

3R - 329

REPORTS

DATE:

1999

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

RECEIVED

April 5, 1999

APR 07 1999

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

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION



RE: 1999 SAN JUAN BASIN ANNUAL GROUNDWATER REPORT

Dear Bill:

PNM is pleased to submit the 1999 Annual Groundwater Report on Unlined Surface Impoundments in the San Juan Basin. Pursuant to PNM's Groundwater Management Program for Unlined Surface Impoundment Closures, the report details the ongoing investigation/remedial activities at unlined surface impoundments having groundwater contamination as identified by PNM. A list of groundwater sites reported in this document is provided below.

Blanco Wash Drip	Mangum 1E
Davis 1	McClanahan 22
Dogie East Pit	McClanahan A 2E
Dogie North Pit	McCoy Gas Com A1
Florance 124	Miles Federal 1E Drip
Florance 32A	O' Shea 1M
Florance 40	Patterson A Com A1
Florance 44	Pritchard 2
Florance M 47X	Randleman 1
Hampton 4M	Reid 16 Drip
Honolulu Drip	Turner 1A
Ice Canyon Drip	Wilmerding 1M
Jacques 2A	Zachry 18E
Jicarilla Contract 147-6	
Linda 1A	

Consistent with PNM's San Juan Basin Groundwater Management Plan, PNM will request closure of four of the above sites, the Florance 32A, Jacques 2A, Mangum 1E and the McClanahan A2E, with the submittal of the 1st Quarter 1999 Pit Closures Report. This request is based upon the analytical data collected over the last two years at each of the sites. BTEX concentrations have been consistently below WQCC standards for four consecutive quarters.

Upon approval of the groundwater closure report, PNM will plug and abandon all of the groundwater monitoring wells at each of the locations. The concrete pad and metal vault surrounding each well will be removed. The well casing will be cut to ground surface and each well will be plugged to the surface

Bill Olson

04/05/99

Page 2

with cement containing 5% bentonite. If you have any questions regarding the contents of the report, please contact me at (505) 241-2974.

Sincerely,

A handwritten signature in cursive script, appearing to read "Maureen Gannon", with a long horizontal flourish extending to the right.

Maureen Gannon
Project Manager

Enclosure

cc: Colin Adams, Esq.
Ingrid Deklau, WFS
Denny Foust, OCD-Aztec Office
Ron Johnson
Mark Sikelianos
Bill VonDrehle, WFS



RECEIVED

APR 07 1999

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Annual Groundwater Report 1999

Volume II

***Unlined Surface Impoundments
San Juan Basin***



Groundwater Site Summary Report

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

Quarter/Year: 2nd/98, 3rd/98, 4th/98 & 1st/99

Operator: Burlington Resources
Sec: 33 **Twn:** 29N **Rng:** 11W **Unit:** F
Canyon: San Juan River

Vulnerable Class: Original
OCD Ranking: 40
Lead Agency: NMOCD

Topo Map: previously submitted

Well Completion Diagram: previously submitted

Site Map with Analysis: Figure 1

Groundwater Contour Map: Figure 2a (April 1998), Figure 2b (July 1998), Figure 2c (October 1998) & Figure 2d (January 1999)

Hydrograph: Figure 3

Analytical Results: attached

Site Hydrology:

The Mangum 1E site lies about 100 feet from the San Juan River, on the north bank just east of the bridge near Bloomfield, New Mexico. The elevation of the site is about 5420 ft. amsl, with the river being 5 to 10 feet lower in elevation. Depth to water is only a few feet at the site, as evidenced by the four monitor wells installed there (see Figure 1).

The valley floor of the San Juan River is more than one-half mile wide near the Mangum 1E site. Alluvial cobbles and gravels, similar to the modern river's bedload, would be expected to be encountered in the subsurface alluvium, which may reach thicknesses of 100 feet or more (Stone et al., 1983; Pastuszak, 1968). However, owing to the extremely shallow groundwater at the site, the depths of the monitor wells are not great, and much clay (presumably from overbank deposits) was found in shallow soils during well installation.

An irrigation ditch bounds the northern side of the Mangum 1E site, while the San Juan River lies just south. Surface topography drops towards the river (south) and along the river's axis (west). Recharge from the irrigation ditch would tend to provide recharge during the spring and summer months, causing groundwater flow towards the river (as also described by Stone et al., 1983).

Groundwater contour maps were prepared from data collected during the quarterly sampling events. Figures 2a through 2c show the elevation of the water table during April, July, and October, 1998, respectively, and Figure 2d for January, 1999. Flow direction is consistently southwestward, with gradient values of about 0.01 (1 ft. per 100 ft.) regardless of the season.

The hydrograph of the site (Figure 3) suggests that groundwater elevations are strongly influenced by the operation of the irrigation ditch in spring and summer months; hydrographs at the site show lowest elevations in the wintertime. Flow direction does not vary appreciably from season to season, as indicated by the "tracking" of water level changes by each well.

Activities for Previous Year:

PNM conducted quarterly groundwater sampling at the Mangum 1E on April 28, July 9 and October 16, 1998, and again on January 18, 1999. In the last sampling round, PNM collected groundwater samples in all wells for chemical analyses of benzene, toluene, ethylbenzene, and xylenes (BTEX). Prior to sampling, water level measurements were taken in each well. All sampling was performed in strict compliance with EPA protocol. PNM delivered the samples to OnSite Technologies, Farmington, New Mexico for chemical analyses of BTEX using EPA method 8020.

Public Service Company of New Mexico - Gas Services

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

Contact: Maureen Gannon

Telephone: 505-241-2974

Results:

Figure 1 is a site map showing benzene, toluene, ethylbenzene and xylenes (BTEX) analytical data for each monitoring well at the site. BTEX concentrations in MW-1 (the upgradient well) and MW-2 (the source well) have been below standard since they were installed after the initial source removal activities in January, 1997. BTEX in downgradient well MW-3 decreased over time, and has remained below WQCC standards for four quarterly sampling events. Contamination in downgradient monitor well MW-4 decreased over time, and has now remained below standards for the last four consecutive quarterly sampling events.

Further Action:

Consistent with PNM's San Juan Basin Groundwater Management Plan, PNM will request closure of the Mangum 1E with the submittal of the 1st Quarter 1999 Pit Closures Report. This request is based upon the analytical data collected over the last two years at the site. The excavation of source materials appears to have been successful in achieving clean-up at the Mangum 1E over the monitoring period since the BTEX concentrations in downgradient well MW-4 have been below standards for four consecutive quarters. Wells, MW-2 and -3, have shown downward trends in concentration over the last two years. Resampling of all monitor wells also shows that BTEX compounds are below standards in the other wells.

Upon approval of the groundwater closure report, PNM will plug and abandon the four groundwater monitoring wells at the site. The concrete pad and metal vault surrounding each well will be removed. The well casing will be cut to ground surface and each well will be plugged to the surface with cement containing 5% bentonite.

Public Service Company of New Mexico - Gas Services

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

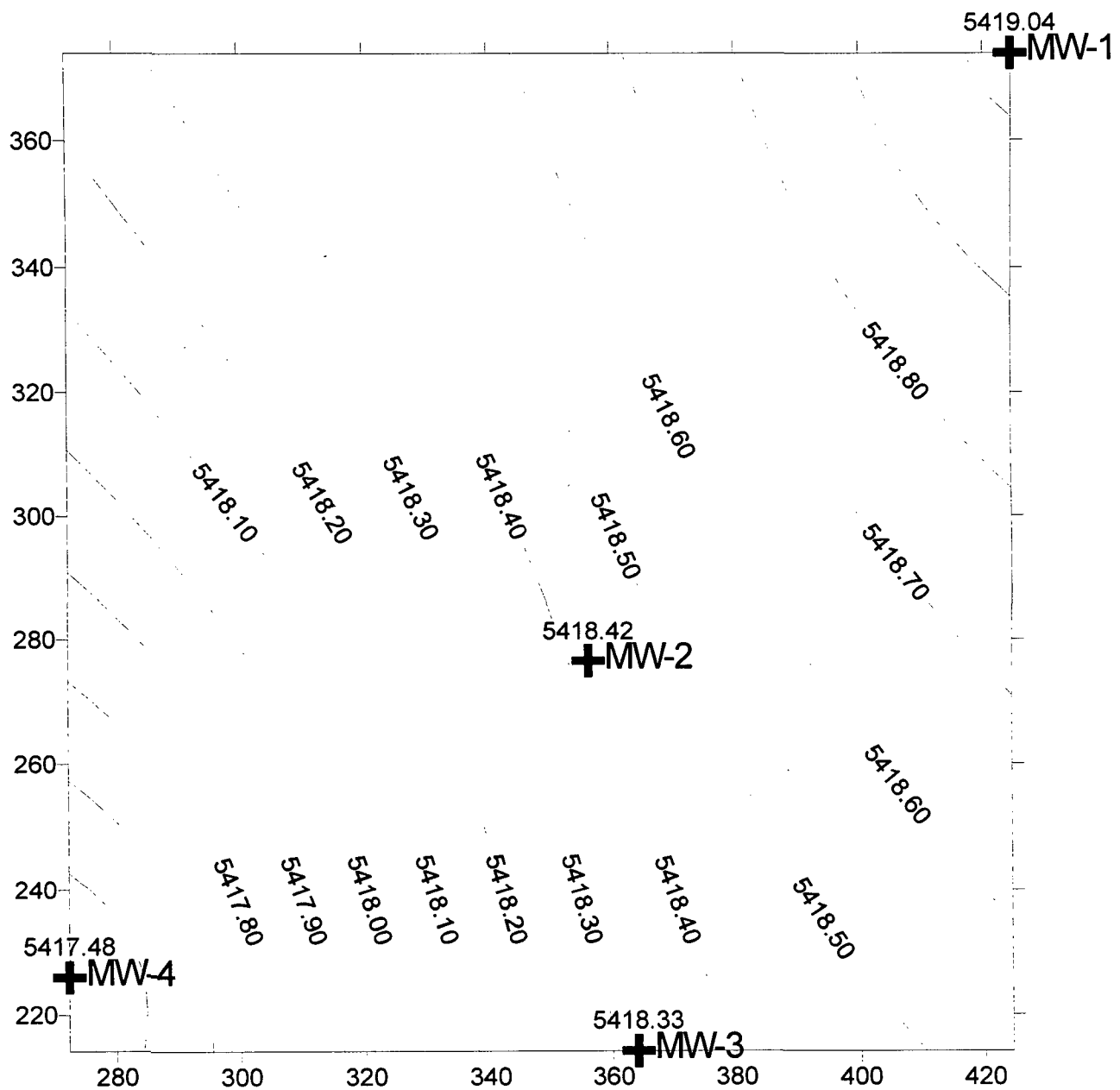
Contact: Maureen Gannon

Telephone: 505-241-2974

Figure 1. Mangum 1E Site Map with Analytical Results
(concentrations in ppb)

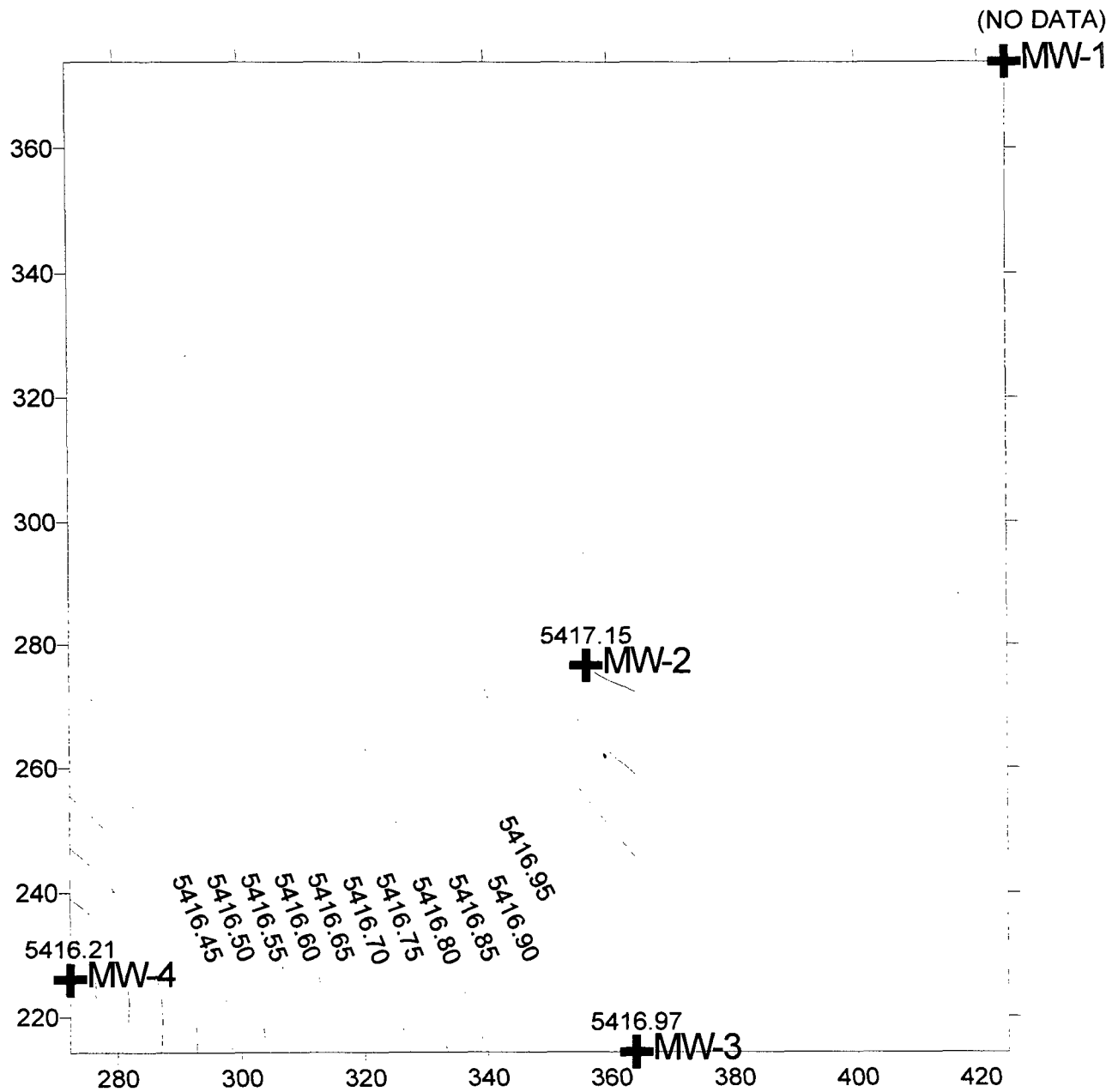


Figure 2a. Mangum 1E Groundwater Contour Map
(April 28, 1998)



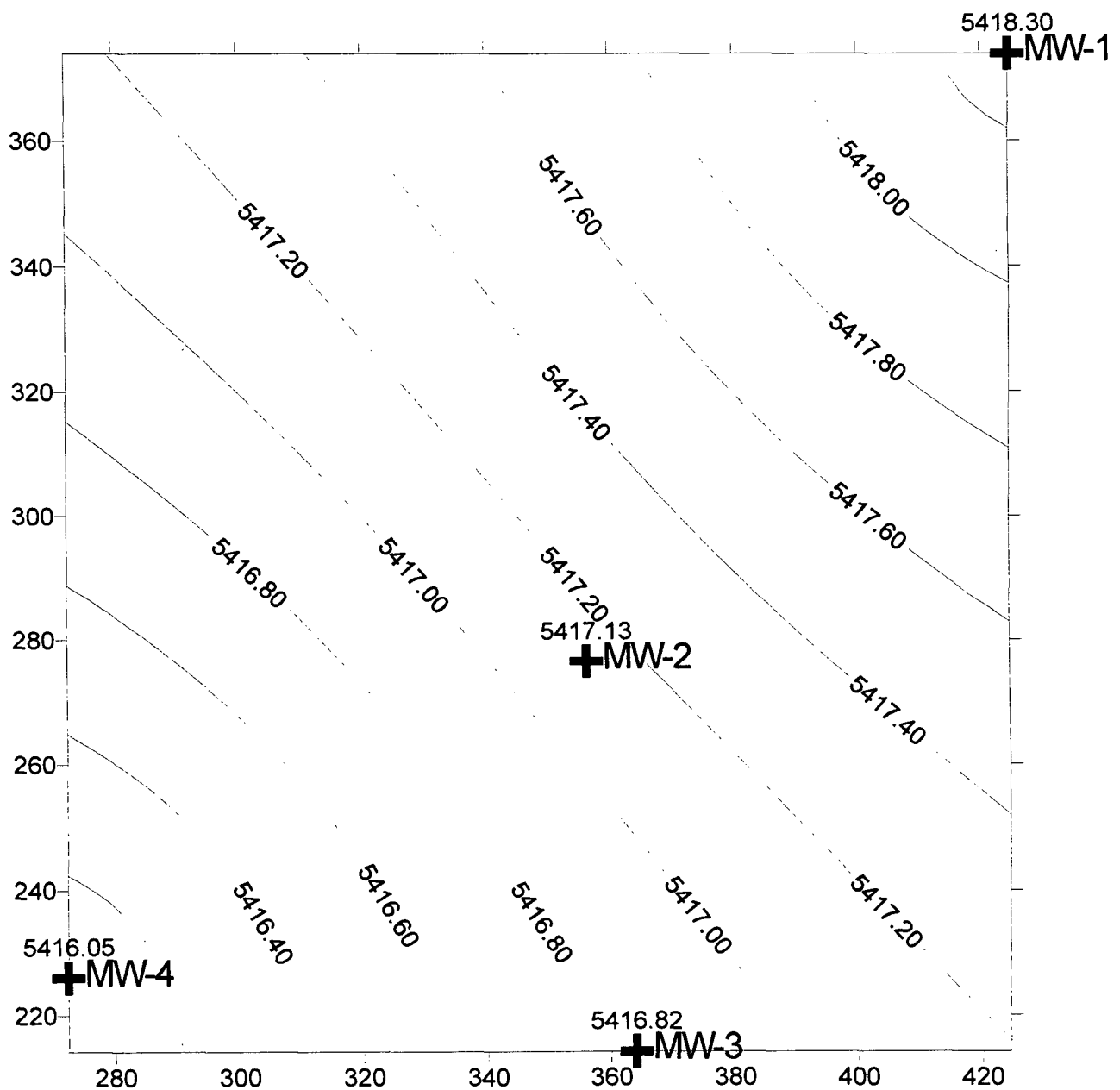
SCALE IN FEET
(X-axis = Easting,
Y-axis = Northing)

Figure 2b. Mangum 1E Groundwater Contour Map
(July 9, 1998)



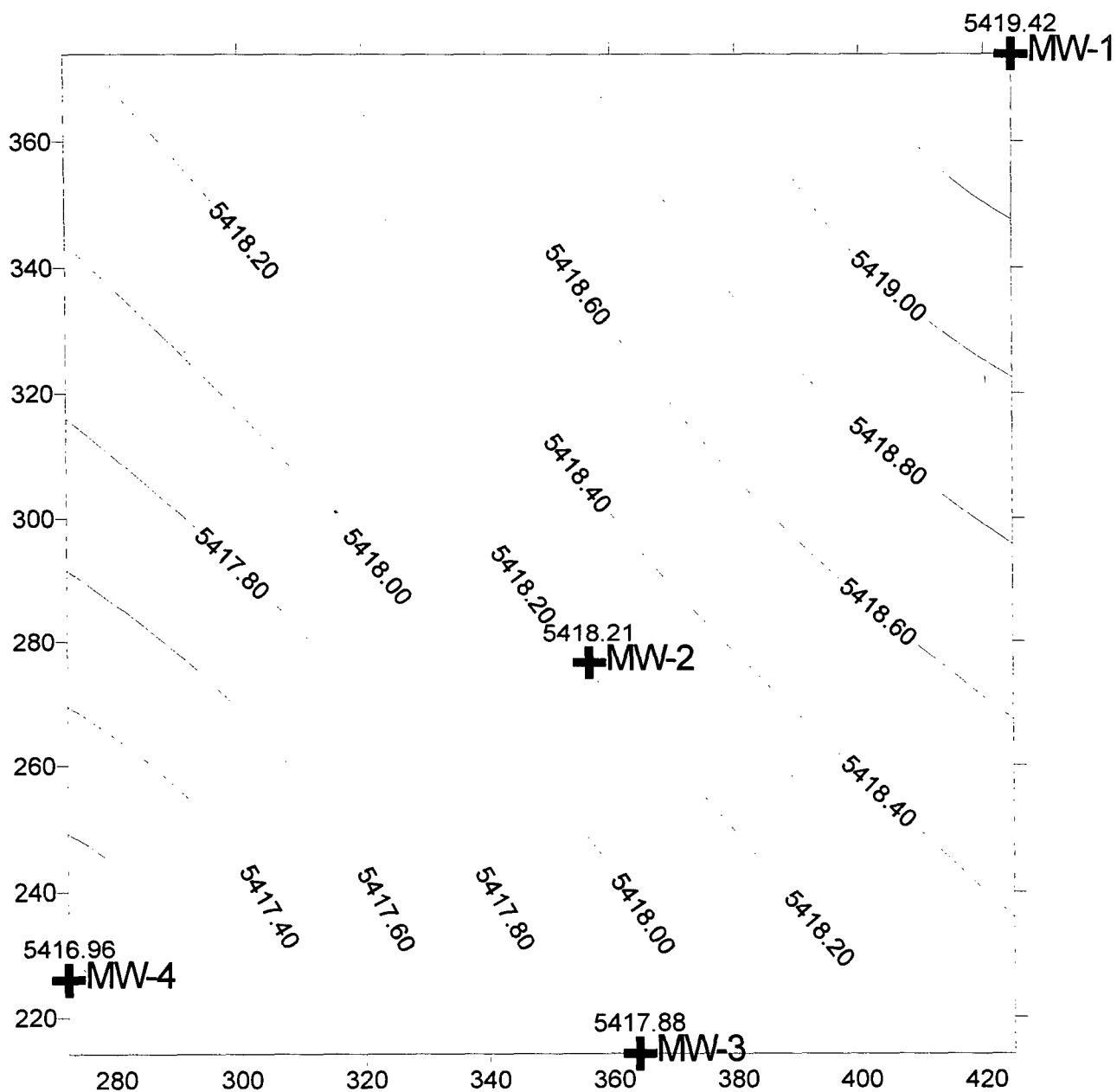
SCALE IN FEET
(X-axis = Easting,
Y-axis = Northing)

Figure 2c. Mangum 1E Groundwater Contour Map
(October 16, 1998)



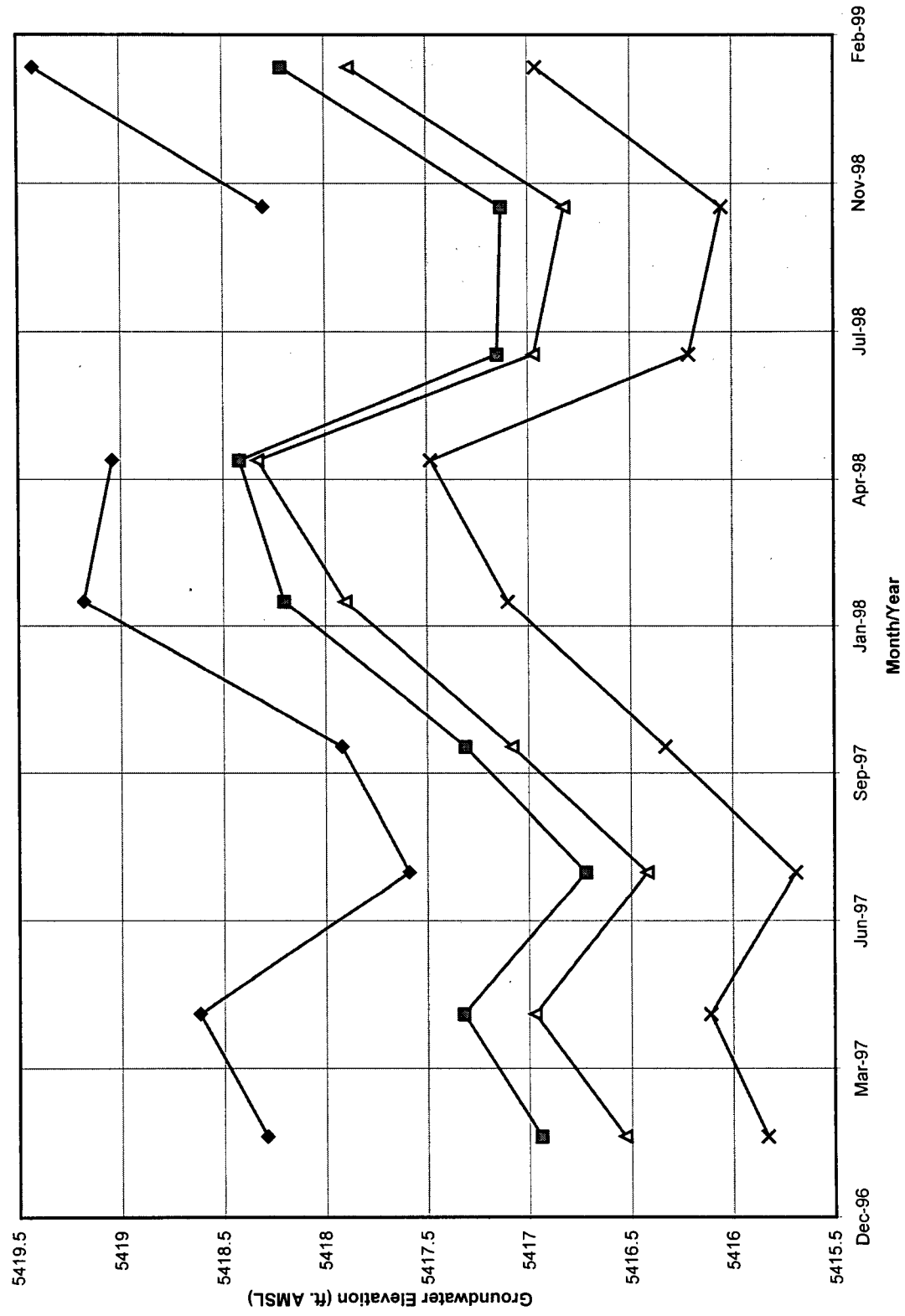
SCALE IN FEET
(X-axis = Easting,
Y-axis = Northing)

Figure 2d. Mangum 1E Groundwater Contour Map
(January 18, 1999)



SCALE IN FEET
(X-axis = Easting,
Y-axis = Northing)

Figure 3. Mangum 1E Hydrograph
(Water Level vs. Time)



OFF: (505) 325-5667



LAB: (505) 325-1556

January 26, 1999

Maureen Gannon
PNM - Public Service Company of NM
Alvarado Square Mail Stop 0408
Albuquerque, NM 87158
TEL: (505) 241-2974
FAX (505) 241-2340

RE: Mangum 1E

Order No.: 9901008

Dear Maureen Gannon,

On Site Technologies, LTD. received 5 samples on 1/18/99 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
BTEX (SW8021B)

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

OFF: (505) 325-5667



LAB: (505) 325-1556

On Site Technologies, LTD.

Date: 26-Jan-99

CLIENT: PNM - Public Service Company of NM

Project: Mangum 1E

Lab Order: 9901008

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 26-Jan-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Mangum 1E
Work Order:	9901008	Client Sample ID:	9901181132; MW-1
Lab ID:	9901008-01A	Matrix:	AQUEOUS
Project:	Mangum 1E	Collection Date:	1/18/99 11:32:00 AM
		COC Record:	7456

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8021B				Analyst: DM
Benzene	ND	0.5		µg/L	1	1/19/99
Toluene	ND	0.5		µg/L	1	1/19/99
Ethylbenzene	ND	0.5		µg/L	1	1/19/99
m,p-Xylene	ND	1		µg/L	1	1/19/99
o-Xylene	ND	0.5		µg/L	1	1/19/99

Qualifiers:

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

ND - Not Detected at Practical Quantitation Limit

R - RPD outside accepted recovery limits

J - Analyte detected below Practical Quantitation Limit

E - Value above quantitation range

B - Analyte detected in the associated Method Blank

Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 26-Jan-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Mangum 1E
Work Order:	9901008	Client Sample ID:	9901181159; MW-2
Lab ID:	9901008-02A	Matrix:	AQUEOUS
Project:	Mangum 1E	Collection Date:	1/18/99 11:59:00 AM
		COC Record:	7456

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8021B				Analyst: DM
Benzene	ND	0.5		µg/L	1	1/19/99
Toluene	ND	0.5		µg/L	1	1/19/99
Ethylbenzene	ND	0.5		µg/L	1	1/19/99
m,p-Xylene	ND	1		µg/L	1	1/19/99
o-Xylene	ND	0.5		µg/L	1	1/19/99

Qualifiers:

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

ND - Not Detected at Practical Quantitation Limit

R - RPD outside accepted recovery limits

J - Analyte detected below Practical Quantitation Limit

E - Value above quantitation range

B - Analyte detected in the associated Method Blank

Surr: - Surrogate

1 of 1

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- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 26-Jan-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Mangum 1E
Work Order:	9901008	Client Sample ID:	9901181220; MW-3
Lab ID:	9901008-03A	Matrix:	AQUEOUS
Project:	Mangum 1E	Collection Date:	1/18/99 12:20:00 PM
		COC Record:	7456

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8021B				Analyst: DM
Benzene	ND	0.5		µg/L	1	1/19/99
Toluene	ND	0.5		µg/L	1	1/19/99
Ethylbenzene	1.6	0.5		µg/L	1	1/19/99
m,p-Xylene	5	1		µg/L	1	1/19/99
o-Xylene	0.5	0.5		µg/L	1	1/19/99

Qualifiers:

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

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

1 of 1

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- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 26-Jan-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Mangum 1E
Work Order:	9901008	Client Sample ID:	9901181250; MW-4
Lab ID:	9901008-04A	Matrix:	AQUEOUS
Project:	Mangum 1E	Collection Date:	1/18/99 12:50:00 PM
		COC Record:	7456

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8021B				Analyst: DM
Benzene	2	0.5		µg/L	1	1/19/99
Toluene	ND	0.5		µg/L	1	1/19/99
Ethylbenzene	10	0.5		µg/L	1	1/19/99
m,p-Xylene	32	1		µg/L	1	1/19/99
o-Xylene	3.7	0.5		µg/L	1	1/19/99

Qualifiers:

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

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

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667

ON SITE

TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 26-Jan-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Mangum 1E
Work Order:	9901008	Client Sample ID:	9901181320; MW-5
Lab ID:	9901008-05A	Matrix:	AQUEOUS
Project:	Mangum 1E	Collection Date:	1/18/99 1:20:00 PM
		COC Record:	7456

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8021B				Analyst: DM
Benzene	ND	0.5		µg/L	1	1/19/99
Toluene	ND	0.5		µg/L	1	1/19/99
Ethylbenzene	ND	0.5		µg/L	1	1/19/99
m,p-Xylene	ND	1		µg/L	1	1/19/99
o-Xylene	ND	0.5		µg/L	1	1/19/99

Qualifiers:

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

ND - Not Detected at Practical Quantitation Limit

R - RPD outside accepted recovery limits

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E - Value above quantitation range

B - Analyte detected in the associated Method Blank

Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

On Site Technologies, LTD.

Date: 26-Jan-99

CLIENT: PNM - Public Service Company of NM

Work Order: 9901008

Project: Mangum 1E

QC SUMMARY REPORT

Method Blank

Sample ID: MB1	Batch ID: GC-1_990119	Test Code: SW8021B	Units: µg/L	Analysis Date: 1/19/99	Prep Date:
Client ID:	9901008	Run ID: GC-1_990119A		SeqNo: 10390	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Benzene	.0678	0.5			J
Ethylbenzene	ND	0.5			
m,p-Xylene	ND	1			
o-Xylene	ND	0.5			J
Toluene	.0672	0.5			

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

On Site Technologies, LTD.

Date: 26-Jan-99

CLIENT: PNM - Public Service Company of NM

Work Order: 9901008

Project: Mangum 1E

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 9901007-02AMS	Batch ID: GC-1_990119	Test Code: SW8021B	Units: µg/L	Analysis Date 1/19/99	Prep Date:						
Client ID:	9901008	Run ID: GC-1_990119A		SeqNo: 10391							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	396.8	5	400	0.929	99.0%	73	115				
Ethylbenzene	413.7	5	400	16.32	99.3%	74	117				
m,p-Xylene	779.2	10	800	4.79	96.8%	76	112				
Methyl tert-Butyl Ether	357.7	10	400	0	89.4%	62	122				
o-Xylene	393.7	5	400	4.928	97.2%	83	112				
Toluene	396.8	5	400	0.397	99.1%	71	120				

Sample ID: 9901007-02AMSD		Batch ID: GC-1_990119		Test Code: SW8021B		Units: µg/L		Analysis Date 1/19/99		Prep Date:				
Client ID: 9901008		Run ID: GC-1_990119A		PQL		SPK value		SeqNo: 10392						
Analyte	Result							%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	403.8			5		400		100.7%	73	115	396.8	1.7%	8	
Ethylbenzene	420.2			5		400		101.0%	74	117	413.7	1.6%	9	
m,p-Xylene	791.2			10		800		98.3%	76	112	779.2	1.5%	9	
Methyl tert-Butyl Ether	358.8			10		400		89.7%	62	122	357.7	0.3%	7	
o-Xylene	398.7			5		400		98.4%	83	112	393.7	1.3%	9	
Toluene	403.4			5		400		100.7%	71	120	396.8	1.6%	9	

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

On Site Technologies, LTD.

Date: 26-Jan-99

CLIENT: PNM - Public Service Company of NM

Work Order: 9901008

Project: Mangum 1E

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS WATER		Batch ID: GC-1_990119	Test Code: SW8021B	Units: µg/L	Analysis Date 1/19/99		Prep Date:
Client ID: 9901008		Run ID: 9901008	PQL	SPK value	GC-1_990119A	SeqNo: 10389	
Analyte	Result					LowLimit	HighLimit
Benzene	38.06	0.5	0.0678	40	84	110	
Ethylbenzene	38.39	0.5	0	40	86	113	
m,p-Xylene	74.55	1	0	80	81	114	
Methyl tert-Butyl Ether	34.65	1	0	40	69	129	
o-Xylene	37.8	0.5	0	40	86	112	
Toluene	37.67	0.5	0.0672	40	85	111	
						%REC	%RPD
						RPD Ref Val	RPDLimit
							Qual

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

On Site Technologies, LTD.

Date: 26-Jan-99

CLIENT: PNM - Public Service Company of NM
 Work Order: 9901008
 Project: Mangum 1E

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV1 QC0606/07		Batch ID: GC-1_990119		Test Code: SW8021B		Units: µg/L		Analysis Date 1/19/99		Prep Date:	
Client ID:		9901008		Run ID:		GC-1_990119A		SeqNo: 10387			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.39	0.5	20	0	102.0%	85	115				
Ethylbenzene	20.6	0.5	20	0	103.0%	85	115				
m,p-Xylene	39.47	1	40	0	98.7%	85	115				
Methyl tert-Butyl Ether	19.15	1	20	0	95.7%	85	115				
o-Xylene	20.16	0.5	20	0	100.8%	85	115				
Toluene	20.12	0.5	20	0	100.6%	85	115				
1,4-Difluorobenzene	96.29	0	100	0	96.3%	90	102				
4-Bromochlorobenzene	99.66	0	100	0	99.7%	93	102				
Fluorobenzene	94.18	0	100	0	94.2%	84	103				

Sample ID: CCV2 QC606/07	Batch ID: GC-1_990119	Test Code: SW8021B	Units: µg/L	Analysis Date 1/19/99		Prep Date:					
Client ID: 9901008	Run ID: GC-1_990119A	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Analyte	Result										
Benzene	19.67	0.5	20	0	98.3%	85	115				
Ethylbenzene	19.79	0.5	20	0	98.9%	85	115				
m,p-Xylene	37.84	1	40	0	94.6%	85	115				
Methyl tert-Butyl Ether	18.6	1	20	0	93.0%	85	115				
o-Xylene	19.55	0.5	20	0	97.8%	85	115				
Toluene	19.4	0.5	20	0	97.0%	85	115				
1,4-Difluorobenzene	95.93	0	100	0	95.9%	90	102				
4-Bromochlorobenzene	100.3	0	100	0	100.3%	93	102				
Fluorobenzene	94.09	0	100	0	94.1%	84	103				

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

On Site Technologies, LTD.

Date: 26-Jan-99

CLIENT: PNM - Public Service Company of NM

Work Order: 9901008

Project: Mangum 1E

Test No: SW8021B

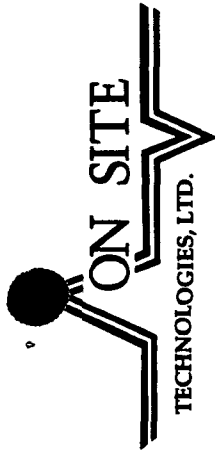
**QC SUMMARY REPORT
SURROGATE RECOVERIES**

BTEX

Sample ID	14FBZ	4BCBZ	FLBZ
9901007-01A	96.4	99.7	94.4
9901007-02A	90.7	94.9	88.8
9901007-02AMS	95	101	93
9901007-02AMSD	94.5	99.7	93.3
9901007-03A	96.6	99.8	94.4
9901007-04A	95.7	99.4	94.4
9901007-05A	91	95.4	89.9
9901008-01A	96.6	99.9	94.3
9901008-02A	96.7	100	94.4
9901008-03A	91.4	94.7	89.5
9901008-04A	92.6	98.2	91
9901008-05A	96	98.7	94.1
CCV1 QC0606/07	96.3	99.7	94.2
CCV2 QC606/07	95.9	100	94.1
LCS WATER	95.5	99.7	93.8
MBI	96.4	98.2	94

Acronym	Surrogate	QC Limits
14FBZ	= 1,4-Difluorobenzene	90-102
4BCBZ	= 4-Bromochlorobenzene	93-102
FLBZ	= Fluorobenzene	84-103

* Surrogate recovery outside acceptance limits



CHAIN OF CUSTODY RECORD

Page: 1 of 1

Date: 1/11/11

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

Purchase Order No.:		Job No.	
Name		Denver Bearden	
Company		PNM Gas Services	
Address		603 W. Elm Street	
City, State, Zip		Farmington, NM 87401	
SEND INVOICE TO		Dept. 324-3763	
Name		Maureen Gannon	
Company		PNM Gas Services	
Mailing Address		Alverado Square, Mail Stop 0408	
City, State, Zip		Albuquerque, NM 87158	
Telephone No.		505-848-2974	
Telefax No.			
Title			
RESULTS TO		ANALYSIS REQUESTED	
REPORT		Number of Containers	
Sampling Location:		Morgue 1E	
Sampler:		R. D. Jirik	
SAMPLE IDENTIFICATION		DATE	
9901151123		1/11/11	
9901151124		1/11/11	
9901151125		1/11/11	
9901151126		1/11/11	
9901151127		1/11/11	
9901151128		1/11/11	
9901151129		1/11/11	
9901151130		1/11/11	
9901151131		1/11/11	
9901151132		1/11/11	
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9901151199		1/11/11	
9901151200		1/11/11	
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9901151435		1/11/11	

OFF: (505) 325-5667



LAB: (505) 325-1556

October 29, 1998

Maureen Gannon
PNM - Public Service Company of NM
Alvarado Square Mail Stop 0408
Albuquerque, NM 87158
TEL: (505) 241-2974
FAX (505) 241-2340

RE: Mangum 1E

Order No.: 9810050

Dear Maureen Gannon,

On Site Technologies, LTD. received 2 samples on 10/16/98 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
BTEX (SW8020A)

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

OFF: (505) 325-5667



LAB: (505) 325-1556

On Site Technologies, LTD.

Date: 29-Oct-98

CLIENT: PNM - Public Service Company of NM

Project: Mangum 1E

Lab Order: 9810050

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 29-Oct-98

Client:	PNM - Public Service Company of NM	Client Sample Info:	Mangum 1E
Work Order:	9810050	Client Sample ID:	9810160902; MW-4
Lab ID:	9810050-01A	Matrix:	AQUEOUS
Project:	Mangum 1E	Collection Date:	10/16/98 9:02:00 AM
		COC Record:	7513

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8020A				Analyst: DC
Benzene	ND	1		µg/L	1	10/26/98
Toluene	2	1		µg/L	1	10/26/98
Ethylbenzene	6.2	1		µg/L	1	10/26/98
m,p-Xylene	14	2		µg/L	1	10/26/98
o-Xylene	5.1	1		µg/L	1	10/26/98

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 29-Oct-98

Client:	PNM - Public Service Company of NM	Client Sample Info:	Mangum 1E
Work Order:	9810050	Client Sample ID:	9810160915; MW-5
Lab ID:	9810050-02A	Matrix:	AQUEOUS
Project:	Mangum 1E	Collection Date:	10/16/98 9:15:00 AM
		COC Record:	7513

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX						Analyst: DC
		SW8020A				
Benzene	ND	1		µg/L	1	10/26/98
Toluene	2.1	1		µg/L	1	10/26/98
Ethylbenzene	7	1		µg/L	1	10/26/98
m,p-Xylene	16	2		µg/L	1	10/26/98
o-Xylene	6.2	1		µg/L	1	10/26/98

Qualifiers:

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

ND - Not Detected at Practical Quantitation Limit

R - RPD outside accepted recovery limits

J - Analyte detected below Practical Quantitation Limit

E - Value above quantitation range

B - Analyte detected in the associated Method Blank

Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY SERVING INDUSTRY WITH THE ENVIRONMENT -

On Site Technologies, LTD.

Date: 29-Oct-98

CLIENT: PNM - Public Service Company of NM

Work Order: 9810050

Project: Mangum 1E

QC SUMMARY REPORT

Method Blank

Sample ID: MB1	Batch ID: GC-1_981026	Test Code: SW8020A	Units: µg/L	Analysis Date 10/26/98	Prep Date:						
Client ID:	9810050	Run ID: GC-1_981026A		SeqNo: 8037							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.0461	1									J
Ethylbenzene	ND	1									
m,p-Xylene	ND	2									
o-Xylene	.2056	1									J
Toluene	.1356	1									J

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

On Site Technologies, LTD.

Date: 29-Oct-98

CLIENT: PNM - Public Service Company of NM
 Work Order: 9810050
 Project: Mangum 1E

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 9810050-02AMS	Batch ID: GC-1_981026	Test Code: SW8020A	Units: µg/L	Analysis Date 10/26/98	Prep Date:						
Client ID: 9810160915; MW-	9810050	Run ID: GC-1_981026A		SeqNo: 8038							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	360.6	10	400	2.174	89.6%	56	128				
Ethylbenzene	383.4	10	400	10.63	93.2%	78	107				
m,p-Xylene	761.4	20	800	24.54	92.1%	67	118				
o-Xylene	388.4	10	400	9.975	94.6%	78	107				
Toluene	373.2	10	400	5.001	92.1%	74	116				

Sample ID: 9810050-02AMSD		Batch ID: GC-1_981026		Test Code: SW8020A		Units: µg/L		Analysis Date 10/26/98		Prep Date:	
Client ID: 9810160915; MW-		9810050		Run ID: GC-1_981026A				SeqNo: 8039			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	359.7	10	400	2.174	89.4%	56	128	360.6	0.2%	12	
Ethylbenzene	382.9	10	400	10.63	93.1%	78	107	383.4	0.1%	11	
m,p-Xylene	760.4	20	800	24.54	92.0%	67	118	761.4	0.1%	10	
o-Xylene	385.5	10	400	9.975	93.9%	78	107	388.4	0.7%	14	
Toluene	372.3	10	400	5.001	91.8%	74	116	373.2	0.2%	14	

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

On Site Technologies, LTD.

Date: 29-Oct-98

CLIENT: PNM - Public Service Company of NM
 Work Order: 9810050
 Project: Mangum 1E

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS WATER		Batch ID: GC-1_981026	Test Code: SW8020A	Units: µg/L	Analysis Date 10/26/98				Prep Date:		
Client ID:		9810050	Run ID: GC-1_981026A								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	35.87	1	40	0.0461	89.6%	56	128				
Ethylbenzene	37.44	1	40	0	93.6%	78	107				
m,p-Xylene	74.04	2	80	0	92.6%	67	118				
o-Xylene	38.45	1	40	0.2056	95.6%	78	107				
Toluene	37.02	1	40	0.1356	92.2%	74	116				

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

On Site Technologies, LTD.

Date: 29-Oct-98

CLIENT: PNM - Public Service Company of NM

Work Order: 9810050

Project: Mangum 1E

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV1 QC0606/07		Batch ID: GC-1_981026		Test Code: SW8020A		Units: µg/L		Analysis Date 10/26/98		Prep Date:	
Client ID:		9810050		Run ID: GC-1_981026A				SeqNo: 8033			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.6	1	20	0	98.0%	85	115				
Ethylbenzene	21.02	1	20	0	105.1%	85	115				
m,p-Xylene	41.34	2	40	0	103.4%	85	115				
o-Xylene	21.06	1	20	0	105.3%	85	115				
Toluene	20.31	1	20	0	101.6%	85	115				
1,4-Difluorobenzene	90.14	0	100	0	90.1%	70	130				
4-Bromochlorobenzene	100.5	0	100	0	100.5%	70	130				
Fluorobenzene	89.56	0	100	0	89.6%	70	130				

Sample ID: CCV2 QC0606/07		Batch ID: GC-1_981026		Test Code: SW8020A		Units: µg/L		Analysis Date 10/26/98		Prep Date:	
Client ID: 9810050		Run ID: GC-1_981026A		PQL		SPK value		SeqNo: 8034			
Analyte	Result	PQL	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Benzene	18.74	1	20	0	85	115					
Ethylbenzene	19.64	1	20	0	85	115					
m,p-Xylene	38.66	2	40	0	85	115					
o-Xylene	20.14	1	20	0	85	115					
Toluene	19.33	1	20	0	85	115					
1,4-Difluorobenzene	90.56	0	100	0	70	130					
4-Bromochlorobenzene	100.7	0	100	0	70	130					
Fluorobenzene	89.76	0	100	0	70	130					

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

CLIENT: PNM - Public Service Company of NM

Work Order: 9810050

Project: Mangum 1E

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: CCV3 QC0606/07		Batch ID: GC-1_981026		Test Code: SW8020A		Units: µg/L		Analysis Date 10/26/98		Prep Date:	
Client ID:		9810050		Run ID: GC-1_981026A				SeqNo: 8035			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	36.65	1	40	0	91.6%	85	115				
Ethylbenzene	38.13	1	40	0	95.3%	85	115				
m,p-Xylene	75.25	2	80	0	94.1%	85	115				
o-Xylene	38.89	1	40	0	97.2%	85	115				
Toluene	37.72	1	40	0	94.3%	85	115				
1,4-Difluorobenzene	90.17	0	100	0	90.2%	70	130				
4-Bromochlorobenzene	99.3	0	100	0	99.3%	70	130				
Fluorobenzene	89.4	0	100	0	89.4%	70	130				

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

CLIENT: PNM - Public Service Company of NM

Work Order: 9810050

Project: Mangum 1E

Test No: SW8020A

**QC SUMMARY REPORT
SURROGATE RECOVERIES****BTEX**

Sample ID	14FBZ	4BCBZ	FLBZ
9810040-05A	90.7	98.9	89.6
9810050-01A	89	98	88.3
9810050-02A	88.6	98.2	88.2
9810050-02AMS	89.4	98.1	89
9810050-02AMSD	89.7	99	89
9810062-01A	90.8	100	89.6
9810062-02A	90.2	100	89.8
9810062-03A	90.6	100	89.3
9810062-04A	89.7	101	89.9
9810064-01A	90.2	101	89.8
9810064-02A	90.9	100	89.9
9810065-01A	90.4	101	89.9
9810065-02A	90.7	102	89.6
9810065-03A	90.7	100	89.7
9810065-04A	91.3	99.4	89.8
9810065-05A	90.4	100	90.1
CCV1 QC0606/07	90.1	100	89.6
CCV2 QC0606/07	90.6	101	89.8
CCV3 QC0606/07	90.2	99.3	89.4
LCS WATER	89.9	100	89.5
MB1	90.7	101	89.5

Acronym	Surrogate	QC Limits
14FBZ	= 1,4-Difluorobenzene	70-130
4BCBZ	= 4-Bromochlorobenzene	70-130
FLBZ	= Fluorobenzene	70-130

* Surrogate recovery outside acceptance limits

CHAIN OF CUSTODY RECORD

[illegible]

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

July 21, 1998

Maureen Gannon
PNM - Public Service Company of NM
Alvarado Square Mail Stop 0408
Albuquerque, NM 87158
TEL: (505) 241-2974
FAX (505) 241-2340

3rd Quarter 98

RE: Mangum 1E

Order No.: 9807026

Dear Maureen Gannon,

On Site Technologies, LTD. received 2 samples on 7/9/98 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
BTEX (SW8020A)

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



OFF: (505) 325-5667

LAB: (505) 325-1556

On Site Technologies, LTD.

Date: 21-Jul-98

CLIENT: PNM - Public Service Company of NM

Project: Mangum 1E

Lab Order: 9807026

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 21-Jul-98

Client:	PNM - Public Service Company of NM	Client Sample Info:	Mangum 1E
Work Order:	9807026	Client Sample ID:	9807091330; MW-4
Lab ID:	9807026-01A	Matrix:	AQUEOUS
Project:	Mangum 1E	Collection Date:	7/9/98 1:30:00 PM
		COC Record:	7280

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8020A				Analyst: DC
Benzene	3.4	0.5		µg/L	1	7/17/98
Toluene	4.6	0.5		µg/L	1	7/17/98
Ethylbenzene	9.6	0.5		µg/L	1	7/17/98
m,p-Xylene	20	1		µg/L	1	7/17/98
o-Xylene	14	0.5		µg/L	1	7/17/98

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

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1 of 1

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 21-Jul-98

Client:	PNM - Public Service Company of NM	Client Sample Info:	Mangum 1E
Work Order:	9807026	Client Sample ID:	9807091345; MW-5
Lab ID:	9807026-02A	Matrix:	AQUEOUS
Project:	Mangum 1E	Collection Date:	7/9/98 1:45:00 PM
		COC Record:	7280

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8020A				Analyst: DC
Benzene	3.3	0.5		µg/L	1	7/17/98
Toluene	4.5	0.5		µg/L	1	7/17/98
Ethylbenzene	9.7	0.5		µg/L	1	7/17/98
m,p-Xylene	20	1		µg/L	1	7/17/98
o-Xylene	14	0.5		µg/L	1	7/17/98

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

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- TECHNOLOGY BREWERY FURNISHED WITH THE ENVIRONMENT -

1 of 1

On Site Technologies, LTD.

Date: 21-Jul-98

CLIENT: PNM - Public Service Company of NM

Work Order: 9807026

Project: Mangum 1E

QC SUMMARY REPORT

Method Blank

Sample ID: MB1		Batch ID: GC-1_980717	Test Code: SW8020A	Units: µg/L	Analysis Date 7/17/98		Prep Date:				
Client ID:		9807026	Run ID: GC-1_980717A		SeqNo: 4649						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.0436	0.5									J
Ethylbenzene	.0759	0.5									J
m,p-Xylene	.1652	1									J
Methyl tert-Butyl Ether	ND	1									
o-Xylene	.1832	0.5									J
Toluene	.1127	0.5									J

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

On Site Technologies, LTD.

Date: 21-Jul-98

CLIENT: PNM - Public Service Company of NM

Work Order: 9807026

Project: Mangum 1E

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 9807025-01AMS	Batch ID: GC-1_980717	Test Code: SW8020A	Units: µg/L	Analysis Date 7/17/98	Prep Date:						
Client ID: 9807026	Run ID: GC-1_980717A			SeqNo: 4650							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1764	25	2000	21.02	87.2%	56	128				
Ethylbenzene	1933	25	2000	75.09	92.9%	78	107				
m,p-Xylene	3626	50	4000	127.2	87.5%	67	118				
o-Xylene	1817	25	2000	30.73	89.3%	78	107				
Toluene	1860	25	2000	67.96	89.6%	74	116				

Sample ID: 9807025-01AMSD		Batch ID: GC-1_980717		Test Code: SW8020A		Units: µg/L		Analysis Date 7/17/98		Prep Date:	
Client ID: 9807026		Run ID: GC-1_980717A						SeqNo: 4651			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1699	25	2000	21.02	83.9%	56	128	1764	3.8%	12	
Ethylbenzene	1865	25	2000	75.09	89.5%	78	107	1933	3.6%	11	
m,p-Xylene	3501	50	4000	127.2	84.4%	67	118	3626	3.5%	10	
o-Xylene	1775	25	2000	30.73	87.2%	78	107	1817	2.3%	14	
Toluene	1791	25	2000	67.96	86.1%	74	116	1860	3.8%	14	

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

On Site Technologies, LTD.

Date: 21-Jul-98

CLIENT: PNM - Public Service Company of NM
 Work Order: 9807026
 Project: Mangum 1E

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS WATER	Batch ID: GC-1_980717	Test Code: SW8020A	Units: µg/L	Analysis Date 7/17/98		Prep Date:					
Client ID:	9807026	Run ID:	GC-1_980717A	SeqNo:	4648						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	37.81	0.5	40	0.0436	94.4%	56	128				
Ethylbenzene	38.38	0.5	40	0.0759	95.8%	78	107				
m,p-Xylene	73.54	1	80	0.1652	91.7%	67	118				
Methyl tert-Butyl Ether	46.48	1	40	0	116.2%	70	130				
o-Xylene	38.42	0.5	40	0.1832	95.6%	78	107				
Toluene	37.72	0.5	40	0.1127	94.0%	74	116				

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

On Site Technologies, LTD.

Date: 21-Jul-98

CLIENT: PNM - Public Service Company of NM
Work Order: 9807026
Project: Mangum 1E

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV1 QC0606/07		Batch ID: GC-1_980717		Test Code: SW8020A		Units: µg/L		Analysis Date 7/17/98		Prep Date:	
Client ID:		9807026		Run ID: GC-1_980717A				SeqNo: 4645			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.67	0.5	20	0	98.4%	85	115				
Ethylbenzene	19.86	0.5	20	0	99.3%	85	115				
m,p-Xylene	37.75	1	40	0	94.4%	85	115				
o-Xylene	19.83	0.5	20	0	99.2%	85	115				
Toluene	19.63	0.5	20	0	98.2%	85	115				
1,4-Difluorobenzene	86.73	0	100	0	86.7%	70	130				
4-Bromochlorobenzene	96.42	0	100	0	96.4%	70	130				
Fluorobenzene	83.42	0	100	0	83.4%	70	130				

Sample ID: CCV2 QC0606/07		Batch ID: GC-1_980717		Test Code: SW8020A		Units: µg/L		Analysis Date 7/17/98		Prep Date:	
Client ID:		9807026		Run ID: GC-1_980717A				SeqNo: 4646			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	18.82	0.5	20	0	94.1%	85	115				
Ethylbenzene	19.37	0.5	20	0	96.8%	85	115				
m,p-Xylene	36.78	1	40	0	91.9%	85	115				
o-Xylene	19.36	0.5	20	0	96.8%	85	115				
Toluene	19.05	0.5	20	0	95.3%	85	115				
1,4-Difluorobenzene	86.52	0	100	0	86.5%	70	130				
4-Bromochlorobenzene	90.57	0	100	0	90.6%	70	130				
Fluorobenzene	82.78	0	100	0	82.8%	70	130				

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

CLIENT: PNM - Public Service Company of NM
Work Order: 9807026
Project: Mangum 1E

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV3 QC0606/07		Batch ID: GC-1_980717		Test Code: SW8020A		Units: µg/L		Analysis Date 7/17/98		Prep Date:	
Client ID:		9807026		Run ID:		GC-1_980717A		SeqNo:		4647	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	35.5	0.5	40	0	88.7%	85	115				
Ethylbenzene	37.28	0.5	40	0	93.2%	85	115				
m,p-Xylene	71.23	1	80	0	89.0%	85	115				
o-Xylene	36.68	0.5	40	0	91.7%	85	115				
Toluene	37.03	0.5	40	0	92.6%	85	115				
1,4-Difluorobenzene	85.63	0	100	0	85.6%	70	130				
4-Bromochlorobenzene	74.02	0	100	0	74.0%	70	130				
Fluorobenzene	81.58	0	100	0	81.6%	70	130				

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

CLIENT: PNM - Public Service Company of NM

Work Order: 9807026

Project: Mangum 1E

Test No: SW8020A

**QC SUMMARY REPORT
SURROGATE RECOVERIES****BTEX**

Sample ID	14FBZ	4BCBZ	FLBZ
9807024-01A	84.6	56.6 *	78.8
9807024-02A	87.7	99.1	84.4
9807025-01AMS	85	66.3 *	80.7
9807025-01AMSD	84.8	68 *	81.1
9807026-01A	83.1	92.3	80
9807026-02A	83.1	90.7	79.8
9807032-01A	85.4	71.6	80.9
9807033-01A	86.8	96	82.8
9807033-02A	86.9	96.7	82.8
9807033-03A	86.6	92.2	83.7
9807033-04A	90.3	94.2	81.3
9807033-05A	86.5	90.8	83
9807034-01A	86.8	91.7	81.8
CCV1 QC0606/07	86.7	96.4	83.4
CCV2 QC0606/07	86.5	90.6	82.8
CCV3 QC0606/07	85.6	74	81.6
LCS WATER	86.2	95.6	83.1
MB1	87.1	95.5	83.9

Acronym**Surrogate****QC Limits**

14FBZ

= 1,4-Difluorobenzene

70-130

4BCBZ

= 4-Bromochlorobenzene

70-130

FLBZ

= Fluorobenzene

70-130

* Surrogate recovery outside acceptance limits



Date:

Page: 1 of 1

TECHNOLOGIES, LTD.

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

ON SITE

OFF: (505) 325-5667

LAB: (505) 325-1556

TECHNOLOGIES, LTD.

May 11, 1998

Maureen Gannon
PNM - Public Service Company of NM
Alvarado Square Mail Stop 0408
Albuquerque, NM 87158
TEL: (505) 241-2974
FAX (505) 241-2340

2nd Quarter 98

RE: Mangum 1E

Order No.: 9804051

Dear Maureen Gannon,

On Site Technologies, LTD. received 2 samples on 4/29/98 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
BTEX (SW8020A)

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

ON SITE

OFF: (505) 325-5667

LAB: (505) 325-1556

TECHNOLOGIES, LTD.

On Site Technologies, LTD.

Date: 11-May-98

CLIENT: PNM - Public Service Company of NM

Project: Mangum 1E

Lab Order: 9804051

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

ON SITE

OFF: (505) 325-5667

LAB: (505) 325-1556

TECHNOLOGIES, LTD.

ANALYTICAL REPORT

Date: 11-May-98

Client:	PNM - Public Service Company of NM	Client Sample Info:	Mangum 1E
Work Order:	9804051	Client Sample ID:	9804281000; MW-4
Lab ID:	9804051-01A	Matrix:	AQUEOUS
Project:	Mangum 1E	Collection Date:	4/28/98 10:00:00 AM
		COC Record:	7246

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8020A				Analyst: DC
Benzene	1.1	0.5		µg/L	1	5/7/98
Toluene	4.3	0.5		µg/L	1	5/7/98
Ethylbenzene	2.3	0.5		µg/L	1	5/7/98
m,p-Xylene	4.1	1		µg/L	1	5/7/98
o-Xylene	0.8	0.5		µg/L	1	5/7/98

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

1 of 1

ON SITE

OFF: (505) 325-5667

LAB: (505) 325-1556

TECHNOLOGIES, LTD.

ANALYTICAL REPORT

Date: 11-May-98

Client:	PNM - Public Service Company of NM	Client Sample Info:	Mangum 1E
Work Order:	9804051	Client Sample ID:	9804281030; MW-5
Lab ID:	9804051-02A	Matrix:	AQUEOUS
Project:	Mangum 1E	Collection Date:	4/28/98 10:30:00 AM
		COC Record:	7246

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8020A				Analyst: DC
Benzene	1.4	0.5		µg/L	1	5/7/98
Toluene	4.8	0.5		µg/L	1	5/7/98
Ethylbenzene	2.5	0.5		µg/L	1	5/7/98
m,p-Xylene	4.3	1		µg/L	1	5/7/98
o-Xylene	1	0.5		µg/L	1	5/7/98

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

On Site Technologies, LTD.

Date: 11-May-98

CLIENT: PNM - Public Service Company of NM
 Work Order: 9804051
 Project: Mangum 1E

QC SUMMARY REPORT

Method Blank

Sample ID: MB1	Batch ID: GC-1_980507	Test Code: SW8020A	Units: µg/L	Analysis Date: 5/7/98	Prep Date:
Client ID:	9804051	Run ID: GC-1_980507A		SeqNo: 1678	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Benzene	.0604	0.5			J
Ethylbenzene	.0824	0.5			J
m,p-Xylene	.2996	1			J
Methyl tert-Butyl Ether	.0751	1			J
o-Xylene	.1208	0.5			J
Toluene	.173	0.5			J

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

On Site Technologies, LTD.

Date: 11-May-98

CLIENT: PNM - Public Service Company of NM
Work Order: 9804051
Project: Mangum 1E

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 9804054-01AMS		Batch ID: GC-1_980507	Test Code: SW8020A	Units: µg/L	Analysis Date 5/7/98		Prep Date:				
Client ID:	9804051	Run ID:	GC-1_980507A		SeqNo:	1679					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	8323	50	4000	3999	108.1%	56	128				S
Ethylbenzene	5411	50	4000	995.8	110.4%	78	107				S
m,p-Xylene	28750	100	8000	14760	174.9%	67	118				S
Methyl tert-Butyl Ether	3732	100	4000	18.23	92.9%	70	130				S
o-Xylene	9129	50	4000	3818	132.8%	78	107				S
Toluene	18610	50	4000	12990	140.7%	74	116				S

Sample ID: 9804054-01AMSD		Batch ID: GC-1_980507	Test Code: SW8020A	Units: µg/L		Analysis Date 5/7/98		Prep Date:			
Client ID:	9804051	Run ID:	GC-1_980507A			SeqNo:	1680				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	7975	50	4000	3999	99.4%	56	128	8323	4.3%	12	
Ethylbenzene	5198	50	4000	995.8	105.1%	78	107	5411	4.0%	11	
m,p-Xylene	27560	100	8000	14760	160.1%	67	118	28750	4.2%	10	S
Methyl tert-Butyl Ether	3664	100	4000	18.23	91.1%	70	130	3732	1.9%	15	
o-Xylene	8811	50	4000	3818	124.8%	78	107	9129	3.5%	14	S
Toluene	17820	50	4000	12990	120.7%	74	116	18610	4.4%	14	S

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

On Site Technologies, LTD.

Date: 11-May-98

CLIENT: PNM - Public Service Company of NM
 Work Order: 9804051
 Project: Mangum 1E

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS WATER		Batch ID: GC-1_980507	Test Code: SW8020A	Units: µg/L	Analysis Date 5/7/98		Prep Date:				
Client ID:	9804051	Run ID:	GC-1_980507A		SeqNo:	1677					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	42.28	0.5	40	0.0604	105.6%	56	128				
Ethylbenzene	42.69	0.5	40	0.0824	106.5%	78	107				
m,p-Xylene	82.27	1	80	0.2996	102.5%	67	118				
Methyl tert-Butyl Ether	38.02	1	40	0.0751	94.9%	70	130				
o-Xylene	42.5	0.5	40	0.1208	105.9%	78	107				
Toluene	42.21	0.5	40	0.173	105.1%	74	116				

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

On Site Technologies, LTD.

Date: 11-May-98

CLIENT: PNM - Public Service Company of NM

Work Order: 9804051

Project: Mangum 1E

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV1 QC0529/30		Batch ID: GC-1_980507		Test Code: SW8020A		Units: µg/L		Analysis Date 5/7/98		Prep Date:	
Client ID:		9804051		Run ID:		GC-1_980507A		SeqNo: 1672			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.26	0.5	20	0	106.3%	85	115				
Ethylbenzene	21.65	0.5	20	0	108.3%	85	115				
m,p-Xylene	41.55	1	40	0	103.9%	85	115				
Methyl tert-Butyl Ether	19.41	1	20	0	97.0%	85	115				
o-Xylene	21.46	0.5	20	0	107.3%	85	115				
Toluene	21.37	0.5	20	0	106.8%	85	115				
1,4-Difluorobenzene	92.8	0	100	0	92.8%	70	130				
4-Bromochlorobenzene	89.27	0	100	0	89.3%	70	130				
Fluorobenzene	92.92	0	100	0	92.9%	70	130				

Sample ID: CCV2 QC0529/30		Batch ID: GC-1_980507		Test Code: SW8020A		Units: µg/L		Analysis Date 5/7/98		Prep Date:	
Client ID:		9804051		Run ID:		GC-1_980507A		SeqNo: 1673			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.82	0.5	20	0	104.1%	85	115				
Ethylbenzene	21.2	0.5	20	0	106.0%	85	115				
m,p-Xylene	40.61	1	40	0	101.5%	85	115				
Methyl tert-Butyl Ether	18.49	1	20	0	92.4%	85	115				
o-Xylene	21.2	0.5	20	0	106.0%	85	115				
Toluene	20.97	0.5	20	0	104.9%	85	115				
1,4-Difluorobenzene	92.53	0	100	0	92.5%	70	130				
4-Bromochlorobenzene	90.18	0	100	0	90.2%	70	130				
Fluorobenzene	92.97	0	100	0	93.0%	70	130				

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

CLIENT: PNM - Public Service Company of NM

Work Order: 9804051

Project: Mangum 1E

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV3 QC0529/30		Batch ID: GC-1_980507	Test Code: SW8020A		Units: µg/L	Analysis Date 5/7/98		Prep Date:	
Client ID:		9804051	Run ID:	GC-1_980507A		SeqNo: 1674			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	RPDLimit Qual
Benzene	21.24	0.5	20	0	106.2%	85	115		
Ethylbenzene	21.5	0.5	20	0	107.5%	85	115		
m,p-Xylene	41.01	1	40	0	102.5%	85	115		
Methyl tert-Butyl Ether	17.96	1	20	0	89.8%	85	115		
o-Xylene	22.72	0.5	20	0	113.6%	85	115		
Toluene	21.47	0.5	20	0	107.3%	85	115		
1,4-Difluorobenzene	92.47	0	100	0	92.5%	70	130		
4-Bromochlorobenzene	88.18	0	100	0	88.2%	70	130		
Fluorobenzene	92.84	0	100	0	92.8%	70	130		

Sample ID: CCV4 QC0529/30		Batch ID: GC-1_980507	Test Code: SW8020A		Units: µg/L	Analysis Date 5/7/98		Prep Date:	
Client ID:		9804051	Run ID:	GC-1_980507A		SeqNo: 1675			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	RPDLimit Qual
Benzene	20.82	0.5	20	0	104.1%	85	115		
Ethylbenzene	21.86	0.5	20	0	109.3%	85	115		
m,p-Xylene	41.02	1	40	0	102.6%	85	115		
Methyl tert-Butyl Ether	18.32	1	20	0	91.6%	85	115		
o-Xylene	21.68	0.5	20	0	108.4%	85	115		
Toluene	21.03	0.5	20	0	105.1%	85	115		
1,4-Difluorobenzene	92.66	0	100	0	92.7%	70	130		
4-Bromochlorobenzene	88.98	0	100	0	89.0%	70	130		
Fluorobenzene	92.65	0	100	0	92.6%	70	130		

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

CLIENT: PNM - Public Service Company of NM

Work Order: 9804051

Project: Mangum 1E

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV5 QC0529/30		Batch ID: GC-1_980507	Test Code: SW8020A	Units: µg/L	Analysis Date 5/7/98		Prep Date:	
Client ID: 9804051		Run ID: GC-1_980507A	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit
Analyte	Result							
Benzene	20.54		0.5	20	0	102.7%	85	115
Ethylbenzene	20.93		0.5	20	0	104.6%	85	115
m,p-Xylene	40.5		1	40	0	101.2%	85	115
Methyl tert-Butyl Ether	17.55		1	20	0	87.8%	85	115
o-Xylene	20.6		0.5	20	0	103.0%	85	115
Toluene	21.34		0.5	20	0	106.7%	85	115
1,4-Difluorobenzene	91.93		0	100	0	91.9%	70	130
4-Bromochlorobenzene	88.69		0	100	0	88.7%	70	130
Fluorobenzene	92.03		0	100	0	92.0%	70	130
						%RPD	RPDLimit	Qual

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

CLIENT: PNM - Public Service Company of NM
Work Order: 9804051
Project: Mangum 1E
Test No: SW8020A

QC SUMMARY REPORT SURROGATE RECOVERIES

BTEX

Sample ID	14FBZ	4BCBZ	FLBZ
9804051-01A	89.6	85	90.3
9804051-02A	89.5	84.7	89.6
9804052-01A	90.3	88	91.7
9804053-01A	78	80	80.4
9804054-01A	91.5	89.1	92.8
9804054-01AMS	91.5	91.3	93.3
9804054-01AMSD	90	89.2	91.1
9804055-01A	81.8	77.1	87.9
9804055-02A	85.9	83.4	88.5
9804056-01A	85.8	85.3	86.6
9804057-01A	93.4	88.7	93.7
9804057-02A	90.2	88.6	91.3
9804057-03A	91.2	88.6	91.7
9805003-01A	93.1	88.8	93.5
9805003-02A	90.7	88.8	91.6
CCV1 QC0529/30	92.8	89.3	92.9
CCV2 QC0529/30	92.5	90.2	93
CCV3 QC0529/30	92.5	88.2	92.8
CCV4 QC0529/30	92.7	89	92.6
CCV5 QC0529/30	91.9	88.7	92
LCS WATER	92.5	89.2	92.5
MB1	93.1	86.4	93.6

Acronym	Surrogate	QC Limits
14FBZ	= 1,4-Difluorobenzene	70-130
4BCBZ	= 4-Bromochlorobenzene	70-130
FLBZ	= Fluorobenzene	70-130

* Surrogate recovery outside acceptance limits

ON SITE

TECHNOLOGIES, LTD.

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

Page: _____ of _____

4/29/98

[illegible]

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

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

86/5/17

Page: _____ of _____

[illegible]

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