3R - 310

REPORTS

DATE: 1998

Public Service Company of New Mexico Alvarado Square MS 0408 Albuquerque, NM 87158

April 2, 1998

Mr. William Olson Hydrogeologist Oil Conservation Division 2040 So. Pacheco Santa Fe, New Mexico 87505 3 1998

Li Conservation Division



RE: 1998 SAN JUAN BASIN ANNUAL GROUNDWATER REPORT

Dear Bill:

PNM is pleased to submit the 1998 Annual Groundwater Report on Unlined Surface Impoundments in the San Juan Basin. Pursuant to PNM's Groundwater Management Program for Unlined Surface Impoundment Closures, the report details the ongoing investigation/remedial activities at unlined surface impoundments having groundwater contamination as identified by PNM. A list of groundwater sites reported in this document is provided below.

Cozzens B1
Dogie Compressor Station East Pit
Dogie Compressor Station North Pit
Florance 32A
Florance Z 40 M
Florance 44
Florance 47X
Florance 124
Hampton 4M
Honolulu Loop Line Drip
Ice Canyon Drip
Jacques 2A
Mangum 1E
McClanahan 22
McClanahan A2E

Miles Federal 1E
Miles Federal 1E Drip
Randleman 1
Reid 16 Drip
Sammons 2
Turner 1A
Turner 3

McCoy Gas Com A1

Turner 3
Zachry 18E

PNM 1998 Groundwater Report

PNM plans to request closure of two of the above sites, the Cozzens B1 and the Sammons 2, in our April 30, 1998 filing of the San Juan Pit Closure Reports to the OCD Santa Fe office. If you have any questions regarding the contents of the report, please contact me at (505) 241-2974.

Sincerely,

Maureen Gannon Project Manager

Attachment

cc:

Ingrid Deklau, WFS

Denny Foust, OCD-Aztec Office

Bill VonDrehle, WFS

PNM 1998 Groundwater Report

bcc: Colin Adams (w/o analytical results)

Kathy Juckes

Ron Johnson (w/o analytical results)

Mark Sikelianos

PNMGS Well Site: Cozzens

Groundwater Site Summary Report

Quarter/Year: 2nd/97, 3rd/97, 4th/97 & 1st/98

Copies: WFS(1)
Operator (1)
NMOCD District Office (1)
NMOCD Santa Fe (1)

Telephone: 505-241-2974

Operator: Burlington Resources

Sec: 19 Twn: 29 Rng: 11 Unit: L

Canyon: San Juan

Vulnerable Class: Original

OCD Ranking: 60

Lead Agency: NMOCD

Topo Map: previously submitted

Well Completion Diagram: previously submitted

Site Map with Analysis: Figure 1

Groundwater Contour Maps: Figure 2 (May 1997) & Figure 3 (August 1997)

Groundwater Hydrograph: Figure 4

Analytical Results: attached

Activities for Previous Year:

On May 29 and August 28, 1997, PNM conducted quarterly groundwater sampling at the Cozzens B1 well site. Prior to sampling, water level measurements were taken in MW-1, -2, -3, -4 and -5.

During the August sampling event, free phase product was discovered in monitor well MW-3. This well is located in a southwesterly direction downgradient of Burlington Resources' (BR) 300 bbl product storage tank. PNM immediately notified BR of a potential leak in their tank. PNM and BR visited the site on September 24, 1997, and discovered that a flange located near the bottom of the tank was leaking.

In a November 12, 1997 letter to OCD, PNM proposed to install a groundwater monitoring well in a true downgradient direction from our former pit and monitor MW-1, MW-2 and the new downgradient well to demonstrate successful remediation of groundwater beneath our former pit. OCD provided approval of our recommendations in a March 3, 1998 letter to PNM.

On January 27, 1998, two monitor wells, MW-7 and MW-8, were installed immediately downgradient of our former pit. The wells were developed. Water levels were not taken in the new wells and therefore a groundwater contour map is not provided for January 1998. PNM performed sampling in MW-1, -2, -7 and -8.

All groundwater sampling at the Cozzens B1 well site was conducted in strict compliance with EPA protocol. PNM delivered groundwater samples to OnSite Technologies, Farmington, New Mexico, for chemical analyses of benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8020.

Results:

Figure 1 is a site map of the Cozzens B1 well site and includes the groundwater analytical results. Figure(s) 2, 3 and 4 are groundwater contour maps for the months of May and August 1997. The groundwater gradient flows in a southwestly direction beneath the site and is dependent on discharge from the Citizens Ditch which flows in a northwesterly direction above the well site. Figure 4 is the hydrograph (water level versus time) for the site. Since June of 1996, water levels have held fairly constant except for MW-5. This well may not be completed within the same permeable layer as the other wells. We believe MW-5 receives groundwater from the canyon located to the northeast of the site.

Results of all sampling events show that BTEX concentrations in MW-1 and MW-2 have been below WQCC standards or non-detectable for seven quarters of monitoring. BTEX concentrations in the newest wells, MW-7 and MW-8, are also below WQCC standards or non-detectable.

Further Action:

Consistent with PNM's San Juan Basin Groundwater Management Plan, PNM will request closure of the Cozzens B1 pit in our April 30, 1998 filing of San Juan Basin Pit Closure Reports to the OCD Santa Fe office. This

Public Service Company of New Mexico - Gas Services

Environmental Services Division - Alvarado Square, MS-0408 Albuquerque, NM 87158

Contact: Maureen Gannon

PNMGS: 98gwrpt.doc 1-Apr-98

PNMGS Well Site: Cozzens (continued)

request is based upon the analytical data collected over the last two years at the site. BTEX concentrations in upgradient and source wells at our former pit have been consistently below WQCC standards for over four calendar quarters. Sampling of MW-7 and MW-8 also indicated that BTEX concentrations in groundwater downgradient of our former pit area are non-detectable or below WQCC standards.

Public Service Company of New Mexico - Gas Services

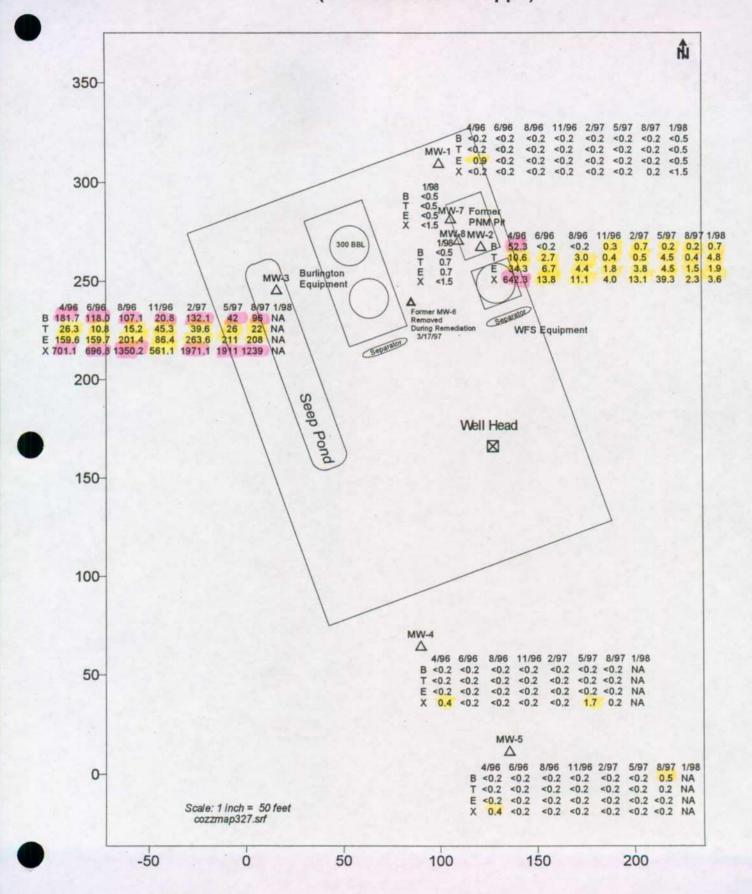
Environmental Services Division - Alvarado Square, MS-0408 Albuquerque, NM 87158

Contact: Maureen Gannon

PNMGS: 98gwrpt.doc 1-Apr-98

Telephone: 505-241-2974

Figure 1. Cozzens B1 Site Map With Analytical Results (Concentrations in ppb)



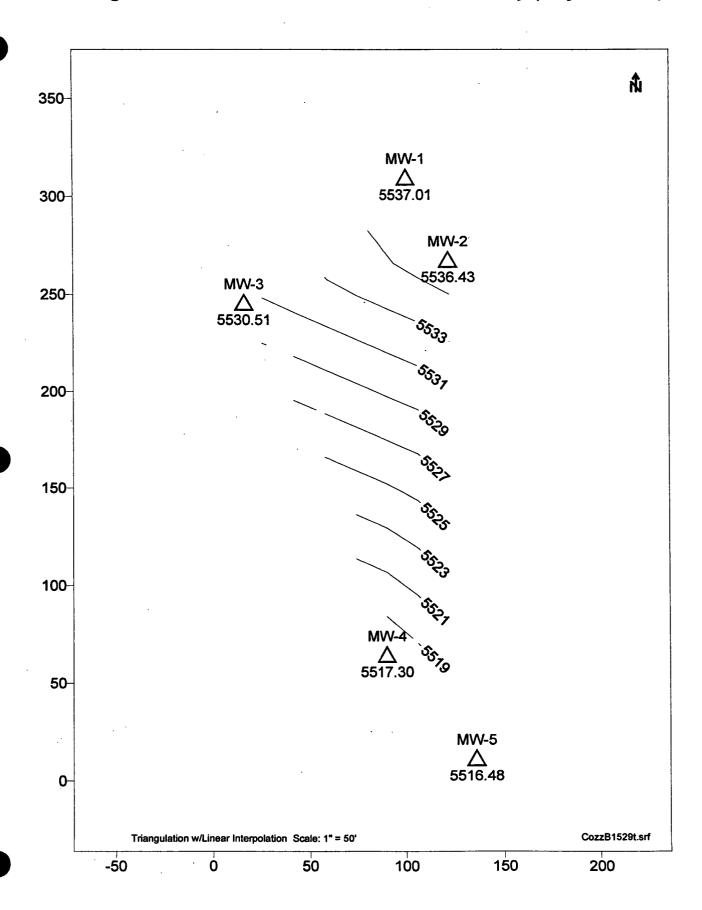
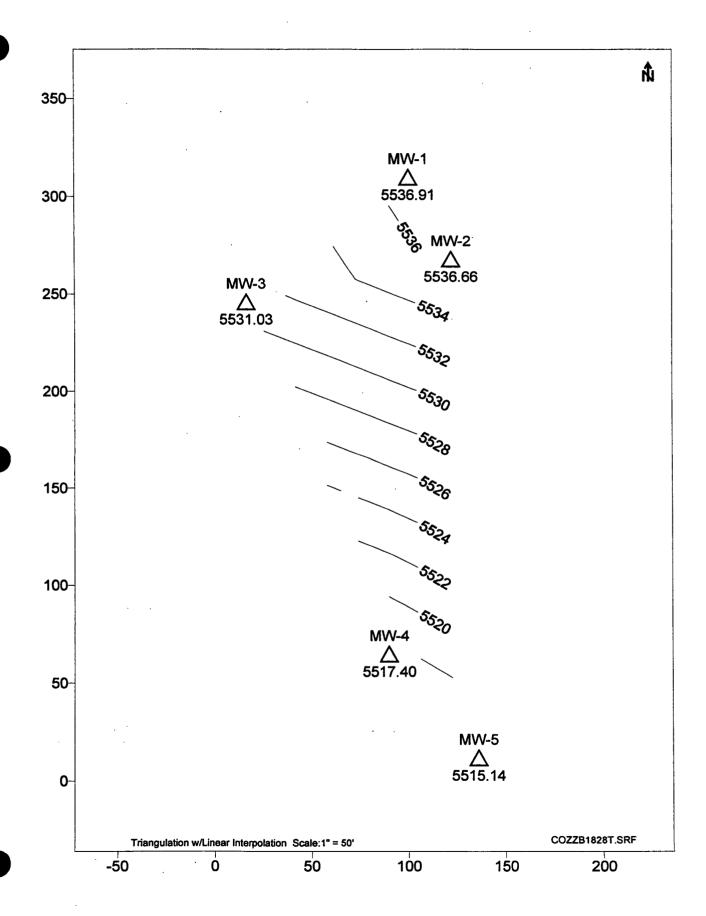
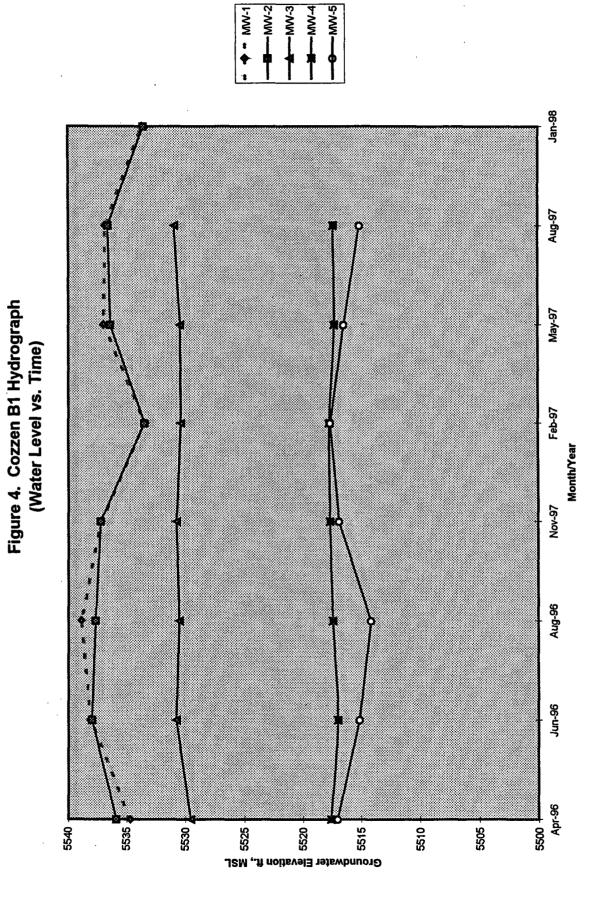


Figure 3. Cozzen Groundwater Contour Map August 28, 1997)



s:\surfer\cozzb1





LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

10-Jun-97

Company: PNM Gas Services

COC No.:

5560

Address:

603 W. Elm

Sample No.:

14778

City, State: Farmington, NM 87401

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzens B1

Project Location:

9705291300; MW-1

Date:

29-May-97 Time:

13:00

Sampled by: Analyzed by:

DC

Date:

4-Jun-97

Sample Matrix:

Liquid

MG/MS

		Results as	Unit of	Limit of	Unit of
Parameter		Received	Measure	Quantitation	Measure
Benzene		ND	ug/I	0.2	ug/L
Toluene		ND	ug/L ug/L	0.2	ug/L ug/L
Ethylbenzene		ND	ug/L	0.2	ug/L
m,p-Xylene		ND	ug/L	0.2	ug/L
o-Xylene		ND	ug/L	0.2	ug/L
	TOTAL	ND	ug/L		

ND - Not Detected at Limit of Quantitation

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

Approved By:

Date:



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

11-Jun-97

Company: PNM Gas Services

COC No.:

5560

Address:

Sample No.:

14779

603 W. Elm

City, State: Farmington, NM 87401

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzens B1

Project Location:

9705291330; MW-2

Date:

29-May-97 Time:

13:30

Sampled by: Analyzed by: MG/MS DC

Date:

4-Jun-97

Sample Matrix:

Liquid

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	ND	ug/L	0.2	ug/L
Toluene	4.5	ug/L	0.2	ug/L
Ethylbenzene	4.5	ug/L	0.2	ug/L
m,p-Xylene	30.7	ug/L	0.2	ug/L
o-Xylene	8.6	ug/L	0.2	ug/L
τοτ	AL 48.3	ug/L		

ND - Not Detected at Limit of Quantitation

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

Approved By: Date:



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

10-Jun-97

Company: PNM Gas Services

COC No.:

5560

Address:

Sample No.:

14780

City, State: Farmington, NM 87401

603 W. Elm

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzens B1

Project Location:

9705291400; MW-3

Date:

29-May-97 Time:

14:00

Sampled by: Analyzed by: MG/MS DC

Date:

3-Jun-97

Sample Matrix:

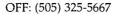
Liquid

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	42	ug/L	2	ug/L
Toluene	26	ug/L	2	ug/L
Ethylbenzene	211	ug/L	2	ug/L
m,p-Xylene	1906	ug/L	2	ug/L
o-Xylene	5	ug/L	2	ug/L
TOTA	2191	ug/L		

ND - Not Detected at Limit of Quantitation

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

Approved By:





ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

10-Jun-97

Company: PNM Gas Services

COC No.:

5560

Address:

603 W. Elm

Sample No.:

14781

City, State: Farmington, NM 87401

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzens B1

Project Location:

9705291430; MW-4

Date:

29-May-97 Time:

14:30

Sampled by: Analyzed by:

DC

Date:

4-Jun-97

Sample Matrix:

Liquid

MG/MS

Parameter		Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene		ND	ug/L	0.2	ug/L
Toluene		ND	ug/L	0.2	ug/L
Ethylbenzene		ND	ug/L	0.2	ug/L
m,p-Xylene		1.7	ug/L	0.2	ug/L
o-Xylene		ND	ug/L	0.2	ug/L
	TOTAL	1.7	ug/L		

ND - Not Detected at Limit of Quantitation

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

Approved By: Date:



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

10-Jun-97

Company: PNM Gas Services

COC No.:

5560

Address:

Sample No.:

14782

City, State: Farmington, NM 87401

603 W. Elm

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzens B1

Project Location:

9705291500; MW-5 MG/MS

Date:

29-May-97 Time:

15:00

Sampled by: Analyzed by: Sample Matrix:

DC Liquid

Date:

3-Jun-97

	Results as	Unit of	Limit of	Unit of	
Parameter	Received	Measure	Quantitation	Measure	
Benzene	ND	ug/L	0.2	ug/L	
Toluene	ND	ug/L	0.2	ug/L	
Ethylbenzene	ND	ug/L	0.2	ug/L	
m,p-Xylene	ND	ug/L	0.2	ug/L	
o-Xylene	ND	ug/L	0.2	ug/L	

ND

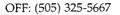
ug/L

ND - Not Detected at Limit of Quantitation

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

TOTAL

Approved By: Date:





ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

11-Jun-97

Company: PNM Gas Services

COC No.:

5560

Address:

603 W. Elm

Sample No.:

14783

City, State: Farmington, NM 87401

Job No.:

2-1000

Project Name: **Project Location:** PNM Gas Services - Cozzens B1

9705291530; MW-6

29-May-97 Time: Date:

15:30

Sampled by: Analyzed by:

DC

Date:

4-Jun-97

Sample Matrix:

Liquid

MG/MS

Parameter		Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene		ND	ug/L	0.2	ug/L
Toluene		4.8	ug/L	0.2	ug/L
Ethylbenzene		4.6	ug/L	0.2	ug/L
m,p-Xylene		31.4	ug/L	0.2	ug/L
o-Xylene		8.7	ug/L	0.2	ug/L
	TOTAL	49.5	ug/L		

ND - Not Detected at Limit of Quantitation

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

Approved By:

P.O. BOX 2606 • FARMINGTON, NM 87499

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LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 3-Jun-97

Internal QC No.:

0527-STD

Surrogate QC No.:

0528-STD

Reference Standard QC No.: 0529/30-QC

Method Blank

		Unit of
Parameter	Result	Measure
Average Amount of All Analytes In Blank	< 0.2	ppb

Calibration Check

Guidration Check						
	Unit of	True	Analyzed			
Parameter	Measure	Value	Value	% Diff	Limit	
Benzene	ppb	20.0	21.2	6	15%	
Toluene	ppb	20.0	21.9	10	15%	
Ethylbenzene	ppb	20.0	22.3	11	15%	
m,p-Xylene	ppb	40.0	42.5	6	15%	
o-Xylene	ppb	20.0	22.0	10	15%	

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	%RSD	Limit
Benzene	92	92	(39-150)	0	20%
Toluene	96	96	(46-148)	0	20%
Ethylbenzene	96	97	(32-160)	0	20%
m,p-Xylene	91	92	(35-145)	0	20%
o-Xylene	97	98	(35-145)	1	20%

Surrogate Recoveries

	S1 Percent	S2 Percent		S1 Percent	S2 Percent
Laboratory Identification	Recovered	Recovered	Laboratory Identification	Recovered	Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
14782-5560	97	<u> </u>			
14780-5560	97				
	+				
				ak.	(ve)
				6/11/97	6/11/57

S1: Flourobenzene



LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 4-Jun-97

Internal QC No.:

0527-STD

Surrogate QC No.:

0528-STD

Reference Standard QC No.: 0529/30-QC

Method Blank

		Unit of
Parameter	Result	Measure
Average Amount of All Analytes In Blank	<0.2	ppb

Calibration Check

	Unit of	True	Analyzed		
Parameter	Measure	Value	Value	% Diff	Limit
Benzene	ppb	20.0	21.4	7	15%
Toluene	ppb	20.0	22.2	11	15%
Ethylbenzene	ppb	20.0	22.7	14	15%
m,p-Xylene	ppb	40.0	43.2	8	15%
o-Xylene	ppb	20.0	22.5	12	15%

Matrix Spike

	1- Percent	2 - Percent			
Parameter	Recovered	Recovered	Limit	%RSD	Limit
Benzene	90	81	(39-150)	3	20%
Toluene	99	94	(46-148)	3	20%
Ethylbenzene	100	96	(32-160)	3	20%
m,p-Xylene	95	91	(35-145)	3	20%
o-Xylene	98	94	(35-145)	3	20%

Surrogate Recoveries

Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered	Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
14778-5560	96				
14779-5560	98				
14781-5560	96				
14783-5560	98				
				dir	m
				16/11/97	6/11/97

S1: Flourobenzene

CHAIN OF CU ODY RECORD

9290

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Date:

ON SITE

TECHNOLOGIES, LTD.

11. 1- 1 C

657 W. Maple • P. O. Box 2606 • Farmington NM 87499 LAB: (505) 325-5667 • FAX: (505) 325-6256

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Specifipment: Client Signature Must Accompany Request) Date Date Date		ished by:		Date/Time	<u>ac</u>	eceived by:		Date/Time
by: Client Signature <u>Must</u> Accompany Request)	Method	of Shipment:			<u>a</u>			
(Client Signature <u>Must</u> Accompany Request)	Authoriz	ed by:						Results to be sent to both parties.
	7	` \	(Client Signature Must Accompany Requ	uest)				



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

5-Sep-97

Company: PNM Gas Services

COC No.:

5680

Address:

603 W. Elm

Sample No.:

ug/L ug/L ug/L ug/L

15998

City, State: Farmington, NM 87401

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzens B1

Project Location:

9708281330; MW-1 MG/MS

Date: Date:

28-Aug-97 Time:

3-Sep-97

13:30

Sampled by: Analyzed by: Sample Matrix:

Parameter

DC Liquid

Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
ND	ug/L	0.2	ug/L

Benzene		ND	ug/L	0.2
Toluene		ND	ug/L	0.2
Ethylbenzene		ND	ug/L	0.2
m,p-Xylene		0.2	ug/L	0.2
o-Xylene		ND	ug/L	0.2
	TOTAL	0.2	ug/L	

ND - Not Detected at Limit of Quantitation

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

- Thank

Approved By:



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

5-Sep-97

Company: PNM Gas Services

COC No.:

5680

Sample No.:

15999

Address:

603 W. Elm

City, State: Farmington, NM 87401

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzens B1

Project Location:

9708281400; MW-2

Date:

28-Aug-97 Time:

14:00

Sampled by: Analyzed by:

Sample Matrix:

DC Liquid

MG/MS

Date:

3-Sep-97

	Results as	Unit of	Limit of	Unit of
Parameter	Received	Measure	Quantitation	Measure
Benzene	0.2	ug/L	0.2	ug/L
Toluene	0.4	ug/L	0.2	ug/L
Ethylbenzene	1.5	ug/L	0.2	ug/L
m,p-Xylene	2.0	ug/L	0.2	ug/L
o-Xylene	0.3	ug/L	0.2	ug/L

5/29

ND 4.5

4.5

30.7

48.3

ND - Not Detected at Limit of Quantitation

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

Approved By:

The Reserve to the State State State



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

5-Sep-97

Company: PNM Gas Services

COC No.:

Job No.:

5680

Address:

16000

City, State: Farmington, NM 87401

603 W. Elm

Sample No.:

2-1000

PNM Gas Services - Cozzens B1

Project Name: **Project Location:**

9708281430; MW-3

Date: Date:

28-Aug-97 Time:

3-Sep-97

14:30

5/29

42 26 211

Sampled by: Analyzed by: Sample Matrix:

DC Liquid

MG/MS

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	96	ug/L	2	ug/L
Toluene	22	ug/L	2	ug/L
Ethylbenzene	208	ug/L	2	ug/L
m,p-Xylene	1233	ug/L	2	ug/L
o-Xylene	6	ug/L	2	ug/L

1565

1906 5 2191

ND - Not Detected at Limit of Quantitation

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

TOTAL

Approved By:



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

5-Sep-97

Company: PNM Gas Services

COC No.:

5680

Sample No.:

16001

Address: City, State: Farmington, NM 87401

603 W. Elm

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzens B1

Project Location:

9708281500; MW-4

MG/MS

Date:

28-Aug-97 Time:

15:00

Sampled by: Analyzed by: Sample Matrix:

DC

Liquid

Date:

3-Sep-97

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	ND	ug/L	0.2	ug/L
Toluene	ND	ug/L	0.2	ug/L
Ethylbenzene	ND	ug/L	0.2	ug/L
m,p-Xylene	0.4	ug/L	0.2	ug/L
o-Xylene	ND	ug/L	0.2	ug/L

0.4

ug/L

ND ND 1.7 NO 1.7

ND

ND - Not Detected at Limit of Quantitation

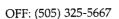
Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

TOTAL

Approved By:

P.O. BOX 2606 • FARMINGTON, NM 87499

- Franking a Panomah Justina a mara





ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

5-Sep-97

Company: PNM Gas Services

COC No.:

5680

16002

Address:

603 W. Elm

Sample No.:

City, State: Farmington, NM 87401

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzens B1

Project Location:

9708281530; MW-6

Date:

28-Aug-97 Time:

15:30

Sampled by: Analyzed by:

DC

Date:

3-Sep-97

Sample Matrix:

Liquid

MG/MS

		Results as	Unit of	Limit of	Unit of
Parameter		Received	Measure	Quantitation	Measure
Benzene		ND	ug/L	0.2	ug/L
Toluene		0.2	ug/L	0.2	ug/L
Ethylbenzene		1.7	ug/L	0.2	ug/L
m,p-Xylene		3.0	ug/L	0.2	ug/L
o-Xylene		0.2	ug/L	0.2	ug/L
	TOTAL	5.1	ug/L		

ND - Not Detected at Limit of Quantitation

Dob of Mrs-5

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



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

5-Sep-97

Company: PNM Gas Services

COC No.:

5680

Address:

603 W. Elm

Sample No.:

16003

City, State: Farmington, NM 87401

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzens B1

Project Location:

9708281600; MW-5

Date:

28-Aug-97 Time:

16:00

Sampled by: Analyzed by:

DC

Date:

3-Sep-97

Sample Matrix:

Liquid

MG/MS

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene	0.5	ug/L	0.2	ug/L
Toluene	0.2	ug/L	0.2	ug/L
Ethylbenzene	ND	ug/L	0.2	ug/L
m,p-Xylene	ND	ug/L	0.2	ug/L
o-Xylene	ND	ug/L	0.2	ug/L
TOTAL	0.7	ug/L		

ND - Not Detected at Limit of Quantitation

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

Approved By:

P.O. BOX 2606 • FARMINGTON, NM 87499

CONTRACTOR BUILDING TO CONTRACTOR CONTRACTOR



LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 3-Sep-97

Internal QC No.: 0527-STD

Surrogate QC No.: 0528-STD

Reference Standard QC No.: 0529/30-QC

Method Blank

		Unit of
Parameter	Result	Measure
Average Amount of All Analytes In Blank	< 0.2	ppb

Calibration Check

Parameter	Unit of Measure	True Value	Analyzed Value	RPD	Limit
Benzene	ppb	20.0	19.4	3	15%
Toluene	ppb	20.0	20.3	1	15%
Ethylbenzene	ppb	20.0	20.4	2	15%
m,p-Xylene	ppb	40.0	39.6	1	15%
o-Xylene	ppb	20.0	20.4	2	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	93	88	(39-150)	5	20%
Toluene	97	92	(46-148)	5	20%
Ethylbenzene	97	93	(32-160)	4	20%
m,p-Xylene	94	90	(35-145)	5	20%
o-Xylene	96	92	(35-145)	4	20%

Surrogate Recoveries

Surrogate Recoveries							
	S1 Percent	S2 Percent		S1 Percent	S2 Percent		
Laboratory Identification	Recovered	Recovered	Laboratory Identification	Recovered	Recovered		
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)			
15998-5680	97						
15999-5680	95						
16000-5680	96						
16001-5680	97						
16002-5680	95	·		dire	(pe)		
16003-5680	97			4/5/97	9/5/97		

\$1: Flourobenzene

ÒN SITE

CHAIN OF CUSTODY RECORD

Date: 8/28/97

680

657 W. Maple • P. O. Box 2606 • Farmington NM 87499 LAB: (505) 325-5667 • FAX: (505) 325-6256

TECHNOLOGIES, LTD.

15798-5680 Date/Time & NEAT > 1600 Results to be sent LAB ID -7m9 to both parties. (6 ovo 15999. 16003 10091 Special Instructions: Date/Time Alverado Square, Mail Stop 0408 Telefax No. ANALYSIS REQUESTED 10 Working Days Albuquerque, NM 87158 PNM Gas Services Maureen Gannon 505-848-2974 24-48 Hours DEST PETA Mailing Address City, State, Zip Telephone No. Company Name Received by: Received by: Received by: Rush от етлиевя Containers એ 2 ТЯОЧЭЯ Number of MATRIX PRES. K Hzo HCA Date Time 6.25-17 Dept. 324-3763 HECO maurun Harron / Mare Esteriars TIME Date/Time Date/Time Date__ 8-22-97 DATE 6 28 93 (Client Signature Must Accompany Request) Job No. City, State, Zip Farmington, NM 87401 PNM Gas Services 603 W. Elm Street **Denver Bearden** SAMPLE IDENTIFICATION Muita 5 Michely mm: 3 (M) 970028 1430 MJ3 Relinquished by: MK MAKEL 9706 201400 MUZ 9708281330 MW1 Cozzens B1 9-2828 1500 9708281530 9300 26 1600 Purchase Order No.: Method of Shipment: Sampling Location: Company Address Relinquished by: Name Relinquished by: Authorized by: _ INVOICE Sampler:

1.

Y MAITAMINIATED SAMORE

Distribution: White - On Site Yellow - LAB Pink - Sampler Goldenrod - Client





LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

22-Oct-97

Company: PNM Gas Services

COC No.:

5848

Address:

603 W. Elm

Sample No.:

16598

City, State: Farmington, NM 87401

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzens B1

Project Location:

9710151030; Seep Pond MG/MS

Date:

15-Oct-97 Time:

10:30

Sampled by: Analyzed by:

DC

Date:

20-Oct-97

Sample Matrix:

Liquid

		Results as	Unit of	Limit of	Unit of
Parameter		Received	Measure	Quantitation	Measure
Benzene		972	ug/L	10	ug/L
Toluene		461	ug/L	10	ug/L
Ethylbenzene		233	ug/L	10	ug/L
m,p-Xylene		1592	ug/L	10	ug/L
o-Xylene		443	ug/L	10	ug/L
	TOTAL	3700	นย/ไ		

ND - Not Detected at Limit of Quantitation

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

Approved By:



LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 20-Oct-97

Internal QC No.:

0527-STD

Surrogate QC No.:

0528-STD

Reference Standard QC No.: 0529/30-QC

Method Blank

		Unit of
Parameter	Result	Measure
Average Amount of All Analytes In Blank	< 0.2	ppb

Calibration Check

	Unit of	True	Analyzed		
Parameter	Measure	Value	Value	RPD	Limit
Benzene	ppb	20.0	18.5	8	15%
Toluene	ppb	20.0	19.2	4	15%
Ethylbenzene	ppb	20.0	19.2	4	15%
m,p-Xylene	ppb	40.0	37.2	7	15%
o-Xylene	ppb	20.0	19.1	5	15%

Matrix Spike

munix		Ţ.			
Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	91	90	(39-150)	0	20%
Toluene	94	93	(46-148)	1	20%
Ethylbenzene	95	93	(32-160)	2	20%
m,p-Xylene	92	91	(35-145)	1	20%
o-Xylene	94	94	(35-145)	0	20%

Surrogate Recoveries

	S1	S2		S1	<i>\$2</i>
Laboratory Identification	Percent Recovered	Percent Recovered	Laboratory Identification	Percent Recovered	Percent Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
16598-5848	95				
				- Jam	(pe)
				10/22/97	10/12/97

S1: Flourobenzene



ON SITE

TECHNOLOGIES, LTD.

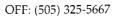
Date: 10 - 15-97

5848

657 W. Maple • P. O. Box 2606 • Farmington NM 87499 LAB: (505) 325-5667 • FAX: (505) 325-6256

o,

(330 14598-584B Results to be sent to both parties. LABID Date/Time (4/15) Special Instructions: Date/Time Telefax No. Alverado Square, Mail Stop 0408 ANALYSIS REQUESTED Title 10 Working Days Albuquerque, NM 87158 PNM Gas Services Maureen Gannon 505-848-2974 24-48 Hours Goldenrod - Client 10708 Nava Mailing Address City, State, Zip Telephone No. Company 1330 Received by: Received by: Name Pink - Sampler Received by: × Rush REPORT OT STJUSER Containers N Number of MATRIX PRES. HZO HCL Distribution: White - On Site Yellow - LAB Date 10 15 97 Date/Time 101591 Dept. 324-3763 Date/Time TIME SAMPLE Sample: Maureu Haran Mark Steiliawas DATE Cozzens BL Mutul Har with (Client Signature Must Accompany Request) Job No. City, State, Zip Farmington, NM 87401 SEEP POND **PNM Gas Services** 603 W. Elm Street Denver Bearden SAMPLE IDENTIFICATION Relinquished by: Mille Light Last (Ere Margan 910151030 Method of Shipment: Purchase Order No.: Sampling Location: Company Address Authorized by: ___ Relinquished by: Relinquished by: Name INVOICE SEND





ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

3-Feb-98

Company: PNM Gas Services

COC No.:

7169

Address:

Sample No.:

17415

City, State: Farmington, NM 87401

603 W. Elm

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzen B-1

Project Location:

9801271015; MW-1 MS/RD

Date:

27-Jan-98 Time:

10:15

Sampled by: Analyzed by:

DC

Date:

30-Jan-98

Sample Matrix:

Liquid

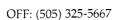
		Results as	Unit of	Limit of	Unit of
Parameter		Received	Measure	Quantitation	Measure
Benzene		ND	ug/L	0.5	ug/L
Toluene		ND	ug/L	0.5	ug/L
Ethylbenzene		ND	ug/L	0.5	ug/L
m,p-Xylene		ND	ug/L	1.0	ug/L
o-Xylene		ND	ug/L	0.5	ug/L
	TOTAL	ND	110/1		

ND - Not Detected at Limit of Quantitation

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

Approved By:

Date:





ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

3-Feb-98

Company: PNM Gas Services

COC No.:

7169

Sample No.:

17416

Address:

603 W. Elm

City, State: Farmington, NM 87401

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzen B-1

Project Location:

9801271030; MW-2 MS/RD

Date:

27-Jan-98 Time:

10:30

Sampled by: Analyzed by: Sample Matrix:

DC

Liquid

Date:

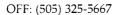
30-Jan-98

	Results as	Unit of	Limit of	Unit of	
Parameter	Received	Measure	Quantitation	Measure	
Benzene	0.7	ug/L	0.5	ug/L	
Toluene	4.8	ug/L	0.5	ug/L	
Ethylbenzene	1.9	ug/L	0.5	ug/L	
m,p-Xylene	3.0	ug/L_	1.0	ug/L	
o-Xylene	0.6	ug/L	0.5	ug/L	

10.9

ND - Not Detected at Limit of Quantitation

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





ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

3-Feb-98

Company: PNM Gas Services

COC No.:

7169

Sample No.:

17417

Address:

603 W. Elm

Job No.:

City, State: Farmington, NM 87401

2-1000

Project Name:

PNM Gas Services - Cozzen B-1

Project Location:

9801271045; MW-7 MS/RD

Date:

27-Jan-98 Time:

10:45

Sampled by: Analyzed by:

DC

Date:

30-Jan-98

Sample Matrix:

Liquid

		Results as	Unit of	Limit of	Unit of
Parameter		Received	Measure	Quantitation	Measure
Benzene		ND	ug/L	0.5	ug/L
Toluene		ND	ug/L	0.5	ug/L
Ethylbenzene		ND	ug/L	0.5	ug/L
m,p-Xylene		ND	ug/L	1.0	ug/L
o-Xylene		ND	ug/L	0.5	ug/L
	TOTAL	ND	ug/L	1	

ND - Not Detected at Limit of Quantitation

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

Approved By:



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

3-Feb-98

Company: PNM Gas Services

COC No.:

7169

Sample No.:

17418

Address: City, State: Farmington, NM 87401

603 W. Elm

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzen B-1

Project Location:

9801271100; MW-8

27-Jan-98 Time:

11:00

Sampled by: Analyzed by:

DC

Date: Date:

30-Jan-98

Sample Matrix:

Liquid

MS/RD

Parameter		Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene		ND	ug/L	0.5	ug/L
Toluene		0.7	ug/L	0.5	ug/L
Ethylbenzene		0.7	ug/L	0.5	ug/L
m,p-Xylene		ND	ug/L	1.0	ug/L
o-Xylene		ND	ug/L	0.5	ug/L
	TOTAL	1.4	ug/L		

ND - Not Detected at Limit of Quantitation

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



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn:

Denver Bearden

Date:

3-Feb-98

Company: PNM Gas Services

COC No.:

7169

Address:

603 W. Elm

Sample No.:

17419

City, State: Farmington, NM 87401

Job No.:

2-1000

Project Name:

PNM Gas Services - Cozzen B-1

Project Location:

9801271115; MW-9

Date:

27-Jan-98 Time:

11:15

Sampled by: Analyzed by:

DC

Date:

30-Jan-98

Sample Matrix:

Liquid

MS/RD

Parameter		Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Benzene		ND	ug/L	0.5	ug/L
Toluene		0.8	ug/L	0.5	ug/L
Ethylbenzene		0.7	ug/L	0.5	ug/L
m,p-Xylene		ND	ug/L	1.0	ug/L
o-Xylene		ND	ug/L	0.5	ug/L
	TOTAL	1.5	ug/L		

ND - Not Detected at Limit of Quantitation

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

LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 30-Jan-98

Internal QC No.:

0559-STD

Surrogate QC No.:

0567-STD

Reference Standard QC No.: 0529/30-QC

Method Blank

		Unit of
Parameter	Result	Measure
Average Amount of All Analytes In Blank	< 0.2	ррь

Calibration Check

	Unit of	True	Analyzed		
Parameter	Measure	Value	Value	RPD	Limit
Benzene	ppb	20.0	21.7	8	15%
Toluene	ppb	20.0	21.9	9	15%
Ethylbenzene	ppb	20.0	22.9	13	15%
m,p-Xylene	ppb	40.0	42.8	7	15%
o-Xylene	ppb	20.0	22.1	10	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	108	95	(39-150)	12	20%
Toluene	106	97	(46-148)	9	20%
Ethylbenzene	110	100	(32-160)	9	20%
m,p-Xylene	103	94	(35-145)	8	20%
o-Xylene	108	99	(35-145)	8	20%

Surrogate Recoveries

Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered	Laboratory Identification	\$1 Percent Recovered	S2 Percent Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
17415-7169	100				
17416-7169	99				
17417-7169	100				
17418-7169	100				
17419-7169	100			-41K	(ne)
				2/3/98	2/3/98

\$1: Flourobenzene



CHAIN OF CUSTODY RECORD

612 E. Murphy Dr. • P.O. Box 2606 • Farmington, NM 87499 LAB: (505) 325-5667 • FAX: (505) 325-6256

Durchage Order No :	14 1	-	_			
	JOD NG.			Wa	Maureen Gannon	921
Name Denver Bearden		ТЯ			PNM Gas Services	
Company PNM Gas Services	Dept. 324-3763	04	ורד	Mailing Address Alv	Alverado Square, Mail Stop 0408	Il Stop 0408
M > H Address 603 W. Elm Street		38	City, State,	Zip	Albuquerque, NM 87158	158
City, State, Zip Farmington, NM 87401			Telephone No.		505-848-2974	Telefax No.
Sampling Location: C		1c	B		ANALYSIS REQUESTED	JESTED
		er c	iəu!			
Sampler: M.S. R.D.		dmuk	istno			
SAMPLE IDENTIFICATION	SAMPLE N DATE TIME	MATRIX PRES.		<u> </u>	\ \ \	LABID
1-MM S101 CE 1088	1 84/17/1	A20 144	X		+	191K-51KI
G801711030 MM-2			× ん			71 1 +tl
271045			X K			- FIATI
980127 1100 MW-8			X ر			1-81tl
1-MM SIII CC 10 86	Ž	7	X Z			1 -61461 1
			+			
Relinquished by:	Date/Time // 7	43 11 50 RE	Received by:			Date/Time 1/4/58 1152
Relinquished by:			Received by:			
Relinquished by:	Date/Time	Re	Received by:		÷	Date/Time
Method of Shipment: Aard Jalure of		R	Rush	24-48 Hours	10 Working Day	10 Working Days Special Instructions:
Miles nt Signatur	Date 1/27/58			, ···		Results to be sent to both parties.
	Distribution: White - On Site	Yellow - LAB Pink	Pink - Sampler Golden	Goldenrod - Client		