

3R - 338

REPORTS

DATE:

2000



Environmental Services
187 County Road 4980
Bloomfield, New Mexico 87413
(505) 632-4409
(505) 632-4405

September 18, 2000

RECEIVED

SEP 28 2000

Mr. William Olson
Hydrologist
Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

RE: 2000 SAN JUAN BASIN ANNUAL GROUNDWATER REPORT

Dear Mr. Olson:

Enclosed for your review is the 2000 San Juan Basin Annual Groundwater Report prepared by Williams for work conducted by Public Service New Mexico (PNM). The report presents monitoring data for twenty-two sites having petroleum hydrocarbon impacted groundwater, which resulted from the past use of unlined surface impoundments. The reporting period begins in the second quarter of 1999 and ends in the second quarter of 2000. The sites included in the report are listed in Table 1, attached.

The natural gas production and gathering facilities at which the impacted groundwater sites are located were formerly owned and operated by PNM. The facilities became assets of Williams upon purchase of the Gas Company of New Mexico (GCNM) from PNM. PNM had retained certain environmental liabilities associated with the assets including obligations for unlined surface impoundment impacts to soil and groundwater. Subsequent negotiations between PNM and Williams resulted in an agreement whereby Williams would complete further investigations and remediation at sites not previously closed by PNM. The agreement also states that Williams will complete work at sites where PNM has identified soil or groundwater contamination or otherwise initiated remedial actions.

During PNM's tenure, management of sites with hydrocarbon impacted groundwater was directed by their Ground Water Management Plan. This plan specified general procedures for site investigation, remediation, and reporting. The plan called for PNM to prepare an annual report summarizing the results of groundwater monitoring at each site. The report was to be submitted each April 1st and include data collected during the second, third and fourth quarters of the previous year and data from the first quarter of the reporting year.

Anticipating termination of their environmental obligations, PNM requested on March 4, 2000 an extension for submittal of the 2000 annual report so that they could also include data collected during the second quarter of 2000. Although PNM completed collection of monitoring data for the second quarter of 2000, they did not prepare and submit an annual report. Williams has prepared the 2000 annual report in an effort to maintain project continuity and to provide closure to PNM's management of the project.

As with most projects of this magnitude, first hand knowledge is paramount to prepare a thorough summary of site activities. Given the limited firsthand knowledge of project workings, Williams is in the unenviable position of trying to glean information from only the paper record. As such, the 2000 report simply transmits the PNM-collected data to OCD in what we hope is a concise and useable format. Initially, it was Williams' goal to provide more comprehensive reporting on the status of each site, however, preliminary evaluation of the data soon revealed that accurate interpretations could not be formulated in a timely manner.

Williams is continuing to review and evaluate the data provided by PNM to determine the best course for future actions at the sites. Preliminary review has revealed several high priority needs. For the majority of sites, accurate surveys are needed along with development of site base maps and a comprehensive database to facilitate project management. Moreover, sites with free product should be evaluated to determine the efficacy of free-product recovery and whether or not all source contributions are known.

Organization of the report follows the same format used by PNM. Data for each site is contained in a separate tabbed section labeled with the site name. Each section contains a data summary table listing each monitoring well. The absence or presence of free product is indicated on the table and the concentrations of the BTEX compounds for the reporting period are noted. Following the data summary table are the actual laboratory analytical reports. In an effort to make this document more manageable, the laboratory quality control reports have not been included. These reports will of course remain a part of the project file and be made available for review upon request. In addition to the analytical data, a contour map depicting the elevation of the water table as interpolated from water-level data is also included. When possible, hydrographs illustrating the seasonal fluctuations in water-table elevations are presented.



RECEIVED

SEP 20 2000

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Annual Groundwater Report 2000

San Juan Basin, New Mexico
Lined Surface Impoundments

Site Summary Report

Site Name: Patterson A Com 1A

Reporting Period: 2nd Qtr 1999 - 2nd Qtr 2000

Location: Unit G, Sec 2, Twn 31N, Rng 12W

Canyon: Farmington Glade

Operator: Burlington

Vulnerable Class: original

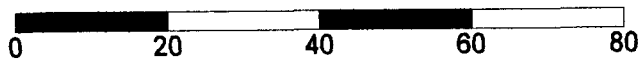
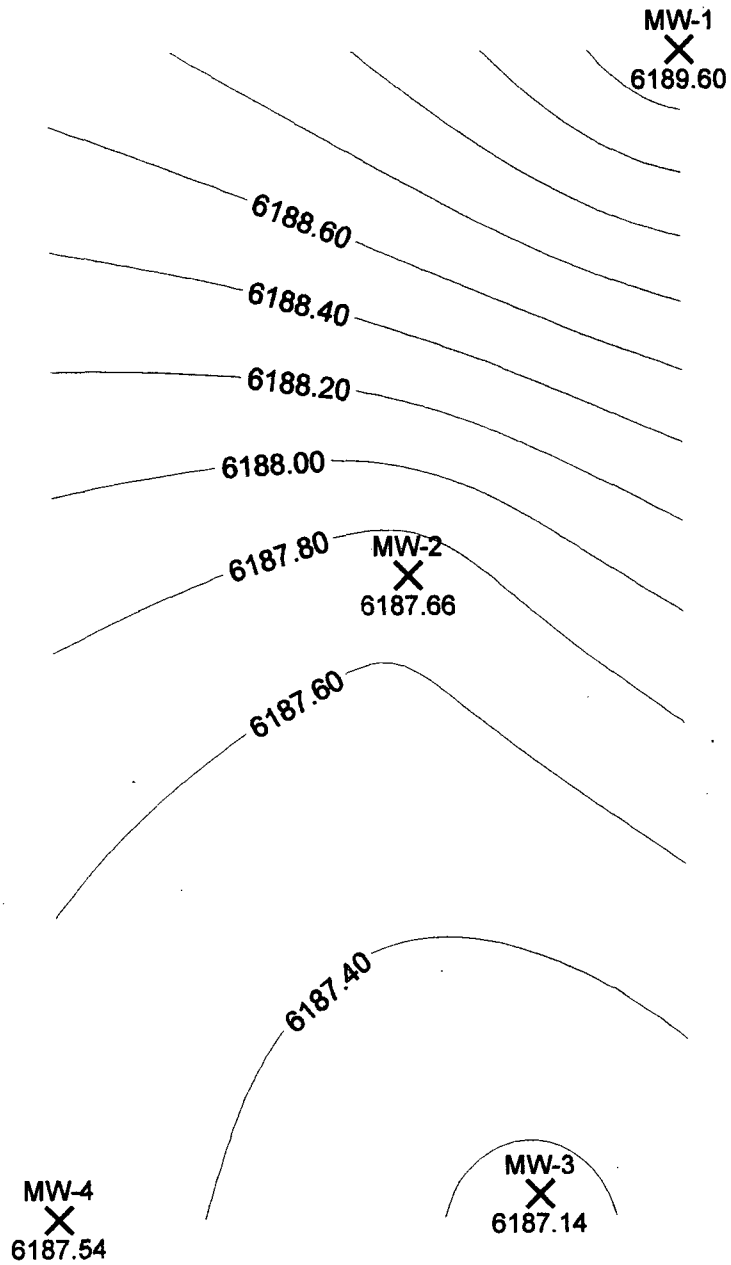
OCD Ranking: 40

Lead Agency: NMOCD

Status Narrative

This site has seven monitoring wells, with five quarters of ground water monitoring completed to date. Recent activities include the installation of three additional monitoring wells (MW-5, -6, and -7). Contaminant levels in monitoring wells MW-2, MW-3, and MW-7 remain above WQCC standards. Depth to groundwater is approximately 70 feet.

**Patterson A Com 1A
Potentiometric Surface Map
(November 22, 1999)**



Patterson A Com #1A
Summary of Groundwater Analytical Data
(Q2/1999 - Q2/2000)

Well ID	Sample ID	Sample Date	Free Product		Analytes (values in ug/L)			
			Present Yes/No	Thickness (ft.)	benzene	toluene	ethylbenzene	total xylenes
MW-1	9906020927	2-Jun-99	N		99	8	<0.5	9
	9908060900	6-Aug-99	N		31	1	<0.5	2
	9911221044	22-Nov-99	N		14	1	<0.5	<1.5
	0003150811	15-Mar-00	N		4	<0.5	<0.5	<1.5
	0006080728	8-Jun-00	N		<0.5	<0.5	<0.5	<1.5
MW-2	9906021003	2-Jun-99	N		3900	6300	230	2580
	9908060930	6-Aug-99	N		1800	3300	97	1860
	9911221119	22-Nov-99	N		4600	4600	54	1530
	0003150839	15-Mar-00	N		2200	2400	22	1040
	0006080749	8-Jun-00	N		2000	3700	170	2970
MW-3	9906021044	2-Jun-99	N		380	64	<0.5	9.1
	9908061000	6-Aug-99	N		190	16	<0.5	3.4
	9911221150	22-Nov-99	N		40	30	<0.5	3.9
	0003150912	15-Mar-00	N		33	27	<0.5	3.7
	0006080812	8-Jun-00	N		26	24	<0.5	3.8
MW-4	9906021120	2-Jun-99	N		<0.5	<0.5	<0.5	<1.5
	9908061030	6-Aug-99	N		<0.5	<0.5	<0.5	<1.5
	9911221222	22-Nov-99	N		<0.5	<0.5	<0.5	<1.5
	0003150940	15-Mar-00	N		<0.5	<0.5	<0.5	<1.5
	NS	8-Jun-00	N					
MW-5	0003151008	15-Mar-00	N		<0.5	<0.5	<0.5	<1.5
	0006080831	8-Jun-00	N		<0.5	<0.5	<0.5	<1.5
MW-6	0003151050	15-Mar-00	N		<0.5	<0.5	<0.5	<1.5
	0006080911	8-Jun-00	N		<0.5	<0.5	<0.5	<1.5
MW-7	0006080931	8-Jun-00	N		8.3	4.8	<0.5	<1.5

ND = analyte not detected above method detection limit

NS = well not sampled for specified analytes

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 10-Aug-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson "A" Com 1A
Work Order:	9906004	Client Sample ID:	9906020927; MW-1
Lab ID:	9906004-01A	Matrix:	AQUEOUS
Project:	Patterson "A" Com 1A	Collection Date:	06/02/1999 9:27:00 AM
		COC Record:	7051

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B				Analyst: DC
Benzene	99	0.5		µg/L	1	06/08/1999
Toluene	7.6	0.5		µg/L	1	06/08/1999
Ethylbenzene	ND	0.5		µg/L	1	06/08/1999
m,p-Xylene	6.6	1		µg/L	1	06/08/1999
o-Xylene	2.3	0.5		µg/L	1	06/08/1999

Qualifiers:

- PQL - Practical Quantitation Limit
- ND - Not Detected at Practical Quantitation Limit
- J - Analyte detected below Practical Quantitation Limit
- B - Analyte detected in the associated Method Blank

- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- Surrogate - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 10-Aug-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson "A" Com 1A
Work Order:	9906004	Client Sample ID:	9906021003; MW-2
Lab ID:	9906004-02A	Matrix:	AQUEOUS
Project:	Patterson "A" Com 1A	Collection Date:	06/02/1999 10:03:00 AM
		COC Record:	7051

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B				Analyst: DC
Benzene	3900	25		µg/L	50	06/15/1999
Toluene	6300	25		µg/L	50	06/15/1999
Ethylbenzene	230	5		µg/L	10	06/08/1999
m,p-Xylene	2100	10		µg/L	10	06/08/1999
o-Xylene	480	5		µg/L	10	06/08/1999

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 10-Aug-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson "A" Com 1A
Work Order:	9906004.	Client Sample ID:	9906021044; MW-3
Lab ID:	9906004-03A	Matrix:	AQUEOUS
Project:	Patterson "A" Com 1A	Collection Date:	06/02/1999 10:44:00 AM
		COC Record:	7051

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DC		
Benzene	380	2.5		µg/L	5	06/15/1999
Toluene	64	0.5		µg/L	1	06/08/1999
Ethylbenzene	ND	0.5		µg/L	1	06/08/1999
m,p-Xylene	5	1		µg/L	1	06/08/1999
o-Xylene	4.1	0.5		µg/L	1	06/08/1999

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 10-Aug-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson "A" Com 1A
Work Order:	9906004	Client Sample ID:	9906021120; MW-4
Lab ID:	9906004-04A	Matrix:	AQUEOUS
Project:	Patterson "A" Com 1A	Collection Date:	06/02/1999 11:20:00 AM
		COC Record:	7051

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DC		
Benzene	ND	0.5		µg/L	1	06/08/1999
Toluene	ND	0.5		µg/L	1	06/08/1999
Ethylbenzene	ND	0.5		µg/L	1	06/08/1999
m,p-Xylene	ND	1		µg/L	1	06/08/1999
o-Xylene	ND	0.5		µg/L	1	06/08/1999

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 25-Aug-99

Client: PNM - Public Service Company of NM
Work Order: 9908015
Lab ID: 9908015-01A **Matrix:** AQUEOUS
Project: Patterson A Com 1A

Client Sample Info: Patterson A Com 1A
Client Sample ID: 9908060900; MW-1
Collection Date: 08/06/1999 9:00:00 AM
COC Record: 7823

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DC		
Benzene	31	0.5		µg/L	1	08/12/1999
Toluene	1.2	0.5		µg/L	1	08/12/1999
Ethylbenzene	ND	0.5		µg/L	1	08/12/1999
m,p-Xylene	1.1	1		µg/L	1	08/12/1999
o-Xylene	1	0.5		µg/L	1	08/12/1999

Qualifiers:
PQL - Practical Quantitation Limit
ND - Not Detected at Practical Quantitation Limit
J - Analyte detected below Practical Quantitation Limit
B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 25-Aug-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	9908015	Client Sample ID:	9908060930; MW-2
Lab ID:	9908015-02A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	08/06/1999 9:30:00 AM
		COC Record:	7823

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DC		
Benzene	1800	10		µg/L	20	08/12/1999
Toluene	3300	10		µg/L	20	08/12/1999
Ethylbenzene	97	10		µg/L	20	08/12/1999
m,p-Xylene	1500	20		µg/L	20	08/12/1999
o-Xylene	360	10		µg/L	20	08/12/1999

Qualifiers:

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

ND - Not Detected at Practical Quantitation Limit

R - RPD outside accepted recovery limits

J - Analyte detected below Practical Quantitation Limit

E - Value above quantitation range

B - Analyte detected in the associated Method Blank

Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

.. TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 25-Aug-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	9908015	Client Sample ID:	9908061000; MW-3
Lab ID:	9908015-03A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	08/06/1999 10:00:00 AM
		COC Record:	7823

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DC		
Benzene	190	0.5		µg/L	1	08/12/1999
Toluene	16	0.5		µg/L	1	08/12/1999
Ethylbenzene	ND	0.5		µg/L	1	08/12/1999
m,p-Xylene	2.1	1		µg/L	1	08/12/1999
o-Xylene	1.3	0.5		µg/L	1	08/12/1999

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 25-Aug-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	9908015	Client Sample ID:	9908061030; MW-4
Lab ID:	9908015-04A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	08/06/1999 10:30:00 AM
		COC Record:	7823

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DC		
Benzene	ND	0.5		µg/L	1	08/12/1999
Toluene	ND	0.5		µg/L	1	08/12/1999
Ethylbenzene	ND	0.5		µg/L	1	08/12/1999
m,p-Xylene	ND	1		µg/L	1	08/12/1999
o-Xylene	ND	0.5		µg/L	1	08/12/1999

Qualifiers:

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

ND - Not Detected at Practical Quantitation Limit

R - RPD outside accepted recovery limits

J - Analyte detected below Practical Quantitation Limit

E - Value above quantitation range

B - Analyte detected in the associated Method Blank

Surr - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 30-Nov-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	9911035	Client Sample ID:	9911221044; MW-1
Lab ID:	9911035-01A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	11/22/99 10:44:00 AM
		COC Record:	7661

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	14	0.5		µg/L	1	11/24/99
Toluene	0.9	0.5		µg/L	1	11/24/99
Ethylbenzene	ND	0.5		µg/L	1	11/24/99
m,p-Xylene	ND	1		µg/L	1	11/24/99
o-Xylene	ND	0.5		µg/L	1	11/24/99

Qualifiers:

PQL - Practical Quantitation Limit
ND - Not Detected at Practical Quantitation Limit
J - Analyte detected below Practical Quantitation Limit
B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 30-Nov-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	9911035	Client Sample ID:	9911221119; MW-2
Lab ID:	9911035-02A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	11/22/99 11:19:00 AM
		COC Record:	7661

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B				Analyst: DM
Benzene	4600	25		µg/L	50	11/24/99
Toluene	4600	25		µg/L	50	11/24/99
Ethylbenzene	54	10		µg/L	20	11/23/99
m,p-Xylene	1200	20		µg/L	20	11/23/99
o-Xylene	330	10		µg/L	20	11/23/99

Qualifiers:

PQL - Practical Quantitation Limit
ND - Not Detected at Practical Quantitation Limit
J - Analyte detected below Practical Quantitation Limit
B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
Sur: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 30-Nov-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	9911035	Client Sample ID:	9911221150; MW-3
Lab ID:	9911035-03A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	11/22/99 11:50:00 AM
		COC Record:	7661

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B				Analyst: DM
Benzene	40	0.5		µg/L	1	11/24/99
Toluene	30	0.5		µg/L	1	11/24/99
Ethylbenzene	ND	0.5		µg/L	1	11/24/99
m,p-Xylene	2.5	1		µg/L	1	11/24/99
o-Xylene	1.4	0.5		µg/L	1	11/24/99

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 30-Nov-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	9911035	Client Sample ID:	9911221222; MW-4
Lab ID:	9911035-04A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	11/22/99 12:22:00 PM
		COC Record:	7661

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	ND	0.5		µg/L	1	11/24/99
Toluene	ND	0.5		µg/L	1	11/24/99
Ethylbenzene	ND	0.5		µg/L	1	11/24/99
m,p-Xylene	ND	1		µg/L	1	11/24/99
o-Xylene	ND	0.5		µg/L	1	11/24/99

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Sum: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

1 of 1

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 27-Mar-00

Client: PNM - Public Service Company of NM
Work Order: 0003028
Lab ID: 0003028-01A **Matrix:** AQUEOUS
Project: Patterson A Com 1A

Client Sample Info: Patterson A Com 1A
Client Sample ID: 0003150811; MW-1
Collection Date: 3/15/2000 8:11:00 AM
COC Record: 8503

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
-----------	--------	-----	------	-------	----	---------------

AROMATIC VOLATILES BY GC/PID

SW8021B

Analyst: DM

Benzene	3.7	0.5		µg/L	1	3/22/2000
Toluene	ND	0.5		µg/L	1	3/22/2000
Ethylbenzene	ND	0.5		µg/L	1	3/22/2000
m,p-Xylene	ND	1		µg/L	1	3/22/2000
o-Xylene	ND	0.5		µg/L	1	3/22/2000

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

1 of 8

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 27-Mar-00

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	0003028	Client Sample ID:	0003150839; MW-2
Lab ID:	0003028-02A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	3/15/2000 8:39:00 AM
		COC Record:	8503

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B				Analyst: DM
Benzene	2200	25		µg/L	50	3/22/2000
Toluene	2400	25		µg/L	50	3/22/2000
Ethylbenzene	22	5		µg/L	10	3/23/2000
m,p-Xylene	820	10		µg/L	10	3/23/2000
o-Xylene	220	5		µg/L	10	3/23/2000

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 27-Mar-00

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	0003028	Client Sample ID:	0003150912; MW-3
Lab ID:	0003028-03A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	3/15/2000 9:12:00 AM
		COC Record:	8503

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	33	0.5		µg/L	1	3/22/2000
Toluene	27	0.5		µg/L	1	3/22/2000
Ethylbenzene	ND	0.5		µg/L	1	3/22/2000
m,p-Xylene	2.2	1		µg/L	1	3/22/2000
o-Xylene	1.5	0.5		µg/L	1	3/22/2000

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

3 of 8

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 27-Mar-00

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	0003028	Client Sample ID:	0003150940; MW-4
Lab ID:	0003028-04A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	3/15/2000 9:40:00 AM
		COC Record:	8503

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B				Analyst: DM
Benzene	ND	0.5		µg/L	1	3/22/2000
Toluene	ND	0.5		µg/L	1	3/22/2000
Ethylbenzene	ND	0.5		µg/L	1	3/22/2000
m,p-Xylene	ND	1		µg/L	1	3/22/2000
o-Xylene	ND	0.5		µg/L	1	3/22/2000

Qualifiers:

PQL - Practical Quantitation Limit
ND - Not Detected at Practical Quantitation Limit
J - Analyte detected below Practical Quantitation Limit
B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
Surr: - Surrogate

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 27-Mar-00

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	0003028	Client Sample ID:	0003151008; MW-5
Lab ID:	0003028-05A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	3/15/2000 10:08:00 AM
		COC Record:	8503

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	ND	0.5		µg/L	1	3/22/2000
Toluene	ND	0.5		µg/L	1	3/22/2000
Ethylbenzene	ND	0.5		µg/L	1	3/22/2000
m,p-Xylene	ND	1		µg/L	1	3/22/2000
o-Xylene	ND	0.5		µg/L	1	3/22/2000

Qualifiers:

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

ND - Not Detected at Practical Quantitation Limit

R - RPD outside accepted recovery limits

J - Analyte detected below Practical Quantitation Limit

E - Value above quantitation range

B - Analyte detected in the associated Method Blank

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 27-Mar-00

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	0003028	Client Sample ID:	0003151050; MW-6
Lab ID:	0003028-06A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	3/15/2000 10:50:00 AM
		COC Record:	8503

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	ND	0.5		µg/L	1	3/22/2000
Toluene	ND	0.5		µg/L	1	3/22/2000
Ethylbenzene	ND	0.5		µg/L	1	3/22/2000
m,p-Xylene	ND	1		µg/L	1	3/22/2000
o-Xylene	ND	0.5		µg/L	1	3/22/2000

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surrogate - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667
FAX: (505) 327-1496



LAB: (505) 325-1556
FAX: (505) 327-1496

ANALYTICAL REPORT

Date: 20-Jun-00

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	0006025	Client Sample ID:	0006080728; MW-1
Lab ID:	0006025-01A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	6/8/2000 7:28:00 AM
		COC Record:	7815

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DC		
Benzene	ND	0.5		µg/L	1	6/16/2000
Toluene	ND	0.5		µg/L	1	6/16/2000
Ethylbenzene	ND	0.5		µg/L	1	6/16/2000
m,p-Xylene	ND	1		µg/L	1	6/16/2000
o-Xylene	ND	0.5		µg/L	1	6/16/2000

Qualifiers:	PQL - Practical Quantitation Limit	S - Spike Recovery outside accepted recovery limits
	ND - Not Detected at Practical Quantitation Limit	R - RPD outside accepted recovery limits
	J - Analyte detected below Practical Quantitation Limit	E - Value above quantitation range
	B - Analyte detected in the associated Method Blank	Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667
FAX: (505) 327-1496



LAB: (505) 325-1556
FAX: (505) 327-1496

ANALYTICAL REPORT

Date: 20-Jun-00

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	0006025	Client Sample ID:	0006080749; MW-2
Lab ID:	0006025-02A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	6/8/2000 7:49:00 AM
		COC Record:	7815

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DC		
Benzene	2000	10		µg/L	20	6/16/2000
Toluene	3700	10		µg/L	20	6/16/2000
Ethylbenzene	170	10		µg/L	20	6/16/2000
m,p-Xylene	2400	20		µg/L	20	6/16/2000
o-Xylene	570	10		µg/L	20	6/16/2000

Qualifiers:

PQL - Practical Quantitation Limit
ND - Not Detected at Practical Quantitation Limit
J - Analyte detected below Practical Quantitation Limit
B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
Sur: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667
FAX: (505) 327-1496



LAB: (505) 325-1556
FAX: (505) 327-1496

ANALYTICAL REPORT

Date: 20-Jun-00

Client: PNM - Public Service Company of NM
Work Order: 0006025
Lab ID: 0006025-03A **Matrix:** AQUEOUS
Project: Patterson A Com 1A

Client Sample Info: Patterson A Com 1A
Client Sample ID: 0006080812; MW-3
Collection Date: 6/8/2000 8:12:00 AM
COC Record: 7815

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DC		
Benzene	26	0.5		µg/L	1	6/16/2000
Toluene	24	0.5		µg/L	1	6/16/2000
Ethylbenzene	ND	0.5		µg/L	1	6/16/2000
m,p-Xylene	2.4	1		µg/L	1	6/16/2000
o-Xylene	1.4	0.5		µg/L	1	6/16/2000

Qualifiers: PQL - Practical Quantitation Limit
ND - Not Detected at Practical Quantitation Limit
J - Analyte detected below Practical Quantitation Limit
B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667
FAX: (505) 327-1496



LAB: (505) 325-1556
FAX: (505) 327-1496

ANALYTICAL REPORT

Date: 20-Jun-00

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	0006025	Client Sample ID:	0006080831; MW-5
Lab ID:	0006025-04A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	6/8/2000 8:31:00 AM
		COC Record:	7815

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DC		
Benzene	ND	0.5		µg/L	1	6/16/2000
Toluene	ND	0.5		µg/L	1	6/16/2000
Ethylbenzene	ND	0.5		µg/L	1	6/16/2000
m,p-Xylene	ND	1		µg/L	1	6/16/2000
o-Xylene	ND	0.5		µg/L	1	6/16/2000

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667
FAX: (505) 327-1496



LAB: (505) 325-1556
FAX: (505) 327-1496

ANALYTICAL REPORT

Date: 20-Jun-00

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	0006025	Client Sample ID:	0006080911; MW-6
Lab ID:	0006025-05A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	6/8/2000 9:11:00 AM
		COC Record:	7815

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
-----------	--------	-----	------	-------	----	---------------

AROMATIC VOLATILES BY GC/PID

SW8021B

Analyst: DC

Benzene	ND	0.5		µg/L	1	6/16/2000
Toluene	ND	0.5		µg/L	1	6/16/2000
Ethylbenzene	ND	0.5		µg/L	1	6/16/2000
m,p-Xylene	ND	1		µg/L	1	6/16/2000
o-Xylene	ND	0.5		µg/L	1	6/16/2000

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667
FAX: (505) 327-1496



LAB: (505) 325-1556
FAX: (505) 327-1496

ANALYTICAL REPORT

Date: 20-Jun-00

Client:	PNM - Public Service Company of NM	Client Sample Info:	Patterson A Com 1A
Work Order:	0006025	Client Sample ID:	0006080931; MW-7
Lab ID:	Q006025-06A	Matrix:	AQUEOUS
Project:	Patterson A Com 1A	Collection Date:	6/8/2000 9:31:00 AM
		COC Record:	7815

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DC		
Benzene	8.3	0.5		µg/L	1	6/16/2000
Toluene	4.8	0.5		µg/L	1	6/16/2000
Ethylbenzene	ND	0.5		µg/L	1	6/16/2000
m,p-Xylene	ND	1		µg/L	1	6/16/2000
o-Xylene	ND	0.5		µg/L	1	6/16/2000

Qualifiers:	PQL - Practical Quantitation Limit	S - Spike Recovery outside accepted recovery limits
	ND - Not Detected at Practical Quantitation Limit	R - RPD outside accepted recovery limits
	J - Analyte detected below Practical Quantitation Limit	E - Value above quantitation range
	B - Analyte detected in the associated Method Blank	Sur: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -