calibration	Verification
Continuing	Campianon	venncation

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography

Approved by: Date: 12/12/97

P.O. BOX 2606 • FARMINGTON, NM 87499

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OFF: (505) 325-5667



LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn:	Scott Po	pe		Date:	11-Dec-97
Company:	Philip En	vironmental		COC No.:	G3688
Address:	4000 Ma	onroe Road		Sample No.:	17062
City, State:	Farmingt	on, NM 87401		Job No.:	2-1000
Project Nar	ne:	Burlington Resou	ırces - Cozzen B-1		
Project Loc	ation:	Cozzen-01			
Sampled by	/:	DB	Date:	9-Dec-97 Time:	12:10

Sampled by:	DB	Date:	9-Dec-97 Time:	12:1
Analyzed by:	DC -	Date:	10-Dec-97	
Sample Matrix:	Soil			

### Laboratory Analysis

Parameter	)e	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene		19	ug kg	2	ug/kg
Toluene		55	ug/kg	2	ug/kg
Ethylbenzene		95	ug/kg	2	ug/kg
m,p-Xylene		497	ug/kg	2	ug/kg
o-Xylene		13	ug/kg	2	ug/kg
	TOTAL	679	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved by: Date:

### P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: 505) 325-5667



LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn:	Scott Pope	Date:	12-Dec-97
Company:	Philip Environmental	COC No.:	G3688
Address:	4000 Monroe Road	Sample No.:	17063
City, State:	Farmington, NM 87401	Job No.:	2-1000

Project Name:	Burlington Resources - (	Cozzen B-1		
Project Location:	Cozzen-02			
Sampled by:	DB	Date:	9-Dec-97 Time:	12:12
Analyzed by:	DC/HR	GRO Date:	10-Dec-97	
Sample Matrix:	Soil	DRO Date:	11-Dec-97	

Laboratory Analysis

	Results as	Unit of	Limit of	Unit of
Parameter	Received	Measure	Quantitation	Measure
Gasoline Range Organics (C5 - C9)	3.5	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD DRO QC No.: 0555-STD

Continuing Calibration Verification

	Method	Unit of	True	Analyzed		RPD
Parameter	Blank	Measure	Value	Value	RPD	Limit
Gusolme Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesei Eunge (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

	1- Percent	2 - Percent			RPD
Parameter	Recovered	Recovered	Limit	RPD	Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography

Approved by: 12/12/57 Date:

P.O. BOX 2606 • FARMINGTON, NM 87499

The second s



OFF: (505) 325-5667

LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn:	Scott Pop	0e			Date:	11-Dec-97
Company:	Philip Env	vironmen	tal		COC No.:	G3688
Address:	4000 Ma	onroe Roa	d		Sample No.:	17063
City, State:	Farmingt	on, NM 8	7401		Job No.:	2-1000
Project Nan	ne:	Burlin	gton Resou	ırces - Cozzen B-1		
Project Loc	ation:	Cozze	n-02			
Sampled by	<i>'</i> :	DB		Date:	9-Dec-97 Time:	12:12
Analyzed b	y:	DC	•	Date:	10-Dec-97	
Sample Ma	trix:	Soil				

### Laboratory Analysis

Parameter	R.	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene		96	ug/kg	2	ug/kg
Toluene		43	ug/kg	2	ug/kg
Ethylbenzene		133	ug/kg	2	ug/kg
m,p-Xylene		508	ug/kg	2	ug/kg
o-Xylene		16	ug/kg	2	ug/kg
	TOTAL	796	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved by: Date: 12/11 (97

P.O. BOX 2606 • FARMINGTON, NM 87499

TECHNOLOGIES, LTD.

LAB: (505) 325-1556

OFF: (505) 325-5667

## QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 10-Dec-97

Internal QC No.:	0559-STD
Surrogate QC No.:	0556-STD
Reference Standard QC No.:	0529/30-QC

**TE** 

Method Blank

		Unit of
Parameter	Result	Measure
Average Amount of All Analytes In Blank	< 1.0	ррb

#### Calibration Check

Parameter		Unit of Measure	True Value	Analyzed Value	RPD	Limit
		.•				
Benzene		ppb	60.0	62.1	3	15%
Toluene	<b>`</b> *	ppb	60.0	63.3	5	15%
Ethylbenzene		ррб	60.0	62.0	3	15%
m,p-Xylene		ppb	120.0	120.9	· 1	15%
o-Xylene		ррb	60.0	62.1	3	15%

### Matrix Spike

	1- Percent	2 - Percent			
Parameter	Recovered	Recovered	Limit	RPD	Limit
Benzene	91	85	(39-150)	7	20%
Toluene	88	83	(46-148)	6	20%
Ethylbenzene	86	82	(32-160)	4	20%
m,p-Xylene	75	70	(35-145)	6	20%
o-Xylene	89	87	(35-145)	3	20%

### Surrogate Recoveries

. . .

	\$1	S2		S1	S2
	Percent	Percent		Percent	Percent
Laboratory Identification	Recovered	Recovered	Laboratory Identification	Recovered	Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
17062-G3688	84				
17063-G3688	84				
				In	(ne)
	1			12/15/97	12/11/97

S1: Flourobenzene


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# Chain of Custody Becord - Nonchemical Samples

210 West Sand Bank Road P.O. Box 230 Columbia, IL 62236-0230 (618) 281-7173 Phone (618) 281-5120 FAX

COC Serial No. 🗯 3688

Project Name Burging Ton R	es. Co2.	zen B.1		ab	Name Ors	ITE
Project Number Pha	se . Task 200	00 # .77			Location FA	RmileTon
Samplers DAITS REG				Ana	alysis Type	)
Sample Number Dat	e Time	Matrix	TPH	BTY		Comments
Cozzen - 01 12.9	- 77 12:10	,	X	X		17067 - 63688
(2200-02 129	-77 11.13		X	X		17063 - 1
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SAN JUAN DIVISION

March 29, 2000

RECEIVED

MAR 3 1 2000 Oil Conservation Division

Certified: P 895 114 539

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

## **RE: 1999** 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 1999 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

If you have questions or additional information is needed, please contact me at (505) 326-9841.

Sincerely,

2)Hasely

Ed Hasely Sr. Staff Environmental Representative

Attachments - Groundwater Investigation and Remediation Reports

cc:

Denny Foust - NMOCD Aztec Bruce Gantner - BR PNM - Maureen Gannon (Cozzens B#1, Hampton #4M) EPFS - Scott Pope (Fogelson #4-1, Johnson Fed. #4, Standard Oil Com.#1) Facility Files Correspondence

# **BURLINGTON RESOURCES 1999 ANNUAL GROUNDWATER REPORT**

## Cozzens B #1

### SITE DETAILS

Location: Unit Letter L, Section 19, Township 29N, Range 11W; San Juan County, New Mexico Land Type: Fee

## **PREVIOUS ACTIVITIES**

PNM had conducted pit closure work and installed monitoring wells on this site in 1996 and 1997. Burlington Resources also had participated in excavation of impacted soils.

In December 1997, Burlington Resources excavated approximately 334 cubic yards of impacted soil from an area near an oil storage tank that had leaked. No groundwater was encountered at this time. The excavation was backfilled with clean soils. A report prepared by Philip Services Corporation detailing the excavation work and soil sampling is attached.

#### **1999 ACTIVITIES**

Burlington installed a groundwater monitoring well (MW-1) near the oil storage tank on this location in May 1999. At the same time, a second monitoring well (MW-2) was installed at the toe of the slope immediately south of location. After developing the wells and allowing them to stabilize, the wells were purged and first sampled on May 26, 1999.

Quarterly groundwater monitoring continued through 1999. Groundwater analytical data are presented in Table 1. A site map is presented as Figure 1.

### **CONCLUSIONS**

Analytical results of groundwater sampling from the source monitoring well (MW-1) in May 1999 showed levels of benzene constituents above New Mexico Groundwater Standards. Since the initial sampling event, the quarterly sampling results from MW-1 have shown all BTEX constituents below the standards.

Auger refusal was encountered at approximately 3 feet during the installation of the second monitoring well (MW-2). Due to the shallow depth of this well, we were unable to collect water samples during several of the quarterly sampling events. Water samples were collected from MW-2 during the 3rd and 4th quarters and results showed levels of benzene and xylene above standards.

## **RECOMMENDATIONS**

- Burlington Resources proposes to continue quarterly sampling at this site.
- Upon receiving analytical results below standards for one full year, Burlington Resources will request official closure of this site.

Attachments: Figure 1 - Site Map

Table 1 - Groundwater Sampling Results Summary 1999 Groundwater Analytical Results Drilling Logs/Wellbore Diagrams Philip Report on Excavation Work

# **Cozzens B#1 - Site Diagram**





# Groundwater Monitoring Well Sampling

		Sample	В	Т	E	X	BTEX	DTW
Well Name	MW #	Date	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ft)
Standard			10	750	750	620		
Cozzens B #1	1	5/26/99	28	11	23	99	161	
		9/2/99	2.5	2.1	5.6	22	32.2	2.31
	[	12/2/99	<0.5	11	5	27	43	4.43
		1/19/00	1.7	13	7.6	28	50.3	6.48
	2	5/26/9 <del>9</del>	V	Vell was dry	/	No Sample		
		9/2/99	120	55	440	450	1065	1.28
		12/2/99	250	39	480	980	1749	4.35
		1/19/00	V	Vell was dry	1.	No Sample		

# 1999 GROUNDWATER ANALYTICAL RESULTS

S: / grndwatr/GW-Sites/Fogelson4-1/99Annual.doc



Pinnacle Lab ID number 905100 June 30, 1999

PHILIP ENVIRONMENTAL 4000 MONROE ROAD FARMINGTON, NM 87401

Project NameBURLINGTON DRILLINGProject Number21057.2000.99

Attention: PAUL CHENEY

On 5/27/99 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592), received a request to analyze **aqueous and non-aq** 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.

EPA methods 8015 and 8021 were performed by Pinnacle Laboratories, Inc., Albuquerque, NM.

All other parameters were performed by ESL (OR) Inc., Portland, OR.

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

H Mitchell Rubenstein Ph D

Kimberly D. McNeill Project Manager

H. Mitchell Rubenstei<mark>h</mark>, Ph. D. General Manager

MR: mt

Enclosure



CLIENT PROJECT # PROJECT NAME	: PHILIP ENVIRONMENTAL : 21057.2000.99 : BURLINGTON DRILLING	PINNACLE ID DATE RECEIVED REPORT DATE	: 905100 : 5/27/99 : 6/30/99
PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	BR-COZMW1	AQUEOUS	5/26/99
02	BR-HAMPTON MW13	AQUEOUS	5/26/99
03	BR-HAMPTON MW9	AQUEOUS	5/26/99
04	BR-HAMP MW12	AQUEOUS	5/26/99
05	BR-HAMP MW7	AQUEOUS	5/26/99
06	BR-HAMP MW5	AQUEOUS	5/26/99
07	PIT #2 LIU16	AQUEOUS	5/26/99
08	BR-HAMP MW8	AQUEOUS	5/26/99



# GAS CHROMATOGRAPHY RESULTS

TEST		: EPA 8021 MOE	DIFIED					
CLIENT		: PHILIP ENVIRO	ONMENTAL			PINNACLE I.E	D.: 905100	
PROJECT	#	: 21057.2000.99						
PROJECT	NAME	: BURLINGTON	DRILLING					
SAMPLE				DATE	DATE	DATE	DIL.	_
ID. #	CLIENT I.D.		MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR	
01	BR-COZMW1		AQUEOUS	5/26/99	NA	6/2/99	1	_
02	<b>BR-HAMPTON</b>	MW13	AQUEOUS	5/26/99	NA	6/2/99	1	
03	<b>BR-HAMPTON</b>	MW9	AQUEOUS	5/26/99	NA	6/2/99	1	
PARAMET	ER	DET. LIMIT		UNITS	BR-COZMW1	BR-HAMPTON MW13	BR-HAMPTON MW9	
BENZENE		0.5		UG/L	28	2100 (D100)	120	-
TOLUENE		0.5		UG/L	11	22	< 0.5	
ETHYLBE	NZENE	0.5		UG/L	23	8.8	1.6	
TOTAL XY	LENES	0.5		UG/L	99	29	0.8	
METHYL-t	-BUTYL ETHER	2.5		UG/L	6.3	< 2.5	< 2.5	
SURROGA	TE:							
BROMOFL	UOROBENZENE	E (%)			94	88	96	
SURROGA	TE LIMITS	(80 - 120)						

CHEMIST NOTES: (D100) = 100 X DILUTION, ANALYZED ON 6/2/99 Environmental Services Laboratory, Inc.

17400 SW Upper Boones Ferry Road • Suite 270 • Portland, OR 97224 • (503) 670-8520

June 23, 1999

Kim McNeill Pinnacle Laboratories 2709-D Pan American Fwy NE

Albuquerque, NM 87107

TEL: 505-344-3777

FAX (505) 344-4413

RE: 905100/PHIL/Burl. Drilling

Order No.: 9905152

Dear Kim McNeill,

Environmental Services Laboratory received 2 samples on 05/28/99 for the analyses presented in the following report.

The Samples were analyzed for the following tests:

CHLORIDE (Chloride) ICP Metals (ICPMET) MERCURY (Mercury) Nitrate/Nitrite (Nitrogen) Sulfate (Sulfate) TOTAL DISSOLVED SOLIDS (E160.1)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval from the Laboratory.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Kimberly Hill Project Manager

Keith Hun

Technical Review

ANALYTICAL SERVICES FOR THE ENVIRONMENT

# **Environmental Services Laboratory**

Date: 24-Jun-99

CLIENT:	Pinnacle Laboratories	Client Sample ID:	905100-01
Lab Order:	9905152	Tag Number:	
Project:	905100/PHIL/Burl. Drilling	<b>Collection Date:</b>	05/26/99
Lab ID:	9905152-01A	Matrix:	AQUEOUS

Analyses	Result	Limit Qu	al Units	DF	Date Analyzed
CHLORIDE		EPA 325.3	······		Analyst: cms
Chloride	1	0.5	mg/L	1	06/04/99
NITRATE/NITRITE		EPA 353.3			Analyst: sid
Nitrogen, N+N	ND	0.05	mg/L	1	06/11/99
SULFATE		EPA 375.4			Analyst: ams
Sulfate	1100	620	mg/L	125	06/07/99
TOTAL DISSOLVED SOLIDS		EPA 160.1			Analyst: cms
Total Dissolved Solids (Residue, Filterable)	2100	10	mg/L	1	06/02/99
MERCURY		SW 7470 / EPA	245.		Analyst: <b>btn</b>
Mercury	ND	0.002	mg/L	1	06/08/99
ICP METALS		SW 6010 / EPA	200.		Analyst: ams
Arsenic	ND	0.05	mg/L	1	06/16/99
Barium	ND	0.3	mg/L	1	06/16/99
Cadmium	ND	0.005	mg/L	1	06/16/99
Chromium	ND	0.05	mg/L	1	06/16/99
Lead	ND	0.05	mg/L	1	06/16/99
Selenium	ND	0.05	mg/L	1	06/16/99
Silver	ND	0.02	mg/L	1	06/16/99

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

ESL ~ OREGON



# Chain of Custody

LABORATORY NUMBER:

17400 SW Upper Boones Ferry Rd., Suite 270 Portland, Oregon 97224 • (503) 670-8520 FAX: (503) 670-9243

ESL Project Manage	r:		Kim Hill					A	NALYS	SIS RE	QUES	1		 
SAMPLE ID	DATE	TIME	MATRIX	LAB ID	PCB	Karl Fisher	100	Sulfide	BOD	Coliform:	E. Coli	TKN	PLRA &	
99905ibb-0) 													× 7	
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Sample ( Anatyu Paranata	Contain Ical Ir Lat	ers Numper	Container T Preservative Container Typa	ype: G → C ea: H = HC Volume (m	ilgar Glass I: N - H Fi Filt L) Yes	s; A = NO ₃ ; S ald ared	Am 5 = Pre	ber Giab∺ H,SO,; /	i: P A = I Co Do Coll Yes	= Plastic; NaOH; O poled uring lection	: V = V = Othe	OA Via	(Gluss), ify ); Commer	0 - Other ISp = Nona
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Sample ( Anatyu Paramate <u>80.2</u>	Contain rual r Lat	ers Numoer Z	Container Tr Preservative Container Typa NO A	ype: G = C s: H = HC Volume (m	liear Glass  ; N - H Fi Filt  L) Yes	$r_{i} A = r_{i} A = r_{i$	Am 5 -	Der G:88≓ MySOx; / MySOx; / MySOx; / MySOx; / MySOx; /	a: P A = I Co Coll Yes	= Plastic NaOH; 0 Doled uring laction No	V - V = Other   V of V G ACL		Commer 2 & A.C. 2 & A.C. 5 & [	$0 = 0 \text{ (her 13)}$ $= \text{None}$ $\text{Its}$ $(-1 \text{ (J)} \text{ (-1 \text{ (J)}  (-1 \text{ (-1 ) (-1 \{ (-1 \text{ (-1 ) (-1 \text{ (-1 ) (-1 ) (-1 (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 ) (-1 $
Sample ( Anatyu Paramate 80.2	Contain Ical Ir Dat	ers Numoer 2.	Container Tr Preservative Container Type NO A	ype: G = C s: H = HC Volume (m	liear Glass  ; N - H Fi Filt  L) Yes	5; A = NO ₃ ; S stat		Der G:88≓ MySOu; / MySOu; / MySOu; / MySOu; / MySOu; / MySOu; / MySOu; / MySOu; /	e: P Cc Coll Yes	= Plastic: NaOH; 0 poled uring laction No	V - V = Other   V of V G ACL I N B		$\frac{(\text{Qluebb})}{(\text{Ify})} = \frac{1}{2}$	$0 = 0 \text{ ther } 13\mu$ $= \text{Nona}$ $(1 \text{ A})G$ $(-1 \text{ A})G$ $(-1 \text{ A})G$ $(-1 \text{ A})G$
Sample ( Paramate 80.2	Contain Ical Ir Dat	ers Numoer 2.	Container Tr Preservative Container Type NO A	ype: G ≠ C s: H = HC Volume (m	liear Glass  ; N → H Filt  L) Ye3	5; A = NO ₃ ; S stat	Am 5 -	Der Glass MySOJ; / Henrved /2. 1 	a: P A = I Co Coll Yes	= Plastic, NaOH; O polyd uring laction No	- 0 the - 0 th		$\frac{(\text{Qluebb})}{(\text{ify})}; - \frac{1}{2}$	0 = 0  then  12p $= None$ $(-1 + 1)(p - 1)$
Sample ( Paramete 80.2	Contain r Lat	ers Numper 2.	Container Tr Preservative Container Type NO A	ype: G = C a: H = HC Volume (m	lear Glass  ; N → H Fi Filt  L) Ye3	5; A = NO ₃ ; S stad	Am 5 = 1 (	Der Glass MySOJ; / HySOJ; / HySOJ; / HySOJ; / HySOJ; / HySOJ; /	a: P A = 1 Co Coll Yes	= Plastic, NaOH; O poled uring lection No	V = V = Other I V of V G ACI I N B		Commer 2 & A.C. 5 & J + +	0 = 0  then  12p $= None$ $(-1 + 1)(-1)(-1)(-1)(-1)(-1)(-1)(-1)(-1)(-1)(-$
Sample ( Analyu Paramate <u>80.2</u>	Contain In Liar	ers Numoer Z.	Container Tr Preservative Container Type NO A	ype: G = C ea: H = HC Volume (m	lear Glass I: N - H Fi Filt IL) Yes	5; A = NO3; 5 Fid Stad	Am Pre	Der G.863 MySO ₄ ; / yserved / <u>2.</u> + 	a: P A = I Co Coll Yes	Plastic; NaOH; O Doluci uring Action No	V = V $= 0  the$ $I = V + G$ $A = C + C$ $I = N = G$		Commer (Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer Commer C	$0 = 0 \text{ ther }  \Omega $ = None $(-1 A)G$ $(-1 A)G$ $(-1 C)G$
Sample ( Anelyu Paramate <u>80.2</u>		ers Numper 2	Container T Preservative Container Typa NO A	ype: G = C ea: H = HC Volume (m	lear Giasa : N - H Fi Filt :L) Yes	5; A = NO ₃ ; 5 Fid sred		Der G(86- H)SO,; / H)SO,; /	a: P A = 1 Ccc Do Coll Yes	Plastic; NaOH; O Dolyd uring action No	I N OT		Commer (Commer Commer CEAC SE ( + -	$0 = 0 \text{ then }  \Omega $ $= \text{Nona}$ $(13)$ $(-1.3)G$ $(-1.3)G$ $(-1.3)G$
Sample ( Analyu Paramete <u>%O</u> Z	Contain rual r Dat	ers Numoer Z	Container T Praservative Container Typa NO A	ype: G = C ea: H = HC Volume (m	lear Glass I: N - H Filt IL) Yes	5; A = NO ₃ ; 5 Pid 9: ad No	Am Pre	Der G.86- HySO,; /	a: P A = 1 Ccc Do Coll Yes	Plastic; NaOH; O Doludi uring Action No	V - V = Other		Commer (Commer Commer CEAC SE ( + ,	O = O(her   G) = Nona Its $(-1 A)G$ $(-1 C)G$ $(-1 C)G$
Sample ( Paramete 80.2		ers Numoer 2	Container Tr Preservative Container Typa NO A	ype: G = C s: H = HC Volume (m	lear Glass I: N - H Filt L) Yes	n; A = NO ₃ ; S stat		Der G:88= HJSOJ; / HJSOJ; / KSOJ; / KSOJ; / HJSOJ; / KSOJ; / K	a: P A = I Coo Cool Yes	Plastic; NaOH; 0 Dollad Uring Action No	V = V $= 0  the$ $V = C$ $V = C$ $(N B)$ $(N B)$ $(N B)$ $(N B)$		Commer Commer Commer Commer Commer Commer Commer Commer	0 = 0  (her 19) = None
Sample ( Paramate <u>80.2</u> Filter Type Commer	Contain	ers Numoer 2.	Container Tr Preservative Container Typa NO A	ype: G = C s: H = HC Volume (m	Iegar Giasa           I; N - H           Filt           Filt           I.) Yes	Rid srad		Der G:88= H,SO.; / H,SO.; / K. 1 K. 1 K. 1 K. 1 K. 1 K. 1 K. 1 K. 1	ty F	Plastic, NaOH; O poled uring lection No	$V = V$ $= 0 \text{ the}$ $\frac{1}{\sqrt{16}}$ $\frac{\sqrt{16}}{\sqrt{16}}$ $\frac{\sqrt{16}}{\sqrt{16}}$ $\frac{\sqrt{16}}{\sqrt{16}}$		Commer 2 & A.C. 5 & J + +	$0 = 0 \text{ ther }  \Omega $ $= \text{None}$ $(-1 A)G-$
Sample ( Parameter 80.2 Filter Type Commer 15 0 M	Contain	егз Numoer 2 2 1 2 4 4 4 5 7 9 2 7 9 2 7 9 2 7 9 2 7 9 2 7 9 2 7 9 2 7 9 2 7 9 2 7 9 2 7 9 2 7 9 7 9	Container Tr Preservative Container Typa NOA NOA L. IN 15 apr.	ype: $G = C$ value (m Value (m Value (m Value (m Value (m) Value (m)	Iegar Giasa ; N → H Filt IL) ¥es	$\frac{1}{1}$		Der G:88- 4,50,; / 9887V80 ./; / ./; / ./; ./; ./; ./; ./; ./; ./; ./; ./; ./	dy F	Plastic, NaOH; O Dolled Uring Action No	$V = V$ $= 0 \text{ the}$ $\frac{1}{\sqrt{16}}$ $\frac{\sqrt{16}}{\sqrt{16}}$ $\frac{\sqrt{16}}{\sqrt{16}}$ $\frac{\sqrt{16}}{\sqrt{16}}$ $\frac{\sqrt{16}}{\sqrt{16}}$		$\frac{(\text{Qluebb})}{(\text{Ify})} = \frac{1}{2}$	O = O(her   G) $= None$ $(-1 A)G-$ $(-1 A$



: PHILIP ENVIRONMENTAL	PINNACLE ID	: 909019
: (none)	DATE RECEIVED	: 9/3/99
BURL DRILLING	REPORT DATE	: 9/14/99
		DATE
CLIENT DESCRIPTION	MATRIX	COLLECTED
TAYLOR COM #2A MW1	AQUEOUS	8/1/99
COZZENS B#1 MW1	AQUEOUS	9/2/99
COZZENS B#1 MW2	AQUEOUS	<u>9/2/99</u>
	: PHILIP ENVIRONMENTAL : (none) : BURL. DRILLING CLIENT DESCRIPTION TAYLOR COM #2A MW1 COZZENS B#1 MW1 COZZENS B#1 MW2	: PHILIP ENVIRONMENTAL     PINNACLE ID       : (none)     DATE RECEIVED       : BURL. DRILLING     REPORT DATE       CLIENT DESCRIPTION     MATRIX       TAYL OR COM #2A MW1     AQUEOUS       COZZENS B#1 MW1     AQUEOUS       COZZENS B#1 MW2     AQUEOUS

PHOLES

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

# GAS CHROMATOGRAPHY RESULTS

TEST		: EPA 8021 MOD	FIED / 8015	GRO			. 000040
CLIENT			JNMENTAL			PINNAGLE I.L	
PROJECT #	F	: (none)					
PROJECT	NAME	: BURL DRILLIN					<b>D</b> 11
SAMPLE				DATE	UAIE	DATE	
ID.#	CLIENT I.D.		MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	TAYLOR COM	#2A MW1	AQUEOUS	9/1/9 <del>9</del>	NA	<b>8/8/8</b> 8	1
02	COZZENS B#1	MW1	AQUEOUS	9/2/99	NA	9/10/9 <del>9</del>	1
03	COZZENS B#1	MW2	AQUEOUS	9/2/99	NA	9/9/99	100
PARAMETE	R	DET. LIMIT	UN	ITS	TAYLOR COM #2A MW1	COZZENS B#1 MVV1	COZZENS B#1 MW2
FUEL HYD	ROCARBONS	50	U	3/L	120	930	11000
HYDROCA	REON RANGE				C6-C14	C6-C14	C6-C14
HYDROCA	RBONS QUANT	ITATED USING			GASOLINE	GASOLINE	GASOLINE
BENZENE		0.5	U	G/L	< 0.5	2.5	120
TOLUENE		0.5	U	G/L	< 0.5	2.1	65
ETHYLBEN	IZENE	0.5	U	3/L	1.3	5.6	440
TOTAL XY	LENES	0.5	U	G/L	1.6	22	450
METHYL-t-	BUTYL ETHER	2.5	U	G/L	< 2.5	< 2.5	< 250
SURROGA	TE:						
BROMOFL	UOROBENZENI	E (%) <b>( 80 - 120</b> )			104	114	99

CHEMIST NOTES: N/A

Pinnacle Laboratories Inc.

# CHAIN OF CUSTODY

PLI Accession #:

909019

	PROJECT MANAGER: CELIL IRBY	T						_ ~		A	AL	'SIS	RE	QUE	ST	••••••	• ,							
HADED AREAS ARE FOR LAB USE ONLY	COMPANY:       PHILIP       SEAVILES       CORP         ADDRESS:       4000       MOANROE         FARMING-TON, NM 8740         PHONE:       505-326-2262         FAX:       505-326-2388         BILLTO:       SAME         COMPANY       ADDRESS:         SMALED:       DATE:         SMALED:       DATE:         SMALED:       DATE:         SMALED:       DATE:         SMALED:       DATE:         SMALED:       DATE:         ADDRESS:       DATE:         COESE COM*2A - 91/49 4:15 AQ       AQ         SMWIL       91/2199 1:00 AQ         COESE ENS B*1 MW1       91/2199 1:00 AQ         COESE ENS B*1 MW2       91/2199 1:15 AQ	Petroleum Hydrocarbons (418.1) TAPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	XX - X 8021 (BTEX)/8015 (Gasoline) MTBE		8021 (TCL) 8021 (FDX)	8021 (HALO)	8021 (CUST)	504.1 EDB 2/ DBCP 2	8260 (TCL) Volatile Organics	8260 (Fuil) Volatile Organics	B260 (CUST) Volatile Organics	0200 (Latituiti) Volatile Ulganica Destinities /PCB /AAA/AAA/	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/62/70)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry:	Defactive Ballistant Matale (13)	Taroet Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Maraus:	NN NUMBER OF CONTAINERS
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FAX:505 326 2385

11 HOVER PILION PILION PILION PILADENDING, Mr. + 2709-D Pan American Freeman, NE + Nouquerque, New Medico 87107 + (505) 344-3777 + Fex : 505) 344-4113 - E-mail: PIN_LABENWORLDNET.ATT.NET DISTRIBUTION: White - PLI, Casary - Originator



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Form AGHD Rev. 10/6794

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Developer's Signature(s)

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CONT BY: PINNACLE LABORATO	ATES	505 344 4413;	Dec-109 13:33;	Page 1
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Kimborly D. McNeill Project Manager

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H. Mitchell Rubenstein, Ph. D. General Manager

FILE No.314 12/10 '99 PM 04:16	ID:PHILIP SERVICES	FAX:505 326 2388	PAGE 13
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CLIENT PROJECT #	: PHILIP ENVIRONMENTAL : (none) (none)	PINNACLE ID DATE RECEIVED REPORT DATE	912012 12/3/99 12/8/99
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OURROGATE: DROMO(TLUOROBENZENE (%)

NUBROGATE LIMITS (80 - 120)

CHEMIST NOTES. SAMPLE FOG1299-1 WAS ANALYZED AT A 2 X DILUTION DUE TO THE FOAMY NATURE OF THE SAMPLE.

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Г		Pinnacle Laboratories Inc.		C	HAI	N (	<b>DF</b>	PAG	JS	5 <b>T</b> ( (	)D' 	Y													The Bar D	FILE No.
		COZIZ99-1-2 22 20 COZIZ97-1-1	Petroleum Hydrocarbons (418.1) TRPH	(NOD.B015) Diasel/Direct Inject	(M8015) Gas/Pume 5, Iran	8021 (BTEX)/8015 (Gasoline) MTBE	(8021 (BTEX)) MTBE TTMB DPCE	8021 (TCL) 8021 (EDX)	9051 (HYTO)	8021 (CUST)		8250 (TCL) Volatile Organics	8260 (Full) Volante Croanice	8260 (CUST) Voletile Organics	Pesticides /PCB (609/6081/8082)	Herbiddea (015/3151)	Bene Neutral Acid Compounds & (825/8270)	Polynuciear Anomatica (810/8310/8270-SINIS)	General Chemietry:	Privrity Pollutant Meals (13)	Target Analyte List Metals (23)	RCRA Modula (8)	RCRA Metals by TCLP (Method 1511)	2012年の「日本にはない」「「日本になって、「日本になった」」という。 しんしょう しんしょう しょうしょう	TANACLE LARCEATORIES 505 2	31/ 12/10 '99 PM 04:18 ID:PHILIP SE
A SHE WALLER	MPLETELY.	$   \begin{array}{c cccccccccccccccccccccccccccccccccc$																							)44 4413; Dec-11	RVICES FAX:50
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# **DRILLING LOGS/WELLBORE DIAGRAMS**

 $S: / \ grndwatr/GW-Sites/Fogelson 4-1/99 Annual.doc$ 

## **RECORD OF SUBSURFACE EXPLORATION**

Philip Environmental Services Corp. 4000 Monroe Road Farmington, New Mexico 87401 (505) 326-2262 FAX (506) 326-2388

Elevation			
Borehole Location Co	Zzens	(MASA	Monzaro
GWL Depth 3	'		
Logged By	chanay		
Drilled By K.	Paulia		
Date/Time Started	5/19	0800	
Date/Time Completed	5/19	10.00	

Project	Name
Project	Number
Project	Location

Well Logged By Personnel On-Site

Drilling Method

21072 Phase 1000.99 (OZZens (Mesa Montana D. Cheney cheney, K. Pauli Rudill Contractors On-Site Client Personnel On-Site E Itace 11 4 14 ItSA Air Monitoring Method Ptu

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of 1

Borehole # Well #

Page

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 1 5 1 10 10 10 10 10 10 10 10 10		₹ -7 -7 -7 -7 -7 -7 -7 -7 -7 -7		Fill to approx 15' (Ed Hasely, 5/19). 1st sampt at 5-7' Brown, medium to coarse stained poorly surred sand w/pea gravel. wet at 3', blact staining at 5', no odor yellowish brown silty clay. Low glasticity, Itard TN=13'. Set 10' screen from 13 to 3', sand to 1' bgs, bentonite to surface			0.5		7.6	B(= 8 s/1ts = 3.6 BC= 50 (10") s/1ts = 4.6	
Comments:	<u>^</u>	1aten 2	suct	1 silt trap, 1-10' screen s hentonite	, / - 9	5 1 1.51	<u>er</u>	6 5	achs	silica sard,	
	Geologist Signature										

# **RECORD OF SUBSURFACE EXPLORATION**

Philip Environmental Services Corp. 4000 Monroe Road Farmington, New Mexico B7401 (505) 328-2262 FAX (505) 328-2388

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Elevation		
Borehole Location		
GWL Depth	a	
Logged By	P. Cheney	
Drilled By	P. cheney	
Date/Time Started	d	
Date/Time Comple	eted	

Project Name Project Number	21073	Phase	1800.99	
Project Location	(ottins	(mesa	Monzano	
Well Logged By Personnel On-Site Contractors On-Site	P. ch cheney	ener t. lad	Ila, D. Pudlla, c	<u></u> rby
Client Personnel On-	Site _	Ed /815	<u>eiy</u>	
Drilling Method Air Monitoring Meth	/and A	nger	· · · · · · · · · · · · · · · · ·	

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Borehole #

of 1

Well #

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Depth (Feet)	Sample Interval	Sample Type & Recovery (inches)	Sample Description Classification System: USCS	USCS Symbol	Depth Lithology Change (feet)	Air U 8Z	Monitori nits: ND BH	ng U S	Drilling Conditions & Blow Counts
			Hand auger to 3! month sand, cobbles and gravel. Auger refusal at 3! Set 2'of screen from 3' to 1', sand to approx O.S', heritonite to surface						

Cozzens B# 1

Comments:

**Geologist Signature** 

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MONITORING WELL INS	TALLATION RE	CORD			Borehole #	<u>+  </u>	
Puillip Environmental Services Cor 4000 Morroe Rood	p.				Well # Page <u>1</u>	of	
Fermington, New Mexico 87401			F	roject Name	·		
(606) 326-2262 FAX (506) 326-2388			, F	roject Number	21073	Phase /00	0.91
			F	roject Location	122ens	(mesa Mo	neary)
Elevation Well Location <u>Cottens</u> GWL Depth <u>3</u> Instailed By <u>M. Codi: 116</u>			( F ( (	Dn-Site Geologist Personnel On-Site Contractors On-Site Client Personnel Or	Cheney,	D. Bridilla, K Idensely	Eladilla, c. Irby
Date/Time Staned <u>5/19</u> Date/Time Completed <u>5/19</u>	0800						
Depths in Reference to Ground	Surface			_ Top of Protec	tive Casing	<u> </u>	
ltem	Material	Depth		Ground Surfa	109		
Top of Protective Casing							
Bottom of Protective Casing							
Top of Permanent Borehole							
Sottom of Permanent Borehole Casing							بالمراجع مراجعا
Top of Concrete		NA.					
Bottom of Concrete		N.A.					
Top of Grout		N.A.					
Bottom of Grout		N.A.					
Top of Weil Riser		2 (+	)				
Eottom of Well Riser	<u></u>	3'					
Top of Well Screen		3		Top of Seal		Ground	
Bottom of Well Screen		13				surfar e	
Top of Peltonite Seal		Surface		×××		. 1	
Bottom of Peltonite Seal		<u> </u>	x x x x	XXX Top of Grave	el Pack		
Top of Gravel Pack		,'		i op of Scree	en .		
Bottom of Gravel Pack		13'					
Top of Natural Cave-in		N.A					
Bottom of Natural Cave-In		N.A.					
Top of Groundwater	<u> </u>	3'		Bottom of Se	creen	13	
Total Depth of Borehole		/3'					
Comments: TD= 13 !	Installed a	screen	Nors 13	103' Sunt	10 1 1	bennine	
Ju Zupu C			Geologist Signature	Ja	e d_	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
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# PHILIP REPORT ON EXCAVATION DATED 1/8/98

S: / grndwatr/GW-Sites/Fogelson4-1/99Annual.doc



Industrial Services Group Central Region January 8, 1998

Project 19914

Mr. Ed Hasely Burlington Resources Oil and Gas Company P.O. Box 4289 Farmington, New Mexico 87499-4289

# RE: Report for work performed at the Cozzen B-1 site

Dear Mr. Hasely:

Philip Services Corporation (Philip) is pleased to submit to Burlington Resources Oil and Gas Company (Burlington) this report of the work performed at the Cozzen B-1 site approximately 3 miles east of Bloomfield, New Mexico.

# **SCOPE OF WORK**

On November 21, 1997 Burlington requested Philip to perform the following scope of work at the Cozzen B-1 site:

- Provide technician, pickup truck and photoionization detector (PID) to monitor soil contamination levels at a previous spill.
- Provide loader, trackhoe and two operators to excavate contaminated soil from the tank pad across the road to an old reserve pit.
- Landfarm contaminated soil on site and backfill excavation using soil removed from location.

# RESULTS

On December 9, 1997 at approximately 7:00 a.m. Philip began excavation activities at the spill area as designated by Burlington. At approximately 9:00 a.m. Burlington's representative arrived to observe the excavation. At approximately 10:00 a.m. Denny Foutz with the New Mexico Oil Conservation District (NMOCD) arrived. Philip field screened the excavated soil with a PID to monitor the extent of contamination. Results of the first screened readings were 192 parts per million (ppm) on the north side; 5 ppm on the east side; and 681 ppm and 573 ppm on the south side. Based on the field screening results, excavation continued to the south and west.

At 12:00 p.m. Philip collected heated headspace samples, with the following results: 179 ppm on the north side, 5 ppm on the east side and 480 ppm on the south side. Philip resumed excavation

Combining the Strengths of Philip Services Corp., Allwaste and Serv-Tech
Mr. Ed Hasely January 8, 1998 Page 2

on all sides. At 1:00 p.m. Philip collected samples for a second heated headspace analysis. The results were: 38 ppm and 32 ppm on the north side, 5 ppm on the east side, 81 ppm and 49 ppm on the south side and 118 ppm on the west side.

At the request of Denny Foutz, Philip collected two samples on the down gradient side of the excavation and sent them to Onsite Laboratory in Farmington, New Mexico. The samples were analyzed for Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) by USEPA method 8020, and Total Petroleum Hydrocarbons (TPH) by USEPA method 8015 modified for gasoline and diesel range. Sample No. Cozzen-01 was collected from the south side of the excavation and sample No. Cozzen-02 was collected from the west. Laboratory analysis indicated BTEX and TPH results to be below NMOCD standards for soil. Results of laboratory analysis are included in Attachment A.

The excavation was approximately 50 feet long, 30 feet wide and approximately 6 feet deep. Philip estimates 334 cubic yards of contaminated soil were removed. No groundwater was encountered. All impacted soil excavated was landfarmed on site.

Once the excavation was complete, Mr. Foutz approved backfilling to the sample locations. Once backfilling was completed, Philip personnel and equipment demobilized from the site.

Philip appreciates the opportunity to provide Burlington with professional services and looks forward to providing additional services in the future. If you have any questions or require additional information, please contact Robert Thompson or Martin Nee at (505) 326-2262.

Respectfully submitted, PHILIP SERVICES CORPORATION

Robert Thompson Project Manager

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# Attachment A

**Results of Laboratory Analysis** 



OFF: (505) 325-5667

### ANALYTICAL REPORT

Attn:	Scott Pope		Date:	12-Dec-97
Company:	Philip Enviro	nmental	COC No.:	G3688
Address:	4000 Monro	e Road	Sample No.:	17062
City, State:	Farmington,	NM 87401	Job No.:	2-1000
Drainat Nom		Purlington Ponouroon Corron R 1		

Burnington Resources - C	JOZZEN D-1		
Cozzen-01			
DB	Date:	9-Dec-97 Time:	12:10
DC/HR	GRO Date:	10-Dec-97	
Soil	DRO Date:	11-Dec-97	
	Cozzen-01 DB DC/HR Soil	Burnington Resources - Cozzen B-1Cozzen-01Date:DBDate:DC/HRGRO Date:SoilDRO Date:	Burnington Resources - Cozzen B-1Cozzen-01DBDate:DC/HRGRO Date:10-Dec-97SoilDRO Date:11-Dec-97

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#### Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.0	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD DRO QC No.: 0555-STD

LAB: (505) 325-1556

Continuing	Calibration	Verification
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	Method	Unit of	True	Analyzed		RPD
Parameter	Blank	Measure	Value	Value	RPD	Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	2,000	10.5	15%
Diesel Range (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Becovered	2 - Percent Recovered	Limit	8PD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography

Approved by: Date: 12/12/97

P.O. BOX 2606 • FARMINGTON, NM 87499

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LAB: (505) 325-1556

OFF: (505) 325-5667

# ANALYTICAL REPORT

Attn:	Scott Pope				Date:	11-Dec-97
Company:	Philip Envir	onment	al		COC No.:	G3688
Address:	4000 Moni	oe Road	1		Sample No.:	17062
City, State:	Farmington	, NM 81	7401		Job No.:	2-1000
Project Nam	e:	Burling	ton Res	ources - Cozzen B-1		
Project Loca	ition:	Cozzei	n-01			
Sampled by	:	DB		Date:	9-Dec-97 Time:	12:10
Analyzed by	':	DC	•	Date:	10-Dec-97	
Sample Mat	rix:	Soil				

## Laboratory Analysis

Parameter	ie.	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene		19	ug/kg	2	ug/kg
Toluene		55	ug/kg	2	ug/kg
Ethylbenzene		95	ug/kg	2	ug/kg
m,p-Xylene		497	ug/kg	2	ug/kg
o-Xylene		13	ug/kg	2	ug/kg
	TOTAL	679	ug/kg		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved by: Date: n-/11/97

P.O. BOX 2606 • FARMINGTON, NM 87499



OFF: 505) 325-5667

LAB: (505) 325-1556

### ANALYTICAL REPORT

City, State:	Farmington, NM 87401	Job No.:	2-1000
Address:	4000 Monroe Road	Sample No.:	17063
Company:	Philip Environmental	COC No.:	G3688
Attn:	Scott Pope	Date:	12-Dec-97

12:12

## in the second 
Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	3.5	mg/kg	0.5	mg/kg
Diesei Range Organics (C10 - C28)	ND	mg/kg	10	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0554-STD DRO QC No.: 0555-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gusoline Range (C5 - C9)	ND	ррb	1,801	2,000	10.5	15%
Diesei Punge (C10 - C28)	ND	ppm	200	195	2.4	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	105	105	(80-120)	0	20%
Diesel Range (C10-C28)	95	98	(75-125)	3	20%

Method: SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography

Approved by: 12/12/97 Date:

P.O. BOX 2606 • FARMINGTON, NM 87499

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OFF: (505) 325-5667

LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn:	Scott Po	pe			Date:	11-Dec-97		
Company:	mpany: Philip Environmental				COC No.:	G3688		
Address: 4000 Monroe Road					Sample No.: 1706			
City, State:	Farming	ton, NM 8	87401		Job No.:	2-1000		
Project Nan	ne:	Burlin	ngton Resou	rces - Cozzen B-1				
Project Loc	ation:	Cozz	e <b>n-02</b>					
Sampled by	<i>r</i> :	DB		Date:	9-Dec-97 Time:	12:12		
Analyzed by	y:	DC	•	Date:	10-Dec-97			
Sample Ma	trix:	Soil						

## Laboratory Analysis

Parameter		Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure	
Benzene		96	ug/kg	2	ug/kg	
Toluene		43	ug/kg	2	ug/kg	
Ethylbenzene	- <u></u>	133	ug/kg	2	ug/kg	
m,p-Xylene		508	ug/kg	2	ug/kg	
o-Xylene	······································	16	ug/kg	2	ug/kg	
	TOT.4L	796	ug/kg			

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved by: Date: 12/11 (97

P.O. BOX 2606 • FARMINGTON, NM 87499



OFF: (505) 325-5667

LAB: (505) 325-1556

### QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 10-Dec-97

Internal QC No.: 0559-STD Surrogate QC No.: 0556-STD Reference Standard QC No.: 0529/30-QC

Method Blank

		Unit of
Parameter	Result	Measure
Average Amount of All Analytes In Blank	< 1.0	ррb

#### Calibration Check

Paramotor	1997 <b>- 19</b> 97 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	Unit of Measure	True Value	Analyzed Value	RPD	Limit
raiainetei		, wieasure	Value	Value		Linit
Benzene		ppb	60.0	62.1	3	15%
Toluene	in:	ppb	60.0	63.3	5	15%
Ethylbenzene		ppb	60.0	62.0	3	15%
m,p-Xylene		ppb	120.0	120.9	· 1	15%
o-Xylene		ррb	60.0	62.1	3	15%

#### Matrix Spike

	1- Percent	2 - Percent				
Parameter	Recovered	Recovered	Limit	RPD	Limit	
Benzene	91	85	(39-150)	7	20%	
Toluene	88	83	(46-148)	6	20%	
Ethylbenzene	86	82	(32-160)	4	20%	
m,p-Xylene	75	70	(35-145)	6	20%	
o-Xylene	89	87	(35-145)	3	20%	

#### Surrogate Recoveries

	\$1	S2		S1	S2
	Percent	Percent		Percent	Percent
Laboratory Identification	Recovered	Recovered	Laboratory Identification	Recovered	Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
17062-G3688	84				
17063-G3688	84				
				<u>IR</u>	(ne)
				12/15/97	17/1/97

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S1: Flourobenzene

### P.O. BOX 2606 • FARMINGTON, NM 87499



# Chain of Custod Record - Nonchemical Samples

210 West Sand Bank Road P.O. Box 230 Columbia, IL 62236-0230

(618) 281-7173 Phone (618) 281-5120 FAX

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Cazzen - 02 11	12.7.77	12:16	2	X	X		17063 - L
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