3R - 174

REPORTS

DATE:

2003

3R174

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**

2003 ANNUAL GROUNDWATER REPORT
FEDERAL SITES VOLUME I

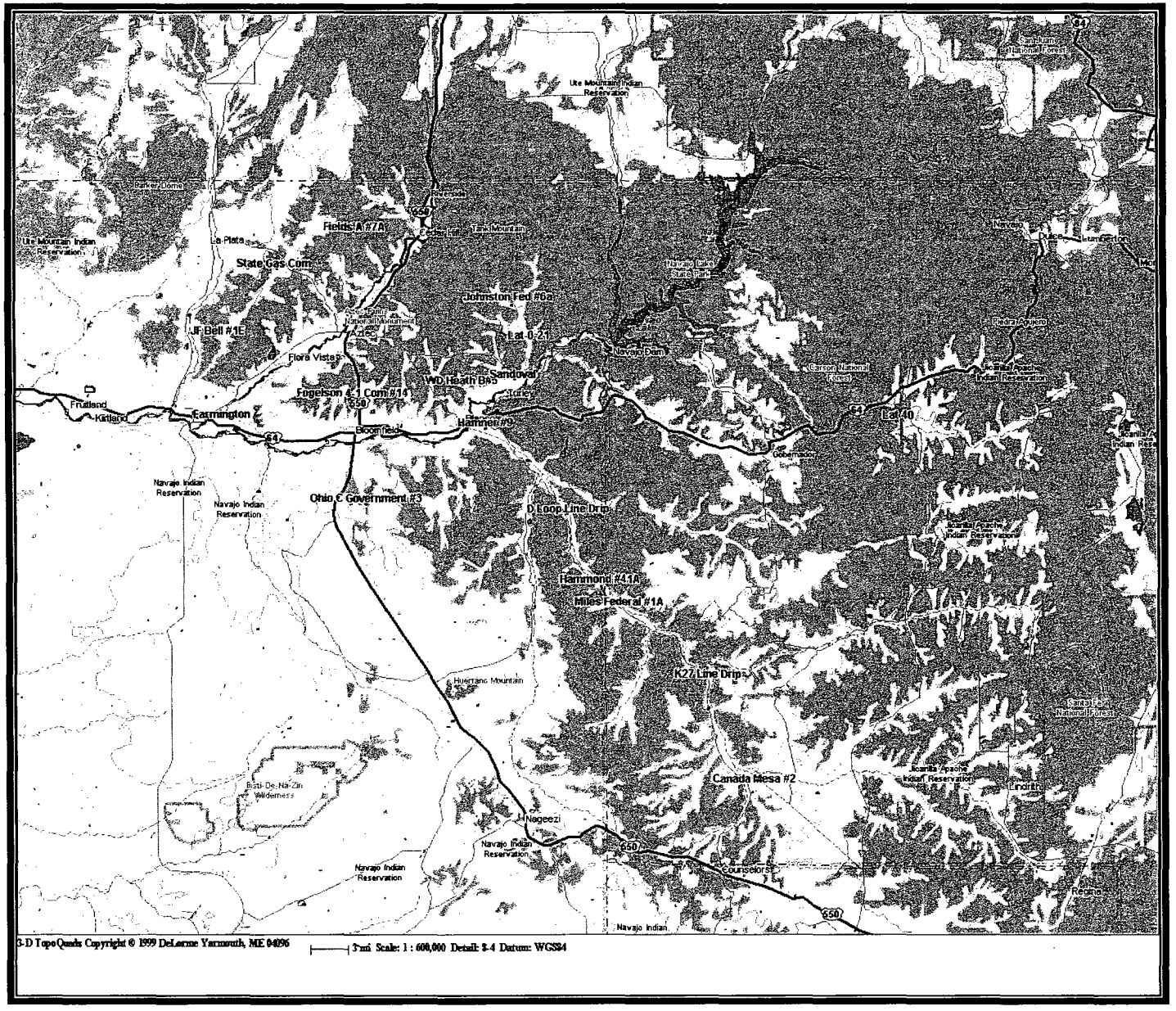
EL PASO FIELD SERVICES

TABLE OF CONTENTS

elpaso

MWH
MONTGOMERY WATSON HARZA

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

Fogelson 4-1 Com #14
Meter Code: 73220

SITE DETAILS

Legal Description:	**Town:**	29N	**Range:**	11W	**Sec:**	4	**Unit:** P
NMOCD Haz Ranking:	10	**Land Type:**	Federal	**Operator:**	Burlington Resources		

PREVIOUS ACTIVITIES

Site Assessment:	3/94	**Excavation:**	4/94 (65cy)	**Soil Boring:**	10/95
Monitor Well:	10/95	**Geoprobe:**	12/96	**Additional MWs:**	6/00
Downgradient MWs:	6/00	**Replace MW:**	NA	**Quarterly Initiated:**	12/96
ORC Nutrient Injection:	8/01	**Re-Excavation:**	NA	**PSH Removal Initiated:**	NA
Annual Initiated:	6/98	**Quarterly Resumed:**	NA		

SUMMARY OF 2003 ACTIVITIES

MW-1: Semi-annual groundwater sampling was performed during 2003. Oxygen releasing compound (ORC) socks in MW-1 were replaced during November 2003.

MW-2: Semi-annual water level monitoring was performed during 2003.

MW-3: Annual groundwater sampling was performed in May 2003. Semi-annual water level monitoring was performed during 2003.

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

SITE MAPS

Site maps (May and November) are attached as Figures 1 and 2.

SUMMARY TABLES AND GRAPHS

- Analytical data from 2003 are summarized in Table 1, and historic data are presented graphically in Figures 3 through 5.
- 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

No wastes were generated at this site during 2003.

ISOCONCENTRATION MAPS

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

CONCLUSIONS

- The benzene concentrations in MW-1 remained elevated (339 µg/L and 401 µg/L in May and November 2003, respectively) during 2003. However, concentrations have decreased slightly since 2002 (430 and 625 µg/L in May and November 2002, respectively). Historically, benzene concentrations in MW-1 have decreased significantly from 1,520 µg/L in 1995, when sampling was initiated.

- BTEX concentrations in MW-2 and MW-3 have continued to be below closure criteria in 2003.

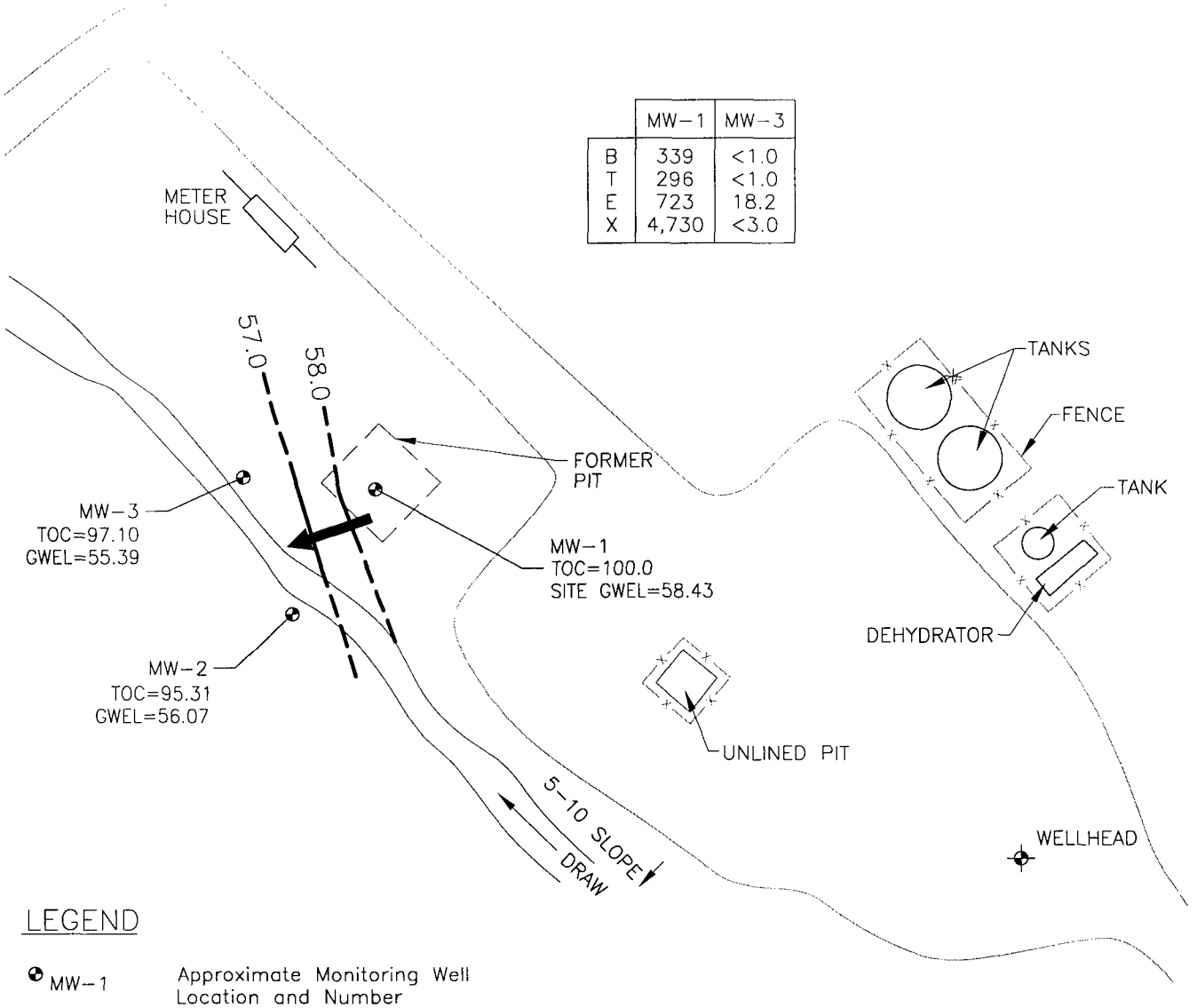
- The groundwater flow direction is to the west.

RECOMMENDATION

- EPFS will continue the use of ORC socks in MW-1 to enhance biodegradation of dissolved-phase contaminants. The ORC socks will continue to be inspected annually and replaced as necessary.

- EPFS will continue annual groundwater sampling at MW-1 until BTEX concentrations approach closure criteria. Sampling will then continue on a quarterly basis until closure criteria are met.

- Because BTEX sampling at MW-2 and MW-3 have historically indicated concentrations less than closure criteria, EPFS recommends that these wells not be sampled until closure.



	MW-1	MW-3
B	339	<1.0
T	296	<1.0
E	723	18.2
X	4,730	<3.0

LEGEND

MW-1	Approximate Monitoring Well Location and Number
x x	Fence Line
6566.0	Potentiometric Surface (Assumed Where Dashed)
→	Direction of Groundwater Flow (Estimated)
B	Benzene (µg/L)
T	Toluene (µg/L)
E	Ethylbenzene (µg/L)
X	Total Xylenes (µg/L)
GWEL	Groundwater Elevation (Relative Elevation)
TOC	Top of Casing
<	Not Detected. Value Shown is Detection Limit.

N

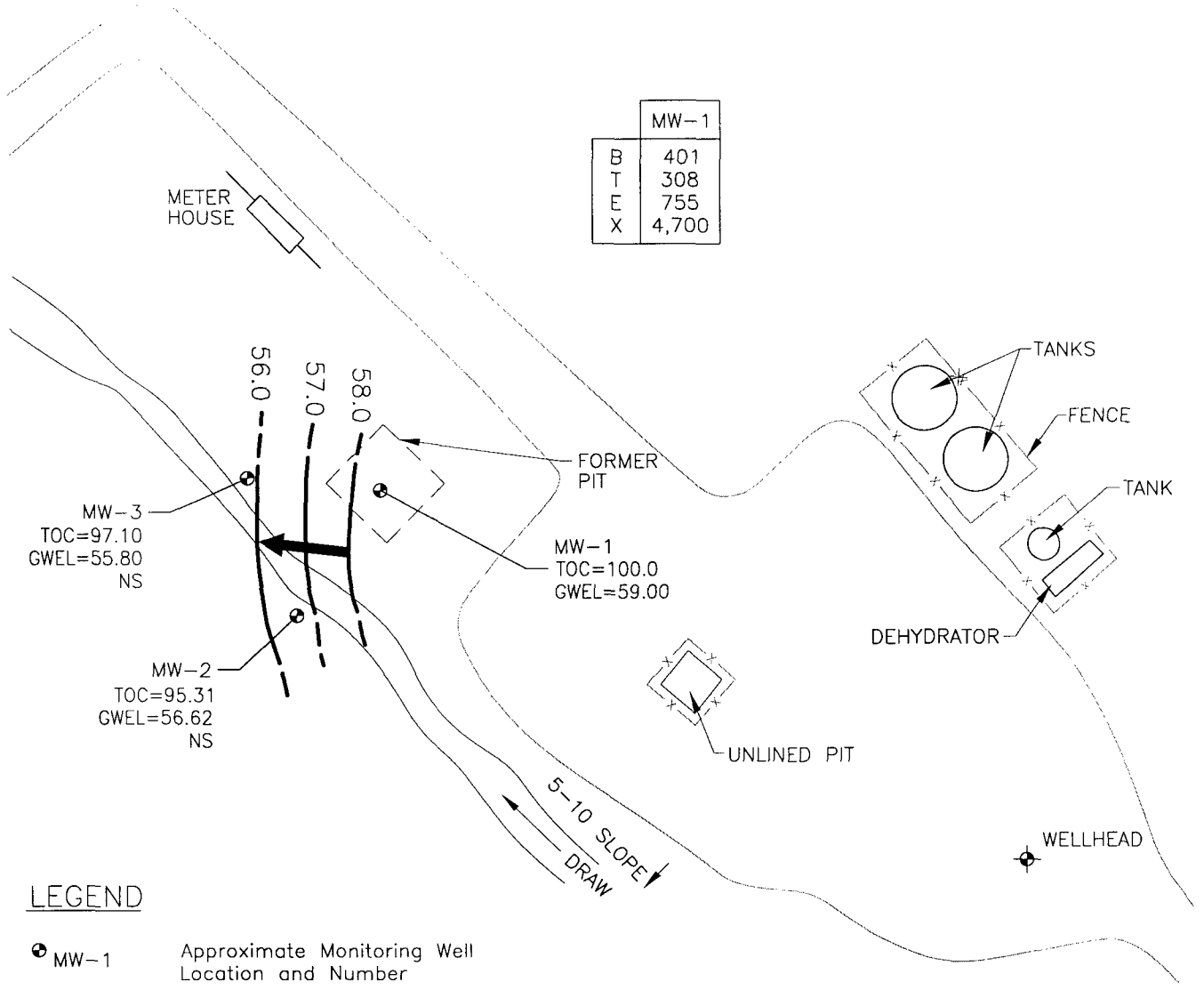
NOT TO SCALE

fogelson41_03.dwg

FOGELSON 4-1 COM #14, METER 73220
MAY 2003

GROUNDWATER SITES
EL PASO FIELD SERVICES

FIGURE 1



LEGEND

MW-1	Approximate Monitoring Well Location and Number
x x	Fence Line
6566.0	Potentiometric Surface (Assumed Where Dashed)
→	Direction of Groundwater Flow (Estimated)
B	Benzene (μg/L)
T	Toluene (μg/L)
E	Ethylbenzene (μg/L)
X	Total Xylenes (μg/L)
GWEL	Groundwater Elevation (Relative Elevation)
TOC	Top of Casing
NS	Not Sampled

N

NOT TO SCALE

FOGELSON 4-1 COM #14, METER 73220
NOVEMBER 2003

GROUNDWATER SITES
EL PASO FIELD SERVICES

FIGURE 2

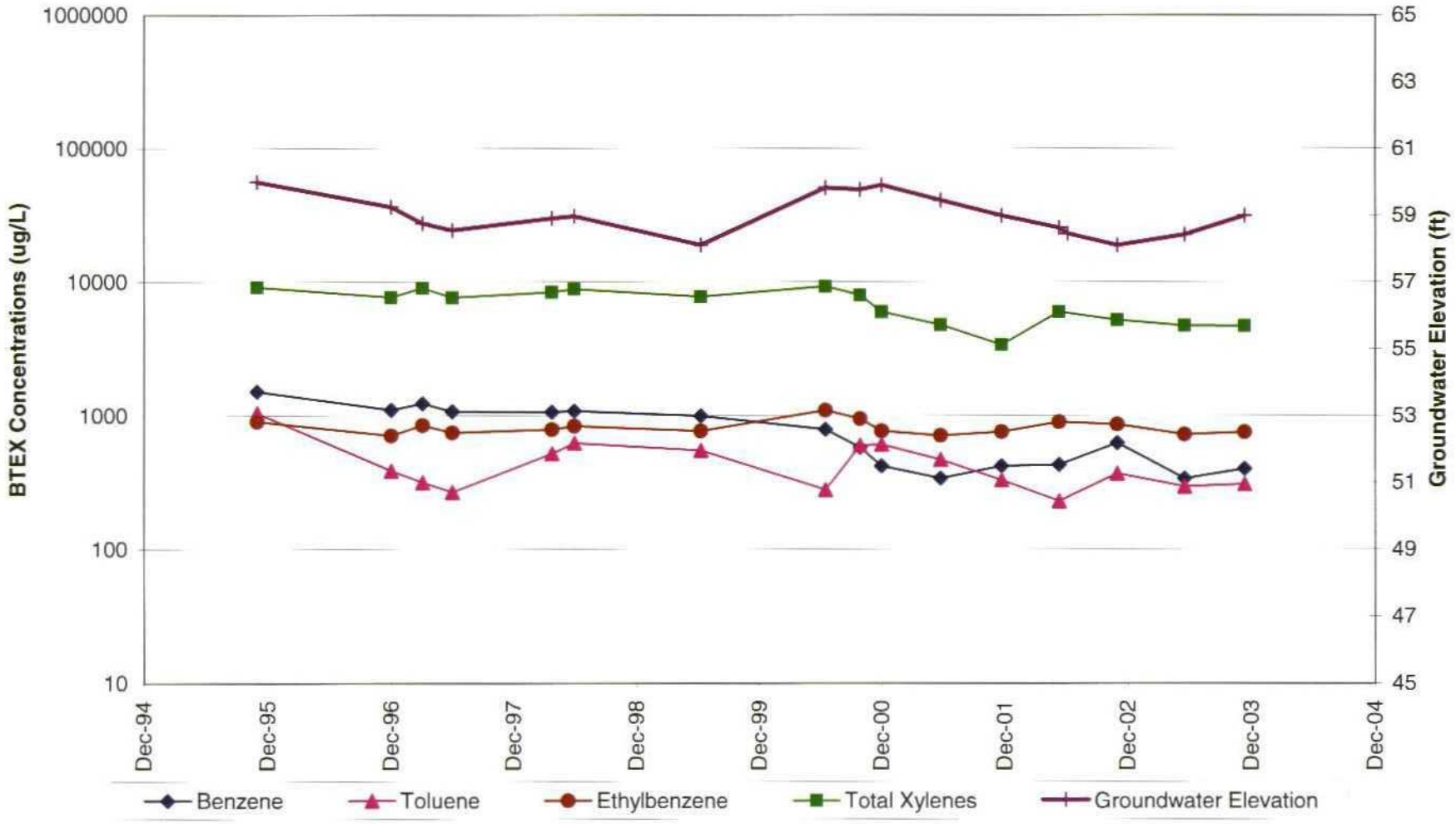
fogelson41_03.dwg

TABLE 1

SUMMARY OF BTEX COMPOUNDS IN 2003 GROUNDWATER SAMPLES
FOGELSON 4-1 COM #14 (METER #73220)

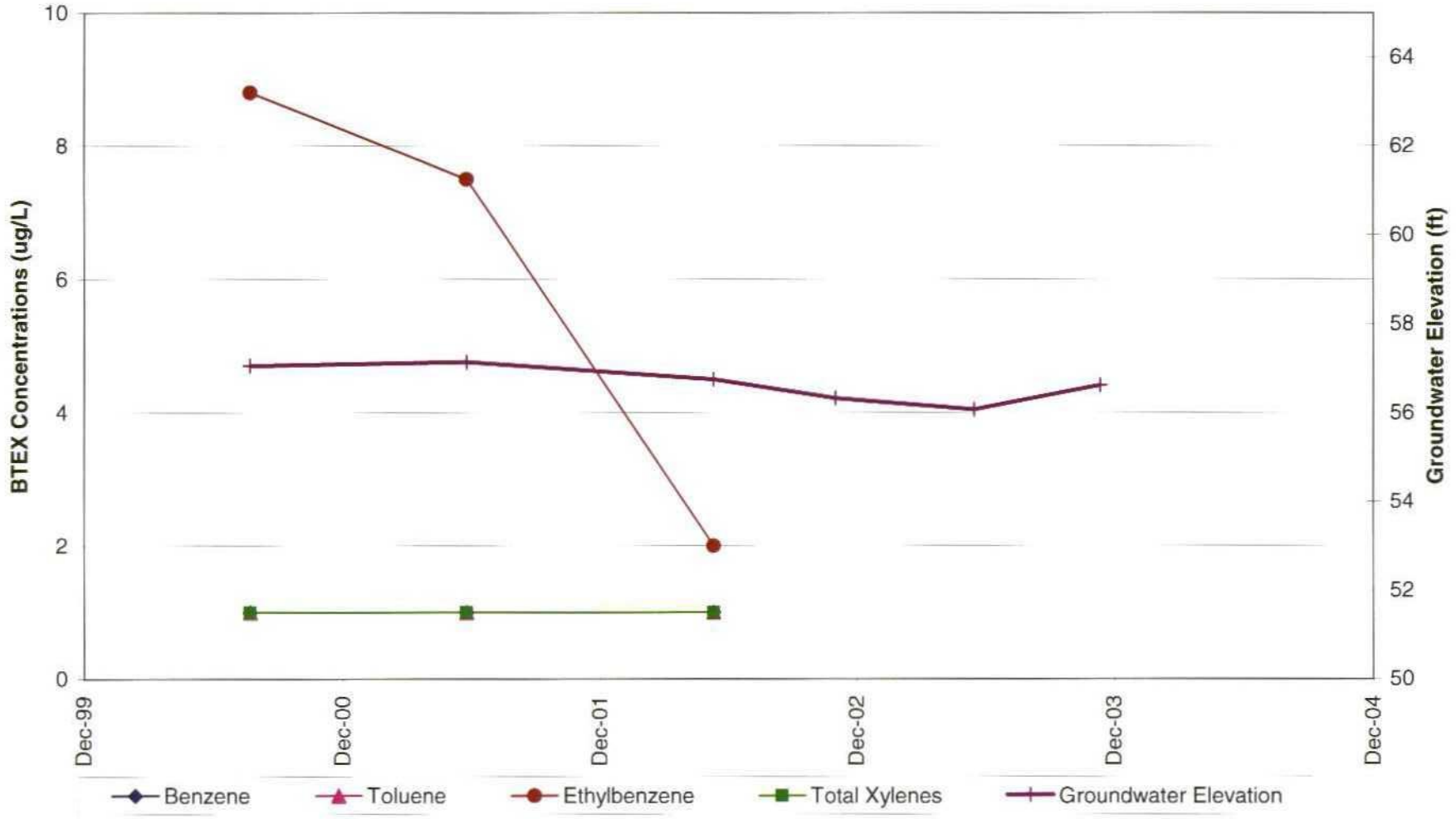
Site Name	Monitoring Well	Sample Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (ft btoc)
Fogelson 4-1 Com. #14	MW-1	5/21/2003	339	296	723	4,730	41.57
Fogelson 4-1 Com. #14	MW-1	11/15/2003	401	308	755	4,700	41.00
Fogelson 4-1 Com. #14	MW-3	5/21/2003	< 1.0	< 1.0	18.2	< 3.0	41.71

FIGURE 3
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
FOGELSON 4-1 COM #14
MW-1



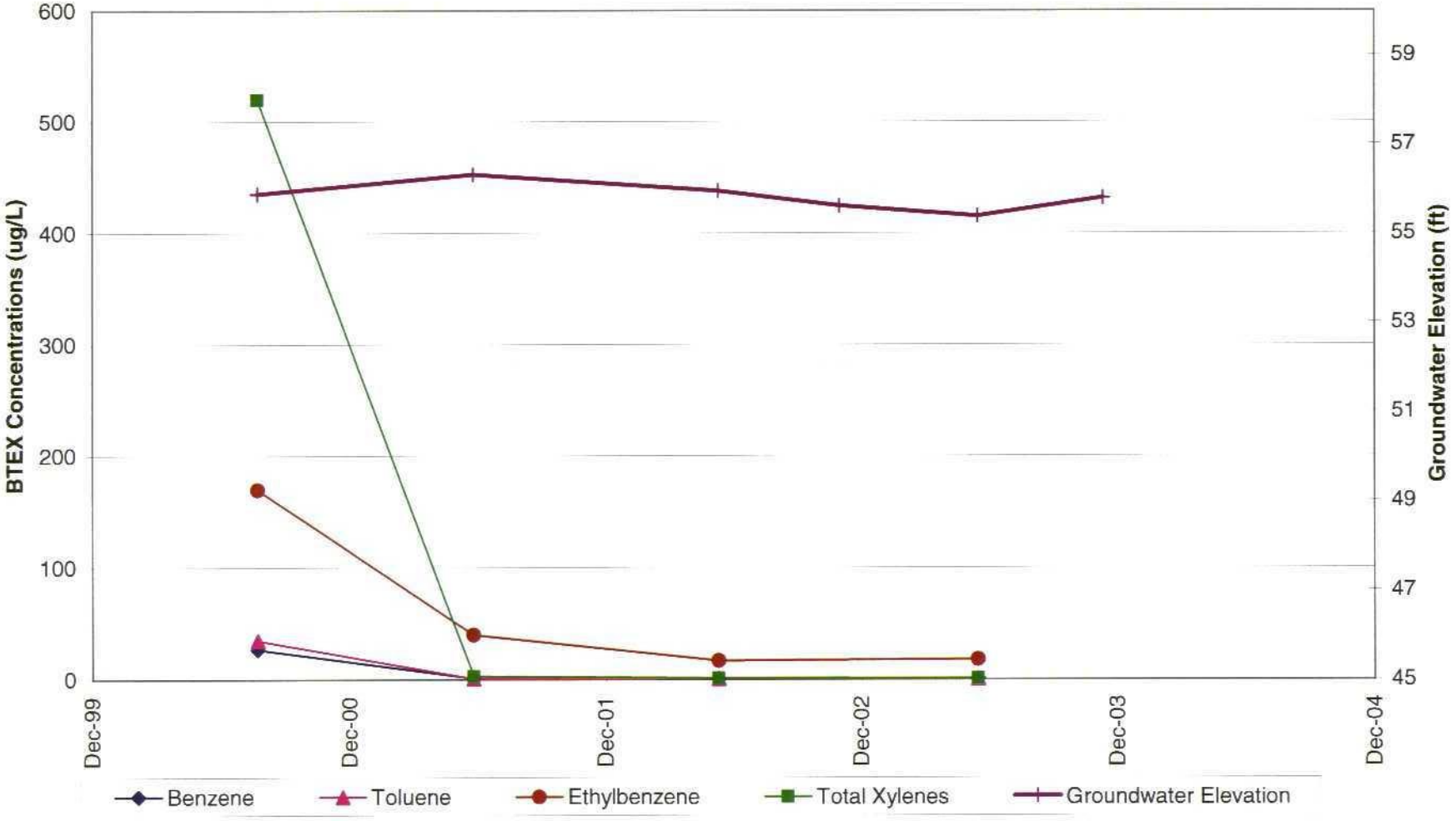
2003 Fogelson.xls,Fogl MW1

FIGURE 4
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
FOGELSON 4-1 COM #14
MW-2



2003 Fogelson.xls,Fogl MW2

FIGURE 5
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
FOGELSON 4-1 COM #14
MW-3



2003 Fogelson.xls,Fogl MW3

ATTACHMENT 1

LABORATORY REPORTS

DATA VALIDATION WORKSHEET

Analytical Method/Analytes: SW-846 8021B (BTEX) **Sample Collection Date(s):** 11/15/03

Laboratory: Accutest **MWH Job Number:** EPC-SJRB (Groundwater)

Batch Identification: T6104 **Matrix:** Water

MS/MSD Parent(s)[a]: T6104-01 **Field Replicate Parent(s):** None

Validation Complete: Brian Buttars 12-04-03 (Date/Signature)

Foot Notes	Site ID	Sample ID	Lab. ID	Hits (Y/N)	Quals.	Comments
1	Fogelson	MW-1	T6104-01	Y	J	Benzene @ 401 µg/l
					J	Toluene @ 308 µg/l
					J	Ethylbenzene @ 755 µg/l
					J	Xylenes (total) @ 4700 µg/l
					J	o-Xylene @ 1080 µg/l
					J	m/p-Xylene @ 3620 µg/l
None	Trip Blank	111503TB03	T6104-02	N		

DATA VALIDATION WORKSHEET

Analytical Method:	**SW-846 8021B (BTEX)**	**MWH Job Number:**	**EPC-SJRB (Groundwater)**
Laboratory:	**Accutest**	**Batch Identification:**	**T6104**

Validation Criteria								
Sample ID	**Fogelson MW-1**	**111503TB 03**						
Lab ID	**T6104-01**	**T6104-02**						
Holding Time	A[1]	A						
Analyte List	A	A						
Reporting Limits	A	A						
Surrogate Spike Recovery	A	A						
Trip Blank	A	A						
Equipment Rinseate Blanks	N/A	N/A						
Field Duplicate/Replicate	N/A	N/A						
Initial Calibration	N	N						
Initial Calibration Verification (ICV)	N	N						
Continuing Calibration Verification (CCV)	N	N						
Method Blank	A	A						
Laboratory Control Sample (LCS)	A	A						
Laboratory Control Sample Duplicate (LCSD)	N	N						
Matrix Spike/Matrix Spike Dup. (MS/MSD)	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:

1) Sample pH at time of analysis was greater than 2 which reduces the holding time from 14 days to 7. Sample analyzed 13 days after sample collection, exceeding holding time by 6 days, introducing a possible low bias. Qualify associated sample hits with "J" flags, indicating the data are estimated and possibly biased low. Qualify associated sample non-detects with "UJ" flags, indicating possible false negatives.

Gulf Coast
ACCUTEST.
Laboratories

12/02/03

Technical Report for

Montgomery Watson

EPFS San Juan Basin Groundwater Site

D-MWH-04-01-03-MSG-01

Accutest Job Number: T6104

Report to:

Montgomery Watson

brian.buttars@us.mwhglobal.com

ATTN: Brian Buttars

Total number of pages in report: **12**

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

Sections: 1 2 3 4

Table of Contents

Sample Summary

Montgomery Watson

Job No: T6104

EPFS San Juan Basin Groundwater Site
Project No: D-MWH-04-01-03-MSG-01

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
T6104-1	11/15/03	14:35		11/18/03	AQ	Water	FOGELSON MW-1
T6104-2	11/15/03	07:00		11/18/03	AQ	Water	111503TB03

Report of Analysis

Client Sample ID:	FOGELSON MW-1		
Lab Sample ID:	T6104-1	Date Sampled:	11/15/03
Matrix:	AQ - Water	Date Received:	11/18/03
Method:	SW846 8021B	Percent Solids:	n/a
Project:	EPFS San Juan Basin Groundwater Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	KK006192.D	20	11/28/03	BC	n/a	n/a	GKK332
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	401	20	ug/l	
108-88-3	Toluene	308	20	ug/l	
100-41-4	Ethylbenzene	755	20	ug/l	
1330-20-7	Xylenes (total)	4700	60	ug/l	
95-47-6	o-Xylene	1080	20	ug/l	
	m,p-Xylene	3620	40	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	84%		64-121%
98-08-8	aaa-Trifluorotoluene	94%		71-121%

(a) Sample was not preserved to a pH < 2; reported results are considered minimum values.

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:	111503TB03		
Lab Sample ID:	T6104-2	Date Sampled:	11/15/03
Matrix:	AQ - Water	Date Received:	11/18/03
Method:	SW846 8021B	Percent Solids:	n/a
Project:	EPFS San Juan Basin Groundwater Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK006189.D	1	11/28/03	BC	n/a	n/a	GKK332
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	87%		64-121%
98-08-8	aaa-Trifluorotoluene	86%		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

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY # 151103MN03

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

FED-EX Tracking # 842252414774 | Bottle Order Control #
Accutest Quote # | Accutest Job #

Client / Reporting Information

Company Name: MWH / El Paso
Address: 1014 Reilly
City: Farmington State: NM Zip: 87401
Project Contact: Scott Pope E-mail:
Phone #: 505 599 2124
Sampler's Name:

Project Information

Project Name: Southern Bloom Groundwater
Street:
City: State:
Project #:
Fax #: 505 599 2119
Client Purchase Order #:

Requested Analysis

BTEX

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
LAB USE ONLY

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	MeOH	DI H2O	BTEX
	Fogelson MW-1		111503	1435	MN	WG	2	X							X
	111503TB03		111503	0200	MN	WQ	1	X							X

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

T6104

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

Relinquished by Sampler:	Date Time:	Received by:	Relinquished by	Date Time:	Received by:
1	1200hrs 111703	1	2		2
Relinquished by: 3	Date Time: 111803 0915	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 1.8°C

T6104: Chain of Custody
Page 1 of 2

ACCUTEST.

SAMPLE RECEIPT LOG

JOB #: T6104 DATE/TIME RECEIVED: 11/18/03 0915

CLIENT: MWH / EL PASO INITIALS: VJ

Condition/Variance (Circle "Y" for yes and "N" for no. If "N" is circled, see variance for explanation):

1. (Y) N Sample received in undamaged condition. 2. Y N Samples received within temp. range.
3. Y (NA) Sample received with proper pH. 4. Y N Sample received in proper containers.
5. (Y) N Sample volume sufficient for analysis. 6. Y N Sample received with chain of custody.
7. (Y) N Chain of Custody matches sample IDs on containers.
8. (Y) NA Custody seal received intact and tamper evident on cooler.
9. Y (NA) Custody seal received intact and tamper evident on bottles.

SAMPLE or FIELD ID	BOTTLE #	DATE SAMPLED	MATRIX	VOLUME	LOCATION	PRESERV.	PH
1	1	11/15/03	WW	VOA	VREF	1,2,3,4,5,6	U, <2, >12, (NA)
2	1	↓	↓	↓	↓	1,2,3,4,5,6	U, <2, >12, (NA)
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA
						1,2,3,4,5,6	U, <2, >12, NA

VJ 11/18/03

LOCATION: ~~WI: Walk-in~~ VR: Volatile Refrig. SUB: Subcontract EF: Encore Freezer

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NAOH 6: Other

Comments:

(pH of waters checked excluding volatiles)

pH of soils N/A

Delivery method: Courier: Fed Ex

Tracking#:

COOLER TEMP: 1.8°C COOLER TEMP:

COOLER TEMP: COOLER TEMP:

Method of sample disposal: (circle one) Accutest disposal Hold Return to Client

Form: SM012

3 3.1

T6104: Chain of Custody

Page 2 of 2

GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: T6104
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin Groundwater Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK332-MB	KK006186.D	1	11/28/03	BC	n/a	n/a	GKK332

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

T6104-1, T6104-2

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	77%	64-121%
98-08-8	aaa-Trifluorotoluene	77%	71-121%

Blank Spike Summary

Job Number: T6104
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin Groundwater Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK332-BS	KK006185.D	1	11/28/03	BC	n/a	n/a	GKK332

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

T6104-1, T6104-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	19.0	95	74-119
100-41-4	Ethylbenzene	20	19.5	98	82-115
108-88-3	Toluene	20	19.0	95	77-116
1330-20-7	Xylenes (total)	60	58.8	98	79-115
95-47-6	o-Xylene	20	19.6	98	78-114
	m,p-Xylene	40	39.2	98	79-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	97%	64-121%
98-08-8	aaa-Trifluorotoluene	90%	71-121%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T6104
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin Groundwater Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T6104-1MS [a]	KK006193.D	20	11/28/03	BC	n/a	n/a	GKK332
T6104-1MSD [a]	KK006194.D	20	11/28/03	BC	n/a	n/a	GKK332
T6104-1 [a]	KK006192.D	20	11/28/03	BC	n/a	n/a	GKK332

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

T6104-1, T6104-2

CAS No.	Compound	T6104-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	401		400	764	91	769	92	1	64-124/16
100-41-4	Ethylbenzene	755		400	1110	89	1110	89	0	64-123/14
108-88-3	Toluene	308		400	668	90	684	94	2	64-120/13
1330-20-7	Xylenes (total)	4700		1200	5750	88	5680	82	1	66-118/18
95-47-6	o-Xylene	1080		400	1430	88	1420	85	1	65-119/20
	m,p-Xylene	3620		800	4320	88	4260	80	1	66-120/14

CAS No.	Surrogate Recoveries	MS	MSD	T6104-1	Limits
460-00-4	4-Bromofluorobenzene	84%	84%	84%	64-121%
98-08-8	aaa-Trifluorotoluene	93%	97%	94%	71-121%

(a) Sample was not preserved to a pH < 2; reported results are considered minimum values.

DATA VALIDATION WORKSHEET

Analytical Method/Analytes:	SW-846 8021B (BTEX)	**Sample Collection Date(s):**	05/21/03
Laboratory:	Accutest	**MWH Job Number:**	EPC-SJRB (Groundwater)
Batch Identification:	T4390	**Matrix:**	Water
MS/MSD Parent(s)[a]:	T4390-3	**Field Replicate Parent(s):**	None

Validation Complete: *Brian Buttars - 05/30/03*

(Date/Signature)

Foot Notes	Site ID	Sample ID	Lab. ID	Hits (Y/N)	Quals.	Comments
None	Trip Blank	210503TB02	T4390-01	N		
None	Fogelson	MW-1	T4390-02	Y		Benzene @ 339 µg/l Toluene @ 296 µg/l Ethylbenzene @ 723 µg/l Xylenes (total) @ 4730 µg/l o-Xylene @ 979 µg/l m,p-Xylene @ 3750 µg/l
1,2	Fogelson	MW-3	T4390-03	Y		Ethylbenzene @ 18.2 µg/l

DATA VALIDATION WORKSHEET

(Page 2 of 2)

Analytical Method: SW-846 8021B (BTEX) **MWH Job Number:** EPC-SJRB (Groundwater)

Laboratory: Accutest **Batch Identification:** T4390

Validation Criteria								
Sample ID	210503TB 02	Fogelson MW-1	Fogelson MW-3					
Lab ID	T4390-01	T4390-02	T4390-03					
Holding Time	A	A	A					
Analyte List	A	A	A					
Reporting Limits	A	A	A					
Trip Blank	A	A	A					
Equipment Rinseate Blanks	N/A	N/A	N/A					
Field Duplicate/Replicate	N/A	N/A	N/A					
Surrogate Spike Recovery	A	A	A					
Initial Calibration	N	N	N					
Initial Calibration Verification (ICV)	N	N	N					
Continuing Calibration Verification (CCV)	N	N	N					
Laboratory Control Sample (LCS)	A	A	A					
Laboratory Control Sample Duplicate (LCSD)	N	N	N					
Method Blank	A	A	A					
Matrix Spike/Matrix Spike Dup. (MS/MSD)	N/A	N/A	A[1,2]					
Retention Time Window	N	N	N					
Injection Time(s)	N	N	N					
Hardcopy vs. Chain-of-Custody	A	A	A					
EDD vs. Hardcopy	N	N	N					
EDD vs. Chain of Custody	N	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:

1) Matrix spike (MS) percent recovery below acceptance criteria @ 60% (64-123) indicating a possible low bias, Matrix spike duplicate (MSD) percent recovery well within acceptance criteria @ 90% (64-123), MS percent recovery considered anomalous, no data qualified.
2) The following analytes had MS/MSD relative percent differences (RPDs) outside acceptance criteria:
   a) Benzene @ 21% (16), analyte not detected in parent sample, no data qualified.
   b) Ethylbenzen @ 18% (14), a large RPD is to be expected when either the MS or MSD result is considered anomalous and the other is well within acceptance criteria, no data qualified.
   c) Toluene @ 20% (13), analyte not detected in parent sample, no data qualified.
   d) Xylenes (total) @ 21% (18), analyte not detected in parent sample, no data qualified.
   e) o-Xylene @ 21% (20), analyte not detected in parent sample, no data qualified.
   f) m,p-Xylene @ 21% (14), analyte not detected in parent sample, no data qualified.

Gulf Coast
ACCUTEST
Laboratories

05/30/03

Technical Report for

Montgomery Watson

EPFS San Juan Basin GS

San Juan Basin

Accutest Job Number: T4390

Report to:

El Paso

lynn.benally@elpaso.com

ATTN: Lynn Benally

Total number of pages in report: 9

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: T4390

EPFS San Juan Basin GS
Project No: San Juan Basin

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
T4390-1	05/21/03	07:00	MJN	05/23/03	AQ	Trip Blank Water	210503TB02
T4390-2	05/21/03	14:30	MJN	05/23/03	AQ	Water	FOGELSON MW-1
T4390-3	05/21/03	15:42	MJN	05/23/03	AQ	Water	FOGELSON MW-3

Accutest Laboratories

Report of Analysis

Client Sample ID:	210503TB02		
Lab Sample ID:	T4390-1	Date Sampled:	05/21/03
Matrix:	AQ - Trip Blank Water	Date Received:	05/23/03
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	KK005178.D	1	05/28/03	JH	n/a	n/a	GKK272
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	84%		64-121%
98-08-8	aaa-Trifluorotoluene	83%		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:	FOGELSON MW-1		
Lab Sample ID:	T4390-2	Date Sampled:	05/21/03
Matrix:	AQ - Water	Date Received:	05/23/03
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	KK005181.D	25	05/28/03	JH	n/a	n/a	GKK272
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	339	25	ug/l	
108-88-3	Toluene	296	25	ug/l	
100-41-4	Ethylbenzene	723	25	ug/l	
1330-20-7	Xylenes (total)	4730	75	ug/l	
95-47-6	o-Xylene	979	25	ug/l	
	m,p-Xylene	3750	50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	81%		64-121%
98-08-8	aaa-Trifluorotoluene	81%		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:	FOGELSON MW-3		
Lab Sample ID:	T4390-3	Date Sampled:	05/21/03
Matrix:	AQ - Water	Date Received:	05/23/03
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	KK005191.D	1	05/28/03	JH	n/a	n/a	GKK272
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	18.2	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	72%		64-121%
98-08-8	aaa-Trifluorotoluene	74%		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: T4390
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin GS

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK272-BS	KK005176.D	1	05/28/03	JH	n/a	n/a	GKK272

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

T4390-1, T4390-2, T4390-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	17.4	87	74-119
100-41-4	Ethylbenzene	20	17.8	89	82-115
108-88-3	Toluene	20	17.7	89	77-116
1330-20-7	Xylenes (total)	60	54.3	91	79-115
95-47-6	o-Xylene	20	17.7	89	78-114
	m,p-Xylene	40	36.6	92	79-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	86%	64-121%
98-08-8	aaa-Trifluorotoluene	85%	71-121%

Method Blank Summary

Job Number: T4390
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin GS

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK272-MB	KK005177.D	1	05/28/03	JH	n/a	n/a	GKK272

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

T4390-1, T4390-2, T4390-3

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	86%	64-121%
98-08-8	aaa-Trifluorotoluene	85%	71-121%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T4390
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin GS

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T4390-3MS	KK005192.D	1	05/28/03	JH	n/a	n/a	GKK272
T4390-3MSD [a]	KK005193.D	1	05/28/03	JH	n/a	n/a	GKK272
T4390-3	KK005191.D	1	05/28/03	JH	n/a	n/a	GKK272

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

T4390-1, T4390-2, T4390-3

CAS No.	Compound	T4390-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		20	13.7	69	17.0	85	21*	64-124/16
100-41-4	Ethylbenzene	18.2		20	30.1	60*	36.2	90	18*	64-123/14
108-88-3	Toluene	ND		20	13.7	69	16.8	84	20*	64-120/13
1330-20-7	Xylenes (total)	ND		60	42.3	71	52.0	87	21*	66-118/18
95-47-6	o-Xylene	ND		20	13.9	70	17.1	86	21*	65-119/20
	m,p-Xylene	ND		40	28.4	71	34.9	87	21*	66-120/14

CAS No.	Surrogate Recoveries	MS	MSD	T4390-3	Limits
460-00-4	4-Bromofluorobenzene	68%	80%	72%	64-121%
98-08-8	aaa-Trifluorotoluene	68%* [b]	81%	74%	71-121%

(a) High RPD due to low spike recoveries of the MSD.
(b) Outside control limits due to matrix interference.

CHAIN OF CUSTODY # 210503MNP2

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

FED-EX Tracking # 835579055 99 | 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: MJNEE

Project Information

Project Name: San Juan Basin
Street: NW New Mexico
City: State:
Project #:
Fax #: 505 599 2119
Client Purchase Order #:

Requested Analysis

BTEX

Matrix Codes

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

Accutest Sample #	Field ID / Point of Collection	SUMMA # / MEOH Vial #	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	BTEX
1	210503TBΦ2		5-21-03	0700	MN	WQ	1	X								X
2	Fogelson MW-1		5-21-03	1430	MN	WQ	2	X								X
3	Fogelson MW-3		5-21-03	1542	MN	WQ	2	X								X

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

T4390

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

	Date Time:	Received by:	Relinquished by	Date Time:	Received by:
1 Relinquished by Sampler: MJNee	5-22-03 1400	1	2	5-23-03 0935	2
3 Relinquished by:	Date Time:	3	4	Date Time:	4
5 Relinquished by:	Date Time:	5	Custody Seal #	Preserved where applicable ☐	On Ice ☒ Cooler Temp. 5.3°C

ATTACHMENT 2

FIELD DOCUMENTATION

PRODUCT RECOVERY/WATER LEVEL DATA

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**	**11-14&15-03**
Site Name	**Fogelson**		

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Comment	
MW-1 11/14	**1245**	-		**Removed 7 ORC Socks**	
MW-1 11/15	**1354**	-	**41.0**	-	-
MW-2		-	**38.695**	-	-
MW-3			**41.3**		
MW-1				**Installed 7 ORC socks**	

Comments

Signature: Martin J. Nee Date: November 15, 2003

WELL DEVELOPMENT AND SAMPLING LOG

Project No.: 30001.0 Project Name: SJB Groundwater Client: MWH/EL Paso

Location: Fogelson Well No: MW-1 Development **Sampling**

Project Manager MJN Date 11/15/03 Start Time 1354 Weather Sunny 60s

Depth to Water 41.00 Depth to Product na Product Thickness na Measuring Point TOC

Water Column Height 6.70 Well Dia. 4"

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

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

Criteria: 3 to 5 Casing Volumes of Water Removal **X** stabilization of Indicator Parameters **X** Other or bail dry

Gal/ft x ft of water	Water Volume in Well		Gal/oz to be removed
	Gallons	Ounces	
6.70 x 0.65	4.35 x 3		13.065

Time (military)	pH (su)	SC (umhos/cm)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gallons)	Comments/ Flow rate
1356	**7.45**	**9740**	**59.2**				**1**	**Clear HC Odor**
	7.43	**10600**	**60.4**				**2**	**Clear HC Odor**
	7.39	**10220**	**60.4**				**3**	**Clear HC Odor**
	7.40	**10530**	**59.9**				**5**	**Clear HC Odor**
	7.39	**10510**	**59.7**				**10**	**Clear HC Odor**
	7.38	**10590**	**59.5**				**12**	**Clear HC Odor**
1429	**7.39**	**10570**	**59.6**		**0.81**		**13.5**	**Clear HC Odor**

Final: Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow Rate
1429	**7.39**	**10570**	**59.6**		0.81			**13.5**	**Clear HC Odor**

COMMENTS:

INSTRUMENTATION: pH Meter **X** _____ Temperature Meter **x**

DO Monitor _____ Other _____

Conductivity Meter **X** _____

Water Disposal Kutz Sample ID Fogelson MW-1 Sample Time 1435

BTEX VOCs Alkalinity TDS Cations Anions Nitrate Nitrite Ammonia TKN NMWQCC Metals Total Phosphorus

MS/MSD _____ BD _____ BD Name/Time _____ TB 151103tb03

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 30001.0 Project Name: SanTanBasin Client: MWH

Location: Fogelson Well No: MW-3 Development ☐ Sampling ☒

Project Manager MJN Date 5-21-08 Start Time 1504 Weather Sunny 80s

Depth to Water 41.71 Depth to Product — Product Thickness — Measuring Point TOC

Water Column Height 10.42 Well Dia. 2"

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 or bailed dry

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
10.42 x .16	1.66x3		5

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
1506	6.70	10550	21.6				.25	
	6.63	10020	20.6				.5	
	6.66	9820	20.6				.75	milky/very silty
	6.69	9590	20.6				1	
	6.74	10030	20.6				2	
	6.73	9780	20.4				3	
	7.17	9890	20.6				4	well has bailed dry
1542	7.17	10280	22.6				4.1	

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate
1542	7.17	10280	22.6					4.1	

COMMENTS: _____

INSTRUMENTATION: pH Meter ☒ _____ Temperature Meter ☒ _____

DO Monitor ☐ _____ Other ☐ _____

Conductivity Meter ☒ _____

Water Disposal Kutz

Sample ID Fogelson MW-3 Sample Time 1542 BTEX ☒ VOCs ☐ Alkilinity ☐

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

Total Phosphorus ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐

MS/MSD _____ BD _____ BD Name/Time _____ TB 210563TB03

WELL DEVELOPMENT AND SAMPLING LOG

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

Location: Fogelson Well No: MW-1 Development ☐ Sampling ☒

Project Manager MJW Date 5/21/03 Start Time 1350 Weather Sunny 80s

Depth to Water 41.57 Depth to Product — Product Thickness — Measuring Point TOC

Water Column Height 6.13 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 _____

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
6.13 x .65	3.98 x 3		11.95

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
1407	7.09	12730	26.8				1	clear
	7.03	11970	21.9				2	degraded HC odor
	7.06	11520	22.2				3	
	7.14	12850	23.1				10	
	7.11	12120	24.4				11	
	7.14	11910	23.2				12	
1442	7.14	12210	23.3				12.5	

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate
1442	7.14	12210	23.3					12.5	

COMMENTS: _____

INSTRUMENTATION: pH Meter ☒ _____ Temperature Meter ☒ _____

DO Monitor ☐ _____ Other ☐ _____

Conductivity Meter ☒ _____

Water Disposal Kutz

Sample ID Fogelson MW-1 Sample Time 1450 BTEX ☒ VOCs ☐ Alkilinity ☐

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

Total Phosphorus ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐

MS/MSD _____ BD _____ BD Name/Time _____ TB 210503TB#2

PRODUCT RECOVERY/WATER LEVEL DATA

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** 5-21-03
Site Name Fogelson

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed
MW-1	1350	-	41.57	-	-
MW-2		-	39.24	-	-
MW-3		-	41.71	-	-

Comments

Signature: *Martin J. Nee* Date: May 21, 2003