3RP-315

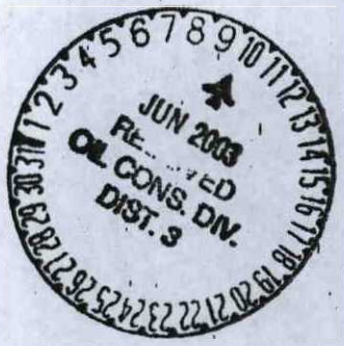
Reports

Date: 2002

Williams

Environmental Services
188 County Road 4900
Bloomfield, New Mexico 87413
(505) 634-4956 (office)
(505) 632-4781 (fax)

June 6, 2003



Mr. William Olson
Hydrologist
Oil Conservation Division
1220 S. St. Francis Dr.
Santa Fe, NM 87505

RE: 2002 GROUND WATER SUMMARY REPORT

Dear Mr. Olson:

Enclosed for your review is the 2002 Ground Water Summary Report. The report presents monitoring data for eleven sites having petroleum hydrocarbon impacted ground water, which resulted from the past use of unlined surface impoundments. The sites included in the report are listed in Table 1.

In 2002, seven sites achieved four or more consecutive quarters of water quality data meeting NMWQCC standards for BTEX. Williams submitted final closure reports for four of these sites and has received OCD closure approval on three of the sites. At your request, Williams has submitted a revised potentiometric surface map for the fourth site to allow completion of the OCD review. Final closure reports for the remaining three sites are currently being prepared and will be submitted soon. Table 2 lists the sites that have met the cleanup objectives in 2002.

Of the eleven active sites, seven have accumulations of LNAPL in one or more monitoring well. In 2002, passive collection devices were deployed in all wells containing measurable accumulations of LNAPL. Periodic emptying of the collection devices along with active bailing of LNAPL during the quarterly sampling events continues.

The remaining four active sites consist of three sites with concentrations of dissolved BTEX in excess of cleanup standards. At each of these sites, only the source area well exceeds the standards. The fourth site, Wilmerding 1M, has had dry wells since May 2001. The samples collected at that time contained no detectable BTEX. The hay field surrounding this site is being irrigated this season and it is anticipated that ground water levels will rise sufficiently to allow sample collection.

Thank you for your time to review this submittal. If you have any questions regarding the report, you may call me at (505) 634-4956.

Respectfully,

James P. Struhs 6/6/03
JAMES P. STRUHS
(FOR MARK B. HARVEY)

Mark B. Harvey
Project Manager

Attachments
Enclosure

c: Denny Foust, OCD Aztec District Office
Bill Liess, BLM Farmington District Office

Table 1. List of Active Sites for 2002 Report

Count	Site Name	Unit Letter	Section	Township	Range	Longitude	Latitude	OCD Initial Notification
1	Chamberlain 1	F	14	32N	12W	-108.068853	36.990549	30-Sep-99
2	Davis 1	E	11	31N	12W	-108.068919	36.916257	2-Mar-99
3	Dogie East Pit	D	4	25N	6W	-107.478874	36.434196	7-Jul-97
4	Florance 40	G	21	30N	8W	-107.67775	36.800088	27-Jan-97
5	Florance M 47X	G	5	30N	9W	-107.799823	36.843166	27-Jan-97
6	Honolulu Drip	B	15	26N	4W	-107.238469	36.492341	18-Jun-96
7	Ice Canyon Drip	J	13	26N	7W	-107.52226	36.484972	1-Dec-97
8	Jicarilla Contract 147-6	C	6	25N	5W	-107.402363	36.433963	13-Aug-98
9	Patterson A Com A1	G	2	31N	12W	-108.061165	36.930755	2-Mar-99
10	Pritchard 2	J	6	30N	8W	-107.712068	36.837817	22-Feb-99
11	Wilmerding 1M	C	10	31N	13W	-108.193158	36.91846	5-Jun-98

Table 2. List of Sites Closed in 2002

Count	Site Name	Unit Letter	Section	Township	Range	Longitude	Latitude	OCD Initial Notification	Status
1	Blanco Wash Drip	J	31	27N	8W	-107.721574	36.530995	19-Feb-99	Approved
2	Dogie North Pit	D	4	25N	6W	-107.479158	36.435784	7-Jul-97	Report Pending
3	Florance 124	C	27	29N	9W	-107.76698	36.70209	12-Aug-96	Pending Approval
4	Grenier 4A	M	7	31N	11W	-108.036001	36.910167	18-Oct-99	Report Pending
5	Kaufman 1	H	33	31N	13W	-108.202128	36.860121	9-Mar-00	Approved
6	O' Shea 1M	F	3	31N	13W	-108.193596	36.932228	6-Jun-98	Report Pending
7	Zachry 18E	O	11	28N	10W	-107.860007	36.670885	6-Sep-96	Approved

Site Summary Report

Site Name: Florance 40 **Reporting Period: 2002**

Location: Unit G, Sec 21, Twn 30N, Rng 8W
Canyon: Gobernador
Operator: Amoco

Vulnerable Class: original
OCD Ranking: 20
Lead Agency: NMOCD

Status Narrative

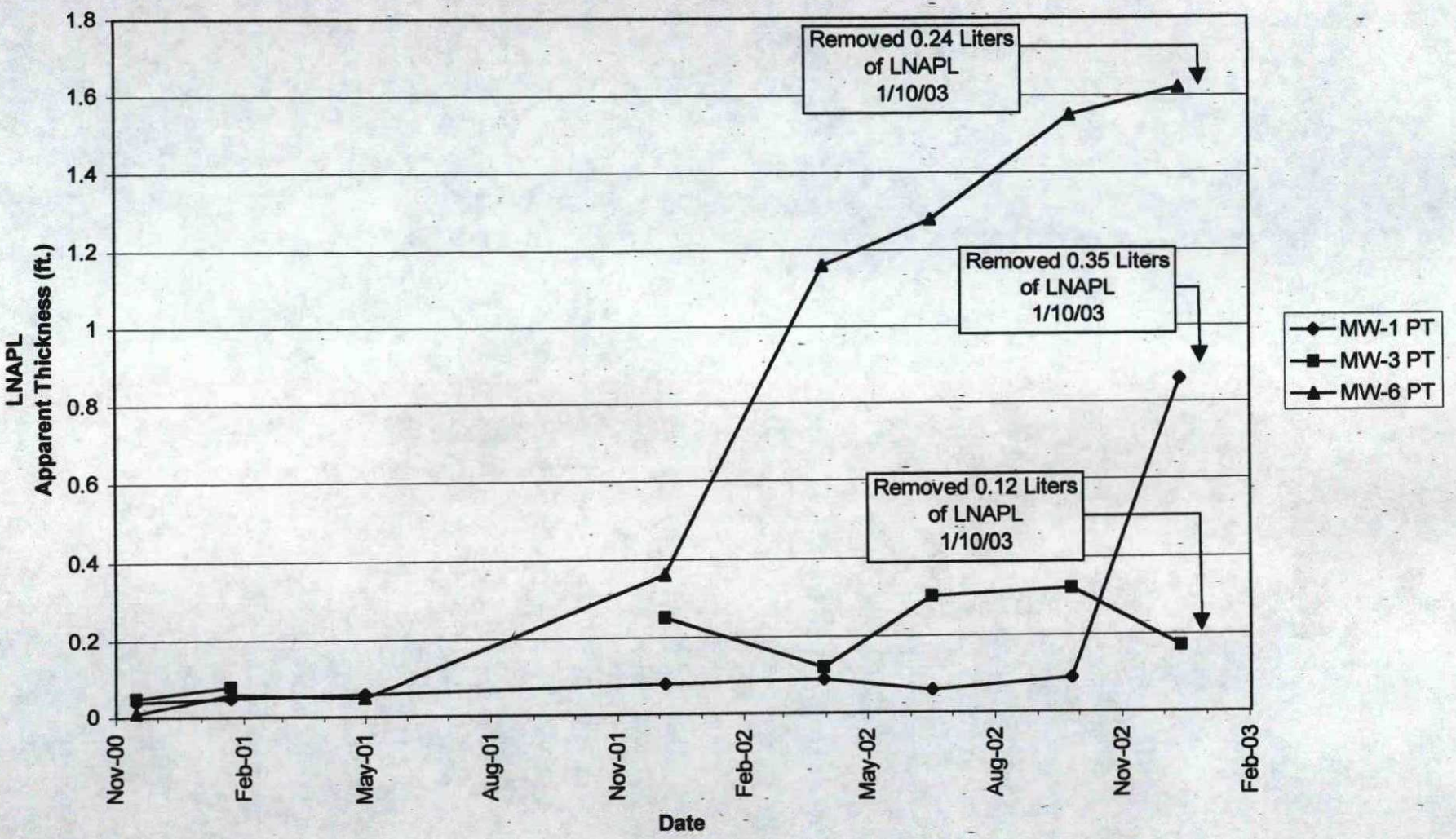
Twenty-one quarters of water quality data have been collected from the seven monitoring wells located at this site. Responsibility for the remediation of the contaminant plume or plumes has been divided between Amoco Production Company and Williams. In a December 30, 1997 letter to Amoco, the NMOCD required Amoco to address soil and ground water contamination downgradient of Amoco's separator pit, which is located upgradient of the Williams source area. The letter assigned responsibility for ground water contamination downgradient of PNM's former dehydrator pit to PNM (now a Williams responsibility).

Monitoring wells identified as "Amoco", MW-1 and MW-5 are located in the Amoco zone of responsibility. The "Amoco" well is located in the source area near the center of the former separator pit. Concentrations of total BTEX in this well increased from 15,500 ppb in the first quarter to 26,140 ppb in the second quarter. In the third quarter, a 0.01-foot accumulation of LNAPL was measured in the well (PNM records indicate that when this well was installed in April 1998 it had 0.002-foot of LNAPL). In the fourth quarter, no measurable accumulations of LNAPL were present and total BTEX was 9,640 ppb. Accumulations of LNAPL in downgradient well MW-1 were between 0.06-foot and 0.08-foot during the first three quarters. In the fourth quarter, LNAPL thickness increased to 0.86-foot. Monitoring well MW-5 has not accumulated LNAPL and has demonstrated a decreasing trend in total BTEX levels. Total BTEX concentrations in the first quarter were 1,342 ppb. In the second and third quarters they were 700 and 705 ppb, respectively. Total BTEX was 298 ppb in the fourth quarter.

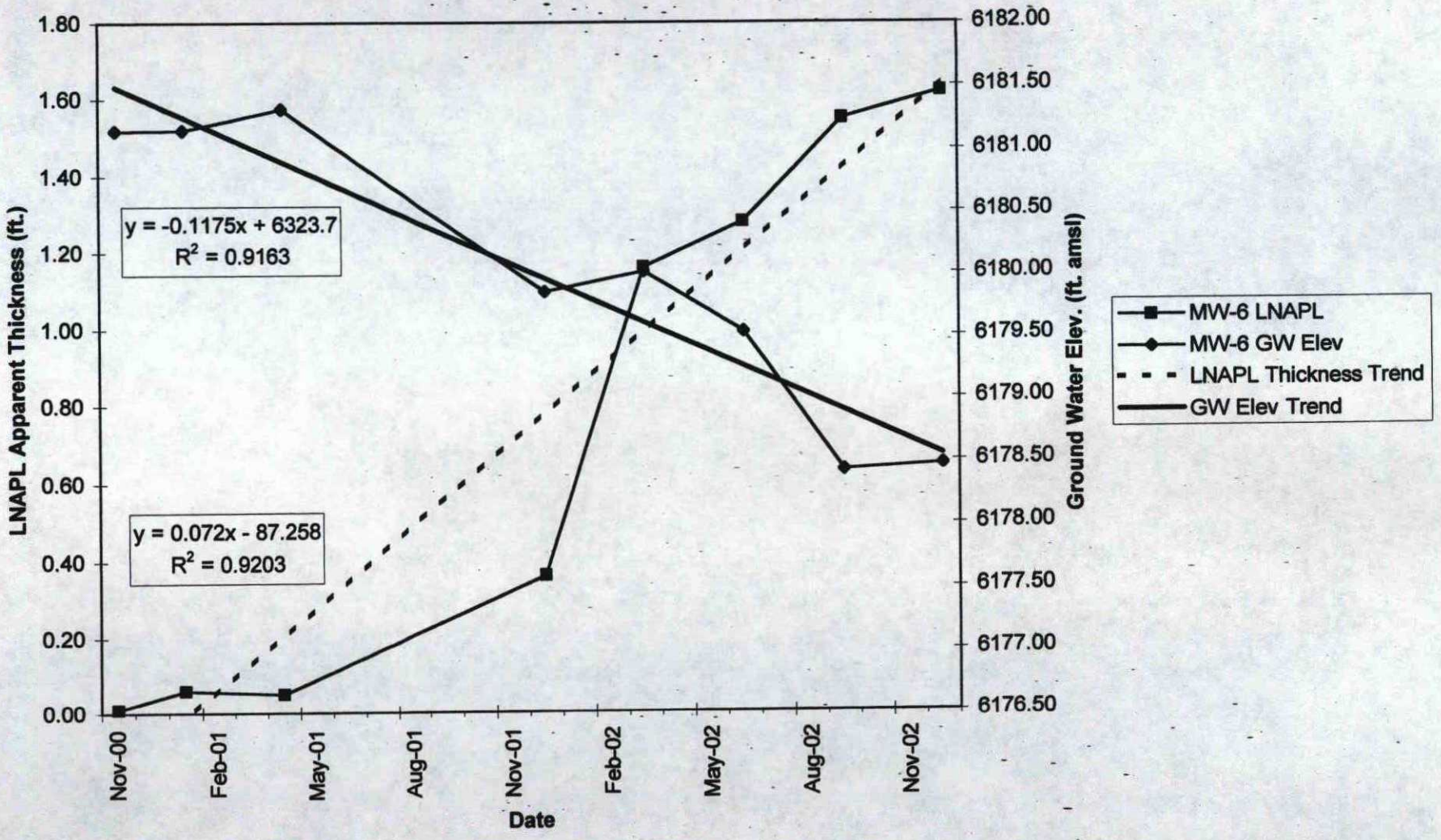
Monitoring wells MW-3, MW-4, MW-6, and MW-7 are located in the Williams zone of responsibility. Accumulations of LNAPL in well MW-6, located in the source area near the former PNM dehydrator pit, have increased over this reporting period. The LNAPL thickness increased from 0.36-foot in the last quarter of 2001 to 1.16-feet in the first quarter of 2002. In the second, third and fourth quarters, LNAPL accumulations increased to 1.28, 1.55, and 1.61-feet, respectively. During this same period, the elevation of the water table at the site steadily declined. A plot of corrected water-table elevations and LNAPL thickness over time in well MW-6 illustrates the inverse relationship between the two parameters. Well MW-3 has also contained accumulations of LNAPL ranging in thickness from 0.12 to 0.32-foot. In the fourth quarter, the first measurable accumulations of LNAPL in well MW-4 were detected (0.01-foot). Preceding the detection of LNAPL, total BTEX concentrations in well MW-4 increased from 224 ppb in the first quarter to 1,625 ppb in the third quarter. A chart illustrating the change in LNAPL thickness over time in wells MW-6, MW-3, and MW-1 is enclosed. Cross-gradient monitoring well MW-7 continues to show no detectable concentrations of BTEX.

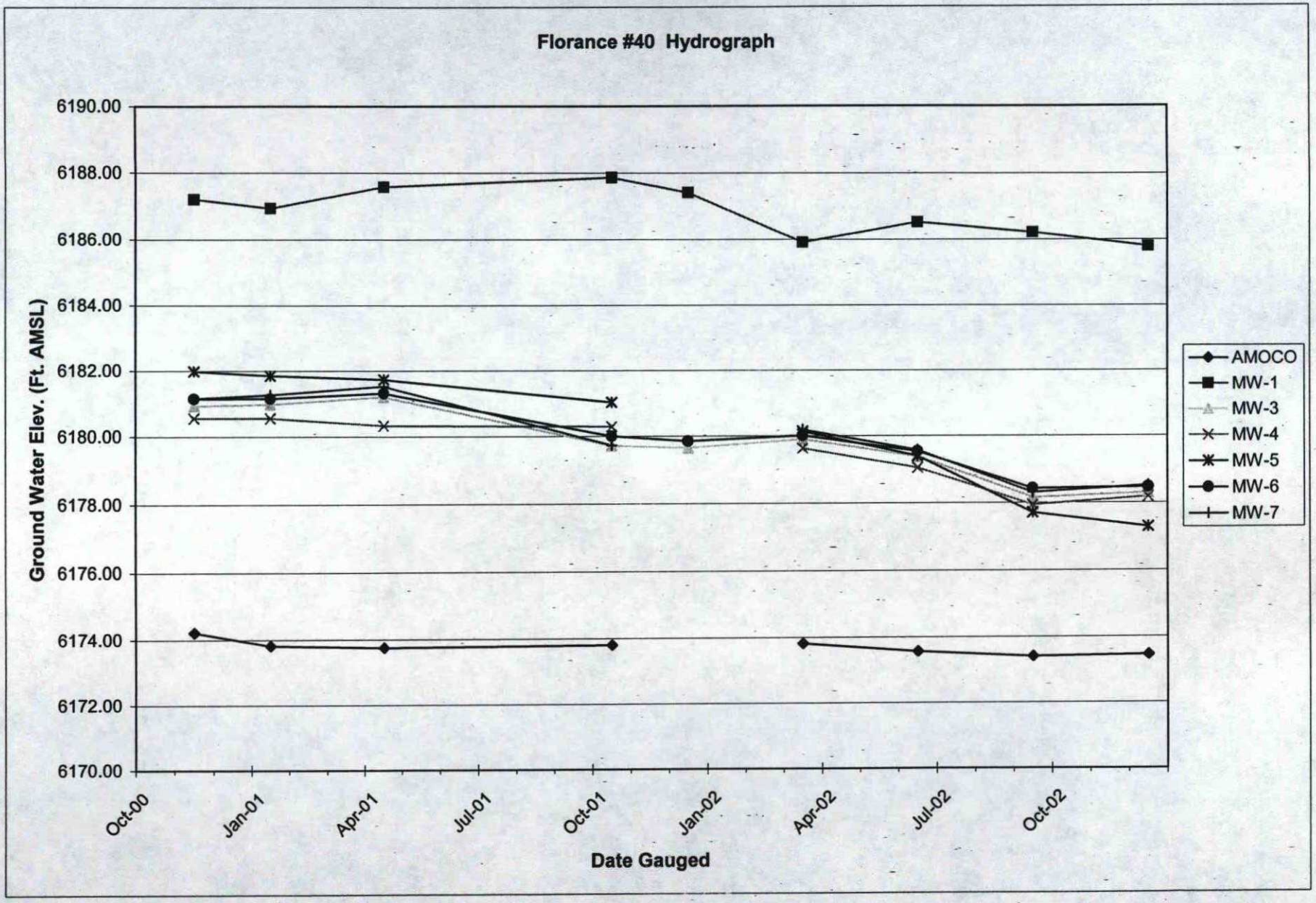
Potentiometric surface maps (Figure 2) depict ground water flow to the east-southeast at an average hydraulic gradient of 0.05. No significant seasonal variations in flow direction or gradient are evident. The enclosed hydrograph illustrates an overall decrease in water-table elevations at the site over the past two years. Water-table elevations in the "Amoco" well appear to be inconsistent with the rest of the data set and were not used in calculating the potentiometric surface. Williams plans to verify the elevation of this well relative to the other wells to confirm the data.

Florance 40
LNAPL Thickness



Florance 40 Well MW-6
LNAPL Thickness and Corrected Water Elevation




Florance #40 Hydrograph
6190.00
6188.00
6186.00
6184.00
6182.00
6180.00
6178.00
6176.00
6174.00
6172.00
6170.00
Ground Water Elev. (Ft. AMSL)
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Date Gauged
AMOCO
MW-1
MW-3
MW-4
MW-5
MW-6
MW-7

Analytical Data Summary

Site Name:
Florance 40

Reporting Period:
1/1/02 To 12/31/02

Well ID	Sample Date	Sample ID	Benzene ug/l	Toluene ug/l	Ethylbenzene ug/l	Xylene (Total) ug/l
AMOCO						
	3/30/02	142530MAR02	610	790	1100	13000
	6/16/02	125216JUN02	740	ND	3400	22000
	12/13/02	135913DEC02	570	ND	670	8400
MW-4						
	3/30/02	143230MAR02	42.	13.	19.	150
	6/16/02	133416JUN02	56.	32.	68.	470
	9/25/02	122125SEP02	170	85.	170	1200
	12/13/02	142113DEC02	130	39.	180	990
MW-5						
	3/30/02	142130MAR02	350	12.	540	440
	6/16/02	130316JUN02	300	ND	290	110
	9/25/02	123625SEP02	250	15.	110	330
	12/13/02	135113DEC02	100	ND	48.	150
MW-7						
	3/30/02	143830MAR02	ND	ND	ND	ND
	6/16/02	132516JUN02	ND	ND	ND	ND
	9/25/02	121025SEP02	ND	ND	ND	ND
	12/13/02	140913DEC02	ND	ND	ND	ND

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9608 Loiret Blvd.
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December 23, 2002

Mr. Jim Struhs
MILE HIGH ENVIRONMENTAL
187 C.R. 4980
Bloomfield, NM 87413

RE: Lab Project Number: 6065820
Client Project ID: SJB-GW FLR40

Dear Mr. Struhs:

Enclosed are the analytical results for sample(s) received by the laboratory on December 17, 2002. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report please feel free to contact me.

Sincerely,

Adam Taylor

For: Mary Jane Walls
mjwalls@pacelabs.com
Project Manager

Kansas/NELAP Certification Number E-10116

Enclosures

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Lenexa, KS 66219
Phone: 913.599.5665
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SAMPLE SUMMARY

Lab Project Number: 6065820
Client Project ID: SJB-GW FLR40

Project Sample Number	Sample Number	Client Sample ID	Matrix	Date Collected	Date Received
6065820-001	605680719	142113DEC02	Water	12/13/02 14:21	12/17/02 08:00
6065820-002	605680727	135913DEC02	Water	12/13/02 13:59	12/17/02 08:00
6065820-003	605680735	135113DEC02	Water	12/13/02 13:51	12/17/02 08:00
6065820-004	605680743	140913DEC02	Water	12/13/02 14:09	12/17/02 08:00

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6065820
Client Project ID: SJB-GW FLR40

Lab Sample No: 605680719 Project Sample Number: 6065820-001 Date Collected: 12/13/02 14:21
Client Sample ID: 142113DEC02 Matrix: Water Date Received: 12/17/02 08:00

Parameters	Results	Units	Report Limit	DF	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles									
Aromatic Volatile Organics	Method: EPA 8021								
Benzene	130	ug/l	10.	5.0	12/20/02 13:54	SHF	71-43-2		
Ethylbenzene	180	ug/l	10.	5.0	12/20/02 13:54	SHF	100-41-4		
Toluene	39.	ug/l	10.	5.0	12/20/02 13:54	SHF	108-88-3		
Xylene (Total)	990	ug/l	25.	5.0	12/20/02 13:54	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	95	%		1.0	12/20/02 13:54	SHF	98-08-8		

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Lab Project Number: 6065820
Client Project ID: SJB-GW FLR40

Lab Sample No: 605680727 Project Sample Number: 6065820-002 Date Collected: 12/13/02 13:59
Client Sample ID: 135913DEC02 Matrix: Water Date Received: 12/17/02 08:00

Parameters	Results	Units	Report Limit	DF	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles									
Aromatic Volatile Organics	Method: EPA 8021								
Benzene	570	ug/l	200	100	12/20/02 14:23	SHF	71-43-2		
Ethylbenzene	670	ug/l	200	100	12/20/02 14:23	SHF	100-41-4		
Toluene	ND	ug/l	200	100	12/20/02 14:23	SHF	108-88-3		
Xylene (Total)	8400	ug/l	500	100	12/20/02 14:23	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	97	%		1.0	12/20/02 14:23	SHF	98-08-8		

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Lab Project Number: 6065820
Client Project ID: SJB-GW FLR40

Lab Sample No: 605680735 Project Sample Number: 6065820-003 Date Collected: 12/13/02 13:51
Client Sample ID: 135113DEC02 Matrix: Water Date Received: 12/17/02 08:00

Parameters	Results	Units	Report Limit	DF	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles									
Aromatic Volatile Organics	Method: EPA 8021								
Benzene	100	ug/l	2.0	1.0	12/20/02 14:51	SHF	71-43-2		
Ethylbenzene	48.	ug/l	2.0	1.0	12/20/02 14:51	SHF	100-41-4		
Toluene	ND	ug/l	2.0	1.0	12/20/02 14:51	SHF	108-88-3		
Xylene (Total)	150	ug/l	5.0	1.0	12/20/02 14:51	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	89	%		1.0	12/20/02 14:51	SHF	98-08-8		

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Lab Project Number: 6065820
Client Project ID: SJB-GW FLR40

Lab Sample No: 605680743 Project Sample Number: 6065820-004 Date Collected: 12/13/02 14:09
Client Sample ID: 140913DEC02 Matrix: Water Date Received: 12/17/02 08:00

Parameters	Results	Units	Report Limit	DF	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles									
Aromatic Volatile Organics	Method: EPA 8021								
Benzene	ND	ug/l	2.0	1.0	12/20/02 15:19	SHF	71-43-2		
Ethylbenzene	ND	ug/l	2.0	1.0	12/20/02 15:19	SHF	100-41-4		
Toluene	ND	ug/l	2.0	1.0	12/20/02 15:19	SHF	108-88-3		
Xylene (Total)	ND	ug/l	5.0	1.0	12/20/02 15:19	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	96	%		1.0	12/20/02 15:19	SHF	98-08-8		

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9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

Lab Project Number: 6065820
Client Project ID: SJB-GW FLR40

PARAMETER FOOTNOTES

Dilution factor shown represents the factor applied to the reported result and reporting limit due to changes in sample preparation, dilution of the extract, or moisture content

ND	Not detected at or above adjusted reporting limit
NC	Not Calculable
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
MDL	Adjusted Method Detection Limit
(S)	Surrogate

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QUALITY CONTROL DATA

Lab Project Number: 6065820
Client Project ID: SJB-GW FLR40

QC Batch: 135999 Analysis Method: EPA 8021
QC Batch Method: EPA 8021 Analysis Description: Aromatic Volatile Organics
Associated Lab Samples: 605680719 605680727 605680735 605680743

METHOD BLANK: 605694397
Associated Lab Samples: 605680719 605680727 605680735 605680743

Parameter	Units	Blank Result	Reporting Limit	Footnotes
Benzene	ug/l	ND	2.0	
Ethylbenzene	ug/l	ND	2.0	
Toluene	ug/l	ND	2.0	
Xylene (Total)	ug/l	ND	5.0	
a,a,a-Trifluorotoluene (S)	%	99		

LABORATORY CONTROL SAMPLE: 605694405

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Footnotes
Benzene	ug/l	20.00	19.76	99	84-122	
Ethylbenzene	ug/l	20.00	20.54	103	85-117	
Toluene	ug/l	20.00	20.68	103	87-117	
Xylene (Total)	ug/l	60.00	64.29	107	85-119	
a,a,a-Trifluorotoluene (S)				95	83-115	1

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Lab Project Number: 6065820
Client Project ID: SJB-GW FLR40

QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines, unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

LCS(D)	Laboratory Control Sample (Duplicate)
MS(D)	Matrix Spike (Duplicate)
DUP	Sample Duplicate
ND	Not detected at or above adjusted reporting limit
NC	Not Calculable
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
MDL	Adjusted Method Detection Limit
RPD	Relative Percent Difference
(S)	Surrogate
[1]	Due to insufficient number of sample containers, there is no MS/MSD. Acceptable recovery of the LCS demonstrates the analytical system was in control.

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Fax: 913.599.1759

October 07, 2002

Mr. Jim Struhs
MILE HIGH ENVIRONMENTAL
187 C.R. 4980
Bloomfield, NM 87413

RE: Lab Project Number: 6063158
Client Project ID: FLR40

Dear Mr. Struhs:

Enclosed are the analytical results for sample(s) received by the laboratory on September 26, 2002. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report please feel free to contact me.

Sincerely,

MJ Walls

Mary Jane Walls
mjwalls@pacelabs.com
Project Manager

Kansas/NELAP Certification Number E-10116

Enclosures

REPORT OF LABORATORY ANALYSIS

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9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

SAMPLE SUMMARY

Lab Project Number: 6063158
Client Project ID: FLR40

Project Sample Number	Sample Number	Client Sample ID	Matrix	Date Collected	Date Received
6063158-001	605468032	121025SEP02	Water	09/25/02 12:10	09/26/02 09:15
6063158-002	605468040	122125SEP02	Water	09/25/02 12:21	09/26/02 09:15
6063158-003	605468057	123625SEP02	Water	09/25/02 12:36	09/26/02 09:15

REPORT OF LABORATORY ANALYSIS

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9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

SAMPLE ANALYTE COUNT

Lab Project Number: 6063158
Client Project ID: FLR40

Project Sample Number	Sample No	Client Sample ID	Analysis Code	Analysis Description	Analytes Reported
6063158-001	605468032	121025SEP02	8020 WPAC	Aromatic Volatile Organics	5
6063158-002	605468040	122125SEP02	8020 WPAC	Aromatic Volatile Organics	5
6063158-003	605468057	123625SEP02	8020 WPAC	Aromatic Volatile Organics	5

REPORT OF LABORATORY ANALYSIS

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Fax: 913.599.1759

Lab Project Number: 6063158
Client Project ID: FLR40

Lab Sample No: 605468032 Project Sample Number: 6063158-001 Date Collected: 09/25/02 12:10
Client Sample ID: 121025SEP02 Matrix: Water Date Received: 09/26/02 09:15

Parameters	Results	Units	Report Limit	DF	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles									
Aromatic Volatile Organics	Method: EPA 8021								
Benzene	ND	ug/l	2.0	1.0	10/03/02 12:33		71-43-2		
Ethylbenzene	ND	ug/l	2.0	1.0	10/03/02 12:33		100-41-4		
Toluene	ND	ug/l	2.0	1.0	10/03/02 12:33		108-88-3		
Xylene (Total)	ND	ug/l	5.0	1.0	10/03/02 12:33		1330-20-7		
a,a,a-Trifluorotoluene (S)	101	%		1.0	10/03/02 12:33		98-08-8		

REPORT OF LABORATORY ANALYSIS

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9608 Loiret Blvd.
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Fax: 913.599.1759

Lab Project Number: 6063158
Client Project ID: FLR40

Lab Sample No: 605468040 Project Sample Number: 6063158-002 Date Collected: 09/25/02 12:21
Client Sample ID: 122125SEP02 Matrix: Water Date Received: 09/26/02 09:15

Parameters	Results	Units	Report Limit	DF	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles									
Aromatic Volatile Organics	Method: EPA 8021								
Benzene	170	ug/l	10.	5.0	10/03/02 13:06		71-43-2		
Ethylbenzene	170	ug/l	10.	5.0	10/03/02 13:06		100-41-4		
Toluene	85.	ug/l	10.	5.0	10/03/02 13:06		108-88-3		
Xylene (Total)	1200	ug/l	25.	5.0	10/03/02 13:06		1330-20-7		
a,a,a-Trifluorotoluene (S)	109	%		1.0	10/03/02 13:06		98-08-8	1	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

Lab Project Number: 6063158
Client Project ID: FLR40

Lab Sample No: 605468057 Project Sample Number: 6063158-003 Date Collected: 09/25/02 12:36
Client Sample ID: 123625SEP02 Matrix: Water Date Received: 09/26/02 09:15

Parameters	Results	Units	Report Limit	DF	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles									
Aromatic Volatile Organics	Method: EPA 8021								
Benzene	250	ug/l	4.0	2.0	10/03/02 13:38		71-43-2		
Ethylbenzene	110	ug/l	2.0	1.0	10/03/02 13:38		100-41-4		
Toluene	15.	ug/l	2.0	1.0	10/03/02 13:38		108-88-3		
Xylene (Total)	330	ug/l	5.0	1.0	10/03/02 13:38		1330-20-7		
a,a,a-Trifluorotoluene (S)	106	%		1.0	10/03/02 13:38		98-08-8		

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6063158
Client Project ID: FLR40

PARAMETER FOOTNOTES

Dilution factor shown represents the factor applied to the reported result and reporting limit due to changes in sample preparation, dilution of the extract, or moisture content

ND	Not detected at or above adjusted reporting limit
NC	Not Calculable
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
MDL	Adjusted Method Detection Limit
(S)	Surrogate
[1]	Elevated quantitation limits resulting from a dilution.

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QUALITY CONTROL DATA

Lab Project Number: 6063158
Client Project ID: FLR40

QC Batch: 131005 Analysis Method: EPA 8021
QC Batch Method: EPA 8021 Analysis Description: Aromatic Volatile Organics
Associated Lab Samples: 605468032 605468040 605468057

METHOD BLANK: 605486943
Associated Lab Samples: 605468032 605468040 605468057

Parameter	Units	Blank Result	Reporting Limit	Footnotes
Benzene	ug/l	ND	2.0	
Ethylbenzene	ug/l	ND	2.0	
Toluene	ug/l	ND	2.0	
Xylene (Total)	ug/l	ND	5.0	
a,a,a-Trifluorotoluene (S)	%	101		

LABORATORY CONTROL SAMPLE: 605486950

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Footnotes
Benzene	ug/l	20.00	22.02	110	84-122	
Ethylbenzene	ug/l	20.00	20.76	104	85-117	
Toluene	ug/l	20.00	20.51	103	87-117	
Xylene (Total)	ug/l	60.00	62.39	104	85-119	
a,a,a-Trifluorotoluene (S)				102	83-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 605487644 605487651

Parameter	Units	605479591 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Footnotes
Benzene	ug/l	0	20.00	21.53	22.16	108	111	82-123	3	10	
Ethylbenzene	ug/l	0	20.00	19.84	20.43	99	102	84-118	3	10	
Toluene	ug/l	0	20.00	19.64	20.25	98	101	82-117	3	10	
Xylene (Total)	ug/l	0.6277	60.00	58.37	60.03	96	99	84-121	3	13	
a,a,a-Trifluorotoluene (S)						103	103	83-115			

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Lab Project Number: 6063158
Client Project ID: FLR40

QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines, unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

LCS(D)	Laboratory Control Sample (Duplicate)
MS(D)	Matrix Spike (Duplicate)
DUP	Sample Duplicate
ND	Not detected at or above adjusted reporting limit
NC	Not Calculable
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
MDL	Adjusted Method Detection Limit
RPD	Relative Percent Difference
(S)	Surrogate

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July 02, 2002

Mr. Jim Struhs
MILE HIGH ENVIRONMENTAL
187 C.R. 4980
Bloomfield, NM 87413

RE: Lab Project Number: 6059942
Client Project ID: FLR40

Dear Mr. Struhs:

Enclosed are the analytical results for sample(s) received by the laboratory on June 20, 2002. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report please feel free to contact me.

Sincerely,

Mary Jane Walls
mjwalls@pacelabs.com
Project Manager

Kansas/NELAP Certification Number E-10116

Enclosures

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SAMPLE SUMMARY

Lab Project Number: 6059942
Client Project ID: FLR40

Project Sample Number	Sample Number	Client Sample ID	Matrix	Date Collected	Date Received
6059942-001	605212158	125216JUN02	Water	06/16/02 12:52	06/20/02 14:12
6059942-002	605212166	133416JUN02	Water	06/16/02 13:34	06/20/02 14:12
6059942-003	605212174	130316JUN02	Water	06/16/02 13:03	06/20/02 14:12
6059942-004	605212182	132516JUN02	Water	06/16/02 13:25	06/20/02 14:12

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SAMPLE ANALYTE COUNT

Lab Project Number: 6059942
Client Project ID: FLR40

Project Sample Number	Sample No	Client Sample ID	Analysis Code	Analysis Description	Analytes Reported
6059942-001	605212158	125216JUN02	8020 WPAC	Aromatic Volatile Organics	5
6059942-002	605212166	133416JUN02	8020 WPAC	Aromatic Volatile Organics	5
6059942-003	605212174	130316JUN02	8020 WPAC	Aromatic Volatile Organics	5
6059942-004	605212182	132516JUN02	8020 WPAC	Aromatic Volatile Organics	5

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Lab Project Number: 6059942
Client Project ID: FLR40

Lab Sample No: 605212158 Project Sample Number: 6059942-001 Date Collected: 06/16/02 12:52
Client Sample ID: 125216JUN02 Matrix: Water Date Received: 06/20/02 14:12

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles								
Aromatic Volatile Organics	Method: EPA 8021							
Benzene	740	ug/l	500	06/21/02 15:57	JPR	71-43-2		
Ethylbenzene	3400	ug/l	500	06/21/02 15:57	JPR	100-41-4		
Toluene	ND	ug/l	500	06/21/02 15:57	JPR	108-88-3		
Xylene (Total)	22000	ug/l	1200	06/21/02 15:57	JPR	1330-20-7		
a,a,a-Trifluorotoluene (S)	135	%		06/21/02 15:57	JPR	98-08-8	1,2	

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Lab Project Number: 6059942
Client Project ID: FLR40

Lab Sample No: 605212166 Project Sample Number: 6059942-002 Date Collected: 06/16/02 13:34
Client Sample ID: 133416JUN02 Matrix: Water Date Received: 06/20/02 14:12

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles								
Aromatic Volatile Organics	Method: EPA 8021							
Benzene	56.	ug/l	4.0	06/24/02 10:54	JPR	71-43-2		
Ethylbenzene	68.	ug/l	4.0	06/24/02 10:54	JPR	100-41-4		
Toluene	32.	ug/l	4.0	06/24/02 10:54	JPR	108-88-3		
Xylene (Total)	470	ug/l	10.	06/24/02 10:54	JPR	1330-20-7		
a,a,a-Trifluorotoluene (S)	203	%		06/24/02 10:54	JPR	98-08-8	1,2	

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Lab Project Number: 6059942
Client Project ID: FLR40

Lab Sample No: 605212174 Project Sample Number: 6059942-003 Date Collected: 06/16/02 13:03
Client Sample ID: 130316JUN02 Matrix: Water Date Received: 06/20/02 14:12

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles								
Aromatic Volatile Organics	Method: EPA 8021							
Benzene	300	ug/l	4.0	06/24/02 11:26	JPR	71-43-2		
Ethylbenzene	290	ug/l	4.0	06/24/02 11:26	JPR	100-41-4		
Toluene	ND	ug/l	4.0	06/24/02 11:26	JPR	108-88-3		
Xylene (Total)	110	ug/l	10.	06/24/02 11:26	JPR	1330-20-7		
a,a,a-Trifluorotoluene (S)	109	%		06/24/02 11:26	JPR	98-08-8	1	

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Lab Project Number: 6059942
Client Project ID: FLR40

Lab Sample No: 605212182 Project Sample Number: 6059942-004 Date Collected: 06/16/02 13:25
Client Sample ID: 132516JUN02 Matrix: Water Date Received: 06/20/02 14:12

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC Volatiles								
Aromatic Volatile Organics	Method: EPA 8021							
Benzene	ND	ug/l	2.0	06/21/02 17:30	JPR	71-43-2		
Ethylbenzene	ND	ug/l	2.0	06/21/02 17:30	JPR	100-41-4		
Toluene	ND	ug/l	2.0	06/21/02 17:30	JPR	108-88-3		
Xylene (Total)	ND	ug/l	5.0	06/21/02 17:30	JPR	1330-20-7		
a,a,a-Trifluorotoluene (S)	102	%		06/21/02 17:30	JPR	98-08-8		

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Lab Project Number: 6059942
Client Project ID: FLR40

PARAMETER FOOTNOTES

ND	Not detected at or above adjusted reporting limit
NC	Not Calculable
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
MDL	Adjusted Method Detection Limit
(S)	Surrogate
[1]	Elevated quantitation limits resulting from a dilution.
[2]	Surrogate recovery outside of acceptance window confirmed as a matrix effect by the analysis of a duplicate or MS/MSD on this sample.

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QUALITY CONTROL DATA

Lab Project Number: 6059942
Client Project ID: FLR40

QC Batch: 124770 Analysis Method: EPA 8021
QC Batch Method: EPA 8021 Analysis Description: Aromatic Volatile Organics
Associated Lab Samples: 605212158 605212166 605212174 605212182

METHOD BLANK: 605214832
Associated Lab Samples: 605212158 605212166 605212174 605212182

Parameter	Units	Blank Result	Reporting Limit	Footnotes
Benzene	ug/l	ND	2.0	
Ethylbenzene	ug/l	ND	2.0	
Toluene	ug/l	ND	2.0	
Xylene (Total)	ug/l	ND	5.0	
a,a,a-Trifluorotoluene (S)	%	101		

LABORATORY CONTROL SAMPLE: 605214840

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Footnotes
Benzene	ug/l	20.00	20.49	102	84-122	
Ethylbenzene	ug/l	20.00	20.37	102	85-117	
Toluene	ug/l	20.00	19.96	100	87-117	
Xylene (Total)	ug/l	60.00	61.70	103	85-119	
a,a,a-Trifluorotoluene (S)				99	83-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 605217454 605217462

Parameter	Units	605212554 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Footnotes
Benzene	ug/l	0.5846	20.00	21.03	20.26	102	98	82-123	4	10	
Ethylbenzene	ug/l	0	20.00	20.48	19.62	102	98	84-118	4	10	
Toluene	ug/l	0.6244	20.00	20.22	19.35	98	94	82-117	4	10	
Xylene (Total)	ug/l	1.350	60.00	61.60	58.65	100	96	84-121	5	13	
a,a,a-Trifluorotoluene (S)						101	101	83-115			

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6059942
Client Project ID: FLR40

QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines, unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

LCS(D)	Laboratory Control Sample (Duplicate)
MS(D)	Matrix Spike (Duplicate)
DUP	Sample Duplicate
ND	Not detected at or above adjusted reporting limit
NC	Not Calculable
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
MDL	Adjusted Method Detection Limit
RPD	Relative Percent Difference
(S)	Surrogate

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April 10, 2002

Mr. Jim Struhs
MILE HIGH ENVIRONMENTAL
187 C.R. 4980
Bloomfield, NM 87413

RE: Lab Project Number: 6057620
Client Project ID: SJB-GW/ FLRN-40

Dear Mr. Struhs:

Enclosed are the analytical results for sample(s) received by the laboratory on April 2, 2002. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report please feel free to contact me.

Sincerely,

MJ Walls

Mary Jane Walls
mjwalls@pacelabs.com
Project Manager

Kansas/NELAP Certification Number E-10116

Enclosures

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Fax: 913.599.1759

SAMPLE SUMMARY

Lab Project Number: 6057620
Client Project ID: SJB-GW/ FLRN-40

Project Sample Number	Sample Number	Client Sample ID	Matrix	Date Collected	Date Received
6057620-001	605018597	142530MAR02	Water	03/30/02 14:25	04/02/02 09:00
6057620-002	605018605	143230MAR02	Water	03/30/02 14:32	04/02/02 09:00
6057620-003	605018621	143830MAR02	Water	03/30/02 14:38	04/02/02 09:00
6057620-004	605018639	142130MAR02	Water	03/30/02 14:21	04/02/02 09:00

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SAMPLE ANALYTE COUNT

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Lab Project Number: 6057620
Client Project ID: SJB-GW/ FLRN-40

Project Sample Number	Sample No	Client Sample ID	Analysis Code	Analysis Description	Analytes Reported
6057620-001	605018597	142530MAR02	8020 WPAC	Aromatic Volatile Organics	5
6057620-002	605018605	143230MAR02	8020 WPAC	Aromatic Volatile Organics	5
6057620-003	605018621	143830MAR02	8020 WPAC	Aromatic Volatile Organics	5
6057620-004	605018639	142130MAR02	8020 WPAC	Aromatic Volatile Organics	5

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MILE HIGH ENVIRONMENTAL
187 C.R. 4980
Bloomfield, NM 87413

Lab Project Number: 6057620
Client Project ID: SJB-GW/ FLRN-40

Attn: Mr. Jim Struhs
Phone: (505)632-4457

Lab Sample No: 605018597 Project Sample Number: 6057620-001 Date Collected: 03/30/02 14:25
Client Sample ID: 142530MAR02 Matrix: Water Date Received: 04/02/02 09:00

Parameters	Results	Units	Report Limit	Analyzed	by	CAS No.	Ftnote	Reg Limit
GC Volatiles								
Aromatic Volatile Organics	Prep/Method: EPA 8021 / EPA 8021							
Benzene	610	ug/l	100	04/08/02 18:09	SHF	71-43-2		
Ethylbenzene	1100	ug/l	100	04/08/02 18:09	SHF	100-41-4		
Toluene	790	ug/l	100	04/08/02 18:09	SHF	108-88-3		
Xylene (Total)	13000	ug/l	250	04/08/02 18:09	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	86	%		04/08/02 18:09	SHF	2164-17-2	1	

REPORT OF LABORATORY ANALYSIS

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Lab Project Number: 6057620
Client Project ID: SJB-GW/ FLRN-40

Lab Sample No: 605018605 Project Sample Number: 6057620-002 Date Collected: 03/30/02 14:32
Client Sample ID: 143230MAR02 Matrix: Water Date Received: 04/02/02 09:00

Parameters	Results	Units	Report Limit	Analyzed by	CAS No.	Ftnote	Req Limit
GC Volatiles							
Aromatic Volatile Organics	Prep/Method: EPA 8021 / EPA 8021						
Benzene	42.	ug/l	2.0	04/08/02 19:38	71-43-2		
Ethylbenzene	19.	ug/l	2.0	04/08/02 19:38	100-41-4		
Toluene	13.	ug/l	2.0	04/08/02 19:38	108-88-3		
Xylene (Total)	150	ug/l	5.0	04/08/02 19:38	1330-20-7		
a,a,a-Trifluorotoluene (S)	99	%		04/08/02 19:38	2164-17-2		

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Lab Project Number: 6057620
Client Project ID: SJB-GW/ FLRN-40

Lab Sample No: 605018621 Project Sample Number: 6057620-003 Date Collected: 03/30/02 14:38
Client Sample ID: 143830MAR02 Matrix: Water Date Received: 04/02/02 09:00

Parameters	Results	Units	Report Limit	Analyzed by	CAS No.	Ftnote	Reg Limit
GC Volatiles							
Aromatic Volatile Organics	Prep/Method: EPA 8021 / EPA 8021						
Benzene	ND	ug/l	2.0	04/09/02 15:52	71-43-2		
Ethylbenzene	ND	ug/l	2.0	04/09/02 15:52	100-41-4		
Toluene	ND	ug/l	2.0	04/09/02 15:52	108-88-3		
Xylene (Total)	ND	ug/l	5.0	04/09/02 15:52	1330-20-7		
a,a,a-Trifluorotoluene (S)	99	%		04/09/02 15:52	2164-17-2		

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Lab Project Number: 6057620
Client Project ID: SJB-GW/ FLRN-40

Lab Sample No: 605018639 Project Sample Number: 6057620-004 Date Collected: 03/30/02 14:21
Client Sample ID: 142130MAR02 Matrix: Water Date Received: 04/02/02 09:00

Parameters	Results	Units	Report Limit	Analyzed	by	CAS No.	Ftnote	Reg Limit
GC Volatiles								
Aromatic Volatile Organics	Prep/Method: EPA 8021 / EPA 8021							
Benzene	350	ug/l	10.	04/09/02 16:20	SHF	71-43-2		
Ethylbenzene	540	ug/l	10.	04/09/02 16:20	SHF	100-41-4		
Toluene	12.	ug/l	10.	04/09/02 16:20	SHF	108-88-3		
Xylene (Total)	440	ug/l	25.	04/09/02 16:20	SHF	1330-20-7		
a,a,a-Trifluorotoluene (S)	96	%		04/09/02 16:20	SHF	2164-17-2	1	

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Lab Project Number: 6057620
Client Project ID: SJB-GW/ FLRN-40

PARAMETER FOOTNOTES

ND	Not detected at or above adjusted reporting limit
NC	Not Calculable
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
(S)	Surrogate
[1]	Elevated quantitation limits resulting from a dilution.

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QUALITY CONTROL DATA

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Phone: 913.599.5665
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Lab Project Number: 6057620
Client Project ID: SJB-GW/ FLRN-40

QC Batch: 120300 Analysis Method: EPA 8021
QC Batch Method: EPA 8021 Analysis Description: Aromatic Volatile Organics
Associated Lab Samples: 605018597 605018605

METHOD BLANK: 605022995
Associated Lab Samples: 605018597 605018605

Parameter	Units	Blank Result	Reporting Limit	Footnotes
Benzene	ug/l	ND	2.0	
Ethylbenzene	ug/l	ND	2.0	
Toluene	ug/l	ND	2.0	
Xylene (Total)	ug/l	ND	5.0	
a,a,a-Trifluorotoluene (S)	%	101		

LABORATORY CONTROL SAMPLE: 605023027

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Footnotes
Benzene	ug/l	20	20.14	101	84-122	
Ethylbenzene	ug/l	20	19.50	98	85-117	
Toluene	ug/l	20	20.31	102	87-117	
Xylene (Total)	ug/l	60	62.20	104	85-119	
a,a,a-Trifluorotoluene (S)				100	83-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 605023134 605023142

Parameter	Units	605018654 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Footnotes
Benzene	ug/l	0	20.00	19.42	19.96	97	100	82-123	3	10	
Ethylbenzene	ug/l	0.8044	20.00	19.21	19.46	92	93	84-118	1	10	
Toluene	ug/l	0.1659	20.00	19.83	20.20	98	100	82-117	2	10	
Xylene (Total)	ug/l	0.7264	60.00	60.46	61.97	100	102	84-121	2	13	
a,a,a-Trifluorotoluene (S)						99	99	83-115			

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www.pacelabs.com

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: 913.599.5665
Fax: 913.599.1759

QUALITY CONTROL DATA

Lab Project Number: 6057620
Client Project ID: SJB-GW/ FLRN-40

QC Batch: 120628 Analysis Method: EPA 8021
QC Batch Method: EPA 8021 Analysis Description: Aromatic Volatile Organics
Associated Lab Samples: 605018621 605018639

METHOD BLANK: 605035286
Associated Lab Samples: 605018621 605018639

Parameter	Units	Blank Result	Reporting Limit	Footnotes
Benzene	ug/l	ND	2.0	
Ethylbenzene	ug/l	ND	2.0	
Toluene	ug/l	ND	2.0	
Xylene (Total)	ug/l	ND	5.0	
a,a,a-Trifluorotoluene (S)	%	101		

LABORATORY CONTROL SAMPLE: 605035294

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Footnotes
Benzene	ug/l	20	22.13	111	84-122	
Ethylbenzene	ug/l	20	19.41	97	85-117	
Toluene	ug/l	20	20.21	101	87-117	
Xylene (Total)	ug/l	60	63.44	106	85-119	
a,a,a-Trifluorotoluene (S)				101	83-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 605035302 605035310

Parameter	Units	605018621 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Footnotes
Benzene	ug/l	0	20.00	20.19	20.34	101	102	82-123	1	10	
Ethylbenzene	ug/l	0.7396	20.00	19.31	19.26	93	93	84-118	0	10	
Toluene	ug/l	0.1021	20.00	20.09	19.82	100	99	82-117	1	10	
Xylene (Total)	ug/l	0.5566	60.00	63.64	62.59	105	103	84-121	2	13	
a,a,a-Trifluorotoluene (S)						99	97	83-115			

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Lab Project Number: 6057620
Client Project ID: SJB-GW/ FLRN-40

QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines, unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

LCS(D)	Laboratory Control Sample (Duplicate)
MS(D)	Matrix Spike (Duplicate)
DUP	Sample Duplicate
ND	Not detected at or above adjusted reporting limit
NC	Not Calculable
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
RPD	Relative Percent Difference
(S)	Surrogate

49

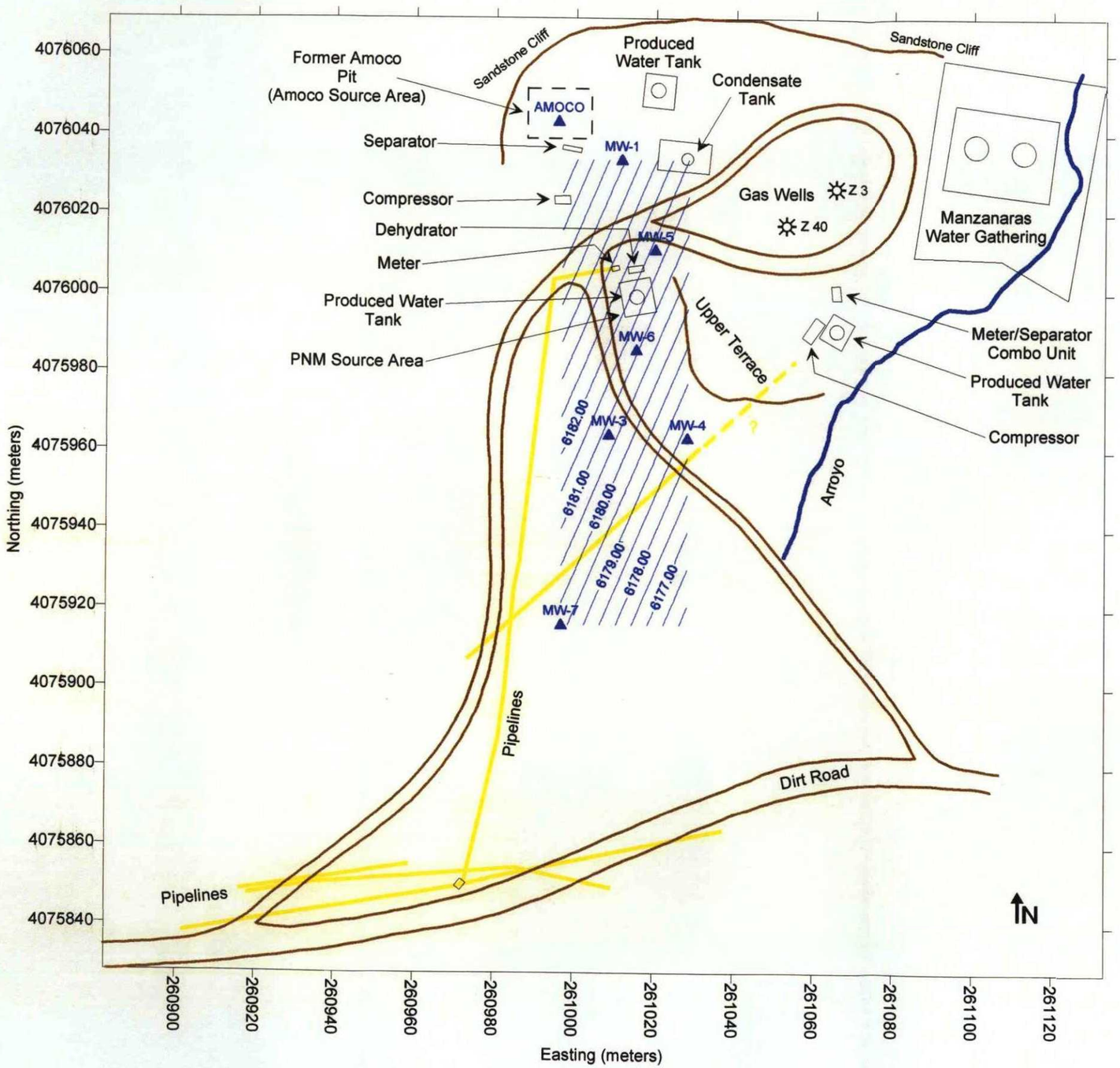

Figure 2
Potentiometric Surface Map
Florance 40
(March 30, 2002)

LEGEND

MW-2 ▲ Monitoring Well

5595.20 Ground Water Elevation (ft. AMSL)

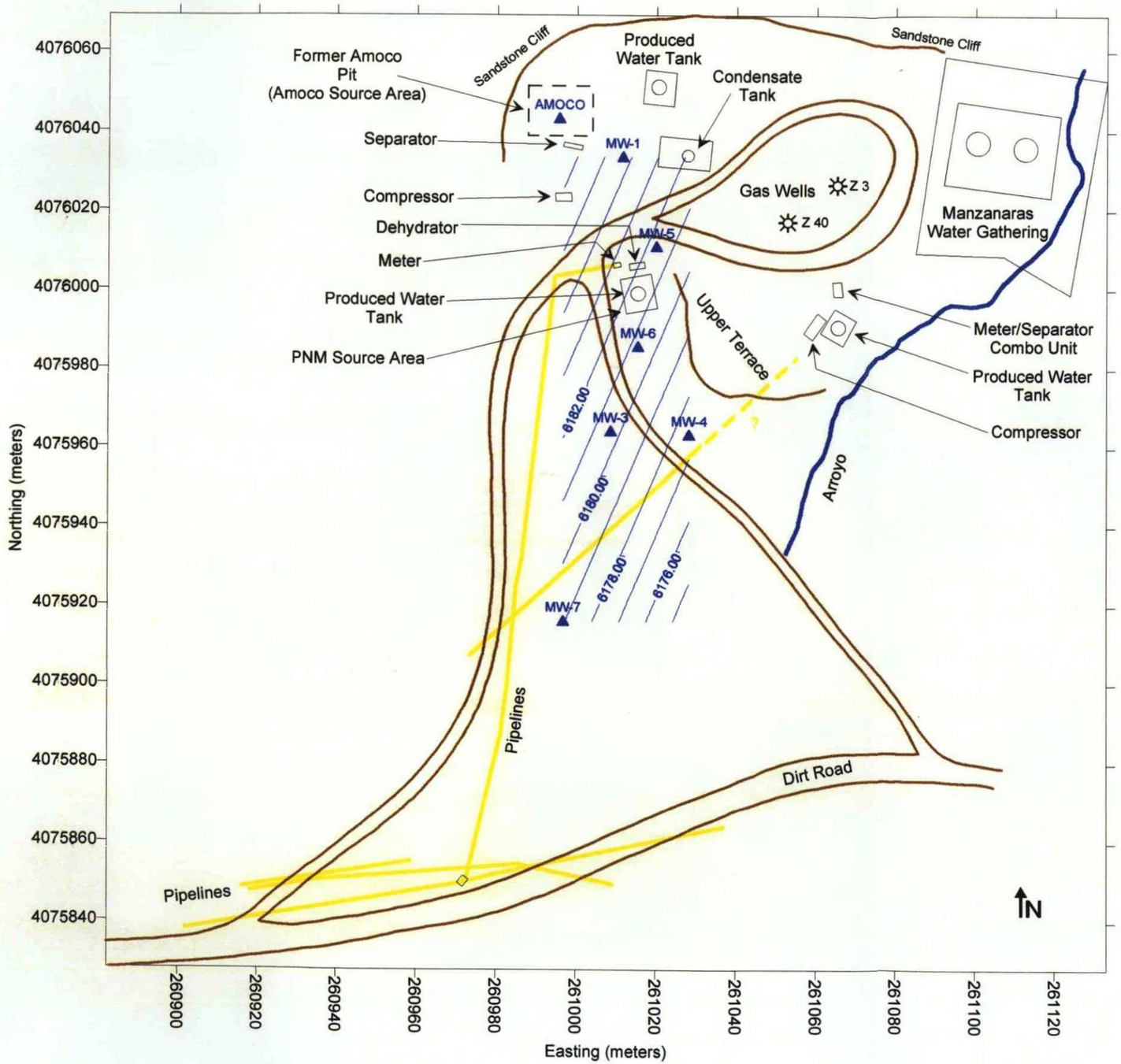

Figure 2
Potentiometric Surface Map
Florance 40
(June 16, 2002)

LEGEND

MW-2 ▲ Monitoring Well

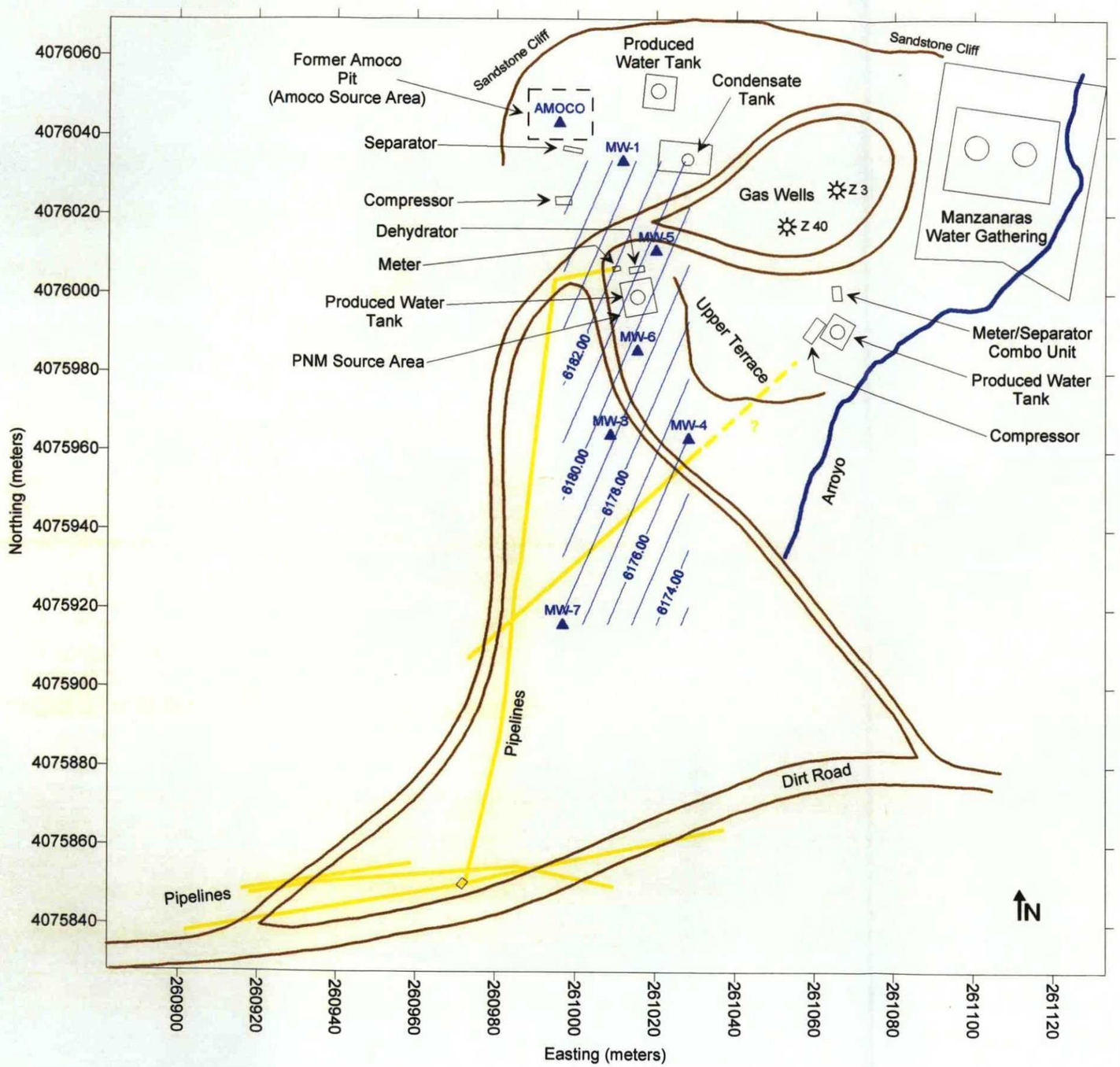

Figure 2
Potentiometric Surface Map
Florance 40
(September 25, 2002)

LEGEND

MW-2 ▲ Monitoring Well

5685.20 Ground Water Elevation (ft. AMSL)

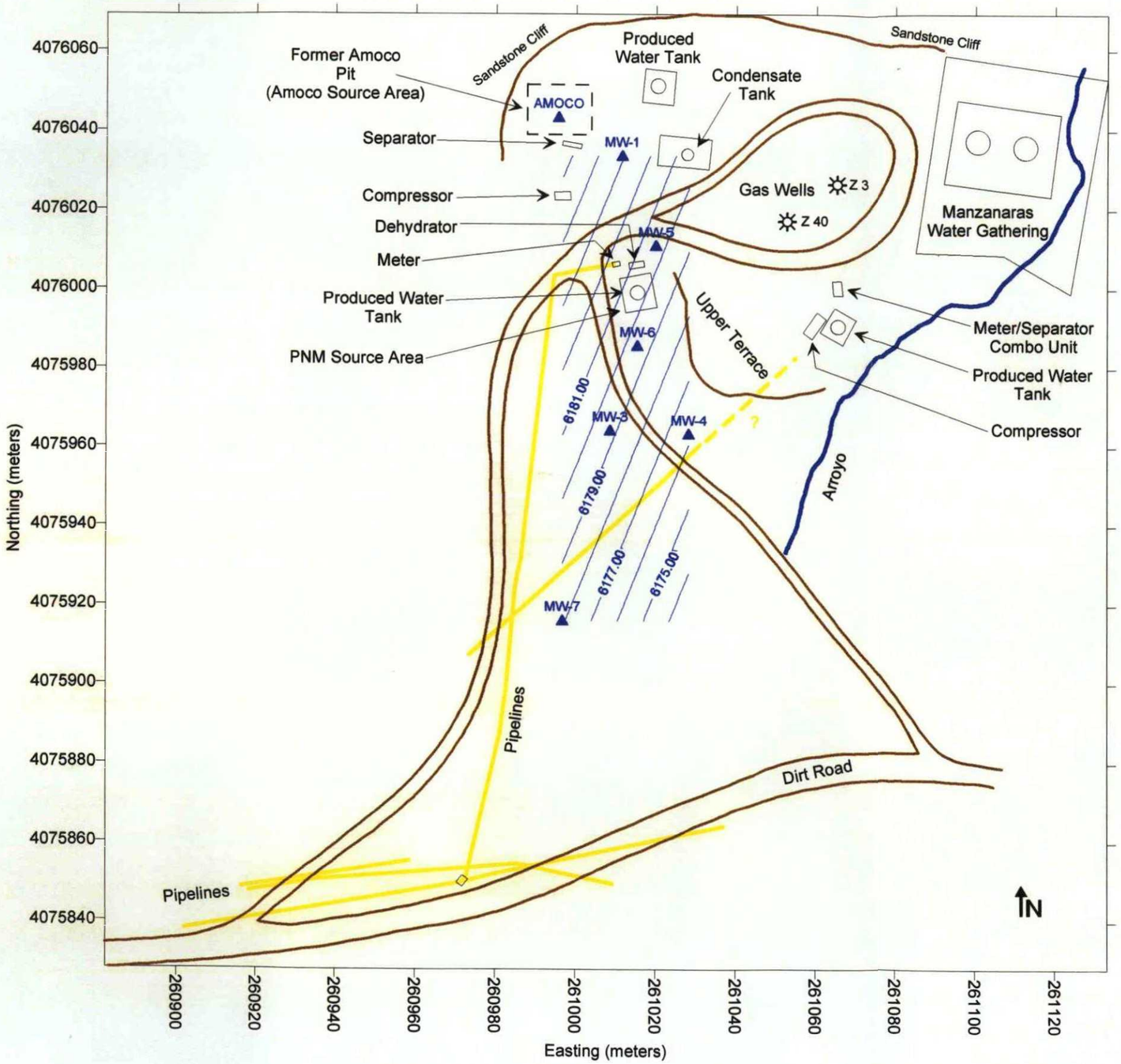

Figure 2
Potentiometric Surface Map
Florance 40
(December 13, 2002)

LEGEND

MW-2 ▲ Monitoring Well