



March 31, 1998

Bill Olson  
Hydrologist, Environmental Bureau  
New Mexico Oil Conservation Division  
2040 South Pacheco  
Santa Fe, NM 87505

RE: Hampton 4M Site  
Free Product and Groundwater Contamination

Dear Bill:

In response to your letter of March 13, 1998, PNM has concerns regarding the effectiveness of any further remedial actions taken by PNM in the face of continuing hydrocarbon sources at this site. We provide a summary of PNM activities, a review of Burlington's reports concerning effectiveness of source removal actions performed by Burlington, and our position regarding free phase hydrocarbons.

#### **I. Summary of PNM Activities**

PNM removed soils associated with the former PNM drip pit shown on Figure 1 in April 1996. Approximately 300 cubic yards of soil were excavated, with a total excavation dimension of approximately 32' x 21' x 12'. Soils remaining at the bottom of the excavation exceeded 1000 ppm as measured by a photoionization detector. Excavation was stopped due to safety concerns related to excessive side-wall sloughing and proximity to the edges of the well pad and onsite equipment. The excavation was backfilled with clean soil; approximately 286 cubic yards of soil excavated from Hampton 4M were landfarmed at the Hampton #2 site.

In December 1996, PNM assessed the vertical extent of contamination remaining beneath the former PNM drip pit. Groundwater was encountered at 28 feet, with approximately 2 inches of free phase hydrocarbons observed in the bailer upon sampling. The initial groundwater sample from this boring (completed as MW-2) contained 3,840 ppb benzene and 20,620 ppb total BTEX. Free product thickness in MW-2 accumulated to 4.41 feet in January 1998 (see Table 1).

PNM has continued to monitor groundwater and recover free product at the Hampton 4M site in accordance with your letter of August 27, 1997. Analytical results for groundwater sampling are reported in Table 1. PNM and Burlington have installed a total of eight monitoring wells and one temporary well at this site. PNM also performed extensive test augering along the wash in November 1997 to determine the downgradient extent of groundwater contamination.

A groundwater potentiometric surface map is provided for January 1998. As shown on the map, groundwater flow is down-canyon towards the northwest. The hydraulic gradient is fairly steep and subparallel to the topographic gradient at approximately 0.10. This is a high energy environment, where contamination will move relatively quickly downgradient from the site of release. This is corroborated by

the extent to which dissolved phase contamination is detected along the wash. The furthest downgradient monitoring well installed to date, MW-7, contains 780 ppb benzene and 5226 ppb total BTEX. Only MW-5 exceeds proposed remediation reference concentrations when comparing downgradient water quality to water quality (e.g., TPW-2 and MW-8) upgradient of PNM equipment.

Hydrographs and contaminant trends with time are provided for each well in Attachment A. The graphs provided for monitoring wells MW-2 and MW-6 do not reflect the presence of free product.

The privately-owned EB well is located cross-gradient (north-northeast). No hydrocarbon constituents above the 0.2 ppb detection limit have been detected in this well.

PNM installed a free product recovery well, MW-6, in November 1997 and initiated free product recovery in January 1998. Initial free product thickness in MW-6 was 4.71 feet on January 12, 1998. Approximately 470 gallons of free product were recovered from MW-6, with an accompanying 2 foot drop in free product thickness, between January 12 and March 18, 1998. Attachment B provides a figure demonstrating free product thickness decrease over the course of free product recovery.

## **II. Burlington Document Review**

PNM reviewed the documents listed below concerning contamination at the Hampton 4M site, submitted to NMOCD by Burlington.

- Burlington Resources, 1998, Hampton 4M - Groundwater Contamination (Status Report); Unit Letter N, Section 13, Township 30N, Range 11W
- Burlington Resources, 1997, Data Summary: Hampton 4M Production Location

Following our review of these documents and our field records for site investigation and remediation data, we are concerned that upgradient source removal is not complete and continuing sources of hydrocarbons will continue to affect downgradient areas, including not only the well pad, but a significant volume of offsite groundwater. Relevant soil and groundwater data collected by both PNM and Burlington is compiled in Table 1. Figure 1 provides a site map of the well pad, equipment, and general vicinity surrounding the site.

- Burlington states they have removed contaminated soils to a depth of 15 feet in the deepest areas of their source area excavation. Sampling of temporary well borings TPW-05 and -07 by Burlington detected significant contamination in the 15 to 16-foot interval. Thus, excavating the source area only to 15 feet at the deepest location leaves documented contamination in place to act as a continuing source to areas downgradient.
- While total BTEX concentrations in MW-4 did decrease as stated by Burlington, concentrations of the most mobile and most toxic constituent, benzene, increased following remediation activities conducted by Burlington. PNM does not agree with the statement that the decrease in total BTEX concentrations in the quarter immediately following excavation points to the success of source removal activities; additional monitoring is needed.
- Monitoring well MW-8 was installed by PNM as an additional well downgradient of the Burlington source area, and upgradient of the former PNM pit. This well detected soil contamination at depths of 14 to 20 feet below grade; groundwater was visibly contaminated by sheen and high dissolved phase contamination.
- Temporary well TPW-02 was installed by Burlington at a location upgradient of the former PNM pit. This temporary monitoring well encountered free product on installation and significant soil contamination at a depth of 25 to 26 feet. Free product is not likely to migrate upgradient in an

environment where both the topographic and groundwater flow gradients are as steep as 0.10. Thus, the contamination at TPW-02 likely originated from upgradient sources.

- If NMOCD considers MW-8 and TPW-02 as upgradient wells for the purposes of establishing remediation reference concentrations for PNM, the upgradient reference concentrations related to contamination caused by PNM are as follows:

Free phase as indicated by TPW-02 (accumulation) and MW-8 (sheen)

Benzene	=	6,410 ppb
Toluene	=	17,301 ppb
Ethylbenzene	=	693 ppb
Xylenes (total)	=	9,397 ppb
BTEX	=	33,801 ppb

Our conclusions relative to the effectiveness of remedial actions undertaken by Burlington are as follows:

- Continuing sources of free phase, sorbed, and dissolved hydrocarbons remain in Burlington source areas and areas immediately downgradient of their facilities.
- These continuing sources will continue to migrate downgradient in the absence of significant containment and/or remediation, beyond the activities documented by Burlington to date.

### III. Free Phase Hydrocarbon Discharge

With regard to the presence and remediation of free product beneath the well pad, this site has had numerous problems associated with equipment operations, including separators throwing fluids and inadequate tankage to handle fluids discharged. Even if PNM has in the past provided dehydration, PNM, by contract with producers, is not responsible for free product. Further, PNM has not provided dehydration at this site since June 30, 1995, when the sale of the gathering system to Williams Field Services (WFS) was concluded. Free product belongs to the producers, even when it is discharged under conditions of system upset. Therefore, free product contamination, regardless of where it occurs, is not the responsibility of PNM, but of the producer.

PNM detected over 4.5 feet of free product in MW-2 and MW-6 in January 1998. In response to NMOCD concerns, PNM installed and continues to operate a single free product recovery well, MW-6. Approximately 450 gallons of free phase were recovered from January 12, 1998 through March 17, 1998. Free product thicknesses as measured in monitoring wells MW-2 and -6 have declined approximately 2 feet since the inception of free product recovery. As the product is not the result of PNM operations prior to June 30, 1995, PNM has placed Burlington and Williams Field Services on notice that PNM will be seeking cost recovery from the responsible party for actions concerning free product and groundwater investigation and remediation activities performed to date at this site.

The presence of significant free phase in the subsurface is also the most likely cause of dissolved phase groundwater contamination detected at this site. Burlington, PNM, and NMOCD are aware of continuing hydrocarbon surface discharges in the area of the hydrocarbon seep along the northwestern area of the well pad. This seep continues to visibly impact soils and dissolved phase groundwater from monitoring wells sampled along the wash. As PNM did not discharge free product at this site, PNM maintains it is not the responsible party for groundwater contamination associated with this ongoing hydrocarbon seep.

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If you have any questions related to the proposed activities for the Hampton 4M site or other project-related activities, please contact me at 505.241.2974.

Sincerely,

*Maureen Gannon*

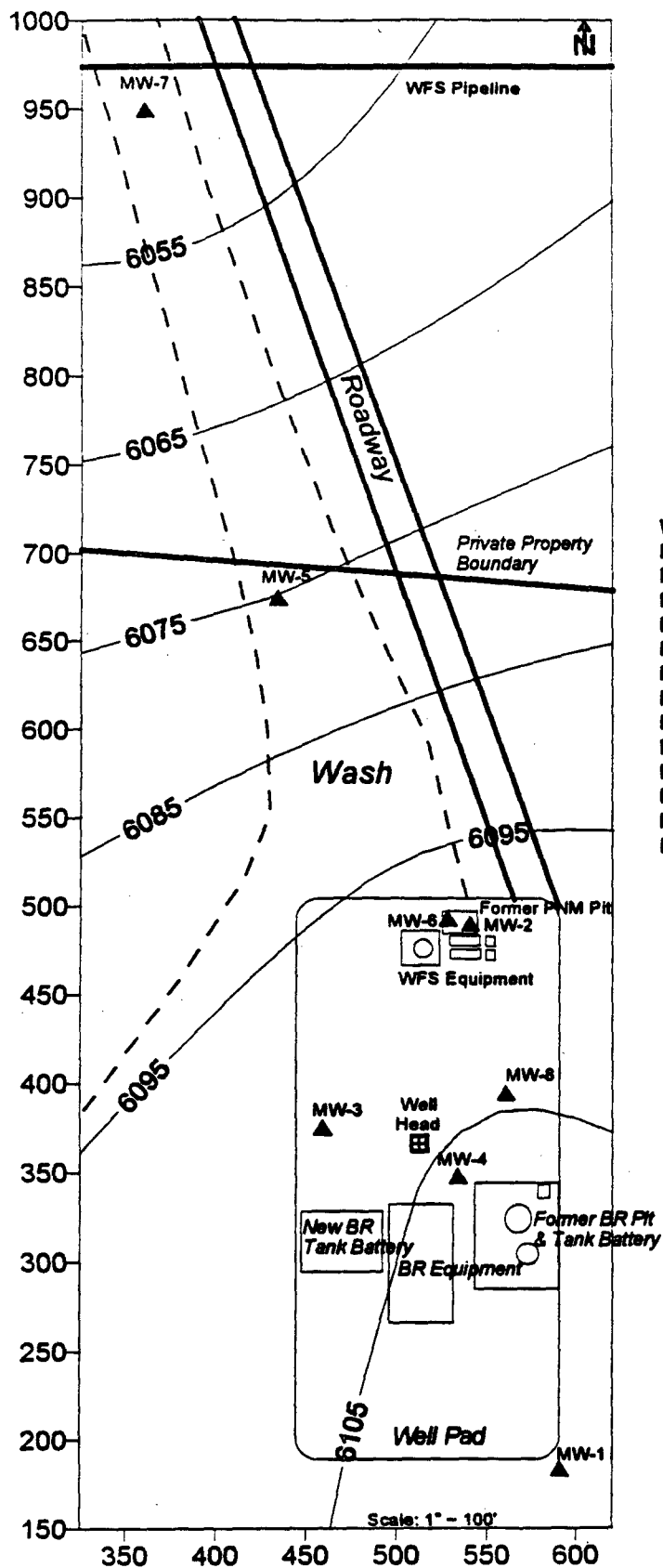
Maureen Gannon  
Project Manager

cc: Roger Anderson, NMOCD  
Ed Haseley, Burlington Resources  
Ingrid Deklau, Williams Field Services  
Colin Adams, PNM  
Denny Foust, NMOCD - Aztec

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Figure 1  
Hampton 4M site map & analytical results (ppb)  
(January, 1998)

△  
EB - Private Well  
(Not to Scale)



Well #	Date	B	T	E	X
MW-1	10/30/97	2.4	2.3	<0.2	1.1
MW-1	1/12/98	4.3	3.3	0.2	1
MW-2	1/12/98	4.41 feet of product			
MW-3	1/31/97	<0.2	<0.2	<0.2	<0.2
MW-3	1/12/98	<0.2	<0.2	<0.2	<0.2
MW-4	1/31/97	811.7	1420.5	31.0	388.1
MW-4	1/12/98	1251	6	81	24
MW-5	10/29/97	5934	10024	709	8188
MW-5	1/12/98	7521	11213	779	8436
MW-6	1/12/98	4.71 feet of product			
MW-7	1/12/98	780	246	258	3942
MW-8	1/12/98	6410	17301	693	9397
EB-Well	11/25/97	<0.2	<0.2	<0.2	<0.2

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Table 1: SUMMARY OF ANALYTICAL RESULTS

GROUNDWATER MONITORING DATA - collected by PNM, except as noted

Well	Date Sampled	GWEL (ft.msl)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Total BTEX (ug/L)	Product Thickness (ft)
MW-1	10/30/97	6110.10	2.4	2.3	<0.2	1.1	5.8	-
Upgradient well	01/12/98	6107.47	4.3	3.3	0.2	1.0	8.8	-
MW-2	01/04/96	6097.88	NA	NA	NA	NA	NA	4.40
PNM drip pit well	12/16/96	NM	3840.0	7960.0	896.0	7920.0	20616.0	NM
	08/27/97	6097.87	NA	NA	NA	NA	NA	4.75
	10/29/97	6098.08	NA	NA	NA	NA	NA	4.58
	01/12/98	6098.10	NA	NA	NA	NA	NA	4.41
MW-3	1/4/96	6101.06	NA	NA	NA	NA	NA	-
Up & cross-gradient to PNM	1/31/97	NM	<0.2	<0.2	<0.2	<0.2	<0.2	-
	5/5/97	NM	NA	NA	NA	NA	NA	-
Burlington	10/29/97	6101.19	<0.2	<0.2	<0.2	<0.2	<0.2	-
	1/12/98	6101.11	<0.2	<0.2	<0.2	<0.2	<0.2	-
MW-4	1/4/96	6106.16	NA	NA	NA	NA	NA	-
Upgradient.PNM; downgradient Burlington	1/31/97		811.7	1420.5	31.0	388.1	2651.3	-
Burlington	5/1/97		1162.0	1797.0	41.0	486.0	3486.0	-
	8/27/97	6106.87	NA	NA	NA	NA	NA	-
	10/29/97	6106.73	NA	NA	NA	NA	NA	-
	1/12/98	6105.88	1251.0	6.0	82.0	24.0	1363.0	-
MW-5	10/29/97		5934.0	10024.0	709.0	8188.0	24855.0	-
Downgradient along wash	1/12/98	6075.09	7521.0	11213.0	779.0	8436.0	27949.0	-
MW-6	11/12/97	6098.08	NA	NA	NA	NA	NA	4.80
PNM drip pit/product recovery	1/12/98	6097.43	NA	NA	NA	NA	NA	4.71
MW-7	1/12/98	6047.12	780.0	246.0	258.0	3942.0	5226.0	-
Downgradient along wash; adj pipeline								
MW-8	1/12/98	6104.71	6410.0	17301.0	693.0	9397.0	33801.0	Sheen
Upgradient PNM; downgradient Burlington								
EB WELL	11/25/97	DTW=68.	<0.2	<0.2	<0.2	<0.2	<0.2	-
Downgradient private well								

Sample	Matrix	Date Sampled	Depth (ft)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	Total BTEX (ppb)	TPH (mg/Kg)
Burlington Temporary Monitoring Well Sampling									
TPW-01	Water	6/5/97		20.0	<1	<1	<1	20.0	NA
	Soil		25-26'	<1	<1	<1	<1	<1	<10
TPW-02	Water	6/5/97	Product	NA	NA	NA	NA	NA	NA
	Soil		25-26'	2000.0	4800.0	14000.0	39000.0	59600.0	600.0
TPW-03	Water	6/5/97	Dry	NA	NA	NA	NA	NA	NA
	Soil	6/5/97	25-26'	<1	<1	<1	<1	<1	25
TPW-04	Water	6/6/97		2000.0	3100.0	57.0	810.0	5967.0	NA
	Soil	6/6/97	20-21.5'	28.0	3.4	78.0	40.0	147.4	52
TPW-05	Water	6/6/97		5800.0	480.0	18000.0	7000.0	29280.0	NA
	Soil	6/6/97	15-16'	4000.0	10000.0	4500.0	28000.0	48500.0	61
TPW-06	Water	6/6/97		1800.0	3400.0	48.0	690.0	5738.0	NA
	Soil	6/6/97	16-16.5'	<1	<1	2.8	4.8	7.6	11
TPW-07	Water	6/6/97		5300.0	18000.0	620.0	9300.0	33220.0	NA
	Soil	6/6/97	15-16'	7000.0	74000.0	20000.0	170000.0	271000.0	250
PNM Test Holes along Wash									
TH-1	Soil	11/11/97	12.7'	NA	NA	NA	NA	NA	PID (ppm) 1412
TH-2	Soil	11/11/97	14.4'	NA	NA	NA	NA	NA	1357
TH-3	Soil	11/11/97	18.5'	NA	NA	NA	NA	NA	0
TH-4	Soil	11/11/97	15'	NA	NA	NA	NA	NA	279
TH-5	Soil	11/11/97	14.5'	NA	NA	NA	NA	NA	1211
TH-6	Soil	11/11/97	16'	NA	NA	NA	NA	NA	0
TH-7 (temporary well)	Water	11/11/97	NA	2171.0	4185.0	190.0	2856.0	170000.0	279
TH-8	Soil	11/12/97	14'	NA	NA	NA	NA	NA	0
Sample from Burlington Excavation									
Groundwater	Water	2/11/98	15'	1800	1700	<25	1420	4920	NA

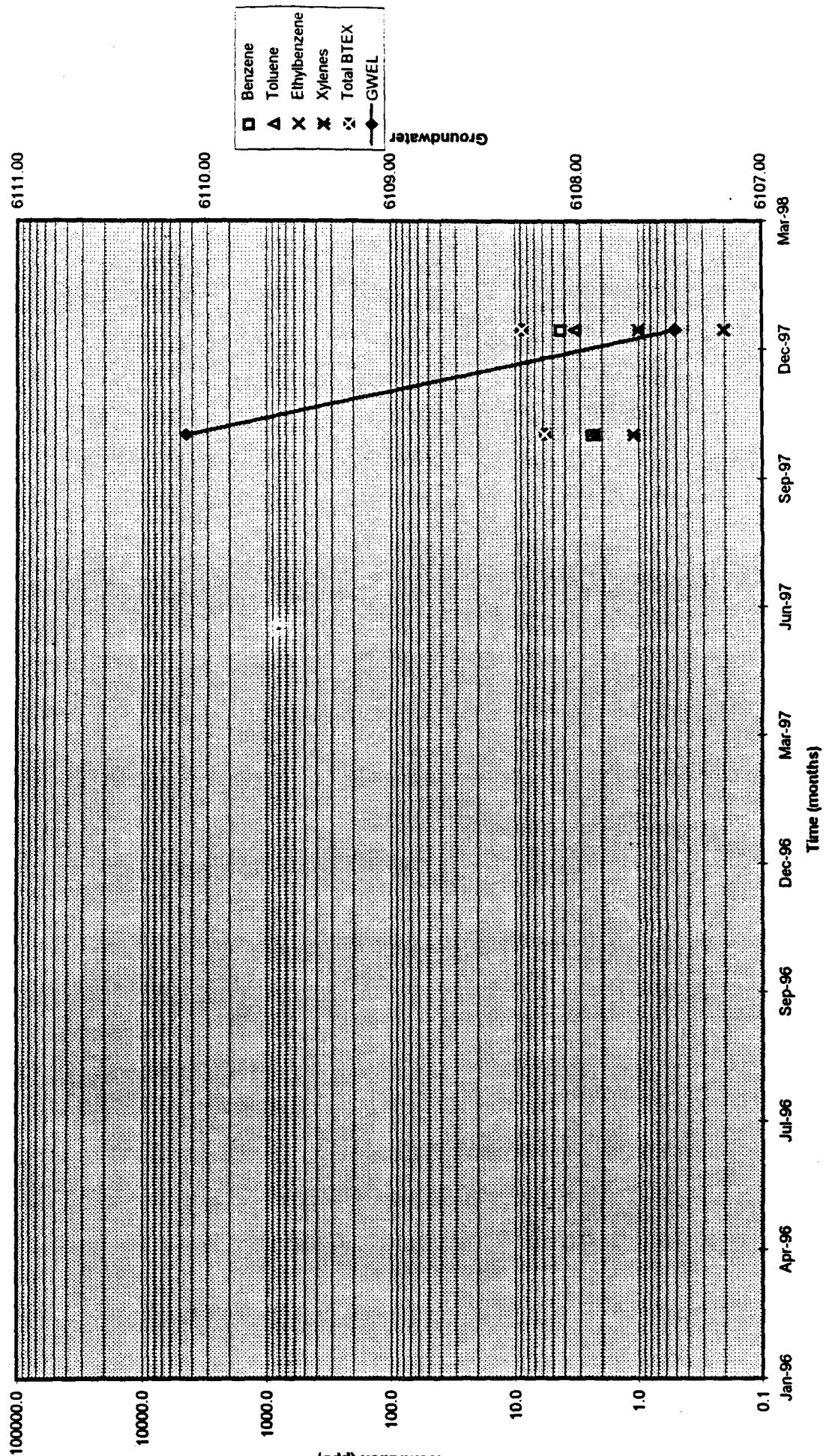
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**Attachment A**

**Hydrographs and Concentrations versus Time**

001359

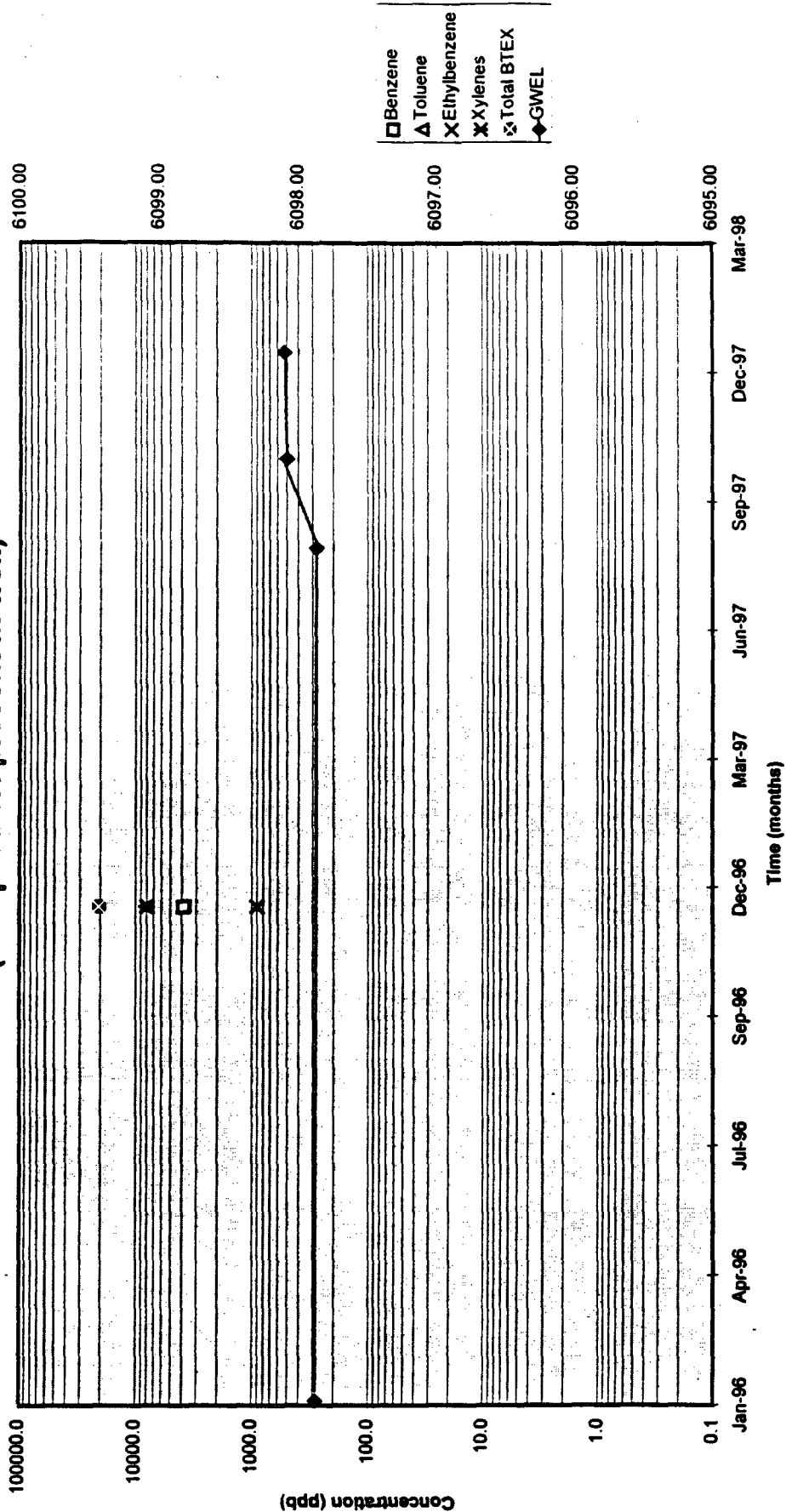
# MW-1: Trends with Time



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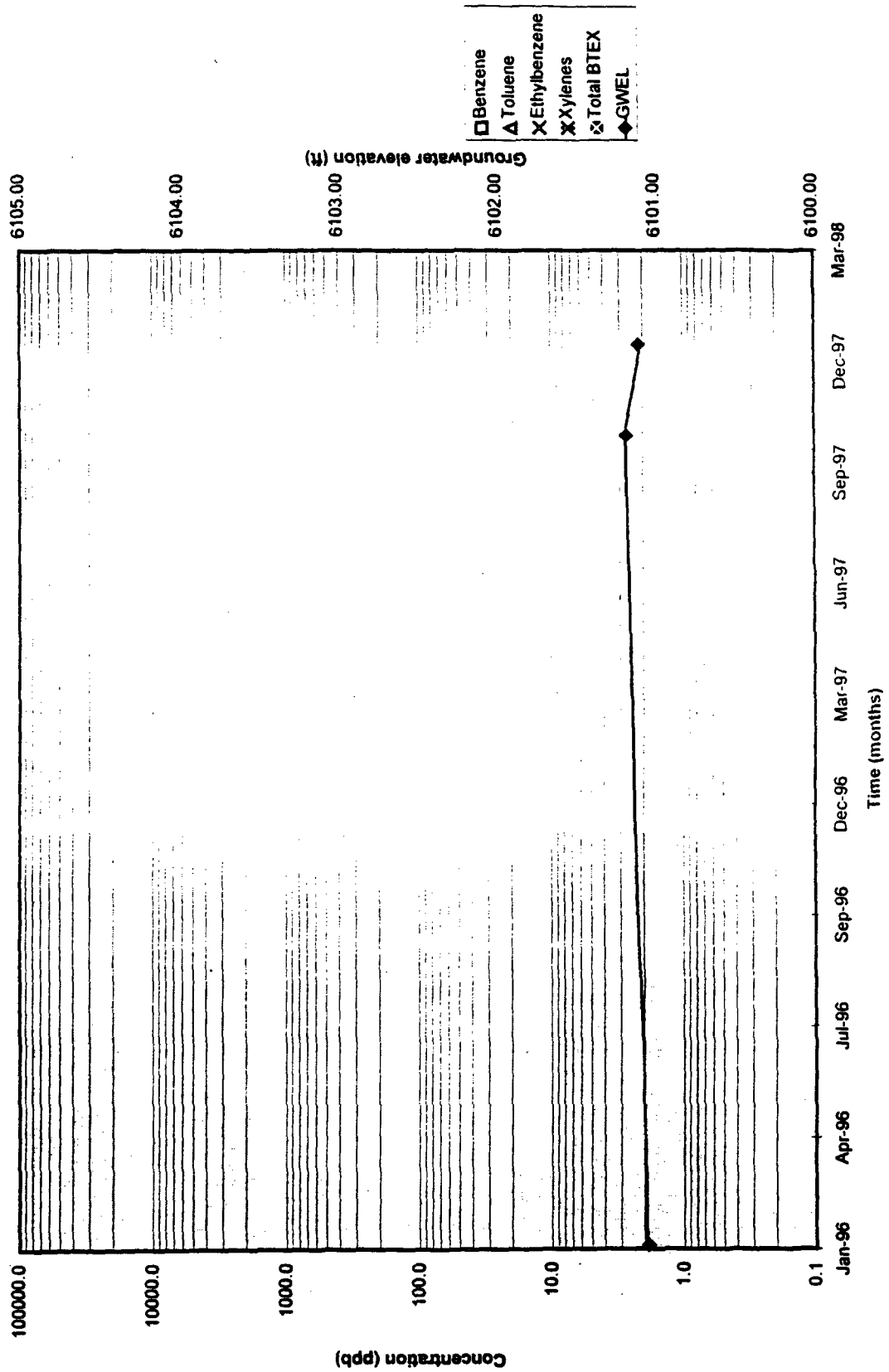


# **MW-2: Trends with Time** (free product present in well)



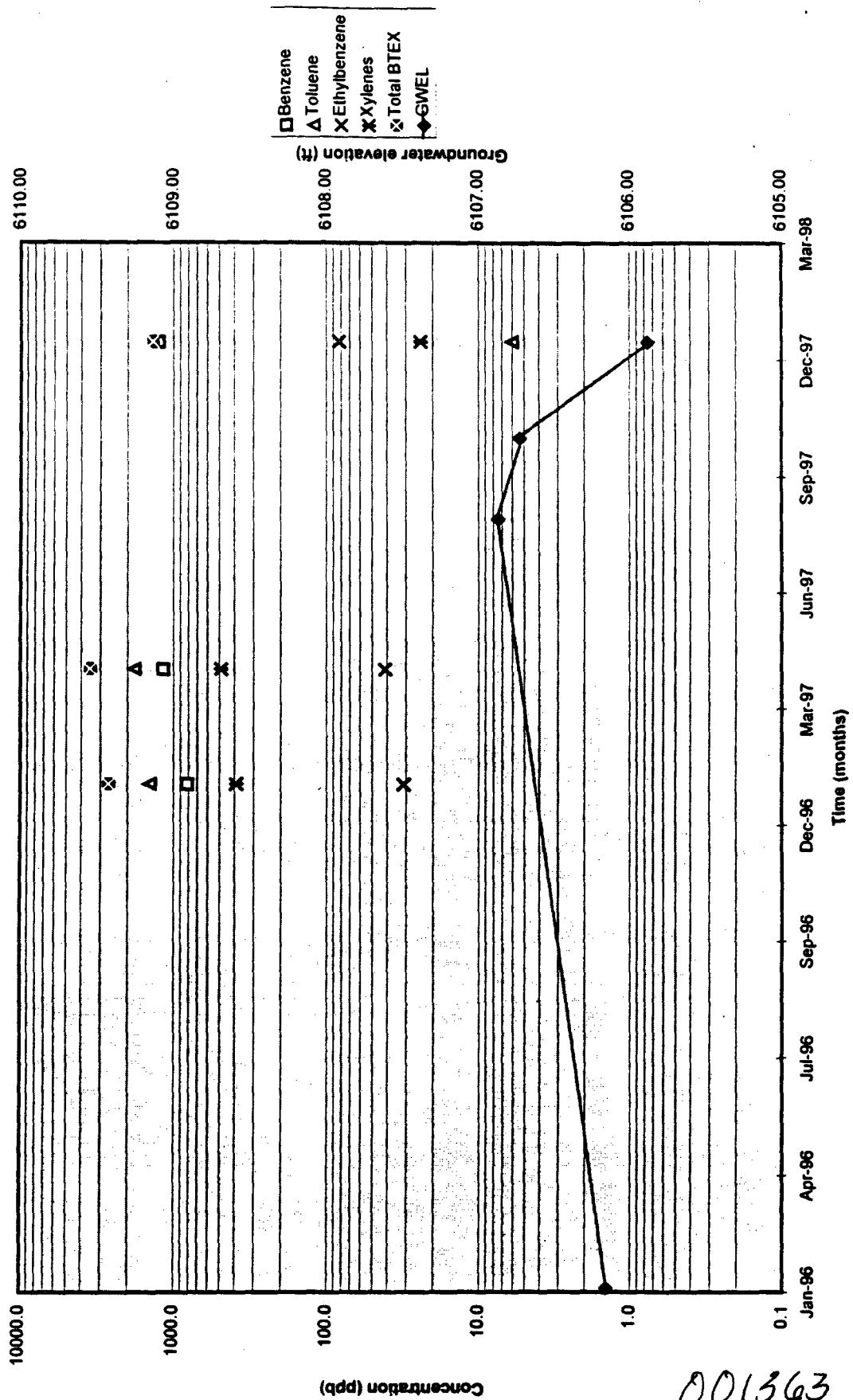
001361

# MW-3: Trends with Time



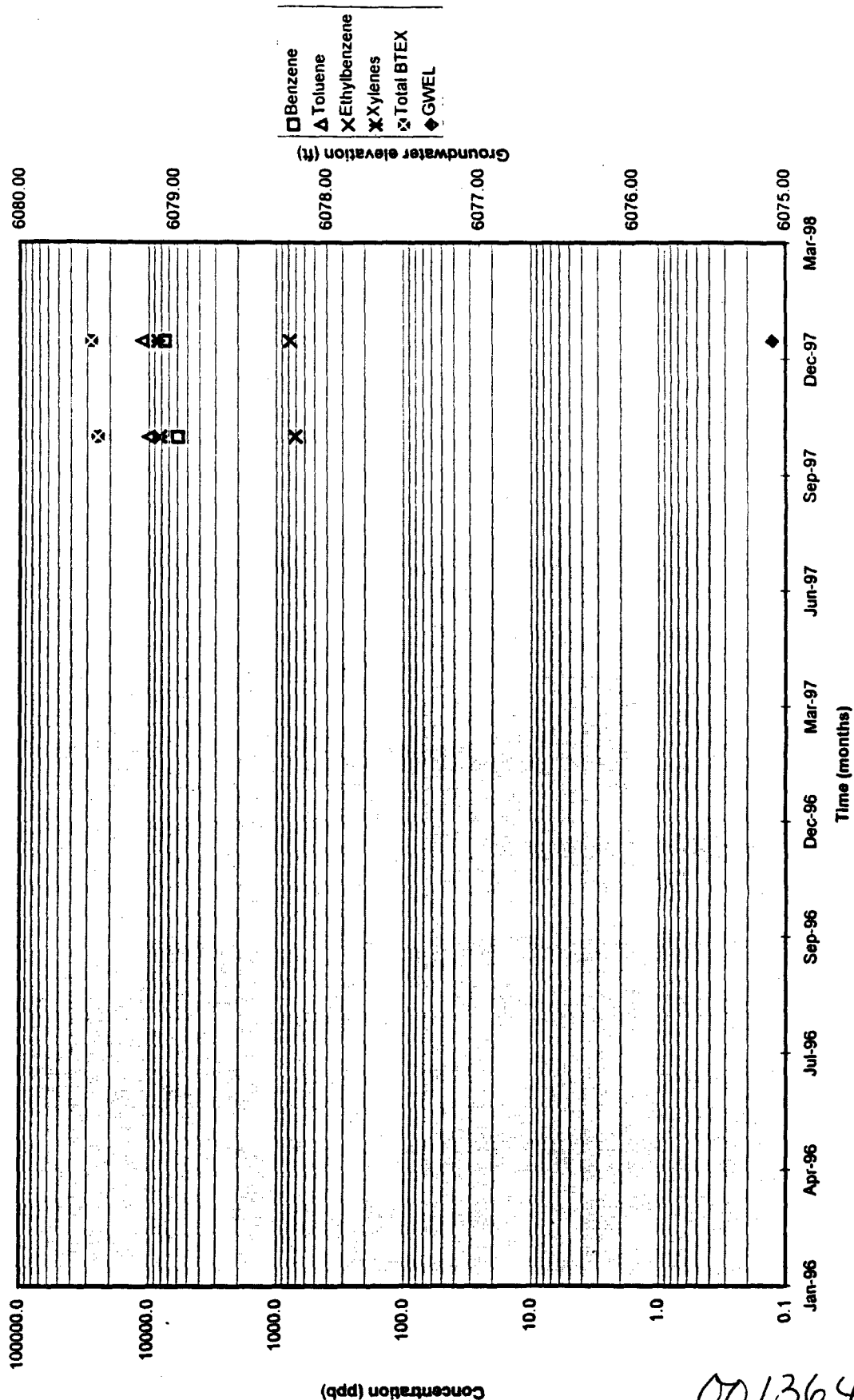
001362

# MW-4: Trends with Time



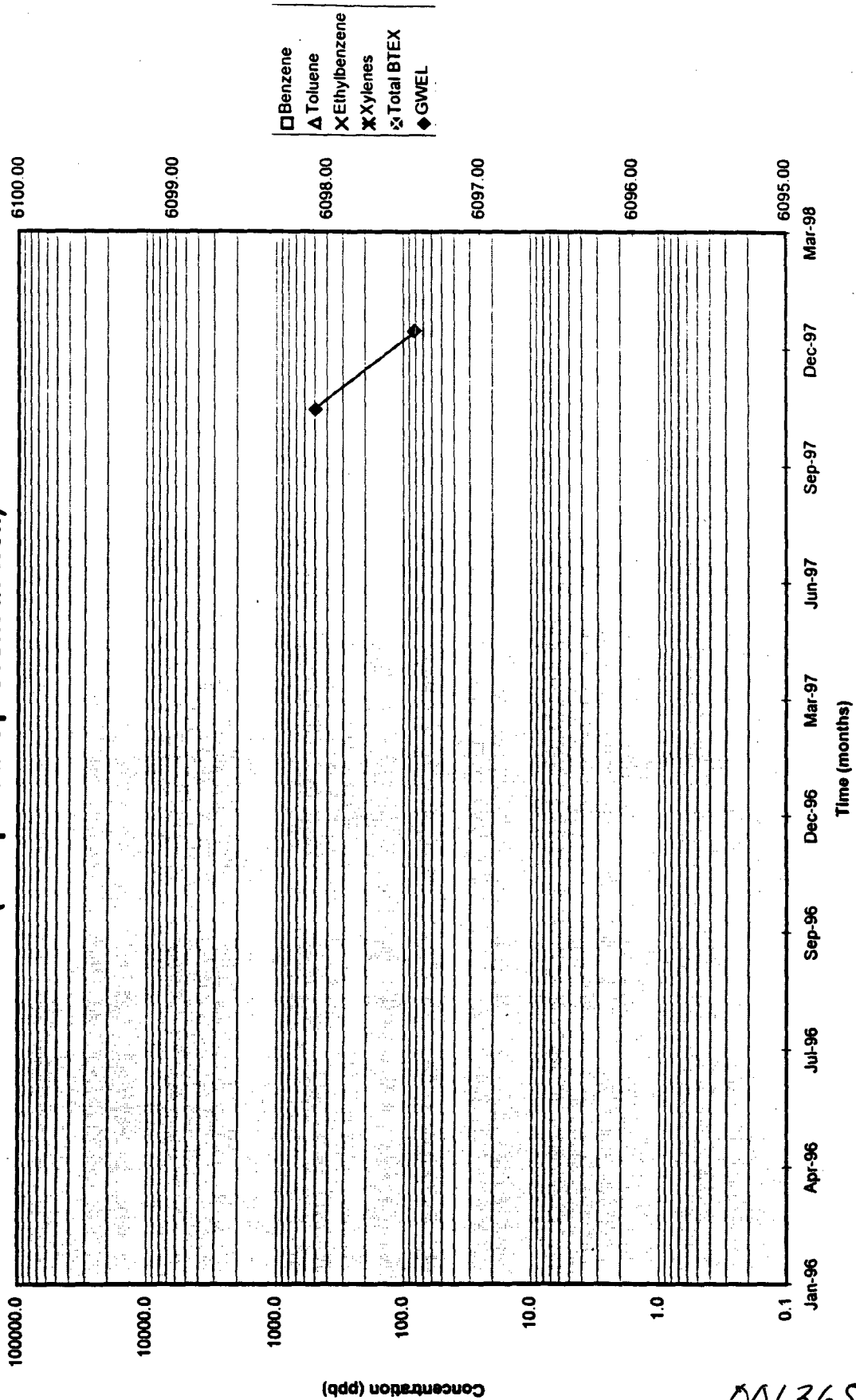
001363

# MW-5: Trends with Time



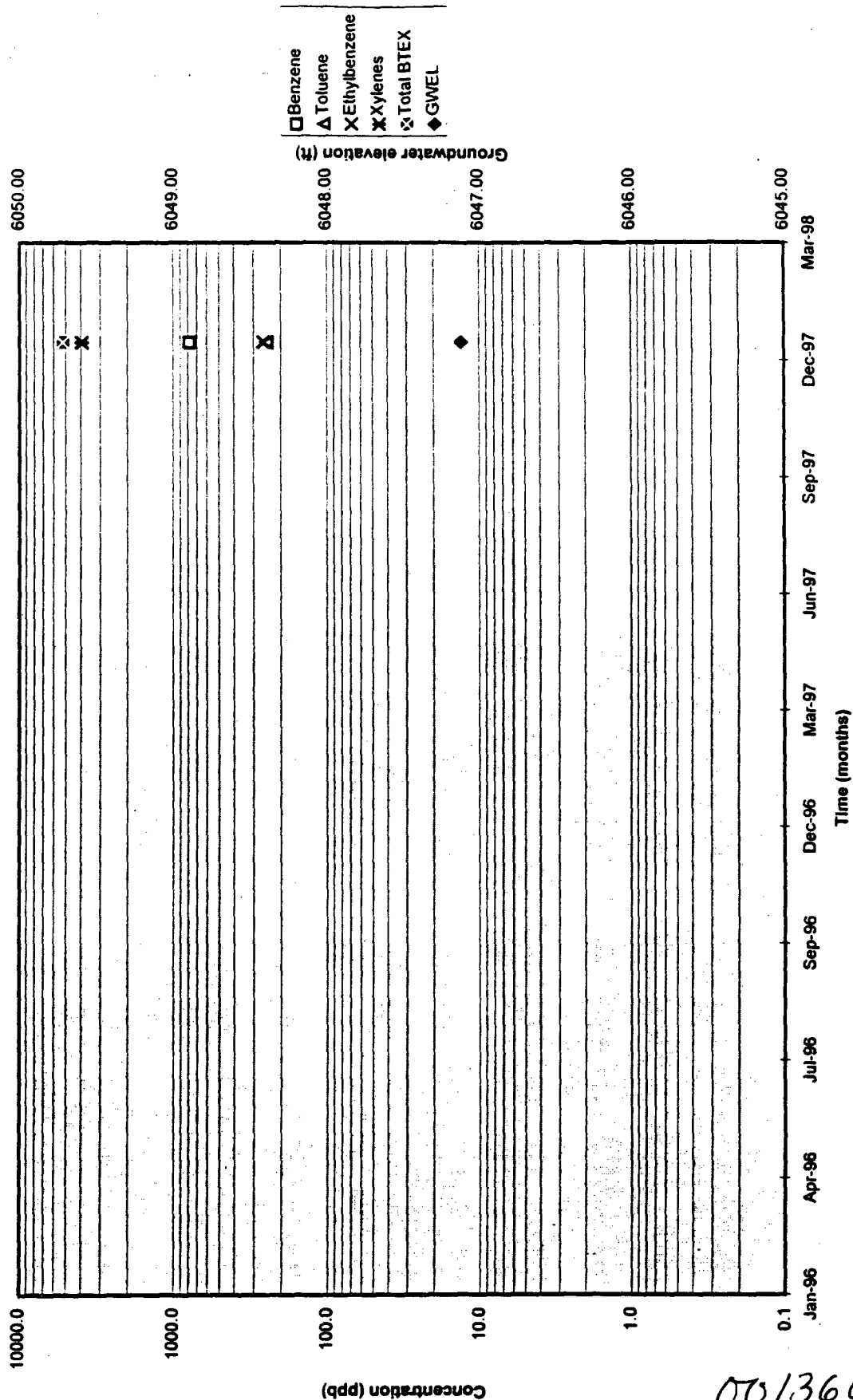
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# **MW-6: Trends with Time** (free product present in well)



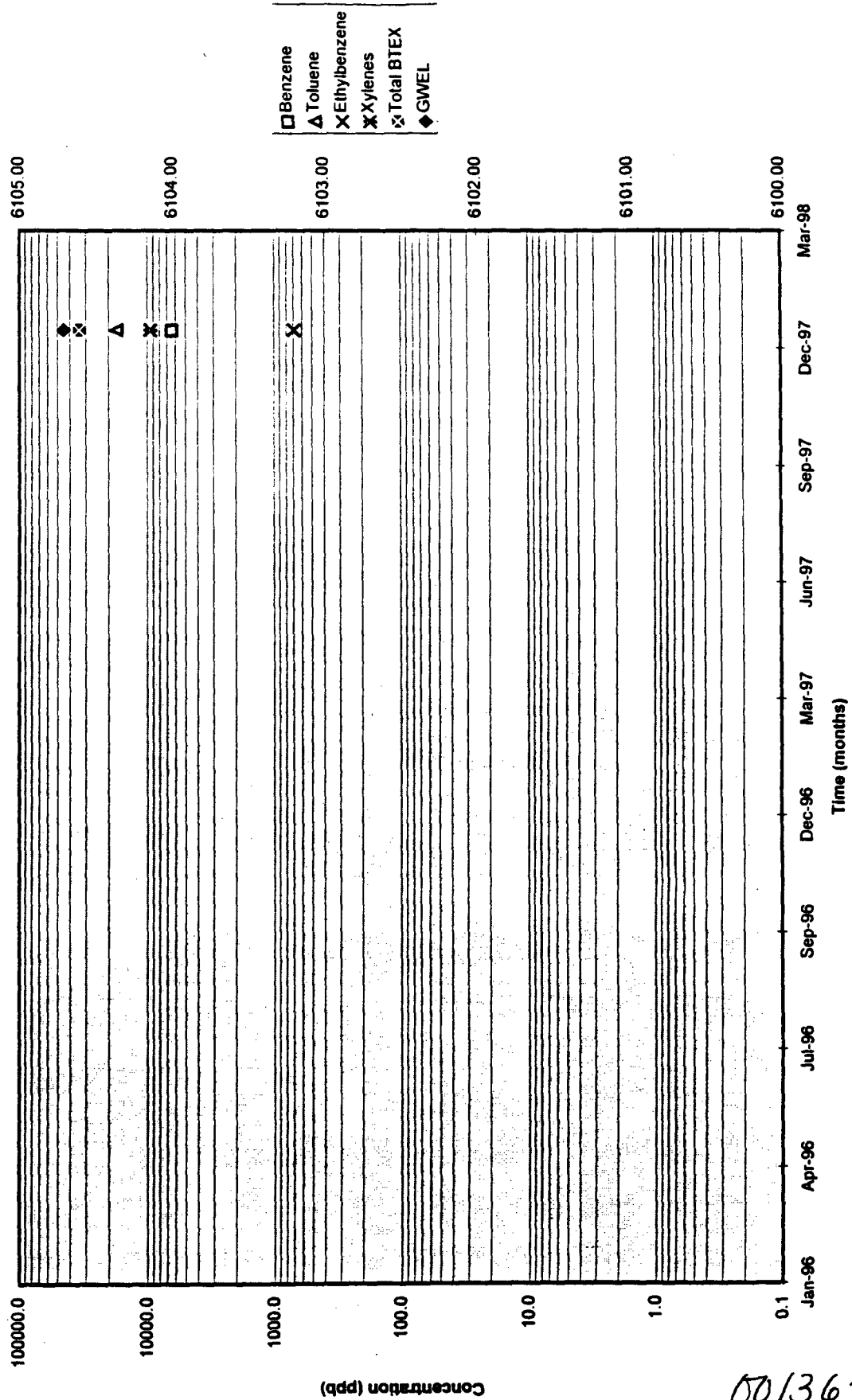
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# MW-7: Trends with Time



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# MW-8: Trends with Time



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**Attachment B**

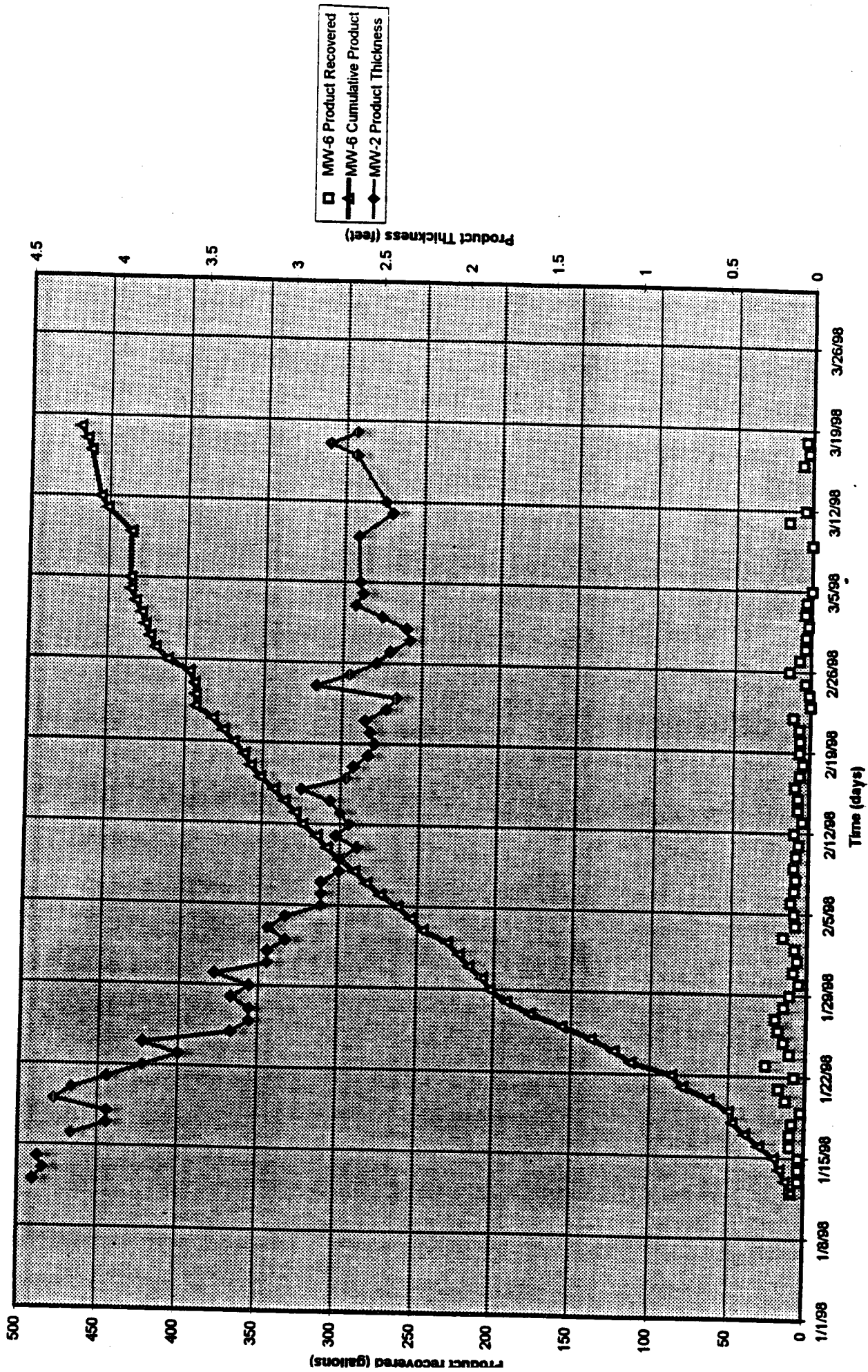
**Free Product Recovery Response**

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# Hampton 4M Free Product Recovery

001369



# HAMPTON 4M

DATE	TIME	PUMP TIME SET	CYCLES / DAY	PUMPING TIME TOTAL	NITROGEN PRESSURE	NITROGEN TANK LEVEL	DRUM LEVEL	MW #2 PRODUCT LEVEL	MW #2 WATER LEVEL
1/14/98	1303	5 min.	3	2 Hr. 10 min	58	675	6	20.78	25.04
1/17/98	1619	5 min.	3	2 Hr. 32 min	58	775	5 3/4"	20.98	25.04
1/18/98	1527	5 min.	3	2 Hr. 53 min	58	275	11 1/2"	20.96	24.96
1/19/98	1323	5 min.	3	3 Hr. 3 min.	58	58	15 1/2"	20.69	25.04
1/20/98	1454	5 min.	3	3 Hr. 30 min	50	750	17"	20.83	25.06
1/21/98	0739	Cont.	1	4 Hr. 23 min	50	550	24 1/2"	20.93	24.77
1/22/98	1344	10 min.	3	5 Hr. 17 min	50	400	5 1/4"	21.00	24.88
1/23/98	1418	10 min.	6	1 Hr. 33 min	50	50	14"	21.11	24.74
1/24/98	1454	20 min	6	6 Hr. 51 min	50	2175	16 1/2"	20.97	24.78
1/25/98	1408	10 min.	6	8 Hr. 03 min	50	1875	25 1/4"	21.18	24.50
1/26/98	1153	10 min.	6	9 Hr. 54 min	50	1625	11 1/4"	21.20	24.43
1/27/98	1443	10 min.	6	10 Hr. 55 min	50	1375	23 1/2"	21.16	24.39
1/28/98	1431	10 min.	6	12 Hr. 07 min	50	600	6"	20.09	24.40
1/29/98	1320	10 min.	6	16 Hr. 48 min	50	325	12 3/4"	21.11	24.31
1/30/98	1525	10 min.	6	19 Hr. 02 min.	50	150	12 3/4"	21.05	24.48
1/31/98	1608	10 min.	6	20 Hr. 06 min	60	2275	18"	21.17	24.27
2/1/98	1223	10 min.	12	22 Hr. 12 min	60	1875	21 3/4"	21.19	24.27
2/2/98	1517	10 min.	6	23 Hr. 13 min	60	1600	26 1/2"	21.25	24.25
2/3/98	1619	10 min.	6	24 Hr. 15 min	60	1410	9 1/2"	21.10	24.20
2/4/98	1315	10 min.	6	25 Hr. 18 min	60	1120	14 1/4"	21.09	24.23
2/5/98	1303	10 min.	6	26 Hr. 14 min	60	875	19 1/2"	21.27	24.13
2/6/98	1518	5 min.	12	27 Hr. 27 min	60	600	26 1/4"	21.25	24.10
2/7/98	1121	5 min.	12	28 Hr. 21 min	60	375	5 1/4"	21.26	24.10
2/8/98	1522	5 min.	12	30 Hr. 07 min	0	0	10"	21.24	23.98
2/9/98	1615	5 min.	12	31 Hr. 17 min	55	2325	15 3/4"	21.21	24.00
2/10/98	1611	5 min.	12	32 Hr. 21 min	55	2110	20 1/2"	21.36	24.00
2/11/98	1350	5 min.	12	33 Hr. 21 min	55	1875	24 1/2"	21.23	23.75
2/12/98	1718	5 min.	12	34 Hr. 30 min	55	1625	5 3/4"	21.30	23.95
2/13/98	1603	5 min.	6	34 Hr. 56 min	55	1500	8 1/4"	21.22	23.92
2/14/98	1623	5 min.	6	35 Hr. 59 min	55	1225	12 1/2"	21.19	23.95

001370

15/5/55

20 60  
14 42  
15  
26.53  
24.06  
2.47  
35  
24.10  
21.38  
2.72  
001391

## PUBLIC SERVICE COMPANY OF NEW MEXICO

7-4  
7n

DEPARTMENT	
PROJECT Hampton 4m	FILE
COMPONENT Product removed (gallons) from mw-6	SHEET OF
	DATE
	CHECKED
	DATE

12 - 8.50 gal. 5.0 gal. in November Feb. 14 - 9.13  
 13 - 3.75 gal. 17 - 6.23  
 14 - 3.75 gal. 18 - 4.15  
 15 - 3.80 gal. 19 - 6.64 - 353.  
 16 - 9.55 gal. 20 - 6.64  
 17 - 9.55 gal. 21 - 7.06  
 18 - 8.30 gal. 22 - 11.21 - 378.5  
 19 - 2.49 gal. 23 - 0  
 20 - 12.45 gal. 24 - 0.83  
 21 - 17.72 gal. 25 - 3.32  
 22 - 7.00 gal. Total 86.86 gal. + 5  
 23 - 20.25 gal. " 112.14 gal.  
 24 - 10.65 gal. 26 - 14.11 - 396.80  
 25 - 14.53 gal. 27 - 7.47  
 26 - 18.68 gal. 28 - 3.74  
 27 - 20.34 gal. manual - 3.32 - 411.33 5  
 28 - 14.96 gal. 2 - 2.08  
 29 - 11.21 gal. Total 176.34 gal. 3 - 3.325  
 30 - 5.00 gal. 4 - 4.154  
 31 - 8.72 gal. Total 187.55 gal. 11 - 15.36  
 1 - 6.23 gal. 12 - 4.57  
 2 - 7.89 gal. 16 - 6.64  
 3 - 15.77 gal. Total 201.27 gal. 17 - 5.81 - 453.269  
 4 - 7.89 gal. 18 - 4.15  
 5 - 8.72 gal. Total 231.16 gal.  
 6 - 11.21 gal. Total 258.98 gal.  
 7 - 8.72 gal.  
 8 - 7.89 gal.  
 9 - 9.55 gal.  
 10 - 7.89 gal. Total 293.02 gal.  
 11 - 6.64 gal. 299.64  
 12 - 9.55 gal.  
 13 - 4.15 gal.  
 14 - 7.06 gal.  
 15 - 7.06 gal.

001372

**Attachment C**  
**Analytical Laboratory Data**

001373

OFF: (505) 325-5667



LAB: (505) 325-1556

February 24, 1998

Maureen Gannon  
PNM Gas Services  
Alevardo Square, Mail Stop 0408  
Albuquerque, NM 87401  
TEL: (505) 241-2974  
FAX (505) 241-2340

RE: Hampton 4M Burlington Excavation

Order No.: 9802007

Dear Maureen Gannon,

On Site Technologies, LTD. received 1 sample on 2/11/98 for the analyses presented in the following report.

The Samples were analyzed for the following tests:  
Aromatic Volatiles by GC-PID (SW8021A)

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.

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

Sincerely,

  
David Cox

001374

OFF: (505) 325-5667



LAB: (505) 325-1556

## ANALYTICAL REPORT

Date: 24-Feb-98

<b>Client:</b>	PNM Gas Services	<b>Client Sample Info:</b>	Hampton 4M
<b>Work Order:</b>	9802007	<b>Client Sample ID:</b>	9802111400; Burlington Excava
<b>Lab ID:</b>	9802007-01A	<b>Matrix:</b>	AQUEOUS
<b>Project:</b>	Hampton 4M Burlington Excavation	<b>Collection Date:</b>	2/11/98 2:00:00 PM
		<b>COC#:</b>	7174

Parameter	Result	Limit	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC-PID		SW8021A		Analyst: DC		
Benzene	1800	25		µg/L	50	2/17/98
Toluene	1700	25		µg/L	50	2/17/98
Ethylbenzene	ND	25		µg/L	50	2/17/98
m,p-Xylene	1200	50		µg/L	50	2/17/98
o-Xylene	220	25		µg/L	50	2/17/98
Surr: Fluorobenzene	99.6	70-130		%REC	50	2/17/98
Surr: 1,4-Difluorobenzene	101.2	70-130		%REC	50	2/17/98
Surr: 4-Bromochlorobenzene	100.6	70-130		%REC	50	2/17/98

**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

001315  
1 of 1

# On Site Technologies, LTD.

Date: 24-Feb-98

CLIENT: PNM Gas Services

Work Order: 9802007

Project: Hampton 4M Burlington Excavation

## QC SUMMARY REPORT

Method Blank

Sample ID: MB1 W	Batch ID: GC-1_980217	Test Code: SW8021A	Units: µg/L	Analysis Date: 2/17/98	Prep Date:						
Client ID:	9802007	Run ID: GC-1_980217A		SeqNo: 71							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.1481	0.5									J
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	1									
o-Xylene	ND	0.5									
Toluene	.0621	0.5									J

001376

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

1 of 1



# On Site Technologies, LTD.

Date: 24-Feb-98

CLIENT: PNM Gas Services

Work Order: 9802007

Project: Hampton 4M Burlington Excavation

## QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 9802002-06A MS		Batch ID: GC-1_980217	Test Code: SW8021A	Units: µg/L	Analysis Date: 2/17/98		Prep Date:	
Client ID: 9802007		Run ID: GC-1_980217A	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit
Analyte	Result							
Benzene	18890		50	4000	15090	95.0%	57	128
Ethylbenzene	4625		50	4000	489.6	103.4%	78	107
m,p-Xylene	12080		100	8000	4068	100.2%	67	118
o-Xylene	5186		50	4000	1043	103.6%	78	107
Toluene	5121		50	4000	1055	101.7%	74	116
Sample ID: 9802002-06A MSD		Batch ID: GC-1_980217	Test Code: SW8021A	Units: µg/L	Analysis Date: 2/17/98		Prep Date:	
Client ID: 9802007		Run ID: GC-1_980217A	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit
Analyte	Result							
Benzene	19120		50	4000	15090	100.9%	57	128
Ethylbenzene	4687		50	4000	489.6	104.9%	78	107
m,p-Xylene	12240		100	8000	4068	102.1%	67	118
o-Xylene	5283		50	4000	1043	106.0%	78	107
Toluene	5195		50	4000	1055	103.5%	74	116

001377

Qualifiers: NID - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

# On Site Technologies, LTD.

Date: 24-Feb-98

CLIENT: PNM Gas Services

Work Order: 9802007

Project: Hampton 4M Burlington Excavation

## QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS WATER	Batch ID: GC-1_980217	Test Code: SW8021A	Units: µg/L	Analysis Date: 2/17/98				Prep Date:			
Client ID:	9802007	Run ID: GC-1_980217A		SeqNo: 73							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	43.06	0.5	40	0.1481	107.3%	84	114				
Ethylbenzene	45.72	0.5	40	0	114.3%	86	118				
m,p-Xylene	87.09	1	80	0	108.9%	50	150				
o-Xylene	44.73	0.5	40	0	111.8%	49	147				
Toluene	44.06	0.5	40	0.0621	110.0%	87	120				

001378

Qualifiers:

ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

IJ - Analyte detected in the associated Method Blank

# On Site Technologies, LTD.

Date: 24-Feb-98

CLIENT: PNM Gas Services

Work Order: 9802007

Project: Hampton 4M Burlington Excavation

## QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV2 QC0529/30	Batch ID: GC-1_980217	Test Code: SW8021A	Units: µg/L	Analysis Date: 2/17/98	Prep Date:
Client ID: 9802007	Run ID: GC-1_980217A	PQL	SPK value	SPK Ref Val	%REC
Analyte	Result	QOL	SPK value	SPK Ref Val	%REC
Benzene	21.26	0.5	20	0	106.3%
Ethylbenzene	21.77	0.5	20	0	108.8%
m,p-Xylene	42.35	1	40	0	105.9%
o-Xylene	22.08	0.5	20	0	110.4%
Toluene	21.94	0.5	20	0	109.7%
1,4-Difluorobenzene	100.6	0	100	0	100.7%
4-Bromochlorobenzene	96.82	0	100	0	96.8%
Fluorobenzene	99.99	0	100	0	100.0%

Sample ID: CCV2 QC0529/30	Batch ID: GC-1_980217	Test Code: SW8021A	Units: µg/L	Analysis Date: 2/17/98	Prep Date:
Client ID: 9802007	Run ID: GC-1_980217A	PQL	SPK value	SPK Ref Val	%REC
Analyte	Result	QOL	SPK value	SPK Ref Val	%REC
Benzene	20.01	0.5	20	0	100.0%
Ethylbenzene	21.19	0.5	20	0	105.9%
m,p-Xylene	39.98	1	40	0	99.9%
o-Xylene	20.82	0.5	20	0	104.1%
Toluene	20.3	0.5	20	0	101.5%
1,4-Difluorobenzene	101.8	0	100	0	101.8%
4-Bromochlorobenzene	99.27	0	100	0	99.3%
Fluorobenzene	99.75	0	100	0	99.8%

001379

Qualifiers:

NID - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: PNM Gas Services

Work Order: 9802007

Project: Hampton 4M Burlington Excavation

## QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV3 QC0529/30		Batch ID: GC-1_980217	Test Code: SW8021A	Units: µg/L	Analysis Date: 2/17/98				Prep Date:		
Client ID: 9802007		Run ID: GC-1_980217A				SeqNo: 94			%RPD	RPDLimit	Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val			
Benzene	20.56	0.5	20	0	102.8%	85	115				
Ethylbenzene	21.76	0.5	20	0	108.8%	85	115				
m,p-Xylene	40.95	1	40	0	102.4%	85	115				
o-Xylene	21.29	0.5	20	0	106.4%	85	115				
Toluene	20.93	0.5	20	0	104.6%	85	115				
1,4-Difluorobenzene	101.2	0	100	0	101.2%	70	130				
4-Bromochlorobenzene	95.23	0	100	0	95.2%	70	130				
Fluorobenzene	99.96	0	100	0	100.0%	70	130				

001380

Qualifiers:

NID - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank



7.74

Page: 1 of 1Date: 2/11/78

612 E. Murphy Dr. • P.O. Box 2608 • Farmington, NM 87499  
LAB: (505) 325-5667 • FAX: (505) 325-6256

[illegible]

**Distribution:** White - On Skin    Yellow - LAG    Pink - Sarnator    Goldenrod - Client

OFF: (505) 325-5667



LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *23-Jan-98*  
COC No.: *7086*  
Sample No.: *17304*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*  
Project Location: *9801121030: MW-1*  
Sampled by: *MS/MG/RD/RB*  
Analyzed by: *DC*  
Sample Matrix: *Liquid*

Date: *12-Jan-98* Time: *10:30*  
Date: *21-Jan-98*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>4.3</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>Toluene</i>	<i>3.3</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>0.2</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>0.7</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>0.3</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>8.8</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *1/23/98*

*001382*

OFF: (505) 325-5667

# ON SITE

TECHNOLOGIES, LTD.

LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *26-Jan-98*  
 COC No.: *7086*  
 Sample ID.: *17304*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*Project Location: *9801121030; MW-1*Sampled by: *MS/MG/RD/RB*Date: *12-Jan-98* Time: *10:30*Analyzed by: *HR*Date: *26-Jan-98*

### Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Results as Received	Unit of Measure
<u>Cations</u>				
Sodium <i>Na</i>	112	mg/L	4.87	me/L
Calcium <i>Ca</i>	444	mg/L	22.16	me/L
Magnesium <i>Mg</i>	210	mg/L	17.28	me/L
Potassium <i>K</i>	8.3	mg/L	0.21	me/L
<u>Anions</u>				
Chloride <i>Cl</i>	9	mg/L	0.26	me/L
Sulfate <i>SO4</i>	2202	mg/L	45.84	me/L
Carbonate <i>CO3 as CaCO3</i>	<1	mg/L	<0.01	me/L
Bicarbonate <i>HCO3 as CaCO3</i>	2	mg/L	0.03	me/L
Hydroxide <i>OH as CaCO3</i>	<1	mg/L	<0.01	me/L
<u>Total Dissolved Solids</u>				
Calculated, Sum of Cation/Anion	2987	mg/L	<u>Cation-Anion Balance</u> 1.61 Difference Cation-Anion, me/L 90.65 Total Cation-Anion, me/L 1.8 % Difference Cation-Anion <u>Comments</u>	
Total Dissolved Solids				
Dried @ 180 C	3242	mg/L		
pH	4.62			
Conductivity @ 25 C	2960	uS/cm		
Total Hardness as CaCO3	1973	mg/L		

Approved by: *[Signature]*Date: *1/30/98*

001323

OFF: (505) 325-3667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *23-Jan-98*  
COC No.: *7086*  
Sample No.: *17305*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*

Project Location: *9801121100; MW-3*

Sampled by: *MS/MG/RD/RB* Date: *12-Jan-98* Time: *11:00*

Analyzed by: *DC* Date: *21-Jan-98*

Sample Matrix: *Liquid*

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

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *1/23/98*

*001384*



OFF: (505) 325-5667



LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *23-Jan-98*  
COC No.: *7086*  
Sample No.: *17306*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*  
Project Location: *9801121130; MW-4*  
Sampled by: *MS/MG/RD/RB*  
Analyzed by: *DC*  
Sample Matrix: *Liquid*

Date: *12-Jan-98* Time: *11:30*  
Date: *21-Jan-98*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>1251</i>	<i>ug/L</i>	<i>2</i>	<i>ug/L</i>
<i>Toluene</i>	<i>6</i>	<i>ug/L</i>	<i>2</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>81</i>	<i>ug/L</i>	<i>2</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>24</i>	<i>ug/L</i>	<i>2</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>ND</i>	<i>ug/L</i>	<i>2</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>1361</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *1/23/98*

*001385*

P.O. BOX 2606 • FARMINGTON, NM 87401

OFF: (505) 325-5667



LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *23-Jan-98*  
COC No.: *7086*  
Sample No.: *17307*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*

Project Location: *9801121200; MW-5*

Sampled by: *MS/MG/RD/RB*

Date: *12-Jan-98* Time: *12:00*

Analyzed by: *DC*

Date: *21-Jan-98*

Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>7521</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>Toluene</i>	<i>11213</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>779</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>6762</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>1674</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>27950</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *1/23/98*

*001386*

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *23-Jan-98*  
COC No.: *7086*  
Sample No.: *17308*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*

Project Location: *9801121230; MW-7*

Sampled by: *MS/MG/RD/RB*

Date: *12-Jan-98* Time: *12:30*

Analyzed by: *DC*

Date: *21-Jan-98*

Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>780</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>Toluene</i>	<i>246</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>258</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>3204</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>738</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>5227</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *1/23/98*

*001387*

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *23-Jan-98*  
COC No.: *7086*  
Sample No.: *17309*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*

Project Location: *9801121300; MW-8*

Sampled by: *MS/MG/RD/RB*

Date: *12-Jan-98* Time: *13:00*

Analyzed by: *DC*

Date: *21-Jan-98*

Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>6410</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>Toluene</i>	<i>17301</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>693</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>7612</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>1785</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>33801</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *1/23/98*

*001388*

OFF: (505) 325-5667



LAB: (505) 325-1556

**ANALYTICAL REPORT**

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *26-Jan-98*  
 COC No.: *7086*  
 Sample ID.: *17309*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*Project Location: *9801121300; MW-8*Sampled by: *MS/MG/RD/RB*Date: *12-Jan-98* Time: *13:00*Analyzed by: *HR*Date: *26-Jan-98***Laboratory Analysis**

Parameter	Results as Received	Unit of Measure	Results as Received	Unit of Measure
<b>Cations</b>				
Sodium <i>Na</i>	108	mg/L	4.70	me/L
Calcium <i>Ca</i>	456	mg/L	22.76	me/L
Magnesium <i>Mg</i>	236	mg/L	19.42	me/L
Potassium <i>K</i>	20.9	mg/L	0.53	me/L
<b>Anions</b>				
Chloride <i>Cl</i>	30	mg/L	0.83	me/L
Sulfate <i>SO4</i>	2215	mg/L	46.12	me/L
Carbonate <i>CO3 as CaCO3</i>	<1	mg/L	<0.01	me/L
Bicarbonate <i>HCO3 as CaCO3</i>	73	mg/L	1.20	me/L
Hydroxide <i>OH as CaCO3</i>	<1	mg/L	<0.01	me/L
<b>Total Dissolved Solids</b>				
Calculated, Sum of Cation/Anion	3139	mg/L	<b>Cation-Anion Balance</b> 0.74 Difference Cation-Anion. me/L 95.55 Total Cation-Anion. me/L 0.8 % Difference Cation-Anion Comments	
Total Dissolved Solids				
Dried @ 180 C	3424	mg/L		
pH	6.21			
Conductivity @ 25 C	2950	uS/cm		
Total Hardness as CaCO3	2110	mg/L		

Approved by: *[Signature]*Date: *1/30/98**DD1389*

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *23-Jan-98*  
COC No.: *7086*  
Sample No.: *17310*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*

Project Location: *9801121330; MW-9*

Sampled by: *MS/MG/RD/RB*

Date: *12-Jan-98* Time: *13:30*

Analyzed by: *DC*

Date: *21-Jan-98*

Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>1252</i>	<i>ug/L</i>	<i>2</i>	<i>ug/L</i>
<i>Toluene</i>	<i>7</i>	<i>ug/L</i>	<i>2</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>80</i>	<i>ug/L</i>	<i>2</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>23</i>	<i>ug/L</i>	<i>2</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>ND</i>	<i>ug/L</i>	<i>2</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>1362</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *1/23/98*

*001398*

OFF: (505) 325-5667



LAB: (505) 325-1556

**QUALITY ASSURANCE REPORT**

for EPA Method 8020

Date Analyzed: 21-Jan-98

Internal QC No.: 0559-STD

Surrogate QC No.: 0567-STD

Reference Standard QC No.: 0529/30-QC

**Method Blank**

Parameter	Result	Unit of 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	30.0	30.6	2	15%
Toluene	ppb	30.0	30.8	3	15%
Ethylbenzene	ppb	30.0	31.4	5	15%
m,p-Xylene	ppb	60.0	59.7	0	15%
o-Xylene	ppb	30.0	31.1	4	15%

**Matrix Spike**

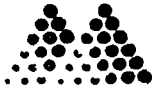
Parameter	1 - Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	102	92	(39-150)	2	20%
Toluene	108	105	(46-148)	2	20%
Ethylbenzene	108	105	(32-160)	3	20%
m,p-Xylene	104	102	(35-145)	3	20%
o-Xylene	110	107	(35-145)	2	20%

**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)	
17304-7086	101		17310-7086	100	
17305-7086	102				
17306-7086	100				
17307-7086	100				
17308-7086	101			JLP	(DC)
17309-7086	101			1/26/98	1/23/98

S1: Fluorobenzene

RECEIVED FEB 12 1998



**Mountain States Analytical, Inc.**

*The Quality Solution*

February 6, 1998

Mr. David Cox  
On Site Technologies, Ltd.  
612 E Murray Drive  
Farmington, NM 87401

**Reference:**

Project: Hampton 4M  
MSAI Group: 19520

Dear Mr. Cox:

Enclosed are the analytical results for your project referenced above. The following samples are included in the report.

9801121030 MW-1 (Diss)

9801121300 MW-8 (Diss)

All holding times were met for the tests performed on these samples.

If the report is acceptable, please approve the enclosed invoice and forward it for payment.

Thank you for selecting Mountain States Analytical, Inc. to serve as your analytical laboratory on this project. If you have any questions concerning these results, please feel free to contact me at any time.

We look forward to working with you on future projects.

With Regards,

Rolf E. Larsen  
Project Manager

001392

10

Corporate Office

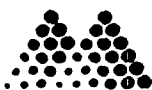
1845 West 1200 South Salt Lake City, Utah 84119  
801-972-0051 • 800-972-5724 (MSAI) • FAX 801-972-6273  
e-mail: [info@msai.com](mailto:info@msai.com)

Southwest States Branch

3023 Balcones Spring, Texas 77629  
281-400-2340 • FAX 281-400-2341  
e-mail: [info@swstates.com](mailto:info@swstates.com)

MSAI  
1001





# Mountain States Analytical, Inc.

The Quality Solution

On Site Technologies, Ltd.  
612 E Murray Drive  
Farmington, NM 87401

Attn: Mr. David Cox  
Project: Hampton 4M

Sample ID: 9801121030 MW-1 (Diss)  
Matrix: Waste Water

MSAI Sample: 74841  
MSAI Group: 19520  
Date Reported: 02/06/98  
Discard Date: 03/08/98  
Date Submitted: 01/30/98  
Date Sampled: 01/12/98  
Collected by: MG  
Purchase Order: 7086  
Project No.:

Test Analysis	Results as Received	Units	Method Detection Limit
-----	-----	-----	-----
0001M **Special Instructions, Metals Method: SPECIAL INST MSAI	Batch. w59		
0259B Mercury by CVAA, w/ww, 7470 Method: SW-846 7470	ND	mg/l	0.0001
0392I Flame/ICP Prep, w/ww, 3005A Method: SW-846 3005A	Batch. w059		
032M Mercury Prep CVAA, w/ww, 7470 Method: SW-846 7470	Batch. w001		
0401 Prep for HAA, w/ww, 7062/7742 Method: SW-846 7062/7742	Batch. w60		
1451 Selenium by HAA, w/ww, 7742 Method: SW-846 7742	ND	mg/l	0.002
7245 Arsenic by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.04
7246 Barium by ICP, w/ww, 6010A Method: SW-846 6010A	0.008	mg/l	0.003
7249 Cadmium by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.004
7251 Chromium by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.010
7255 Lead by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.050

001393



On Site ~~Technologies, Ltd.~~ **Mountain States Analytical, Inc.**  
The Quality Solution

Sample ID: 9801121030 MW-1 (Diss)

MSAI Sample: 74841  
MSAI Group: 19520

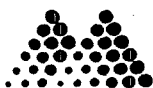
Test	Analysis	Results as Received	Units	Method Detection Limit
7266	Silver by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.005
0939	Sample Filtering, ww, MSAI Method: IN HOUSE MSAI	Complete		

This report consists of the following items: A cover letter, a signed analytical report for each sample specified on the cover letter, and if applicable, an inorganic quality control summary. Organic sample reports contain footnotes which describe any quality control anomalies which may have occurred.

Respectfully Submitted,  
Reviewed and Approved by:

  
Rolf E. Larsen  
Project Manager

001394



## Mountain States Analytical, Inc.

*The Quality Solution*

On Site Technologies, Ltd.  
612 E Murray Drive  
Farmington, NM 87401

Attn: Mr. David Cox  
Project: Hampton 4M

Sample ID: 9801121300 MW-8 (Diss)  
Matrix: Waste Water

MSAI Sample: 74842  
MSAI Group: 19520  
Date Reported: 02/06/98  
Discard Date: 03/08/98  
Date Submitted: 01/30/98  
Date Sampled: 01/12/98  
Collected by: MG  
Purchase Order: 7086  
Project No.:

Test Analysis	Results as Received	Units	Method Detection Limit
0259B Mercury by CVAA, w/ww, 7470 Method: SW-846 7470	ND	mg/l	0.0001
0392I Flame/ICP Prep, w/ww, 3005A Method: SW-846 3005A	Batch. w059		
0392M Mercury Prep CVAA, w/ww, 7470 Method: SW-846 7470	Batch. W001		
0401 Prep for HAA, w/ww, 7062/7742 Method: SW-846 7062/7742	Batch. w60		
1451 Selenium by HAA, w/ww, 7742 Method: SW-846 7742	ND	mg/l	0.002
7245 Arsenic by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.04
7246 Barium by ICP, w/ww, 6010A Method: SW-846 6010A	0.014	mg/l	0.003
7249 Cadmium by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.004
7251 Chromium by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.010
7255 Lead by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.050
7266 Silver by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.005

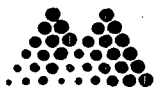
001395

10  
Years of  
Quality  
Service

Corporate Office  
1645 West 2200 South, Salt Lake City, Utah 84119  
801-973-0050 • 1-800-973-6724(MSAI) • FAX 801-972-6278  
e-mail: service@msailabs.com

Southwest States Region  
6223 Bayonne, Spring, Texas 77389  
281-320-2842 • FAX 281-320-0989  
e-mail: gbrewer@msailabs.com





# Mountain States Analytical, Inc.

Page 2

On Site Technologies, Ltd.

*The Quality Solution*

MSAI Sample: 74842

MSAI Group: 19520

Sample ID: 9801121300 MW-8 (Diss)

Test	Analysis	Results as Received	Units	Method Detection Limit
----	-----	-----	-----	-----
0939	Sample Filtering, ww, MSAI Method: IN HOUSE MSAI	Complete		

This report consists of the following items: A cover letter, a signed analytical report for each sample specified on the cover letter, and if applicable, an inorganic quality control summary. Organic sample reports contain footnotes which describe any quality control anomalies which may have occurred.

Respectfully Submitted,  
Reviewed and Approved by:

  
Rolf E. Larsen  
Project Manager

001396

10  
Years of  
Quality  
Service

**Corporate Office**  
1645 West 2200 South, Salt Lake City, Utah 84119  
801-973-0050 • 1-800-973-6724(MSAI) • FAX 801-972-6278  
e-mail: service@msailabs.com

**Southwest States Region**  
6223 Bayonne, Spring, Texas 77389  
281-320-2842 • FAX 281-320-0989  
e-mail: gbrewer@msailabs.com

MEMBER  
**ACIL**

Mountain States Analytical, Inc.  
Daily QC Batching Data  
Data Released for Reporting

02/06/98  
15:55:12  
Group: 195

Analysis Batch Number: 02598-02/03/98-114 -1  
Identification : 02598-Mercury by CVAA, w/ww, 7470  
Number of Samples : 4  
Batch Data-Date/Time : 02/04/98 / 11:19:01

Sequence : 8259 -1

BLANK#	ANALYTE	CONC FOUND #	CONC LIMIT
19477-74729	Mercury	-0.0900	0.1000
PBW1-001-2	Mercury	-0.0900	0.1000
19477-74729-3	Mercury	-0.0900	0.1000

						QC LIMITS	
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	CONC SPIKE	% REC #	LOWER	UPPER
19527-74856	Mercury	2.0000	-0.1800	1.8900	103.5	80.0	120.0

						QC LIMITS			
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	RESULT 2	%REC2 #	LOWER	UPPER	RPD #	LIM
19527-74856	Mercury	2.0000	-0.1800	1.9000	104.0	80.0	120.0	0.5	20

DUPLICATE						
SAMPLE#	ANALYTE	RESULT 1	RESULT 2	RPD #	LIMIT	DILUTION
19527-74856	Mercury	-0.1800	-0.1800	0.0	20.0	1.00

					QC LIMITS	
SAMPLE#	ANALYTE	CONC FOUND	CONC KNOWN	% REC #	LOWER	UPPER
19477-74730	Mercury	2.5000	2.5000	100.0	80.0	120.0
19477-74730-2	Mercury	2.5000	2.5000	100.0	80.0	120.0
19477-74730-3	Mercury	2.5000	2.5000	100.0	80.0	120.0

						QC LIMITS	
CCV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	LOWER	UPPER	
CCV-	Mercury	3.0000	2.8800	96.0	90.0	110.0	
CCV--2	Mercury	5.0000	4.8900	97.8	80.0	120.0	
CCV--3	Mercury	5.0000	4.7800	95.6	80.0	120.0	
CCV--4	Mercury	5.0000	4.7700	95.4	80.0	120.0	

CCB#	ANALYTE	CONC FOUND #	CONC LIMIT
CCB-	Mercury	-0.0300	0.1000
CCB-	Mercury	-0.0100	0.1000
CCB-	Mercury	0.0800	0.1000
CCB-	Mercury	0.0700	0.1000

## Groups &amp; Samples

19477-74728    19477-74729    19477-74730    19520-74841    19520-74842    19523-74848    19527-74856

001397

Mountain States Analytical, Inc.  
Daily QC Batching Data  
Data Released for Reporting

02/06/98  
15:55:16  
Group: 19

Analysis Batch Number: 1451 -02/02/98-061 -1  
Test Identification : 1451 -Selenium by HAA, w/w, 7742  
Number of Samples : 2  
Batch Data-Date/Time : 02/02/98 / 20:38:44

Sequence : DAAA033

BLANK#	ANALYTE	CONC FOUND #	CONC LIMIT
PBW-060	Selenium	ND	0.0050

						QC LIMITS	
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	CONC SPIKE	% REC #	LOWER	UPPER
19520-74841	Selenium	0.0400	0.0010	0.0436	106.5	75.0	125.0

						QC LIMITS			
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	RESULT 2	%REC2 #	LOWER	UPPER	RPD #	L
19520-74841	Selenium	0.0400	0.0010	0.0393	95.8	75.0	125.0	10.4	2

DUPLICATE						
SAMPLE#	ANALYTE	RESULT 1	RESULT 2	RPD #	LIMIT	DILUTION
19520-74841	Selenium	0.0010	0.0007	35.3(11)	20.0	2.00

					QC LIMITS	
SAMPLE#	ANALYTE	CONC FOUND	CONC KNOWN	% REC #	LOWER	UPPER
LCSW-060	Selenium	0.0384	0.0400	96.0	75.0	125.0

QC LIMITS						
#	ANALYTE	TRUE VALUE	BATCH READ	% REC #	LOWER	UPPER
100	Selenium	0.0500	0.0533	106.6	80.0	120.0
CCV1--2	Selenium	0.0500	0.0534	106.8	80.0	120.0

CCB#	ANALYTE	CONC FOUND #	CONC LIMIT
ICB-	Selenium	0.0001	0.0050
CCB1-	Selenium	0.0003	0.0050

----- Result Footnotes -----  
(11) - The duplicate results cannot be evaluated because both results are <MDL.

Groups &amp; Samples

-----  
19520-74841    19520-74842

001398

Analysis Batch Number: ICPWA-02/03/98-001 -4

Identification : ICPWA-\*Metals by ICP

Sequence : DATC034

Number of Samples : 4

Batch Data-Date/Time : 02/04/98 / 07:42:35

BLANK#	ANALYTE	CONC FOUND #	CONC LIMIT
PBW1-059	Silver	0.0010	0.0060
	Arsenic	0.0019	0.0300
	Barium	ND	0.0030
	Cadmium	ND	0.0040
	Chromium	0.0017	0.0100
	Iron	ND	0.2000
	Molybdenum	ND	0.0300
	Nickel	ND	0.0300
	Lead	0.0119	0.0400
	Selenium	0.0069	0.0700

						QC LIMITS	
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	CONC SPIKE	% REC #	LOWER	UPPER
19523-74848	Silver	0.0500	0.0000	0.0479	95.8	80.0	120.0
	Arsenic	2.0000	0.0017	1.9432	97.1	80.0	120.0
	Barium	2.0000	0.2139	2.1351	96.1	80.0	120.0
	Cadmium	0.0500	0.0002	0.0516	102.8	80.0	120.0
	Chromium	0.2000	0.0017	0.2019	100.1	80.0	120.0
	Iron	1.0000	0.2537	1.2570	100.3	80.0	120.0
	Molybdenum	0.5000	0.0037	0.5063	100.5	80.0	120.0
	Nickel	0.5000	-0.0015	0.4943	99.2	80.0	120.0
	Lead	0.5000	-0.0106	0.5096	104.0	80.0	120.0
	Selenium	2.0000	0.0102	1.9405	96.5	80.0	120.0

						QC LIMITS			
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	RESULT 2	%REC2 #	LOWER	UPPER	RPD #	LIM
19523-74848	Silver	0.0500	0.0000	0.0495	99.0	80.0	120.0	3.3	20
	Arsenic	2.0000	0.0017	1.9992	99.9	80.0	120.0	2.8	20
	Barium	2.0000	0.2139	2.1773	98.2	80.0	120.0	2.0	20
	Cadmium	0.0500	0.0002	0.0506	100.8	80.0	120.0	2.0	20
	Chromium	0.2000	0.0017	0.2042	101.3	80.0	120.0	1.1	20
	Iron	1.0000	0.2537	1.2820	102.8	80.0	120.0	2.0	20
	Molybdenum	0.5000	0.0037	0.5201	103.3	80.0	120.0	2.7	20
	Nickel	0.5000	-0.0015	0.4993	100.2	80.0	120.0	1.0	20
	Lead	0.5000	-0.0106	0.5027	102.7	80.0	120.0	1.4	20
	Selenium	2.0000	0.0102	2.0087	99.9	80.0	120.0	3.5	20

## DUPLICATE

SAMPLE#	ANALYTE	RESULT 1	RESULT 2	RPD #	LIMIT	DILUTION
19523-74848	Silver	0.0000	0.0000	0.0	20.0	1.00
	Arsenic	0.0017	0.0121	150.7(11)	20.0	1.00
	Barium	0.2139	0.2118	1.0	20.0	1.00
	Cadmium	0.0002	0.0001	66.7(11)	20.0	1.00
	Chromium	0.0017	0.0000	200.0(11)	20.0	1.00
	Iron	0.2537	0.2477	2.4	20.0	1.00
	Molybdenum	0.0037	0.0000	200.0(11)	20.0	1.00
	Nickel	-0.0015	0.0000	200.0(11)	20.0	1.00
	Lead	-0.0106	0.0074	1125.0(11)	20.0	1.00
	Selenium	0.0102	0.0136	28.6(11)	20.0	1.00

001399

Mountain States Analytical, Inc.  
Daily QC Batching Data  
Data Released for Reporting

02/06/98  
15:55:23  
Group: 195

Analysis Batch Number: ICPWA-02/03/98-001 -4  
Identification : ICPWA--Metals by ICP  
Number of Samples : 4  
Batch Data-Date/Time : 02/04/98 / 07:42:35

Sequence : DATC034

CONTROL		QC LIMITS				
SAMPLE#	ANALYTE	CONC FOUND	CONC KNOWN	% REC #	LOWER	UPPER
LCSW-059	Silver	0.0521	0.0500	104.2	80.0	120.0
	Arsenic	2.0127	2.0000	100.6	80.0	120.0
	Barium	1.9239	2.0000	96.2	80.0	120.0
	Cadmium	0.0557	0.0500	111.4	80.0	120.0
	Chromium	0.2081	0.2000	104.1	80.0	120.0
	Iron	1.0343	1.0000	103.4	80.0	120.0
	Molybdenum	0.5225	0.5000	104.5	80.0	120.0
	Nickel	0.5137	0.5000	102.7	80.0	120.0
	Lead	0.5514	0.5000	110.3	80.0	120.0
	Selenium	2.0482	2.0000	102.4	80.0	120.0

		QC LIMITS				
CCV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	LOWER	UPPER
ICV-	Silver	0.4000	0.3789	94.7	90.0	110.0
	Arsenic	1.6000	1.5838	99.0	90.0	110.0
	Barium	4.0000	3.8169	95.4	90.0	110.0
	Cadmium	4.0000	3.9563	98.9	90.0	110.0
	Chromium	4.0000	4.0024	100.1	90.0	110.0
	Iron	4.0000	4.0909	102.3	90.0	110.0
	Molybdenum	20.0000	19.4749	97.4	90.0	110.0
	Nickel	8.0000	7.9267	99.1	90.0	110.0
	Lead	20.0000	19.2317	96.2	90.0	110.0
	Selenium	1.6000	1.5514	97.0	90.0	110.0
CCV1--2	Silver	0.4000	0.3724	93.1	90.0	110.0
	Arsenic	1.6000	1.5616	97.6	90.0	110.0
	Barium	4.0000	3.7455	93.6	90.0	110.0
	Cadmium	4.0000	3.9347	98.4	90.0	110.0
	Chromium	4.0000	3.9560	98.9	90.0	110.0
	Iron	4.0000	4.1056	102.6	90.0	110.0
	Molybdenum	20.0000	19.2108	96.1	90.0	110.0
	Nickel	8.0000	7.8528	98.2	90.0	110.0
	Lead	20.0000	19.0628	95.3	90.0	110.0
	Selenium	1.6000	1.5385	96.2	90.0	110.0
CCV2--3	Silver	0.4000	0.3825	95.6	90.0	110.0
	Arsenic	1.6000	1.5837	99.0	90.0	110.0
	Barium	4.0000	3.7675	94.2	90.0	110.0
	Cadmium	4.0000	3.9612	99.0	90.0	110.0
	Chromium	4.0000	3.9819	99.5	90.0	110.0
	Iron	4.0000	4.1693	104.2	90.0	110.0
	Molybdenum	20.0000	19.3837	96.9	90.0	110.0
	Nickel	8.0000	7.8818	98.5	90.0	110.0
	Lead	20.0000	19.4674	97.3	90.0	110.0
	Selenium	1.6000	1.5373	96.1	90.0	110.0
-4	Silver	0.4000	0.3834	95.9	90.0	110.0
	Arsenic	1.6000	1.5810	98.8	90.0	110.0
	Barium	4.0000	3.7692	94.2	90.0	110.0
	Cadmium	4.0000	3.9638	99.1	90.0	110.0
	Chromium	4.0000	3.9899	99.7	90.0	110.0
	Iron	4.0000	4.1877	104.7	90.0	110.0

001400



Analysis Batch Number: ICPWA-02/03/98-001 -4

Identification : ICPWA--Metals by ICP

Sequence : DATC034

Number of Samples : 4

Batch Data-Date/Time : 02/04/98 / 07:42:35

		QC LIMITS			
CCV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	LOWER UPPER
CCV3--4	Molybdenum	20.0000	19.3755	96.9	90.0 110.0
	Nickel	8.0000	7.9553	99.4	90.0 110.0
	Lead	20.0000	19.4548	97.3	90.0 110.0
	Selenium	1.6000	1.4923	93.3	90.0 110.0
CCB#	ANALYTE	CONC FOUND #	CONC LIMIT		
ICB-	Silver	ND	0.0060		
	Arsenic	ND	0.0300		
	Barium	ND	0.0030		
	Cadmium	0.0027	0.0040		
	Chromium	0.0034	0.0100		
	Iron	ND	0.2000		
	Molybdenum	0.0182	0.0300		
	Nickel	0.0067	0.0300		
	Lead	0.0279	0.0400		
	Selenium	0.0466	0.0700		
	Silver	0.0015	0.0060		
	Arsenic	ND	0.0300		
CCB1-	Barium	ND	0.0030		
	Cadmium	0.0026	0.0040		
	Chromium	0.0015	0.0100		
	Iron	ND	0.2000		
	Molybdenum	0.0164	0.0300		
	Nickel	ND	0.0300		
	Lead	0.0017	0.0400		
	Selenium	0.0310	0.0700		
	Silver	0.0038	0.0060		
	Arsenic	0.0042	0.0300		
	Barium	ND	0.0030		
	Cadmium	0.0026	0.0040		
CCB2-	Chromium	0.0020	0.0100		
	Iron	0.0081	0.2000		
	Molybdenum	0.0111	0.0300		
	Nickel	0.0016	0.0300		
	Lead	ND	0.0400		
	Selenium	0.0200	0.0700		
	Silver	ND	0.0060		
	Arsenic	0.0031	0.0300		
	Barium	ND	0.0030		
	Cadmium	ND	0.0040		
	Chromium	0.0010	0.0100		
	Iron	ND	0.2000		
CCB3-	Molybdenum	0.0119	0.0300		
	Nickel	ND	0.0300		
	Lead	0.0060	0.0400		
	Selenium	0.0111	0.0700		

00401

Mountain States Analytical, Inc.  
Daily QC Batching Data  
Data Released for Reporting

02/06/98  
15:55:27  
Group: 195

ysis Batch Number: ICPWA-02/03/98-001 -4  
Identification : ICPWA-\*Metals by ICP  
Number of Samples : 4  
Batch Data-Date/Time : 02/04/98 / 07:42:35

Sequence : DATC034

----- Result Footnotes -----

(11) - The duplicate results cannot be evaluated because both results are <MDL.

Groups & Samples

-----  
19494-74776    19520-74841    19520-74842    19523-74848

001402

**TECHNOLOGIES, LTD.**

**IES, LTD.**

2

657 W. Maple

• P.O. Box 2

606 • Farming

ington NM 874

86

[illegible]



# CHAIN OF CUSTODY RECORD

Page: 1 of 1

Date: 1/13/97

612 E. Murphy Dr. • P.O. Box 2608 • Farmington, NM 87489  
LAB: (505) 325-5667 • FAX: (505) 325-6256

Purchase Order No.:		Job No.		Name		Maureen Gannon		Title	
Name		Denver Bearden		Company		PNM Gas Services		PNM Gas Services	
Company		PNM Gas Services		Dept.		324-3763		Mailing Address	
Address		603 W. Elm Street		City, State, Zip		Farmington, NM 87401		Alverado Square, Mail Stop 0408	
City, State, Zip		Farmington, NM 87401		Telephone No.		505-848-2974		Telefax No.	
INVOICE TO				RESULTS TO					
Name				Name					
Company				Company					
Address				Address					
City, State, Zip				City, State, Zip					
Telephone No.				Telephone No.					
Telefax No.				Telefax No.					
Sampling Location:				ANALYSIS REQUESTED					
Hampton 4M									
Sample:				MS. MG. RDRB.					
SAMPLE IDENTIFICATION		SAMPLE DATE		TIME		MATRIX		PRES.	
T801121030		1/12/98		1030		H2O		H2O	
T801121100									
T801121130									
T801121200									
T801121230									
T801121300									
T801121320									
MW-1									
MW-3									
MW-4									
MW-5									
MW-7									
MW-8									
MW-9									
T801121030									
T801121100									
T801121130									
T801121200									
T801121230									
T801121300									
T801121320									
MW-1									
MW-3									
MW-4									
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MW-7									
MW-8									
MW-9									
T801121030									
T801121100									
T801121130									
T801121200									
T801121230									
T801121300									
T801121320									
MW-1									
MW-3									
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MW-7									
MW-8									
MW-9									
T801121030									
T801121100									
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T801121320									
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T801121300									
T801121320									
MW-1									

OFF: (505) 325-5667



LAB: (505) 325-1556

**ANALYTICAL REPORT**

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *17-Nov-97*  
COC No.: *7083*  
Sample No.: *16818*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*  
Project Location: *9711111330; TH-7*  
Sampled by: *MS*  
Analyzed by: *DC*  
Sample Matrix: *Liquid*

Date: *11-Nov-97* Time: *13:30*  
Date: *13-Nov-97*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>2171</i>	<i>ug/L</i>	<i>10</i>	<i>ug/L</i>
<i>Toluene</i>	<i>4185</i>	<i>ug/L</i>	<i>10</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>190</i>	<i>ug/L</i>	<i>10</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>2225</i>	<i>ug/L</i>	<i>10</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>631</i>	<i>ug/L</i>	<i>10</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>9402</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *11/17/97*

*001405*

# American Environmental Network, Inc.

AEN I.D.

711365

December 18, 1997

PUBLIC SERVICE COMPANY  
ALVARADO SQUARE-MS0408  
ALBUQUERQUE, NM 87158

Project Name HAMPTON 4M  
Project Number (none)

Attention: GANNON MAUREEN

On 11/26/97 American Environmental Network (NM), Inc. (ADHS License No. AZ0015), 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.

On December 3, 1997, the client notified the laboratory which cations and which anions should be analyzed. The list is attached to the COC.

EPA Method 8020 was performed by AEN(NM), Inc., Albuquerque, NM.

All other analyses were performed by AEN(FL), Pensacola, FL.

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: mt

Enclosure

001406

*American Environmental Network, Inc.*

CLIENT	: PUBLIC SERVICE COMPANY	AEN I.D.	: 711365
PROJECT #	: (none)	DATE RECEIVED	: 11/26/97
PROJECT NAME	: HAMPTON 4M	REPORT DATE	: 12/18/97
AEN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	9711251200	AQ	11/25/97

001407

GAS CHROMATOGRAPHY RESULTS

TEST : BTEX (EPA 8020)  
CLIENT : PUBLIC SERVICE COMPANY  
PROJECT # : (none)  
PROJECT NAME : HAMPTON 4M

AEN I.D.: 711365

SAMPLE		MATRIX	DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	9711251200	AQUEOUS	11/15/97	NA	11/25/97	1
PARAMETER		DET. LIMIT	UNITS	01		
BENZENE		0.5	UG/L	< 0.5		
TOLUENE		0.5	UG/L	< 0.5		
ETHYLBENZENE		0.5	UG/L	< 0.5		
TOTAL XYLENES		0.5	UG/L	< 0.5		

SURROGATE:  
BROMOFLUOROBENZENE (%) 105  
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:  
N/A

001408



GAS CHROMATOGRAPHY RESULTS  
REAGENT BLANK

TEST	: BTEX (EPA 8020)	AEN I.D.	: 711365
BLANK I. D.	: 112597	DATE EXTRACTED	: NA
CLIENT	: PUBLIC SERVICE COMPANY	DATE ANALYZED	: 11/25/97
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: HAMPTON 4M		

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 (%) 101  
SURROGATE LIMITS: ( 80 - 120 )  
CHEMIST NOTES:  
N/A

001409

GAS CHROMATOGRAPHY RESULTS  
REAGENT BLANK

TEST	: BTEX (EPA 8020)	AEN I.D.	: 711365
BLANK I. D.	: 112697	DATE EXTRACTED	: NA
CLIENT	: PUBLIC SERVICE COMPANY	DATE ANALYZED	: 11/26/97
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: HAMPTON 4M		

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 (%) 104

SURROGATE LIMITS: ( 80 - 120 )

REMARKS:

N/A

001410

GAS CHROMATOGRAPHY QUALITY CONTROL  
MSMSD

TEST	: BTEX (EPA 8020)	AEN I.D.	: 711365
MSMSD #	: 711361-03	DATE EXTRACTED	: NA
CLIENT	: PUBLIC SERVICE COMPANY	DATE ANALYZED	: 11/25/97
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: HAMPTON 4M	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RF LIM
BENZENE	<0.5	10.0	9.7	97	10.1	101	4	( 80 - 120 )	20
TOLUENE	<0.5	10.0	9.6	96	10.0	100	4	( 80 - 120 )	20
ETHYLBENZENE	<0.5	10.0	10.2	102	10.6	106	4	( 80 - 120 )	20
TOTAL XYLENES	<0.5	30.0	31.1	104	32.4	108	4	( 80 - 120 )	20

ANALYST NOTES:  
N/A

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

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

001411



MARK CALLED AT 9:20 AM 12-3-97 AND REQUESTED CATIONS/ANIONS TO INCLUDE :

CATIONS: Na, Ca, Mg, K

ANIONS: Cl, SO<sub>4</sub>, CARBONATE/BICARBONATE, HYDROXIDE, TDS,  
pH, CONDUCTIVITY, TOTAL HARDNESS

& CAT./ANION % DIFFERENCE.

001413

[0] Page 1  
Date 12-Dec-97

## "FINAL REPORT FORMAT - SINGLE"

Accession: 711653  
Client: AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.  
Project Number: 711365  
Project Name: PNM  
Project Location: HAMPTON 4N  
Test: TOTAL ALKALINITY  
Matrix: WATER  
QC Level: II

Lab ID: 001  
Client Sample Id: 711365-01

Sample Date/Time: 25-NOV-97 1200  
Received Date: 04-DEC-97

Parameters:	Units:	Results:	Rpt Lmts:	Q:	Batch:	Analyst:
ALKALINITY, TOTAL (2320B)	MG/L	160	1		ASW046	JL
PH (150.1)	UNITS	7.3	NA	R4	PHW251	JL
BICARBONATE, CACO3 (2330B)	MG/L	160	1		NONE	DPH
CARBONATE, CACO3 (2330B)	MG/L	ND	1		NONE	DPH
CARBON DIOXIDE, FREE AS CACO3	MG/L	16	1		NONE	DPH
HYDROXIDE (2330B) AS CACO3	MG/L	ND	1		NONE	DPH

Comments:

001414

[0] Page 2  
Date 12-Dec-97

"Method Report Summary"

Accession Number: 711653  
Client: AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.  
Project Number: 711365  
Project Name: PNM  
Project Location: HAMPTON 4N  
Test: TOTAL ALKALINITY

Client Sample Id:	Parameter:	Unit:	Result:
711365-01	ALKALINITY, TOTAL (2320B)	MG/L	160
	PH (150.1)	UNITS	7.3
	BICARBONATE, $\text{CaCO}_3$ (2330B)	MG/L	160
	CARBON DIOXIDE, FREE AS $\text{CaCO}_3$	MG/L	16

001415

Analysis Report

Analysis: Group of Single Wetchem

Accession:	711653
Client:	AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.
Project Number:	711365
Project Name:	PNM
Project Location:	HAMPTON 4N
Department:	WET CHEM

001416



[0] Page 2  
Date 12-Dec-97

"Method Report Summary"

Accession Number: 711653  
Client: AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.  
Project Number: 711365  
Project Name: PNM  
Project Location: HAMPTON 4N  
Test: Group of Single Wetchem

Client Sample Id:	Parameter:	Unit:	Result:
711365-01	CHLORIDE (325.3)	MG/L	29
	CONDUCTIVITY (120.1/2510 B)	UMH/CM	5000
	SULFATE (375.4)	MG/L	3000
	TOTAL DISSOLVED SOLIDS (160.1)	MG/L	4100

001418

Analysis Report

Analysis: Group of Single Metals

Accession:	711653
Client:	AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.
Project Number:	711365
Project Name:	PNM
Project Location:	HAMPTON 4N
Department:	METALS

001419

(0) Page 1  
Date 16-Dec-97

"FINAL REPORT FORMAT - SINGLE"

Accession: 711653  
Client: AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.  
Project Number: 711365  
Project Name: PNM  
Project Location: HAMPTON 4N  
Test: Group of Single Metals  
Matrix: WATER  
QC Level: II

Lab Id: 001  
Client Sample Id: 711365-01

Sample Date/Time: 25-NOV-97 1200  
Received Date: 04-DEC-97

Parameters:	Units:	Results:	Rpt Lmts:	Q:	Batch:	Analyst:
CALCIUM (200.7)	MG/L	400	1		I0W291	JR
POTASSIUM (200.7)	MG/L	6	2		X0W291	JR
MAGNESIUM (200.7)	MG/L	19	0.2		J0W291	JR
SODIUM (200.7)	MG/L	880	1	+	10W291	JR

Comments:

001420

[0] Page 2  
Date 16-Dec-97

"Method Report Summary"

Accession Number: 711653  
Client: AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.  
Project Number: 711365  
Project Name: PNM  
Project Location: HAMPTON 4N  
Test: Group of Single Metals

Client Sample Id:	Parameter:	Unit:	Result:
711365-01	CALCIUM (200.7)	MG/L	400
	POTASSIUM (200.7)	MG/L	6
	MAGNESIUM (200.7)	MG/L	19
	SODIUM (200.7)	MG/L	880

001421

Analysis Report

Analysis: HARDNESS

Accession:	711653
Client:	AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.
Project Number:	711365
Project Name:	PNM
Project Location:	HAMPTON 4N
Department:	METALS

001422

[0] Page 1  
Date 16-Dec-97

"FINAL REPORT FORMAT - SINGLE"

Accession: 711653  
Client: AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.  
Project Number: 711365  
Project Name: PNM  
Project Location: HAMPTON 4N  
Test: HARDNESS  
Matrix: WATER  
QC Level: II

Lab Id:	001	Sample Date/Time:	25-NOV-97 1200
Client Sample Id:	711365-01	Received Date:	04-DEC-97

Parameters:	Units:	Results:	Rpt Lmts:	Q:	Batch:	Analyst:
CALCIUM, HARDNESS (200.7)	MG/L	990	2		I0W291	JR
MAGNESIUM, HARDNESS (200.7)	MG/L	78	0.8		J0W291	JR
TOTAL HARDNESS	MG/L	1100	NA		NONE	JR

Comments:

001423

[0] Page 2  
Date 16-Dec-97

"Method Report Summary"

Accession Number: 711653  
Client: AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.  
Project Number: 711365  
Project Name: PNM  
Project Location: HAMPTON 4N  
Test: HARDNESS

Client Sample Id:	Parameter:	Unit:	Result:
711365-01	CALCIUM, HARDNESS (200.7)	MG/L	990
	MAGNESIUM, HARDNESS (200.7)	MG/L	78
	TOTAL HARDNESS	MG/L	1100

001424

## Data Qualifiers for Final Report

AEN-Pensacola Inorganic/Organic

@	Adjusted reporting limit due to sample matrix (dilution prior to digestion and/or analysis)
+	Elevated reporting limit due to dilution into calibration range
•	Elevated reporting limit due to matrix interference (dilution prior to digestion and/or analysis)
#	Elevated reporting limit due to insufficient sample size
D	Diluted out
J5	The reported value is quantitated as a TIC; therefore, it is estimated
ND = Not Detected	N/S = Not Submitted      N/A = Not Applicable

Florida Projects Inorganic/Organic

Y1	Improper preservation, no preservative present in sample upon receipt
Y2	Improper preservation, incorrect preservative present in sample upon receipt
Y3	Improper preservation, sample temperature exceeded EPA temperature limits of 2-6°C upon receipt
Y (FL description)	The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
Q	Sample held beyond the accepted holding time
I	The reported value is < Laboratory RL and > laboratory MDL
U1	The reported value is ≤ Laboratory MDL (value for sample result is reported as the MDL)
U (FL description)	Indicates the compound was analyzed for but not detected.
T	The reported value is < Laboratory MDL (value shall not be used for statistical analysis)
V	The analyte was detected in both the sample and the associated method blank.
J1	Surrogate recovery limits have been exceeded
J2	The sample matrix interfered with the ability to make any accurate determinations
J3	The reported value failed to meet the established quality control criteria for either precision or accuracy
J (FL description)	Estimated value; not accurate.

AFCEE Projects (under OAPP) and All Other (AEN-PN) Projects/Sites for Inorganic/Organic Parameters

J4	(For positive results)      Temperature limits exceeded (≤2°C or ≥ 6°C)
J (AFCEE description)	The analyte was positively identified, the quantitation is an estimation
1	(For nondetects)      Temperature limits exceeded (≤2°C or ≥ 6°C)
..2	Improper preservation, no preservative present in sample upon receipt
R3	Improper preservation, incorrect preservative present in sample upon receipt
R4	Holding time exceeded
R5	Collection requirements not met, improper container used for sample
R (AFCEE description)	The data are unusable due to deficiencies in the ability to analyze the sample and meet QC criteria
F	< RL and > laboratory MDL
F (AFCEE description)	The analyte was positively identified but the associated numerical value is below the AFCEE or lab RL
U2	≤ Laboratory MDL (value for result will be the MDL, never below the MDL)
U (AFCEE description)	The analyte was analyzed for but not detected. The associated numerical value is at or below the MDL
B (AFCEE description)	The analyte was found in the associated blank, as well as in the sample

ICR Projects Inorganic/Organic

A	Acceptable
R6	Rejected

Examples: ICR Flags

R6 = Laboratory extracted the sample but the refrigerator malfunctioned so the extract became warm and client was notified

R6 = Sample arrived in laboratory in good condition; however, the laboratory did not analyze it within EPA's established holding time limit.

CLP and CLP-like Projects

Refer to referenced CLP Statement of Work (SOW) for explanation of data qualifiers

IDL = Laboratory Instrument Detection Limit

MDL = Laboratory Method Detection Limit

RL = Reporting Limit (AFCEE RLs are listed in the AFCEE QAPP)

CLP CRDL = CLP Contract Required Detection Limit (these limits are listed in the EPA CLP Statement of Work or SOW)

CLP CRQL = CLP Contract Required Quantitation Limit (these limits are listed in the EPA CLP Statement of Work or SOW)

At time a sample arrives at the laboratory improperly preserved (at improper pH or temperature) or after holding time has expired or prepared or analyzed after holding time, client must be notified in writing (i.e. case narrative).

AEN-Pensacola uses the most current promulgated methods contained in the reference manuals.



Quality Control Report

Analysis: TOTAL ALKALINITY

Accession:	711653
Client:	AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.
Project Number:	711365
Project Name:	PNM
Project Location:	HAMPTON 4N
Department:	WET CHEM

001426

[0] Page 1  
Date 12-Dec-97

## "WetChem Quality Control Report"

Parameter:	ALKALINITY	PH
Batch Id:	ASW046	PHW251
Blank Result:	<1	N/A
Anal. Method:	2320B	150.1
Prep. Method:	N/A	N/A
Analysis Date:	04-DEC-97	04-DEC-97
Prep. Date:	04-DEC-97	04-DEC-97

## Sample Duplication

Sample Dup:	711550-2	711654-1
Rept Limit:	<1	N/A
Sample Result:	99.6	5.92
Dup Result:	99.9	5.92
Sample RPD:	0	0
Max RPD:	4	0.12
Dry Weight%	N/A	N/A

## Matrix Spike

Sample Spiked:	711550-2	N/A
Rept Limit:	<1	N/A
Sample Result:	99.6	
Spiked Result:	127.0	
Spike Added:	25.0	
% Recovery:	110	
% Rec Limits:	77-122	
Dry Weight%	N/A	

## ICV

ICV Result:	244	10.09
True Result:	250	10.00
% Recovery:	98	101
% Rec Limits:	90-110	90-110

## LCS

LCS Result:		6.87
True Result:		6.87
% Recovery:		100
% Rec Limits:		96-104

001427

----- Common Footnotes WetChem -----

N/A = NOT APPLICABLE.  
 N/S = NOT SUBMITTED.  
 N/C = SAMPLE AND DUPLICATE RESULTS ARE AT OR BELOW AEN REPORTING LIMIT;  
 THEREFORE, THE RPD IS "NOT CALCULABLE" AND NO CONTROL LIMITS APPLY.  
 N/D = NOT DETECTED.  
 R = REACTIVE  
 T = TOTAL  
 G = SAMPLE AND/OR DUPLICATE RESULT IS BELOW 5 X AEN REPORTING LIMIT AND  
 THE ABSOLUTE DIFFERENCE BETWEEN THE SAMPLE AND DUPLICATE RESULT IS AT  
 OR BELOW AEN REPORTING LIMIT; THEREFORE, THE RESULTS ARE "IN CONTROL".  
 Q = THE ANALYTICAL (POST-DISTILLATION) SPIKE IS REPORTED DUE TO PERCENT RECOVERY  
 BEING OUTSIDE ACCEPTANCE LIMITS ON THE MATRIX (PRE-DISTILLATION) SPIKE.  
 # = ELEVATED REPORTING LIMIT DUE TO INSUFFICIENT SAMPLE.  
 + = ELEVATED REPORTING LIMIT DUE TO DILUTION INTO CALIBRATION RANGE.  
 \* = ELEVATED REPORTING LIMIT DUE TO MATRIX INTERFERENCE (DILUTION PRIOR DIGESTION  
 AND/OR ANALYSIS).  
 @ = ADJUSTED REPORTING LIMIT DUE TO SAMPLE MATRIX (DILUTION PRIOR TO DIGESTION  
 AND/OR ANALYSIS).  
 P = ANALYTICAL (POST DIGESTION) SPIKE.  
 I = DUPLICATE INJECTION.  
 & = AUTOMATED  
 F = SAMPLE SPIKED > 4 X SPIKE CONCENTRATION.  
 N/C+ = NOT CALCULABLE  
 H = SAMPLE AND/OR DUPLICATE RESULT IS BELOW 5 X AEN REPORTING LIMIT AND THE  
 ABSOLUTE DIFFERENCE BETWEEN THE RESULTS EXCEEDS THE AEN REPORTING  
 LIMIT; THEREFORE, THE RESULTS ARE "OUT OF CONTROL".  
 A = SAMPLE AND DUPLICATE RESULTS ARE "OUT OF CONTROL".  
 Z = THE SAMPLE RESULT FOR THE SPIKE IS BELOW THE REPORTING LIMIT. HOWEVER,  
 THIS RESULT IS REPORTED FOR ACCURATE QC CALCULATIONS.  
 NH- SAMPLE AND / OR DUPLICATE RESULT IS BELOW 5 X AEN REPORTING LIMIT  
 AND THE ABSOLUTE DIFFERENCE BETWEEN THE RESULTS EXCEEDS THE AEN  
 REPORTING LIMIT; THEREFORE, THE RESULTS ARE "OUT OF CONTROL".  
 SAMPLE IS NON-HOMOGENEOUS.  
 (\*) = REPORTING LIMITS RAISED DUE TO CLP METHOD NOT REQUIRING A CONCENTRATION STEP FOR C  
 (CA) = SEE CORRECTIVE ACTIONS FORM.  
 \*\*\* MATRIX INTERFERENCE  
 SW-846, 3rd Edition, latest EPA-approved edition.  
 EPA 600/4-79-020, Revised March 1983.  
 STANDARD METHODS, For the Examination of Water and Wastewater, latest EPA-approved editio  
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 ANNUAL BOOK OF ASTM STANDARDS, VOLUMES 11.01 and 11.02, latest EPA-approved edition.  
 METHODS FOR THE DETERMINATION OF INORGANIC SUBSTANCES IN ENVIRONMENTAL SAMPLES,  
 EPA600/R-93/100, AUGUST 1993  
 METHODS FOR SOIL ANALYSIS, PART 2, CHEMICAL AND MICROBIOLOGICAL PROPERTIES, 2ND EDITION.  
 AEN-PN USES THE MOST CURRENT PROMULGATED METHODS FROM THE REFERENCES LISTED ABOVE.

1. COLIFORM. COLIFORM PRECISION IS MEASURED BY THE ABSOLUTE DIFFERENCE BETWEEN  
 THE LOGARITHM OF COLONIES PER 100 MLS OF SAMPLE ON DUPLICATE PLATES.
2. PH. PH PRECISION IS MEASURED BY THE ABSOLUTE DIFFERENCE BETWEEN THE  
 SAMPLE AND DUPLICATE ANALYSIS.
3. FLASHPOINT. FLASHPOINT PRECISION IS MEASURED BY THE ABSOLUTE DIFFERENCE BETWEEN  
 THE SAMPLE AND DUPLICATE ANALYSIS.

RPD = RELATIVE PERCENT DIFFERENCE (OR DEVIATION).  
 RPT LMTS = REPORTING LIMITS BASED ON METHOD DETECTION LIMIT STUDIES.

DPH = DOLLY P. HWANG	RB = REBECCA BROWN	JL = JANET LECLEAR
MM = MIKE MCKENZIE	ED = ESTHER DANTIN	CR = CYNTHIA ROBERTS
PLD = PAULA L. DOUGHTY	LV = LASSANDRA VON APPEN	JTZ = JONATHAN T. ZIENTARSKI
RH = RICKY HAGENDORFER	MG = MARY GUTIERREZ	AB = AMY BRADLEY
NK = NIKKI KILBURN		

001428

Quality Control Report

Analysis: Group of Single Wetchem

Accession:	711653
Client:	AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.
Project Number:	711365
Project Name:	PNM
Project Location:	HAMPTON 4N
Department:	WET CHEM

001429

(0) Page 1  
Date 12-Dec-97

## "WetChem Quality Control Report"

Parameter:	CHLORIDE	CONDUCT'Y	SULFATE	TDS
Batch Id:	CIW116	CDW026	SEW094	TDW069
Blank Result:	<1	<1	<10	<5
Anal. Method:	325.3	120.1	375.4	160.1
Prep. Method:	N/A	N/A	N/A	N/A
Analysis Date:	03-DEC-97	12-DEC-97	08-DEC-97	09-DEC-97
Prep. Date:	03-DEC-97	12-DEC-97	08-DEC-97	08-DEC-97

## Sample Duplication

Sample Dup:	711631-2	711653-1	711603-1	711653-1
Rept Limit:	<1	<1	<10	<5
Sample Result:	12.8	4990	<10	4120
Dup Result:	12.6	4980	<10	4068
Sample RPD:	2	0	N/C	1
Max RPD:	6	2	10	15
Dry Weight%	N/A	N/A	N/A	N/A

## Matrix Spike

Sample Spiked:	711631-2	N/A	711603-1	N/A
Rept Limit:	<1	N/A	<10	N/A
Sample Result:	12.8		<10	
Spiked Result:	70.2		21.1	
Spike Added:	55.0		20.0	
% Recovery:	104		106	
% Rec Limits:	88-113		64-150	
Dry Weight%	N/A		N/A	

## ICV

ICV Result:	98.1		20.1	
True Result:	100		20.0	
% Recovery:	98		101	
% Rec Limits:	90-110		90-110	

## LCS

LCS Result:	1426		310	
True Result:	1412		293	
% Recovery:	101		106	
% Rec Limits:	98-102		77-122	

001430

[0] Page 2  
Date 12-Dec-97

"Quality Control Comments"

Batch Id:                      Comments:

---

CIW116	711654-1; 711653-1	WAS ADDED TO BATCH ON 4-DEC-97
TDW069	712058-1,2,3,4,5,6;	712059-1,2,3,4,5,6,7,8,9,10 WERE ADDED TO BATCH
TDW069	ON 10-DEC-97	

001431

(0) Page 3  
Date 12-Dec-97

----- Common Footnotes WetChem -----

N/A = NOT APPLICABLE.  
N/S = NOT SUBMITTED.  
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THEREFORE, THE RPD IS "NOT CALCULABLE" AND NO CONTROL LIMITS APPLY.  
N/D = NOT DETECTED.  
R = REACTIVE  
T = TOTAL  
G = SAMPLE AND/OR DUPLICATE RESULT IS BELOW 5 X AEN REPORTING LIMIT AND  
THE ABSOLUTE DIFFERENCE BETWEEN THE SAMPLE AND DUPLICATE RESULT IS AT  
OR BELOW AEN REPORTING LIMIT; THEREFORE, THE RESULTS ARE "IN CONTROL".  
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ABSOLUTE DIFFERENCE BETWEEN THE RESULTS EXCEEDS THE AEN REPORTING  
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SAMPLE IS NON-HOMOGENEOUS.  
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RPT LMTS = REPORTING LIMITS BASED ON METHOD DETECTION LIMIT STUDIES.

DPH = DOLLY P. HWANG	RB = REBECCA BROWN	JL = JANET LECLEAR
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PLD = PAULA L. DOUGHTY	LV = LASSANDRA VON APPEN	JTZ = JONATHAN T. ZIENTARSKI
RH = RICKY HAGENDORFER	MG = MARY GUTIERREZ	AB = AMY BRADLEY
NK = NIKKI KILBURN		

001432

Quality Control Report

Analysis: Group of Single Metals

Accession:	711653
Client:	AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.
Project Number:	711365
Project Name:	PNM
Project Location:	HAMPTON 4N
Department:	METALS

00433



[0] Page 1  
Date 16-Dec-97

## "Metals Quality Control Report"

Parameter:	CALCIUM	POTASSIUM	MAGNESIUM	SODIUM
Batch Id:	IOW291	XOW291	JOW291	10W291
Blank Result:	<1	<2	<0.2	<0.2
Anal. Method:	200.7	200.7	200.7	200.7
Prep. Method:	200.7	200.7	200.7	200.7
Analysis Date:	09-DEC-97	11-DEC-97	11-DEC-97	11-DEC-97
Prep. Date:	08-DEC-97	08-DEC-97	08-DEC-97	08-DEC-97

## Sample Duplication

Sample Dup:	711410-2	711410-2	711410-2	711410-2
Rept Limit:	<1	<2	<0.2	<0.2
Sample Result:	23	22	21	23
Dup Result:	23	22	21	23
Sample RPD:	0	0	0	0
Max RPD:	20	20	20	20
Dry Weight%	N/A	N/A	N/A	N/A

## Matrix Spike

Sample Spiked:	711410-2	711410-2	711410-2	711410-2
Rept Limit:	<1	<2	<0.2	<0.2
Sample Result:	3	<2	0.8	3.0
Spiked Result:	23	22	21	23
Spike Added:	20	20	20	20
% Recovery:	100	110	101	100
% Rec Limits:	75-125	75-125	75-125	75-125
Dry Weight%	N/A	N/A	N/A	N/A

## ICV

ICV Result:	24	26	25	24
True Result:	25	25	25	25
% Recovery:	96	104	100	96
% Rec Limits:	95-105	95-105	95-105	95-105

## LCS

LCS Result:	20	21	20	20
True Result:	20	20	20	20
% Recovery:	100	105	100	100
% Rec Limits:	80-120	80-120	80-120	80-120

001434

[0] Page 2  
Date 16-Dec-97

"Quality Control Comments"

Batch Id:                      Comments:

---

IOW291	ANALYST: JR
IOW291	The results reported under 'Sample Duplication' are the MS/MSD.
XOW291	ANALYST: JR
XOW291	The results reported under 'Sample Duplication' are the MS/MSD.
JOW291	ANALYST: JR
JOW291	The results reported under 'Sample Duplication' are the MS/MSD.
10W291	ANALYST: JR
10W291	The results reported under 'Sample Duplication' are the MS/MSD.

001435

----- Common Footnotes Metals -----

N/A = NOT APPLICABLE.  
N/S = NOT SUBMITTED.  
N/C = SAMPLE AND DUPLICATE RESULTS ARE AT OR BELOW THE REPORTING LIMIT;  
THEREFORE, THE RPD IS "NOT CALCULABLE" AND NO CONTROL LIMITS APPLY.  
N/D = NOT DETECTED.  
DISS. OR D = DISSOLVED  
T & D = TOTAL AND DISSOLVED  
R = REACTIVE  
T = TOTAL  
G = SAMPLE AND/OR DUPLICATE RESULT IS BELOW 5 X THE REPORTING LIMIT AND  
THE ABSOLUTE DIFFERENCE BETWEEN THE SAMPLE AND DUPLICATE RESULT IS AT  
OR BELOW AEN REPORTING LIMIT; THEREFORE, THE RESULTS ARE "IN CONTROL".  
Q = THE ANALYTICAL (POST-DIGESTION) SPIKE IS REPORTED DUE TO PERCENT RECOVERY  
BEING OUTSIDE ACCEPTANCE LIMITS ON THE MATRIX (PRE-DIGESTION) SPIKE.  
# = ELEVATED REPORTING LIMIT DUE TO INSUFFICIENT SAMPLE.  
+ = ELEVATED REPORTING LIMIT DUE TO DILUTION INTO CALIBRATION RANGE.  
\* = ELEVATED REPORTING LIMIT DUE TO MATRIX INTERFERENCE. (DILUTION PRIOR  
TO ANALYSIS)  
@ = ADJUSTED REPORTING LIMIT DUE TO SAMPLE MATRIX. (DILUTION PRIOR TO  
DIGESTION)  
P = ANALYTICAL (POST DIGESTION) SPIKE.  
I = DUPLICATE INJECTION.  
& = AUTOMATED  
F = SAMPLE SPIKED > 4 X SPIKE CONCENTRATION.  
N/C+ = NOT CALCULABLE  
N/C\* = NOT CALCULABLE; SAMPLE SPIKED > 4 X SPIKE CONCENTRATION.  
H = SAMPLE AND/OR DUPLICATE RESULT IS BELOW 5 X AEN REPORTING LIMIT AND THE  
ABSOLUTE DIFFERENCE BETWEEN THE RESULTS EXCEEDS THE AEN REPORTING  
LIMIT; THEREFORE, THE RESULTS ARE "OUT OF CONTROL".  
A = SAMPLE AND DUPLICATE RESULTS ARE "OUT OF CONTROL".  
Z = THE SAMPLE RESULT FOR THE SPIKE IS BELOW THE REPORTING LIMIT. HOWEVER,  
THIS RESULT IS REPORTED FOR ACCURATE QC CALCULATIONS.  
NH= THE RELATIVE PERCENT DIFFERENCE (RPD) EXCEEDS THE AEN CONTROL LIMIT  
AND IS "OUT OF CONTROL; DUE TO A NON-HOMOGENEOUS SAMPLE MATRIX.  
J = (FLORIDA DEP 'J' FLAG) - MATRIX SPIKE AND POST SPIKE RECOVERY IS OUT OF  
THE ACCEPTABLE RANGE. SEE OUT OF CONTROL EVENTS FORM.  
U = (FLORIDA DEP 'U' FLAG) - THE COMPOUND WAS ANALYZED FOR, BUT NOT DETECTED.  
S = METHOD OF STANDARD ADDITIONS (MSA) WAS PERFORMED ON THIS SAMPLE.

FROM QUALITY CONTROL REPORT:

RPD= RELATIVE PERCENT DEVIATION.

REPT LIMIT= REPORTING LIMIT BASED ON METHOD DETECTION LIMIT STUDIES.

NOTE: THE UNITS REPORTED ON THE QUALITY CONTROL REPORT ARE REPORTED ON AN AS  
RUN BASIS. (NOT ADJUSTED FOR DRY WEIGHT).

SW-846, 3rd Edition, latest revision.

EPA 600/4-79-020, Revised March 1983.

NIOSH Manual of Analytical Methods, 4th Edition.

Standard Methods For the Examination of Water and Wastewater, 18th Edition, 1992.

Methods For the Determination of Metals in Environmental Samples - Supplement I,

EPA 600/R-94-111, May 1994.

GJ = GARY JACOBS

JLH = JAMES L. HERED

JR = JOHN REED

LV = LASSANDRA VON APPEN

001436

Quality Control Report

Analysis: HARDNESS

Accession:	711653
Client:	AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.
Project Number:	711365
Project Name:	PNM
Project Location:	HAMPTON 4N
Department:	METALS

001437

[0] Page 1  
Date 16-Dec-97

## "Metals Quality Control Report"

Parameter:	CALCIUM	MAGNESIUM
Batch Id:	IOW291	JOW291
Blank Result:	<1	<0.2
Anal. Method:	200.7	200.7
Prep. Method:	200.7	200.7
Analysis Date:	09-DEC-97	11-DEC-97
Prep. Date:	08-DEC-97	08-DEC-97

## Sample Duplication

Sample Dup:	711410-2	711410-2
Rept Limit:	<1	<0.2

Sample Result:	23	21
Dup Result:	23	21
Sample RPD:	0	0
Max RPD:	20	20
Dry Weight%	N/A	N/A

## Matrix Spike

Sample Spiked:	711410-2	711410-2
Rept Limit:	<1	<0.2

Sample Result:	3	0.8
Spiked Result:	23	21
Spike Added:	20	20
% Recovery:	100	101
% Rec Limits:	75-125	75-125
Dry Weight%	N/A	N/A

## ICV

ICV Result:	24	25
True Result:	25	25
% Recovery:	96	100
% Rec Limits:	95-105	95-105

## LCS

LCS Result:	20	20
True Result:	20	20
% Recovery:	100	100
% Rec Limits:	80-120	80-120

001438

[0] Page 2  
Date 16-Dec-97

"Quality Control Comments"

Batch Id:                      Comments:

---

IOW291	ANALYST: JR
IOW291	The results reported under 'Sample Duplication' are the MS/MSD.
JOW291	ANALYST: JR
JOW291	The results reported under 'Sample Duplication' are the MS/MSD.

001439

(0) Page 3  
Date 16-Dec-97

----- Common Footnotes Metals -----

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DISS. OR D = DISSOLVED  
T & D = TOTAL AND DISSOLVED  
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THE ABSOLUTE DIFFERENCE BETWEEN THE SAMPLE AND DUPLICATE RESULT IS AT  
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N/C+ = NOT CALCULABLE  
N/C\* = NOT CALCULABLE; SAMPLE SPIKED > 4 X SPIKE CONCENTRATION.  
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EPA 600/R-94-111, May 1994.

GJ = GARY JACOBS

JLH = JAMES L. HERED

JR = JOHN REED

LV = LASSANDRA VON APPEN

001440

*American Environmental Network of Florida*

Lab Accession #: 711 653

Date Received: 12-4-97

- |   |      |     |     |   |      |     |           |
|---|------|-----|-----|---|------|-----|-----------|
| 1. Was there a Chain of Custody?                                      | Yes  | No* |     | 8. Were samples checked for preservative? (Check pH of all H <sub>2</sub> O requiring preservative except VOA vials that require zero headspace)* | Yes  | No* | N/A       |
| 2. Was Chain of Custody properly filled out and relinquished?         | Yes  | No* |     | 9. Is there sufficient volume for analysis requested?   | Yes  | No* | ME 14419; |
| 3. Were samples received cold? (Criteria: 2° - 6°C: AEN-SOP 1055)     | Yes  | No* | N/A | 10. Were samples received within Holding Time? (REFER TO AEN-SOP 1040)  | Yes  | No* |           |
| 4. Were all samples properly labeled and identified?                  | Yes  | No* |     | 11. Is Headspace visible > 1/4" in diameter in VOA vials?* If any headspace is evident, comment in out-of-control section.                        | Yes* | No  | N/A       |
| 5. Did samples require splitting? Req By: PM Client Other*            | Yes* | No  |     | 12. If sent, were matrix spike bottles returned?  | Yes  | No* | N/A       |
| 6. Were samples received in proper containers for analysis requested? | Yes  | No* |     | 13. Was Project Manager notified of problems? (initials: )  | Yes  | No* | N/A       |
| 7. Were all sample containers received intact?                        | Yes  | No* |     |   |      |     |           |

Airbill Number(s): 329 4596 986

Shipped By: FEDEX

Cooler Number(s): N/S

Shipping Charges: N/A

Cooler Weight(s): MA

Cooler Temp(s) (°C): 50

(LIST THERMOMETER NUMBER(S) FOR VERIFICATION)

***Out of Control Events and Inspection Comments:***

10. PH, Conductivity and TDS were received out of hold time. A/E 12/4/97.

(USE BACK OF PSIF FOR ADDITIONAL NOTES AND COMMENTS) 

Inspected By: J. Webb Date: 12-4-97 Logged By: PKC Date: 12/4/97

**Note all Out-of-Control and/or questionable events on Comment Section of this form.**

**Note who requested the splitting of samples on the Comment Section of this form.**

*All preservatives for the State of North Carolina, the State of New York, and other requested samples are to be recorded on the sheet provided to record pH results (AEN-SOP 938, section 2.2.9).*

According to EPA, %" of headspace is allowed in 40 ml vials requiring volatile analysis, however, AEN makes it policy to record any headspace as out-of-control (AEN-SOP 938, section 2.2.12).



# CHAIN OF CUSTODY

DATE: 11/26/97 PAGE: 1 OF 1

PROJECT MANAGER: <u>Gannon, Maurice</u>		ANALYSIS REQUEST	
COMPANY: <u>PNM</u>	ADDRESS: <u>Alvarado Square</u>	General Chemistry: <u>Me. Action/An.</u>	
PHONE: <u>505 241-2018</u>	FAX: <u>505 241-2340</u>	Base/Neutral/Acid Compounds GC/MS (625/8270)	
BILL TO: <u>Same</u>	COMPANY: <u>711653</u>	Herbicides (615/8150)	
ADDRESS: <u>711653</u>		Pesticides/PCB (608/8080)	
		Volatile Organics (8260) GC/MS	
		Volatile Organics (624/8240) GC/MS	
		Polynuclear Aromatics (610/8310)	
		504 EDB □ / DBCP □	
		Chlorinated Hydrocarbons (601/8010)	
		BTX/MTE/EDC & EDB (8020/8010/Short)	
		BTX & Chlorinated Aromatics (602/8020)	
		Gasoline/BTEX & MTE (M8015/8020)	
		(M8015) Gas/Purge & Trap	
		(MOD.8015) Diesel/Direct/Inject	
		Petroleum Hydrocarbons (418.1) TPH	
		504 EDB □ / DBCP □	
		Polynuclear Aromatics (610/8310)	
		Volatile Organics (624/8240) GC/MS	
		Volatile Organics (8260) GC/MS	
		Pesticides/PCB (608/8080)	
		Herbicides (615/8150)	
		Base/Neutral/Acid Compounds GC/MS (625/8270)	
		General Chemistry: <u>Me. Action/An.</u>	
		Priority Pollutant Metals (13)	
		Target Analyte List Metals (23)	
		RCRA Metals (8)	
		RCRA Metals by TCLP (Method 1311)	
		Metals	

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR THIS PROJECT	
PROJ NO: <u>Hampton 4M</u>	(RUSH) □ 24hr □ 48hr □ 72hr □ 1 WEEK	(NORMAL) <input checked="" type="checkbox"/>	
P.O. NO:	CERTIFICATION REQUIRED: <input type="checkbox"/> NM <input type="checkbox"/> SDWA <input type="checkbox"/> OTHER		
SHIPPED VIA:	METHANOL PRESERVATION <input type="checkbox"/>		
COMMENTS: FIXED FEE <input checked="" type="checkbox"/>		Will Fax Cation/Anion Lst Dec 1, 1997 001442	
Signature: <u>[Signature]</u> Time: <u>10:30</u> Printed Name: <u>Marks, Wanda</u> Date: <u>11/26/97</u> Company: <u>PNM</u>		Signature: <u>[Signature]</u> Time: <u>10:30</u> Printed Name: <u>Marks, Wanda</u> Date: <u>11/26/97</u> Company: <u>PNM</u>	

# Interlab Chain of Custody

<b>NETWORK PROJECT MANAGER: KIMBERLY D. McNEILL</b>			
<b>COMPANY:</b> American Environmental Network <b>ADDRESS:</b> 2709-D Pan American Freeway, NE Albuquerque, NM 87107			
<b>CLIENT PROJECT MANAGER:</b> Kim McNeill			
<b>SAMPLE ID</b>	<b>DATE</b>	<b>TIME</b>	<b>LAB ID</b>
711365-01	11-25	12:00	AR

ANALYSIS REQUEST									
<input checked="" type="checkbox"/>	Metals - TAL								
<input checked="" type="checkbox"/>	Metals - PP List								
<input checked="" type="checkbox"/>	Metals - RCRA								
<input checked="" type="checkbox"/>	RCRA Metals by TCLP (1311)								
<input checked="" type="checkbox"/>	Gen Chemistry								
<input checked="" type="checkbox"/>	Oil and Grease								
<input checked="" type="checkbox"/>	COD								
<input checked="" type="checkbox"/>	BOD								
<input checked="" type="checkbox"/>	Pesticides/PCB (608/8080)								
<input checked="" type="checkbox"/>	Herbicides (615/8150)								
<input checked="" type="checkbox"/>	Base/Neutral Acid Compounds GC/MS (625/8270)								
<input checked="" type="checkbox"/>	Volatile Organics GC/MS (624/8240)								
<input checked="" type="checkbox"/>	Polynuclear Aromatics (610/8310)								
<input checked="" type="checkbox"/>	8240 (TCLP 1311) ZHE								
<input checked="" type="checkbox"/>	8270 (TCLP 1311)								
<input checked="" type="checkbox"/>	Gross Alpha/Beta								
<input checked="" type="checkbox"/>	TO-14								
<input checked="" type="checkbox"/>	Number of Containers								

<b>PROJECT INFORMATION</b>		<b>SAMPLE RECEIPT</b>	
PROJECT NUMBER: <b>711365</b>	TOTAL NUMBER OF CONTAINERS	SAN DIEGO	
PROJECT NAME: <b>PAW</b>	CHAIN OF CUSTODY SEALS	N.C.	
CK LEVEL: <b>SID IV</b>	INTACT?	RENTON	
CK REQUIRED: <b>MS MSD BLANK</b>	RECEIVED GOOD COND/ACOLD	PENSACOLA	
LAB STANDARD: <b>RUSIN</b>	LAB NUMBER	PORTLAND	
		PHOENIX	
		ILL	

DUE DATE: _____ RUSH SURCHARGE: _____ CLIENT DISCOUNT: _____ SPECIAL CERTIFICATION REQUIRED: <input type="checkbox"/> YES <input type="checkbox"/> NO	See Also Attachment Cat/Arion % Difference
--	---

RELINQUISHED BY: 1. Signature: <i>[Signature]</i> Printed Name: <b>Patricia 1700</b> Date: <b>12-3-97</b> Company: <b>Albuquerque NM</b>	RELINQUISHED BY: 2. Signature: <i>[Signature]</i> Printed Name: <b>Patricia 1700</b> Date: <b>12-3-97</b> Company: <b>Albuquerque NM</b>
--	--

RECEIVED BY: 1. Signature: <i>[Signature]</i> Printed Name: <b>Patricia 1700</b> Date: <b>12-3-97</b> Company: <b>Albuquerque NM</b>	RECEIVED BY: 2. Signature: <i>[Signature]</i> Printed Name: <b>Patricia 1700</b> Date: <b>12-3-97</b> Company: <b>Albuquerque NM</b>
--	--

OFF: (505) 325-5667



LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *5-Dec-97*  
COC No.: *7087*  
Sample No.: *16982*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - EB Well*

Project Location: *9711251200*

Sampled by: *MG/MS*

Date: *25-Nov-97* Time: *12:00*

Analyzed by: *DC*

Date: *4-Dec-97*

Sample Matrix: *Liquid*

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

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *12/5/97*

*00444*



**ON SITE**  
TECHNOLOGIES, LTD.

## QUALITY ASSURANCE REPORT

for EPA Method 8020

**Internal QC No.:** 0559-STD

**Surrogate QC No.:** 0556-STD

**Reference Standard QC No.:** 0529/30-QC

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

Parameter	Unit of Measure	True Value	Analyzed Value	RPD	Limit
Benzene	ppb	20.0	20.4	2	15%
Toluene	ppb	20.0	21.1	5	15%
Ethylbenzene	ppb	20.0	21.2	6	15%
m,p-Xylene	ppb	40.0	41.1	3	15%
o-Xylene	ppb	20.0	21.0	5	15%

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	94	87	(39-150)	4	20%
Toluene	99	95	(46-148)	4	20%
Ethylbenzene	99	92	(32-160)	4	20%
m,p-Xylene	100	93	(35-145)	4	20%
o-Xylene	100	95	(35-145)	4	20%

	S1 Percent Recovered	S2 Percent Recovered		S1 Percent Recovered	S2 Percent Recovered
Laboratory Identification			Laboratory Identification		
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
16982-7087	94				
				248	(m)
				128.97	12/5/72

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

001445

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *17-Nov-97*  
COC No.: *7083*  
Sample No.: *16818*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*

Project Location: *9711111330; TH-7*

Sampled by: *MS*

Date: *11-Nov-97* Time: *13:30*

Analyzed by: *DC*

Date: *13-Nov-97*

Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>2171</i>	<i>ug/L</i>	<i>10</i>	<i>ug/L</i>
<i>Toluene</i>	<i>4185</i>	<i>ug/L</i>	<i>10</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>190</i>	<i>ug/L</i>	<i>10</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>2225</i>	<i>ug/L</i>	<i>10</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>631</i>	<i>ug/L</i>	<i>10</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>9402</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *11/17/97*

*00417*



**ON SITE**  
TECHNOLOGIES, LTD.

## QUALITY ASSURANCE REPORT

**Reference Standard QC No.:** 0529/30-QC

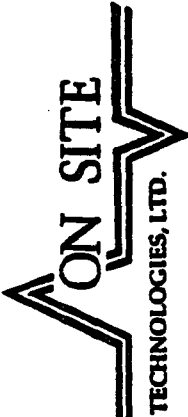
Parameter	Result	Unit of Measure
Average Amount of All Analytes in Blank	< 0.2	ppb

<i>Parameter</i>	<i>Unit of Measure</i>	<i>True Value</i>	<i>Analyzed Value</i>	<i>RPD</i>	<i>Limit</i>
<i>Benzene</i>	ppb	20.0	20.0	0	15%
<i>Toluene</i>	ppb	20.0	20.7	4	15%
<i>Ethylbenzene</i>	ppb	20.0	20.8	4	15%
<i>m,p-Xylene</i>	ppb	40.0	39.7	1	15%
<i>o-Xylene</i>	ppb	20.0	20.8	4	15%

<i>Parameter</i>	<i>1 - Percent Recovered</i>	<i>2 - Percent Recovered</i>	<i>Limit</i>	<i>RPD</i>	<i>Limit</i>
<i>Benzene</i>	89	93	(39-150)	2	20%
<i>Toluene</i>	88	94	(46-148)	2	20%
<i>Ethylbenzene</i>	96	98	(32-160)	2	20%
<i>m,p-Xylene</i>	91	94	(35-145)	2	20%
<i>o-Xylene</i>	93	96	(35-145)	2	20%

	S1 Percent Recovered	S2 Percent Recovered		S1 Percent Recovered	S2 Percent Recovered
Laboratory Identification			Laboratory Identification		
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
16818-7083	95				
				JHR	(DC)
				11/24/97	11/17/97

JO 1448



# CHAIN OF CUSTODY RECORD

612 E. Murphy Dr. • P.O. Box 2608 • Farmington, NM 87499  
LAB: (505) 325-5667 • FAX: (505) 325-6256

Purchase Order No.:		Job No.		Name: Maureen Gannon		Title:	
Name: Denver Bearden		Company: PNM Gas Services		Company: PNM Gas Services			
Address: 603 W. Elm Street		Dept. 324-3763		Mailing Address: Alverado Square, Mail Stop 0408			
City, State, Zip: Farmington, NM 87401				City, State, Zip: Albuquerque, NM 87158			
Sampling Location: Hampton 4M				Telephone No. 505-848-2974		Telefax No.	
Sample: Mark Sikelianos				ANALYSIS REQUESTED			
SAMPLE IDENTIFICATION		SAMPLE DATE		MATRIX PRES		LAB ID	
971111330 TH-7		11/11/97		100 H-1		16818-7083	
60149							
Requested by: [Signature]		Date/Time: 11/11/97 1430		Received by: [Signature]		Date/Time: 11/11/97 1430	
Requested by:		Date/Time:		Received by:		Date/Time:	
Requested by:		Date/Time:		Received by:		Date/Time:	
Method of Shipment:		Rush		24-48 Hours		10 Working Days	
Authorized by: [Signature]		Date: 11/11/97		Special Instructions:		Results to be sent to both parties.	

OFF: (505) 325-5667



LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *5-Dec-97*  
COC No.: *7087*  
Sample No.: *16982*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - EB Well*Project Location: *9711251200*Sampled by: *MG/MS*Date: *25-Nov-97* Time: *12:00*Analyzed by: *DC*Date: *4-Dec-97*Sample Matrix: *Liquid*

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

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *12/5/97*

*001450*



OFF: (505) 325-5667



LAB: (505) 325-1536

**QUALITY ASSURANCE REPORT**

for EPA Method 8020

Date Analyzed: 4-Dec-97

Internal QC No.: 0559-STD

Surrogate QC No.: 0556-STD

Reference Standard QC No.: 0529/30-QC

**Method Blank**

Parameter	Result	Unit of 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	20.4	2	15%
Toluene	ppb	20.0	21.1	5	15%
Ethylbenzene	ppb	20.0	21.2	6	15%
m,p-Xylene	ppb	40.0	41.1	3	15%
o-Xylene	ppb	20.0	21.0	5	15%

**Matrix Spike**

Parameter	1 - Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	94	87	(38-150)	4	20%
Toluene	99	95	(46-148)	4	20%
Ethylbenzene	99	92	(32-160)	4	20%
m,p-Xylene	100	93	(35-145)	4	20%
o-Xylene	100	95	(35-145)	4	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)	
16982-7087	94				
					(12)
					12/5/97

S1: Fluorobenzene

OFF: (505) 325-5667



LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn: **Denver Bearden**  
Company: **PNM Gas Services**  
Address: **603 W. Elm**  
City, State: **Farmington, NM 87401**

Date: **5-Nov-97**  
COC No.: **7080**  
Sample No.: **16700**  
Job No.: **2-1000**

Project Name: **PNM Gas Services - Hampton 4M**  
Project Location: **9710301030; MW-1**  
Sampled by: **MS**  
Analyzed by: **HR**  
Sample Matrix: **Liquid**

Date: **30-Oct-97** Time: **10:30**  
Date: **4-Nov-97**

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<b>Benzene</b>	<b>2.4</b>	<b>ug/L</b>	<b>0.2</b>	<b>ug/L</b>
<b>Toluene</b>	<b>2.3</b>	<b>ug/L</b>	<b>0.2</b>	<b>ug/L</b>
<b>Ethylbenzene</b>	<b>ND</b>	<b>ug/L</b>	<b>0.2</b>	<b>ug/L</b>
<b>m,p-Xylene</b>	<b>1.1</b>	<b>ug/L</b>	<b>0.2</b>	<b>ug/L</b>
<b>o-Xylene</b>	<b>ND</b>	<b>ug/L</b>	<b>0.2</b>	<b>ug/L</b>
<b>TOTAL</b>	<b>5.8</b>	<b>ug/L</b>		

ND - Not Detected at Limit of Quantitation

Method - **SW-846 EPA Method 8204 Aromatic Volatile Organics by Gas Chromatography**

Approved By:   
Date: **11/5/97**

P.O. BOX 2606 • FARMINGTON, NM 87499

001452

OFF: (505) 325-5667



LAB: (505) 325-1556

### QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 4-Nov-97

Internal QC No.: 0559-STD

Surrogate QC No.: 0556-STD

Reference Standard QC No.: 0529/30-QC

#### Method Blank

Parameter	Result	Unit of 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	20.7	4	15%
Toluene	ppb	20.0	21.3	6	15%
Ethylbenzene	ppb	20.0	21.2	6	15%
m,p-Xylene	ppb	40.0	40.3	1	15%
o-Xylene	ppb	20.0	21.1	5	15%

#### Matrix Spike

Parameter	1 - Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	92	88	(39-150)	3	20%
Toluene	96	87	(46-148)	3	20%
Ethylbenzene	97	92	(32-160)	4	20%
m,p-Xylene	94	88	(35-145)	4	20%
o-Xylene	95	92	(35-145)	2	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)	
16699-7080	95				
16700-7080	95				
					(nc)
					11/5/97

S1: Fluorobenzene

001453

OFF: (505) 325-5667



LAB: (505) 325-1556

**ANALYTICAL REPORT**

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *5-Nov-97*  
COC No.: *7080*  
Sample No.: *16700*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hemptom 4M*  
Project Location: *9710301030; MW-1*

Sampled by: *MS* Date: *30-Oct-97* Time: *10:30*  
Analyzed by: *HR* Date: *4-Nov-97*  
Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>2.4</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>Toluene</i>	<i>2.3</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>ND</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>1.1</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>ND</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<b>TOTAL</b>	<b>5.8</b>	<b>ug/L</b>		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *11/5/97*

*001454*

OFF: (505) 325-5667



LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *5-Nov-97*  
COC No.: *7080*  
Sample No.: *16699*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hampton 4M*  
Project Location: *9710291400; MW-5*  
Sampled by: *MS*  
Analyzed by: *HR*  
Sample Matrix: *Liquid*

Date: *29-Oct-97* Time: *14:00*  
Date: *4-Nov-97*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>5934</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>Toluene</i>	<i>10024</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>709</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>6451</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>1737</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>24855</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*  
Date: *11/5/97*

*001455*

OFF: (505) 325-5667



LAB: (505) 325-1556

# **QUALITY ASSURANCE REPORT** for EPA Method 8020

Date Analyzed: 4-Nov-97

Internal QC No.: 0559-STD

Surrogate QC No.: 0556-STD

Reference Standard QC No.: 0529/30-QC

## **Method Blank**

Parameter	Result	Unit of 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	20.7	4	15%
Toluene	ppb	20.0	21.3	6	15%
Ethylbenzene	ppb	20.0	21.2	6	15%
m,p-Xylene	ppb	40.0	40.3	1	15%
o-Xylene	ppb	20.0	21.1	5	15%

## **Matrix Spike**

Parameter	1 - Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	92	88	(39-150)	3	20%
Toluene	96	87	(46-148)	3	20%
Ethylbenzene	97	92	(32-160)	4	20%
m,p-Xylene	94	88	(35-145)	4	20%
o-Xylene	95	92	(35-145)	2	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)	
16699-7080	95				
16700-7080	95				
					(nc)
					11/5/97

S1: Fluorobenzene

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *5-Nov-97*  
COC No.: *7080*  
Sample No.: *16699*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Hamptom 4M*

Project Location: *9710291400; MW-5*

Sampled by: *MS*

Date: *29-Oct-97* Time: *14:00*

Analyzed by: *HR*

Date: *4-Nov-97*

Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>5934</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>Toluene</i>	<i>10024</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>709</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>6451</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>1737</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>24855</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*

Date: *11/5/97*

*001482*