3R - 201

REPORTS

DATE:

2003

3R201

elpaso Field Services

Certified Mail: #7002 0510 0000 0307 7497

February 26, 2004

RECEIVED

MAR 03 2004

Oil Conservation Division
Environmental Bureau

Mr. William C. Olson
New Mexico Oil Conservation Division
1220 St. Francis Dr.
Santa Fe, NM 87504

RE: 2003 Pit Project Annual Groundwater Report

Dear Mr. Olson:

In accordance with reporting requirements, El Paso Field Services (EPFS) has enclosed annual reports for the 24 remaining groundwater impacted sites that were identified during our pit closure project of 1994 / 1995.

EPFS has organized the 24 Annual Reports (Volumes 1, 2 and 3) by land type. Volume 1 contains Annual Reports for sites found on Federal land. Volume 2 contains Non Federal sites and Volume 3 contains sites on Navajo land. Of the 24 reports submitted, EPFS is requesting closure of one site located on Navajo lands (Jennepah #1). EPFS understands closure of groundwater sites on Navajo lands falls under jurisdiction of the Navajo Nation Environmental Protection Agency and original documents have been submitted to them for review. Other Navajo sites are included in the report for your information.

If you have any questions concerning the enclosed reports, please call me at (505) 599-2124.

Sincerely,

Scott T. Pope P.G.
Senior Environmental Scientist

xc: Mr. Denny Foust, NMOCD, Aztec - w / enclosures; **Certified Mail # 7002 0510 0000 0307 7473**
Mr. Bill Liesse, BLM – w / enclosures (federal sites only), **Certified Mail # 7002 0510 0000 0307 7466**

El Paso Field Services
614 Reilly Ave. Farmington, NM 87401

2003 ANNUAL GROUNDWATER REPORT
NON-FEDERAL SITES VOLUME II

EL PASO FIELD SERVICES

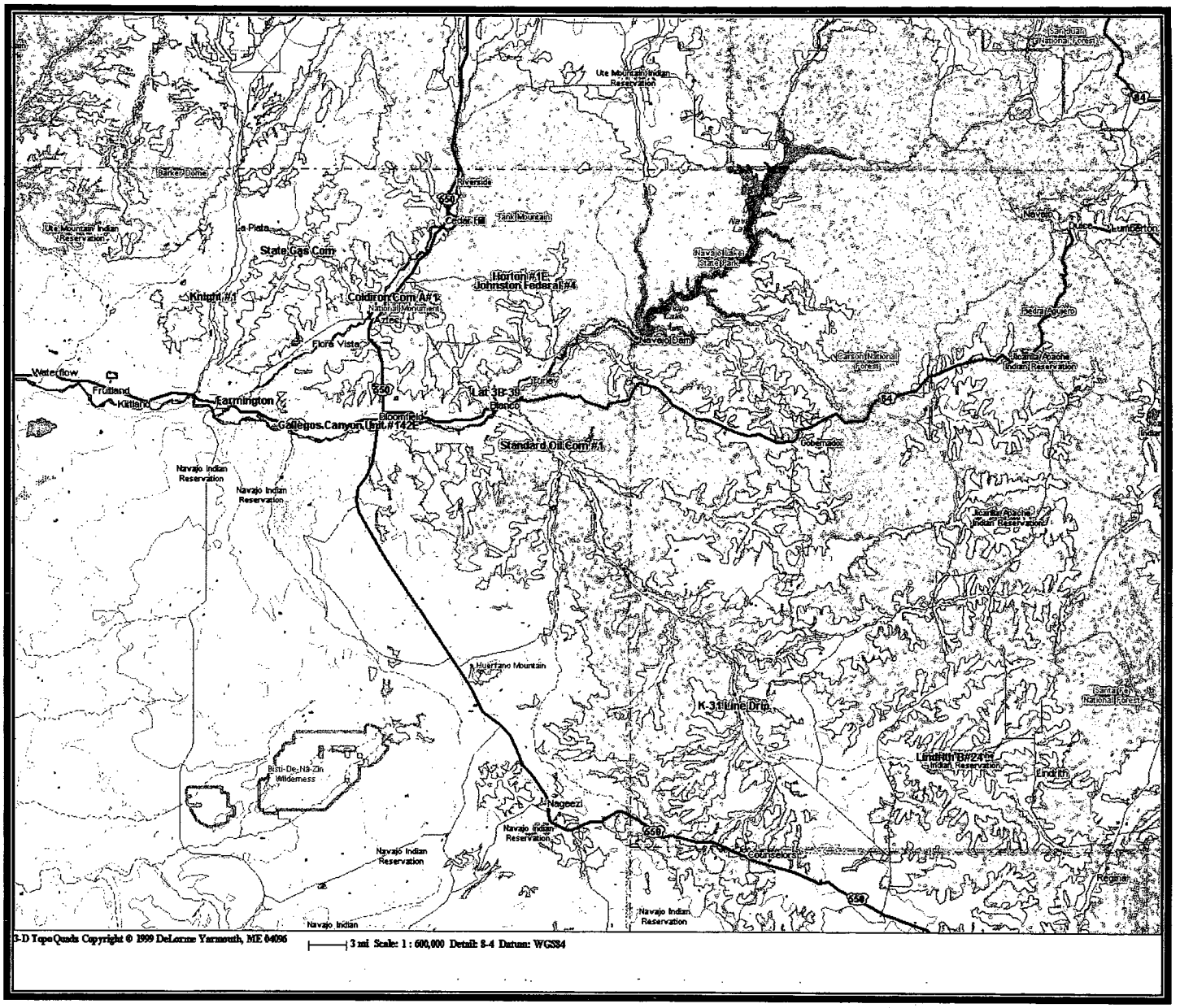
TABLE OF CONTENTS

METER or LINE ID	SITE NAME	TOWNSHIP	RANGE	SECTION	UNIT
71669	State Gas Com N #1	31N	12W	16	H
70194	Johnston Fed #4	31N	09W	33	H
93388	Horton #1E	31N	09W	28	H
72556	Knight #1	30N	13W	5	A
73551	Coldiron A #1	30N	11W	2	K
03906	GCU Com A #142E	29N	12W	25	G
70445	Standard Oil Com #1	29N	09W	36	N
LD087	K-31 Line Drip	25N	06W	16	N
94967	Lindrith B #24	24N	03W	9	N

elpaso

MWH
MONTGOMERY WATSON HARZA

Non - Federal Groundwater Site Map



LIST OF ACRONYMS

B	benzene
btoc	below top of casing
E	ethylbenzene
EPFS	El Paso Field Services
ft	foot/feet
GWEL	groundwater elevation
ID	identification
MW	monitoring well
PSH	phase-separated hydrocarbons
NMWQCC	New Mexico Water Quality Control Commission
T	toluene
TOC	top of casing
NA	not applicable
NE	not established
NM	not measured
NMOCD	New Mexico Oil Conservation Division
NS	not sampled
ORC	oxygen-releasing compound
ppb	parts per billion
µg/L	micrograms per liter
X	total xylenes

EPFS GROUNDWATER SITES
2003 ANNUAL GROUNDWATER REPORT

Johnston Fed #4
Meter Code: 70194

SITE DETAILS

Legal Description: **Town:** 31N **Range:** 09W **Sec:** 33 **Unit:** H

NMOCD Haz Ranking: 40 **Land Type:** Fee **Operator:** Burlington Resources

PREVIOUS ACTIVITIES

Site Assessment:	8/94	**Excavation:**	9/94 (60 cy)	**Soil Boring:**	8/95
Monitor Well:	8/95	**Geoprobe:**	9/97	**Additional MWs:**	12/95
Downgradient MWs:	12/95	**Replace MW:**	NA	**Quarterly Initiated:**	NA
ORC Nutrient Injection:	NA	**Re-Excavation:**	NA	**PSH Removal Initiated:**	9/97
Annual Initiated:	6/01	**Quarterly Resumed:**	NA		

SUMMARY OF 2003 ACTIVITIES

MW-1: Quarterly free-product recovery and water level monitoring was performed during 2003. MW-1 was redeveloped in June 2003 in an attempt to increase free-product recovery.

MW-2: Annual groundwater sampling (June) and quarterly water level monitoring was performed during 2003.

MW-3: Quarterly free-product recovery and water level monitoring was performed during 2003. MW-3 was redeveloped in June 2003 in an attempt to increase free-product recovery.

Site-Wide Activities: No other activities were performed at this site during 2003.

SITE MAPS

Site maps (June) are attached in Figure 1.

SUMMARY TABLES AND GRAPHS

- Analytical data from 2003 are summarized in Table 1, and historic data are presented graphically in Figures 2 through 4.

- Free-product recovery data from 2003 are summarized in Table 2, and historic data are presented graphically in Figures 5 and 6.
- Laboratory reports are presented in Attachment 1.
- Field documentation is presented in Attachment 2.

GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS

No subsurface activities were performed at this site during 2003.

DISPOSITION OF GENERATED WASTES

All phase-separated hydrocarbons were disposed of at the EPFS Kutz Separator located in Bloomfield, New Mexico.

ISOCONCENTRATION MAPS

No isoconcentration maps were prepared for this site, however, the attached site maps present the water level and analytical data collected during 2003.

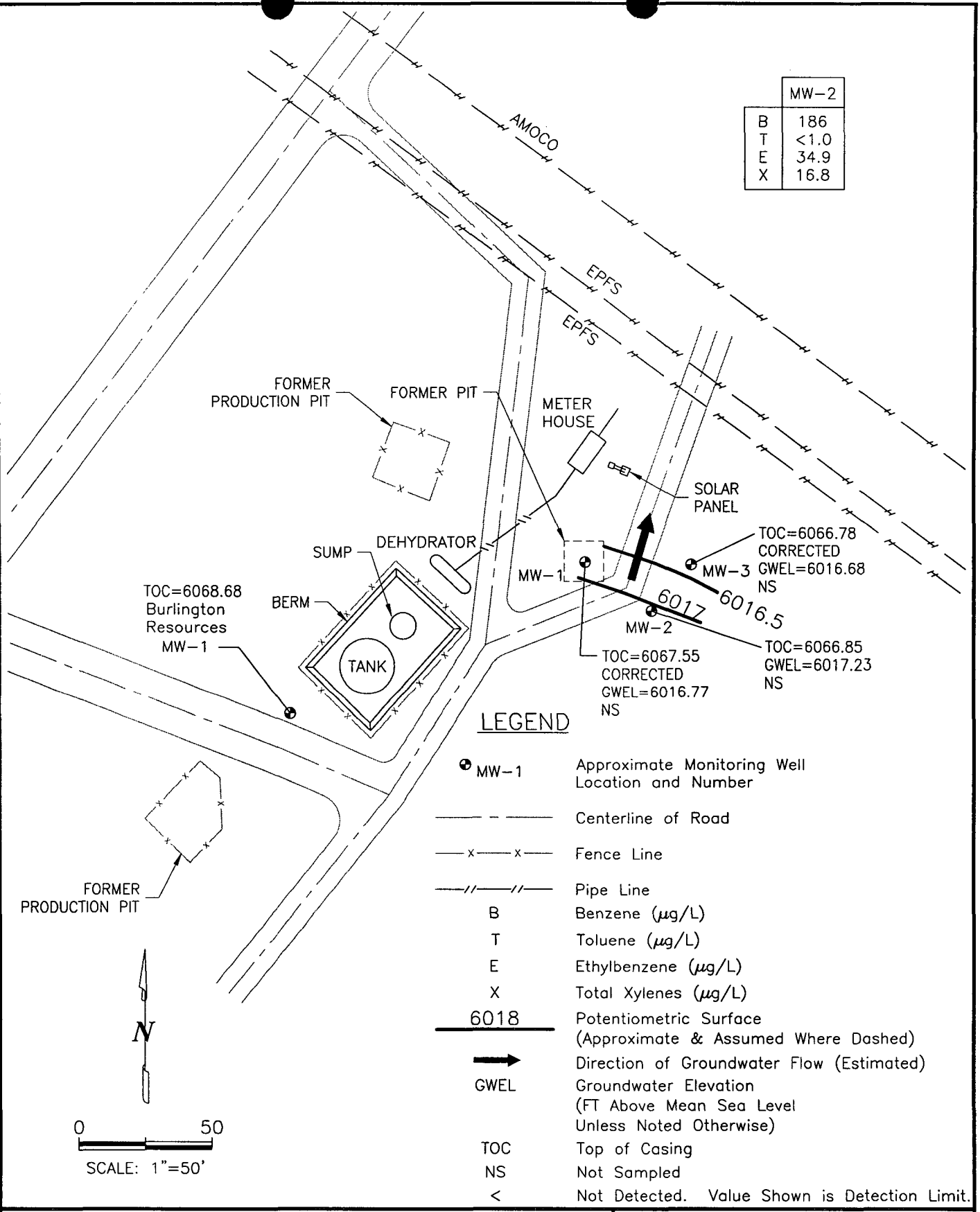
CONCLUSIONS

- Free-product recovery efforts at MW-1 resulted in the removal of approximately 1.82 gallons of free-phase hydrocarbons during 2003 bringing the cumulative total volume recovered to date to approximately 10.25 gallons. Redevelopment of this well in June did not result in any significant increase in free-product recovery during subsequent events. However, this well produced ample product during removal activities (i.e., bailing), indicating that a passive skimmer may be appropriate for this well.
- The benzene concentration in the annual groundwater sample collected at MW-2 significantly decreased from 2,800 µg/l (June 2001) to 370 µg/l in June 2002, and to 186 µg/l in June 2003.
- Free-product recovery efforts at MW-3 resulted in the removal of approximately 3.1 gallons of free-phase hydrocarbons during 2003, bringing the cumulative total volume recovered to 5.68 gallons. Redevelopment of this well in June did not result in any significant increase in free-product recovery during subsequent events. However, the well produced product throughout redevelopment and subsequent removal events, indicating that a passive skimmer may be appropriate for this well.
- The groundwater flow direction at this site trends toward the northeast.

RECOMMENDATIONS

- EPFS will continue quarterly free-product recovery efforts at MW-1 and MW-3 in 2004. EPFS will evaluate passive free-product removal methodologies (i.e., hand bailing, passive skimmers, or hydrocarbon-absorbent material socks) and frequencies for most efficient free-product removal from these wells during 2004.

- EPFS will continue annual sampling and quarterly water level monitoring at MW-2 until analytical results indicate that BTEX concentrations are approaching closure criteria. This well will then be scheduled for quarterly sampling until closure criteria have been met.



LEGEND

MW-1	Approximate Monitoring Well Location and Number
——— - ———	Centerline of Road
——x——x——	Fence Line
——//——//——	Pipe Line
B	Benzene (μg/L)
T	Toluene (μg/L)
E	Ethylbenzene (μg/L)
X	Total Xylenes (μg/L)
6018	Potentiometric Surface (Approximate & Assumed Where Dashed)
→	Direction of Groundwater Flow (Estimated)
GWEL	Groundwater Elevation (FT Above Mean Sea Level Unless Noted Otherwise)
TOC	Top of Casing
NS	Not Sampled
<	Not Detected. Value Shown is Detection Limit.

johnsonfed4_03.dwg

JOHNSTON FEDERAL #4, METER 70194
JUNE 2003

GROUNDWATER SITES
EL PASO FIELD SERIVCES

FIGURE 1

TABLE 1

SUMMARY OF BTEX COMPOUNDS IN 2003 GROUNDWATER SAMPLES
JOHNSTON FED #4 (METER #70194)

Site Name	Monitoring Well	Sample Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (ft btoc)
Johnston Fed #4	MW-2	6/18/2003	186	< 1.0	34.9	16.8	49.62

TABLE 2

SUMMARY OF FREE-PRODUCT REMOVAL DURING 2003
JOHNSTON FED #4 (METER #70194)

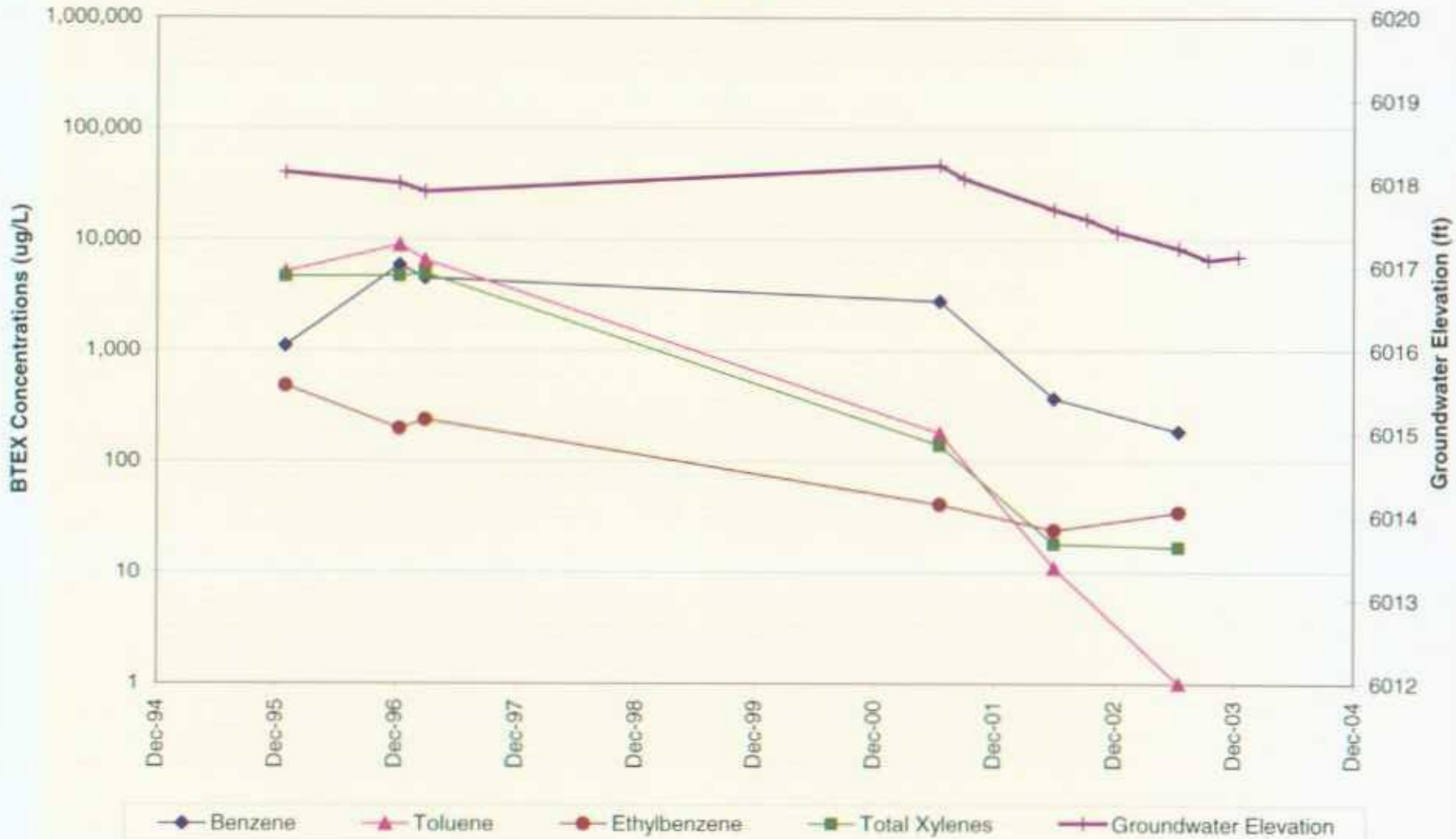
Site Name	Monitoring Well	Removal Date	Depth to Product (feet btoc)	Depth to Water (feet btoc)	Product Thickness (feet)	Volume of Product Removed (gallons)	Cummulative Volume of Product Removed (gallons)
Johnston Fed #4	MW-1	3/14/03	50.73	50.90	0.17	0.26	8.69
Johnston Fed #4	MW-1	6/18/03	50.74	51.28	0.54	0.50	9.19
Johnston Fed #4	MW-1	9/16/03	50.78	51.70	0.92	1.00	10.19
Johnston Fed #4	MW-1	12/17/03	50.92	51.15	0.23	0.06	10.25
Johnston Fed #4	MW-3	3/14/03	50.34	51.03	0.69	1.00	3.58
Johnston Fed #4	MW-3	6/18/03	50.45	51.16	0.71	1.50	5.08
Johnston Fed #4	MW-3	9/16/03	50.585	51.30	0.715	0.25	5.33
Johnston Fed #4	MW-3	12/17/03	50.60	51.08	0.48	0.35	5.68

MW-1 and MW-3 were redeveloped in June 2003.
MW-3 produced free-product throughout well redevelopment.
MW-1 and MW-3 produced ample product during removal activities in September 2003.

FIGURE 2
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
JOHNSTON FED #4
MW-1

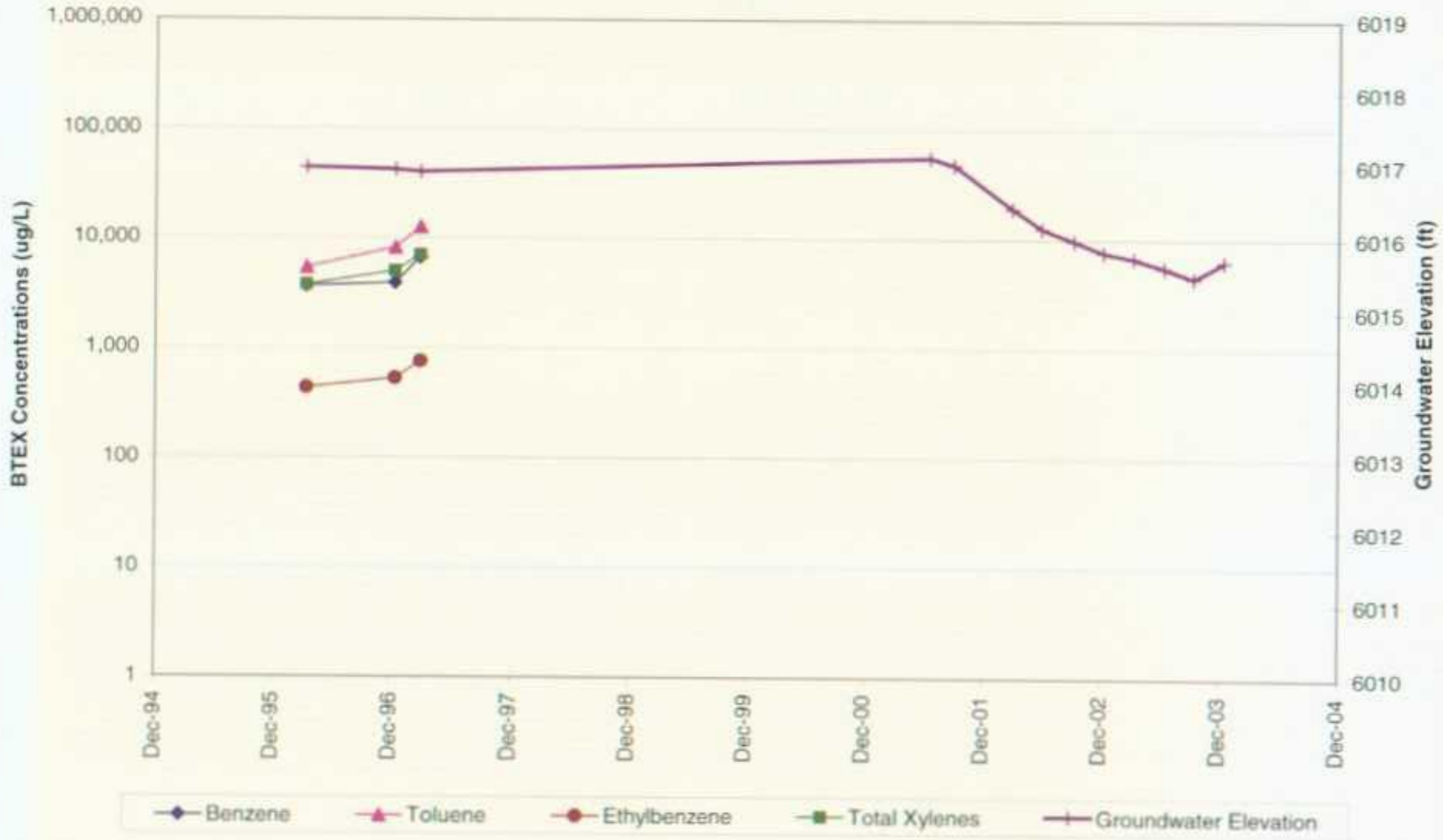
2003 Johnston Fed4.xls,JohnFed4 MW1

FIGURE 3
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
JOHNSTON FED #4
MW-2



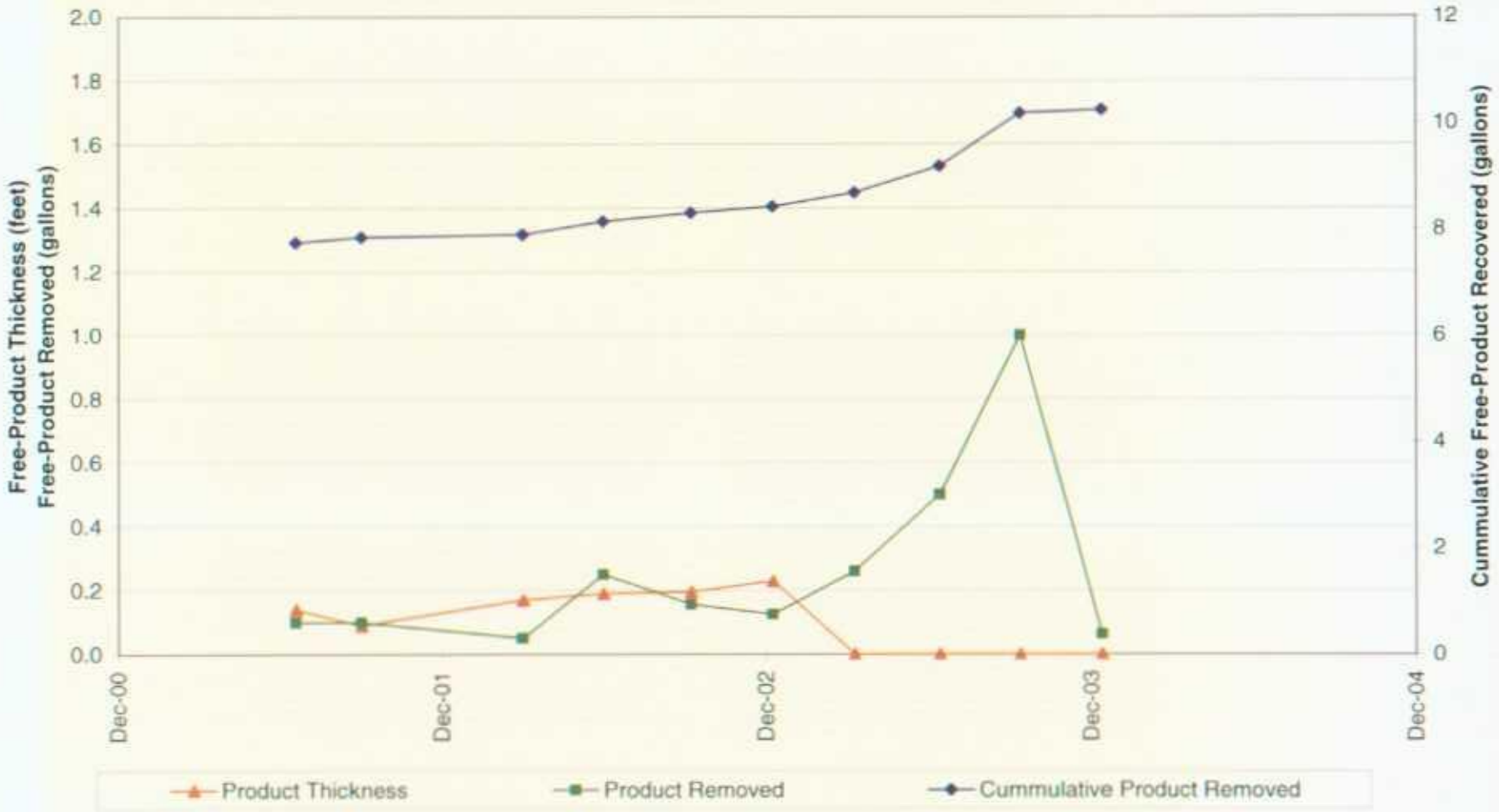
2003 Johnston Fed4.xls,JohnFed4 MW2

FIGURE 4
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
JOHNSTON FED #4
MW-3



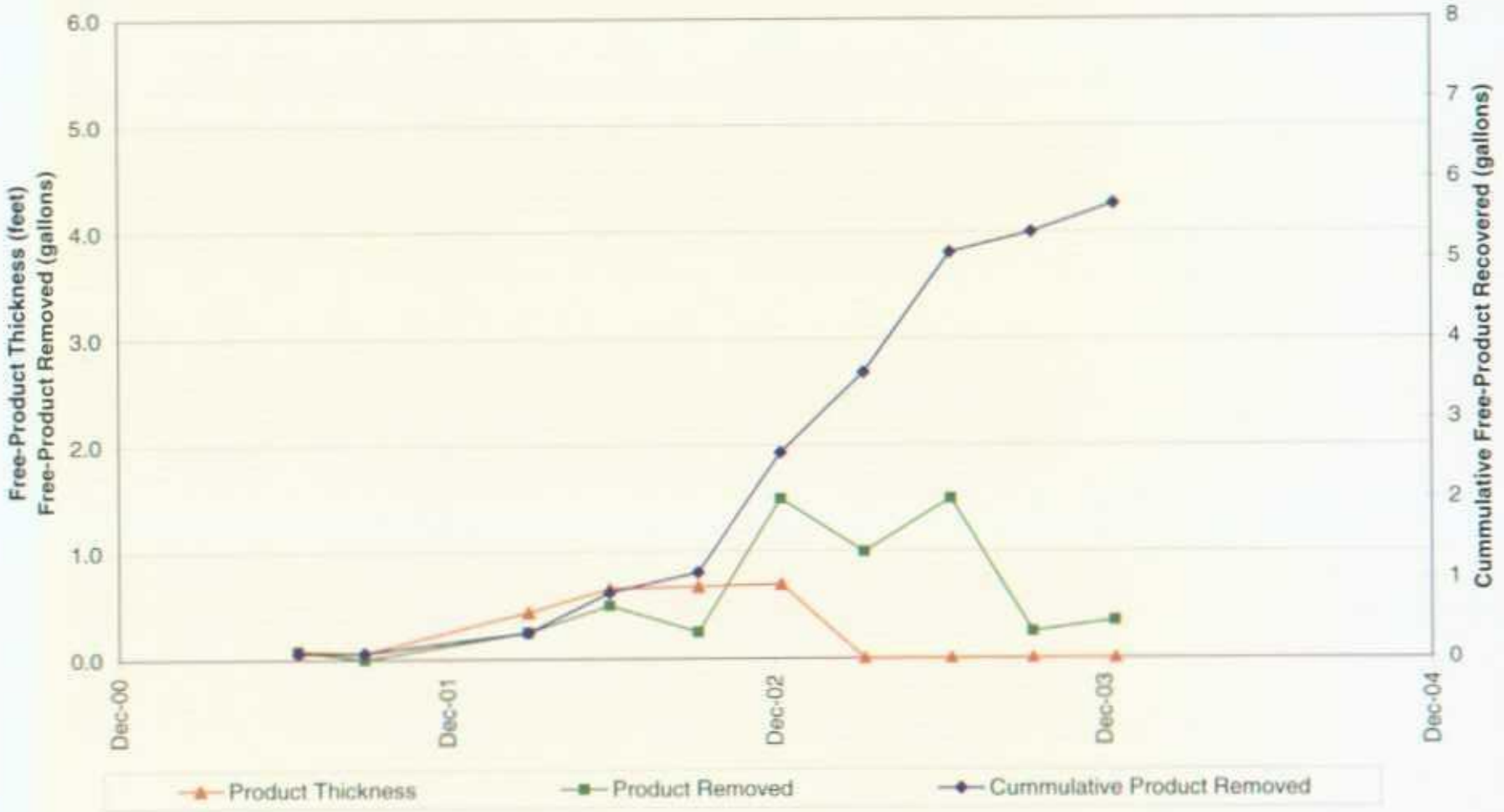
2003 Johnston Fed4.xls,JohnFed4 MW3

FIGURE 5
HISTORIC FREE-PRODUCT RECOVERY
JOHNSTON FED #4
MW-1



2003 Johnston Fed4.xlsm JohnFed4 PR1

FIGURE 6
HISTORIC FREE-PRODUCT RECOVERY
JOHNSTON FED #4
MW-3



2003 Johnston Fed4.xlsm JohnFed4 PR3

ATTACHMENT 1

LABORATORY REPORTS

DATA VALIDATION WORKSHEET

Analytical Method/Analytes:	SW-846 8021B (BTEX)	**Sample Collection Date(s):**	06/18/03
Laboratory:	Accutest	**MWH Job Number:**	EPC-SJRB (Groundwater)
Batch Identification:	T4609	**Matrix:**	Water
MS/MSD Parent(s)[(a)]:	None	**Field Replicate Parent(s):**	None

Validation Complete: Brian Buttars - 07/01/03
(Date/Signature)

Foot Notes	Site ID	Sample ID	Lab. ID	Hits (Y/N)	Quals.	Comments
None	Trip Blank	180603TB03	T4609-01	N		
None	Johnston Fed. #4	MW-2	T4609-02	Y		Benzene @ 186 µg/l Ethylbenzene @ 34.9 µg/l Xylenes (total) @ 16.8 µg/l m,p-Xylene @ 16.8 µg/l

DATA VALIDATION WORKSHEET

Analytical Method:	SW-846 8021B (BTEX)	**MWH Job Number:**	EPC-SJRB (Groundwater)
Laboratory:	Accutest	**Batch Identification:**	T4609

Validation Criteria								
Sample ID	180603TB 03	Johnston Fed. #4 MW-2						
Lab ID	T4609-01	T4609-02						
Holding Time	A	A						
Analyte List	A	A						
Reporting Limits	A	A						
Trip Blank	A	A						
Equipment Rinseate Blanks	N/A	N/A						
Field Duplicate/Replicate	N/A	N/A						
Surrogate Spike Recovery	A	A						
Initial Calibration	N	N						
Initial Calibration Verification (ICV)	N	N						
Continuing Calibration Verification (CCV)	N	N						
Laboratory Control Sample (LCS)	A	A						
Laboratory Control Sample Duplicate (LCSD)	N	N						
Method Blank	A	A						
Matrix Spike/Matrix Spike Dup. (MS/MSD)	N/A	N/A						
Retention Time Window	N	N						
Injection Time(s)	N	N						
Hardcopy vs. Chain-of-Custody	A	A						
EDD vs. Hardcopy	N	N						
EDD vs. Chain of Custody	N	N						

(a) List QC batch identification if different than Batch ID
A indicates validation criteria were met
A/L indicates validation criteria met based upon Laboratory's QC Summary Form
X indicates validation criteria were not met
N indicates data review were not a project specific requirement
N/A indicates criteria are not applicable for the specified analytical method or sample
N/R indicates data not available for review

NOTES:

Gulf Coast
ACCUTEST
Laboratories

06/26/03

Technical Report for

Montgomery Watson

EPFS San Juan Basin GS

Accutest Job Number: T4609

Report to:

El Paso

lynn.benally@elpaso.com

ATTN: Lynn Benally

Total number of pages in report: 8

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Ron Martino
Laboratory Manager

Sample Summary

Montgomery Watson

Job No: T4609

EPFS San Juan Basin GS

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
T4609-1	06/18/03	07:00	MJN	06/20/03	AQ	Water	180603TB03
T4609-2	06/18/03	16:34	MJN	06/20/03	AQ	Water	JOHNSTON FEDERAL 4 MW-2

Accutest Laboratories

Report of Analysis

Client Sample ID:	180603TB03		
Lab Sample ID:	T4609-1	Date Sampled:	06/18/03
Matrix:	AQ - Water	Date Received:	06/20/03
Method:	SW846 8021B	Percent Solids:	n/a
Project:	EPFS San Juan Basin GS		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK005292.D	1	06/23/03	BC	n/a	n/a	GKK279
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
	m,p-Xylene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	100%		64-121%
98-08-8	aaa-Trifluorotoluene	99%		71-121%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	JOHNSTON FEDERAL 4 MW-2		
Lab Sample ID:	T4609-2	Date Sampled:	06/18/03
Matrix:	AQ - Water	Date Received:	06/20/03
Method:	SW846 8021B	Percent Solids:	n/a
Project:	EPFS San Juan Basin GS		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK005301.D	5	06/23/03	BC	n/a	n/a	GKK279
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	186	5.0	ug/l	
108-88-3	Toluene	ND	5.0	ug/l	
100-41-4	Ethylbenzene	34.9	5.0	ug/l	
1330-20-7	Xylenes (total)	16.8	15	ug/l	
95-47-6	o-Xylene	ND	5.0	ug/l	
	m,p-Xylene	16.8	10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	103%		64-121%
98-08-8	aaa-Trifluorotoluene	119%		71-121%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Blank Spike Summary

Job Number: T4609
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin GS

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK279-BS	KK005288.D	1	06/23/03	BC	n/a	n/a	GKK279

The QC reported here applies to the following samples: Method: SW846 8021B

T4609-1, T4609-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	19.2	96	74-119
100-41-4	Ethylbenzene	20	19.2	96	82-115
108-88-3	Toluene	20	19.0	95	77-116
1330-20-7	Xylenes (total)	60	57.6	96	79-115
95-47-6	o-Xylene	20	19.1	96	78-114
	m,p-Xylene	40	38.5	96	79-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	100%	64-121%
98-08-8	aaa-Trifluorotoluene	98%	71-121%

Method Blank Summary

Job Number: T4609
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin GS

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK279-MB	KK005289.D	1	06/23/03	BC	n/a	n/a	GKK279

The QC reported here applies to the following samples: Method: SW846 8021B

T4609-1, T4609-2

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
	m,p-Xylene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	99%	64-121%
98-08-8	aaa-Trifluorotoluene	98%	71-121%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T4609
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin GS

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T4607-2MS	KK005295.D	1	06/23/03	BC	n/a	n/a	GKK279
T4607-2MSD	KK005296.D	1	06/23/03	BC	n/a	n/a	GKK279
T4607-2	KK005294.D	1	06/23/03	BC	n/a	n/a	GKK279

The QC reported here applies to the following samples: Method: SW846 8021B

T4609-1, T4609-2

CAS No.	Compound	T4607-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	6.5		20	26.8	102	27.6	106	3	64-124/16
100-41-4	Ethylbenzene	17.8		20	38.2	102	39.1	107	2	64-123/14
108-88-3	Toluene	ND		20	20.5	103	21.4	107	4	64-120/13
1330-20-7	Xylenes (total)	1.7	J	60	62.7	102	64.8	105	3	66-118/18
95-47-6	o-Xylene	0.55	J	20	20.7	101	21.4	104	3	65-119/20
	m,p-Xylene	1.2	J	40	42.0	102	43.4	106	3	66-120/14

CAS No.	Surrogate Recoveries	MS	MSD	T4607-2	Limits
460-00-4	4-Bromofluorobenzene	102%	101%	99%	64-121%
98-08-8	aaa-Trifluorotoluene	101%	102%	100%	71-121%

CHAIN OF CUSTODY 180603MN03

ACCUTEST Laboratories
10165 Harwin Drive, Ste. 150, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking # 836557900640 | Bottle Order Control #
Accutest Quote # | Accutest Job #

Client / Reporting Information

Company Name: MWH / EL Paso
Address: 614 Reilly Ave
City: Farmington State: NM Zip: 87401
Project Contact: Lynn Benally E-mail:
Phone #: 505 599 2178
Sampler's Name: M J Nee

Project Information

Project Name: San Juan Basin
~~Street~~: Groundwater
City: State:
Project #:
Fax #: 505 599 2119
Client Purchase Order #:

Requested Analysis

8734

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO Soil
SL Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

Accutest Sample #	Field ID / Point of Collection	SUMMA # / MEOH Vial #	Collection Date	Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	LAB USE ONLY
1	180603TBØ3		6-18-03	0700	MN	WG	1	1								Vref
2	Johnston Federal 4 MW-2		6/18/03	1634	MN	WG	2	2								

Turnaround Time (Business Days)

- [X] 10 Day STANDARD — Approved By: / Date:
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] Other

Emergency & Rush T/A data available VIA LabLink

Data Deliverable Information

- [ ] Commercial "A"
- [ ] Commercial "B"
- [ ] Reduced Tier 1
- [ ] Full Tier 1
- [ ] TRRP13
- [ ] EDD Format ____

Commercial "A" = Results Only

Comments / Remarks

T4609

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Date Time			Date Time	
Relinquished by Sampler: 1	700 6-19-03	Received by: 1	Relinquished by 2	10/20/03 8:45	Received by: 2 Alejandra Luna
Relinquished by: 3	Date Time:	Received by: 3	Relinquished by: 4	Date Time:	Received by: 4
Relinquished by: 5	Date Time:	Received by: 5	Custody Seal #	Preserved where applicable ☐	On Ice ☐ Cooler Temp.

ATTACHMENT 2

FIELD DOCUMENTATION

PRODUCT RECOVERY

Martin J. Nee
PO Box 3861
Farmington, NM 87499-3861
(505)334-2791 (505)320-9675cell

Project Name	**San Juan Basin Ground Water**	**Project No.**	**30001.0**
Project Manager	**MJN**		
Client Company	**MWH**	**Date**	**12-17-03**
Site Name	**Johnston Federal 4**		

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed
MW-1	1130	50.92	51.15	0.23	8 oz
		51.15	51.18	0.11	5 gal water
MW-2		-	49.72		
MW-3		50.60	51.08	0.48	45 oz
		51.34	51.38	0.17	15 gal water

Comments
Could not bail product completely from well. Wells produce ample product to warrant moving the system from Blanco NFP to this site. We would need to purchase a solar panel. We could pump from both MW-1 and MW-3 if we purchased a pump for a 2" well. I think we could use the same controller.

Signature: *Martin J. Nee* Date: December 17, 2003

PRODUCT RECOVERY

Martin J. Nee
PO Box 3861
Farmington, NM 87499-3861
(505)334-2791 (505)320-9675cell

Project Name_	**San Juan Basin Ground Water**	**Project No.**	**30001.0**
Project Manager	**MJN**		
Client Company	**MWH**	**Date**	**9-16-03**
Site Name	**Johnston Federal 4**		

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed (gal)
MW-1	1130	50.78	51.70	0.92	1 product
		51.04	51.15	0.11	1.5 water
MW-2		-	49.76		
MW-3		50.585	51.3	0.715	.25 product
		50.94	51.11	0.17	1.5 water

Comments·
Could not bail product completely from well. Wells produce ample product to warrant moving the system from Blanco NFP to this site. We would need to purchase a solar panel. We could pump from both MW-1 and MW-3 if we purchased a pump for a 2" well. I think we could use the same controller.

Signature: *Martin J. Nee* Date: September 16, 2003

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 30001-C Project Name: San Juan Basin Client: MWH

Location: Johnston Fed 4 Well No: MW-3 Development ☒ Sampling ☐

Project Manager MJN Date 8-18-03 Start Time 1554 Weather AC 80s

Depth to Water 51.16 Depth to Product 50.45 Product Thickness .71 Measuring Point TOC

Water Column Height 8.28 Well Dia. 4"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer ☒ Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal ☒ Sabilization of Indicator Parameters ☒ Other Moderate

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
8.28 x .65	5.38 x 3		16.140

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
1604	738	2460	184				3	
	735	2350	163				3.5	Water to black
	729	2470	167				8.5	
1624	744	2320	164				13.5	water has cleared
							17 (18.5)	including product

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate
1624	747	2320	164					185	

COMMENTS: Pervasive product could use skimmer

INSTRUMENTATION: pH Meter ☒ _____ Temperature Meter ☒ _____

DO Monitor ☐ _____ Other ☐ _____

Conductivity Meter ☒ _____

Water Disposal Kutz

Sample ID N2 Sample Time N2 BTEX ☐ VOCs ☐ Alkilinity ☐

TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Ammonia ☐ TKN ☐ NM WQCC Metals ☐

Total Phosphorus ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐

MS/MSD _____ BD _____ BD Name/Time _____ TB N2

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 30001-0 Project Name: San Juan Basin Client: MWH

Location: Johnston Fed 4 Well No: MW-2 Development ☐ Sampling ☒

Project Manager MTN Date 6-18-03 Start Time 1534 Weather pc 80s

Depth to Water 49.62 Depth to Product — Product Thickness — Measuring Point TOC

Water Column Height 3.98 Well Dia. 4"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer ☒ Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal ☒ Sabilization of Indicator Parameters ☒ Other bailed dry

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
3.98 x .65	2.58 x 3		7.76

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
1538	7.80	2220	22.8				5	clear
	7.55	2140	19.7				1	grey
	7.63	2140	19.7				1.5	V dark grey org mat
1546	7.44	2190	19.8				2.5	well is dry

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate
1546	7.44	2190	19.8					2.5	bailed dry

COMMENTS: well bailed dry returned later to sample

INSTRUMENTATION: pH Meter ☒ _____ Temperature Meter ☑ _____

DO Monitor ☐ _____ Other ☐ _____

Conductivity Meter ☒ _____

Water Disposal Kurz

Sample ID Johnston Fed 4 MW2 Sample Time 1634 BTEX ☒ VOCs ☐ Alkilinity ☐

TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Ammonia ☐ TKN ☐ NM WQCC Metals ☐

Total Phosphorus ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐

MS/MSD _____ BD _____ BD Name/Time _____ TB 18060STB03

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 30001.0 Project Name: San Juan Basin Client: MWH

Location: Johnston Fed 4 Well No: MW-1 Development ☒ Sampling ☐

Project Manager MJN Date 6-18-03 Start Time 1656 Weather Raining

Depth to Water 51.28 Depth to Product 50.74 Product Thickness .57 Measuring Point TOC

Water Column Height 5.745 Well Dia. 4"

Sampling Method: Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ☐

Bottom Valve Bailer ☒ Double Check Valve Bailer ☐ Stainless-Steel Kemmerer ☐

Criteria: 3 to 5 Casing Volumes of Water Removal ☒ Sabilization of Indicator Parameters ☒ Other clean water

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
5.745 x .65	3.73 gal x 3		11-20

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
1656								
1700	761	2980	163				5	clear
1718	754	2760	165				8	well is bailing down
1725	741	2540	168				9	clear, well is dry

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate
1725	741	2540	168					9	

COMMENTS: Surged & Surged could not get well to produce more

INSTRUMENTATION: pH Meter ☒ DO Monitor ☐ Conductivity Meter ☒ Temperature Meter ☒ Other ☐

Water Disposal KUTZ

Sample ID na Sample Time na BTEX ☐ VOCs ☐ Alkilinity ☐

TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Ammonia ☐ TKN ☐ NM WQCC Metals ☐

Total Phosphorus ☐ ☐ ☐ ☐ ☐

MS/MSD BD BD Name/Time TB na

PRODUCT RECOVERY

Martin J. Nee
PO Box 3861
Farmington, NM 87499-3861
(505)334-2791 (505)320-9675cell

Project Name_	**San Juan Basin Ground Water**	**Project No.**	**30001.0**
Project Manager	**MJN**		
Client Company	**MWH**	**Date**	**6-18-03**
Site Name	**Johnston Federal 4**		

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed (gal)
MW-1	1524	50.74	51.28	.57	.5
MW-2		-	49.62		
MW-3		50.45	51.16	.71	1.5

Comments
MW-3 made more product than was found in the well casing. The well produced product throughout development. A skimmer may be appropriate for this well.

Signature: Martin J. Nee Date: June 18, 2003

Product Recovery and Well Observation Data

Project Name: San Juan Basin
Project Manager: MJN
Client Company: MWH
Site Name: Johnston Federal No 4

Project No: Z20013
Date: 3.14.03

Well	Time	Depth to Water (ft)	Depth to Product (ft)	Total Well Depth (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	0930	50.90	50.73	—	0.17	.26	.75g water
		50.79		—			final
MW-2	0928	49.52		—			
MW-3	1007	51.03	50.34	—	0.69	1g	1gal water
		50.74	50.63	—			final
~~MW-4~~		~~47.35~~	~~46.99~~	—	~~0.36~~	~~.75g~~	~~1gal water~~
		~~47.42~~	~~47.26~~	—	~~0.16~~		~~final~~

COMMENTS: ~~locker will not close on MW-4 because well casing is to high. Not locked~~

Signature: [signature]

Date: 3-14-03