3R - 205

REPORTS

DATE:

2003

3R205

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

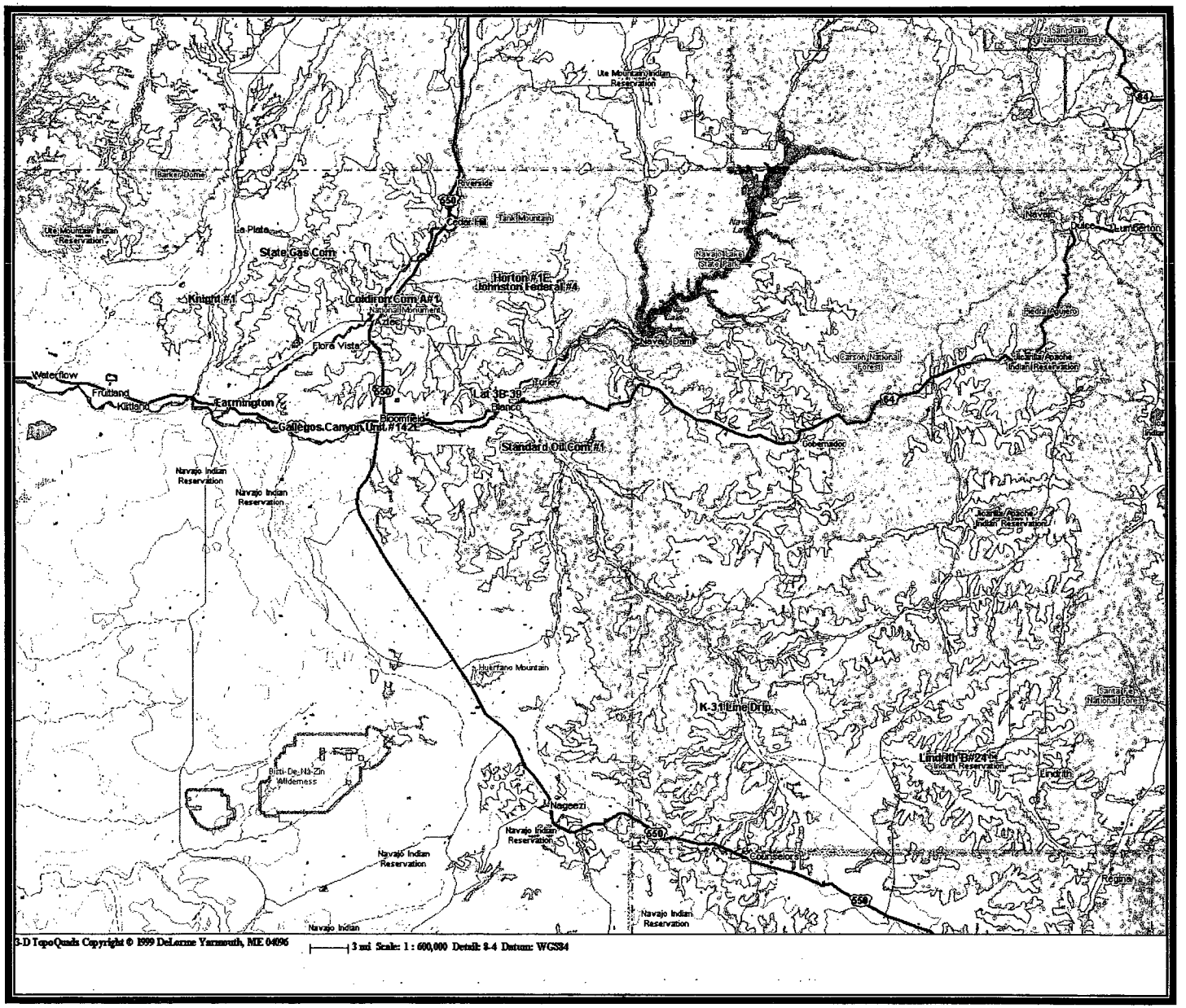
TABLE OF CONTENTS

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

K-31 Line Drip
Meter Code: LD087

SITE DETAILS

Legal Description: **Town:** 25N **Range:** 6W **Sec:** 16 **Unit:** N

NMOCD Haz Ranking: 40 **Land Type:** State **Operator:** EPFS

PREVIOUS ACTIVITIES

Site Assessment:	7/94	**Excavation:**	8/94 (90 cy)	**Soil Boring:**	9/95
Monitor Well:	3/97	**Geoprobe:**	7/97	**Additional MWs:**	7/00
Downgradient MWs:	7/00	**Replace MW:**	NA	**Quarterly Initiated:**	6/97
ORC Nutrient Injection:	11/02	**Re-Excavation:**	11/95 (1786 cy)	**PSH Removal Initiated:**	NA
Annual Initiated:	6/99	**Quarterly Resumed:**	NA		

SUMMARY OF 2003 ACTIVITIES

MW-1: Semi-annual water level monitoring was performed during 2003.

MW-2: Semi-annual groundwater sampling and water level monitoring were performed during 2003.

MW-3: Semi-annual water level monitoring was performed during 2003.

Site-Wide Activities: Top of casing elevations were resurveyed in May 2003.

SITE MAP

Site maps (March and September) are attached in 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 are 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

- BTEX concentrations in MW-1 were below closure criteria during four consecutive quarters in 2002. Therefore, this well was not sampled in 2003, but will be sampled at closure.

- Benzene concentrations in MW-2 were 254 µg/L and 125 µg/L in March and September 2003, respectively, which represents a significant decrease from 1,800 µg/L when this well was initially sampled in 2000.

- The elevation survey conducted during 2003 was in response to varying interpretations of flow direction during 2000, 2001 and 2002. Resurveyed elevations are as follows:

  - MW-1: 6304.83 (no change)
  - MW-2: 6303.53 (change of +0.22 feet)
  - MW-3: 6303.93 (change of +0.22 feet)

- Historic water level data were re-plotted using the new top of casing elevations. Based on revised maps, the groundwater flow direction varies between the north/northwest and the north/northeast, which is consistent with historic maps presented in previous annual reports. (The only period where the new survey data significantly altered the groundwater map was in October 2002, where the interpreted flow direction was revised from northeast to northwest.) Considering the extremely flat hydraulic gradient in the area, natural variability in the flow direction is likely. This is consistent with the conclusion presented in the 2002 Annual Report.

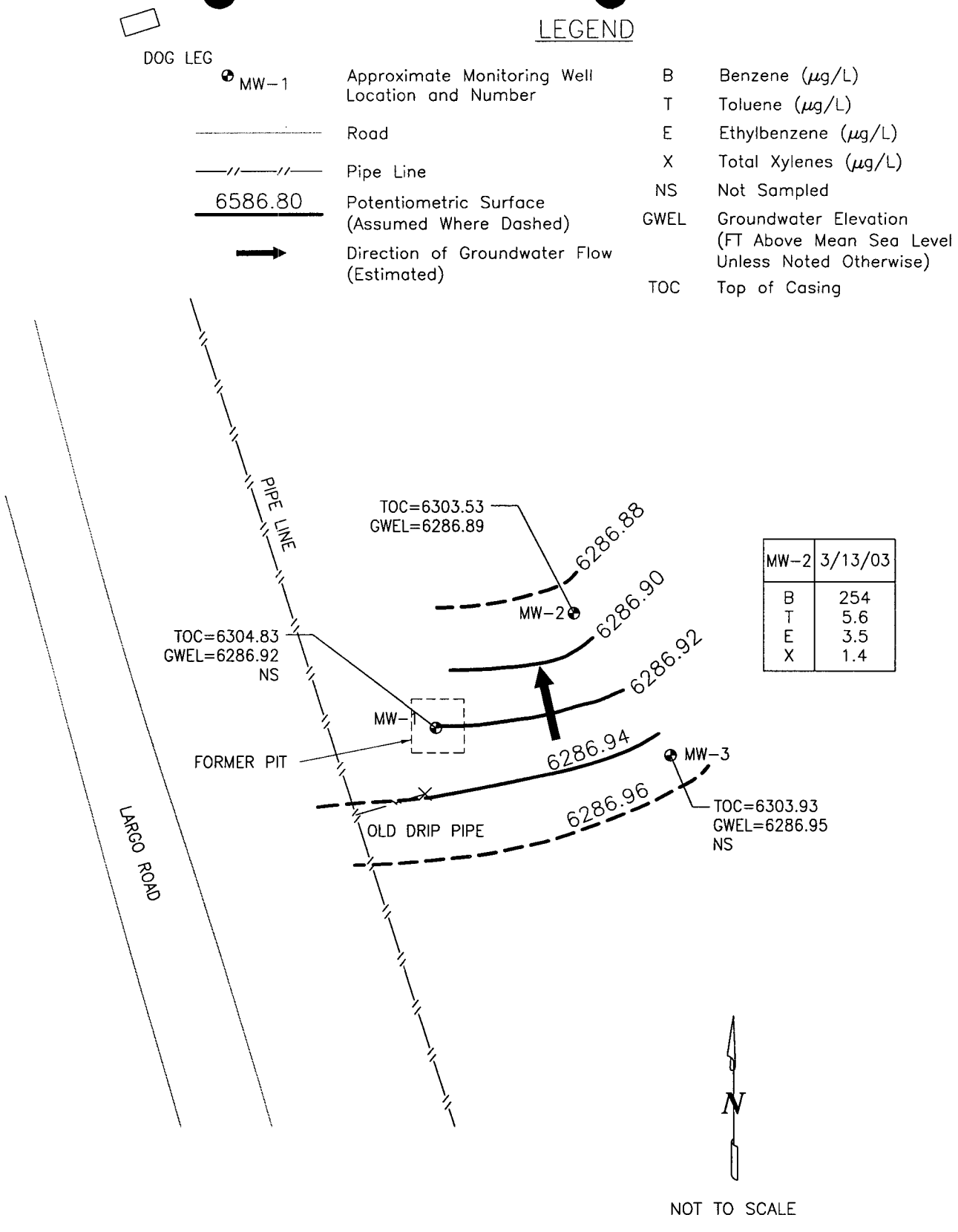
- In November 2002, oxygen releasing compound (ORC) slurry was injected into the subsurface near MW-2 (see maps for injection point locations). Following ORC injection in November 2002, benzene concentrations in MW-2 were 254 and 125 µg/L in 2003, compared to the pre-injection concentrations of 230 and 104 µg/L in 2002. ORC injection does not appear to have significantly influenced the concentrations in this well. This may be due to the flat hydraulic gradient across the site which results in very slow groundwater velocity.

RECOMMENDATIONS

- Because sampling at MW-1 has indicated BTEX concentrations below detection limits for four consecutive quarters, EPFS recommends that this well not be sampled until closure samples are scheduled for collection.

- EPFS recommends that MW-2 be sampled semi-annually until closure criteria are approached, at which time, quarterly sampling will be initiated.

- Because sampling at MW-3 has indicated BTEX concentrations below detection limits, EPFS recommends that this well not be sampled until closure samples are scheduled.

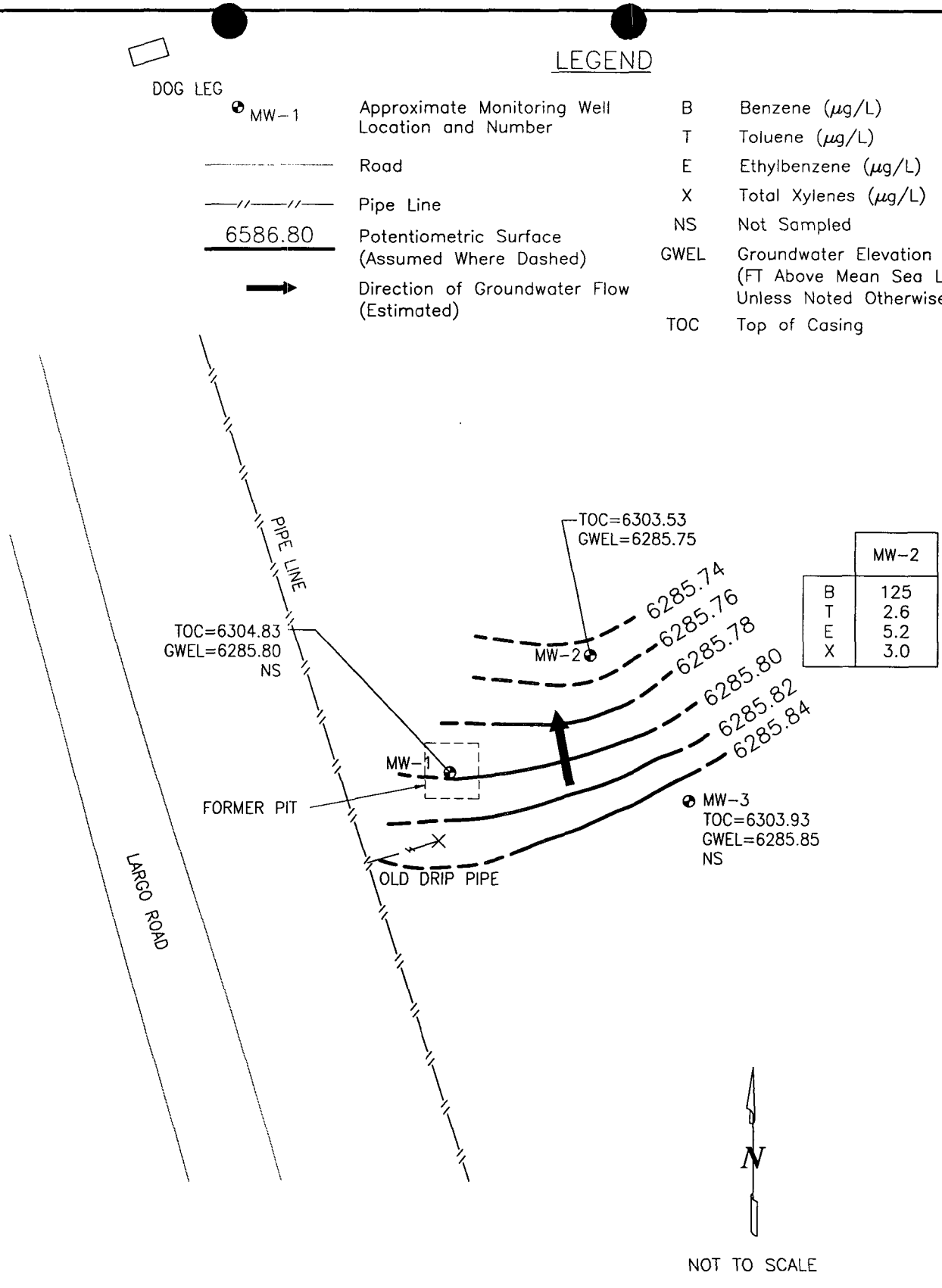


k31ld_03.dwg

K-31 LINE DRIP, LD087
MARCH 2003

GROUNDWATER SITES
EL PASO FIELD SERVICES

FIGURE 1



k31ld_03.dwg

K-31 LINE DRIP, LD087
SEPTEMBER 2003

GROUNDWATER SITES
EL PASO FIELD SERVICES

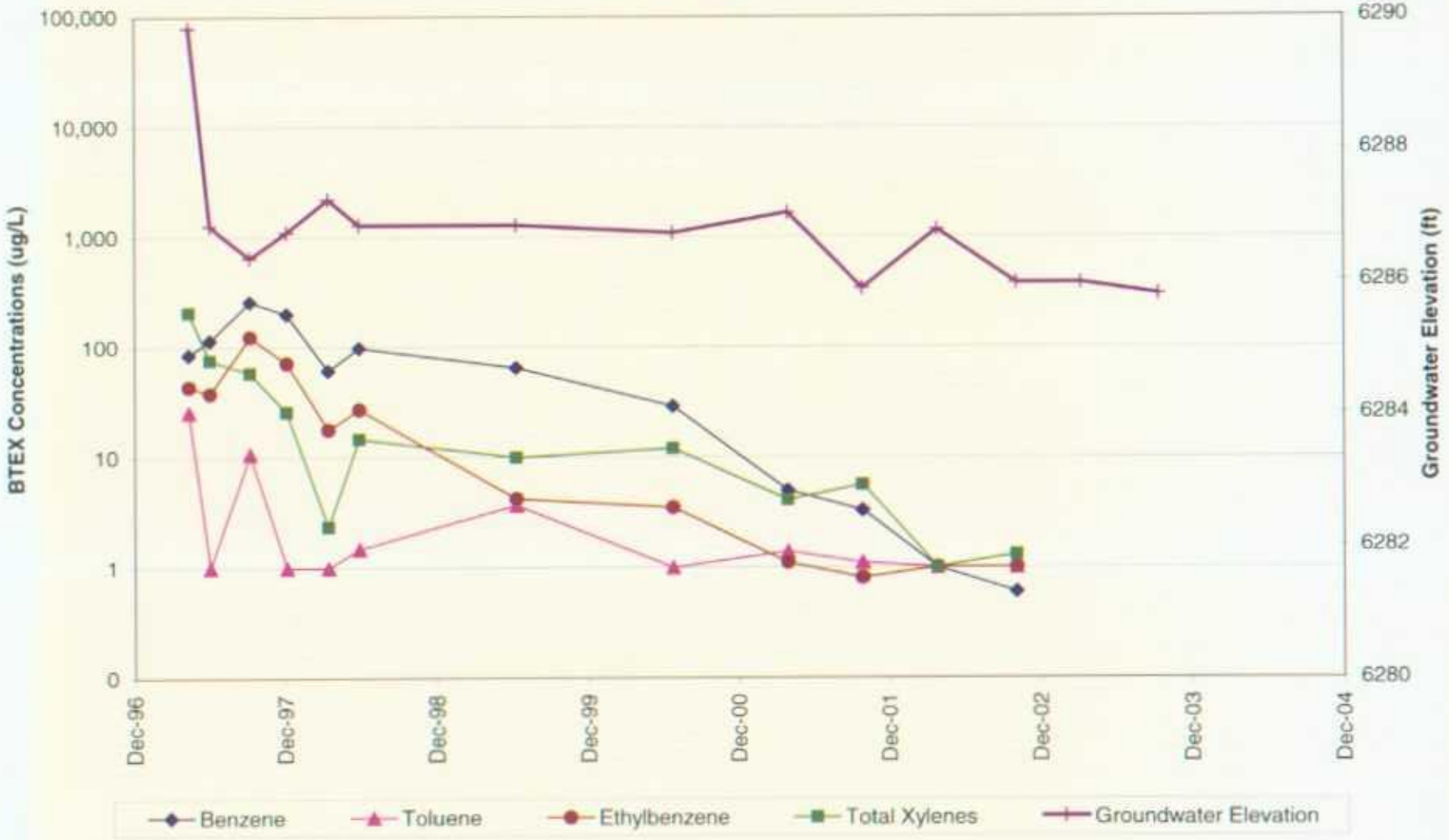
FIGURE 2

TABLE 1

SUMMARY OF BTEX COMPOUNDS IN 2003 GROUNDWATER SAMPLES
K-31 LINE DRIP (METER #LD087)

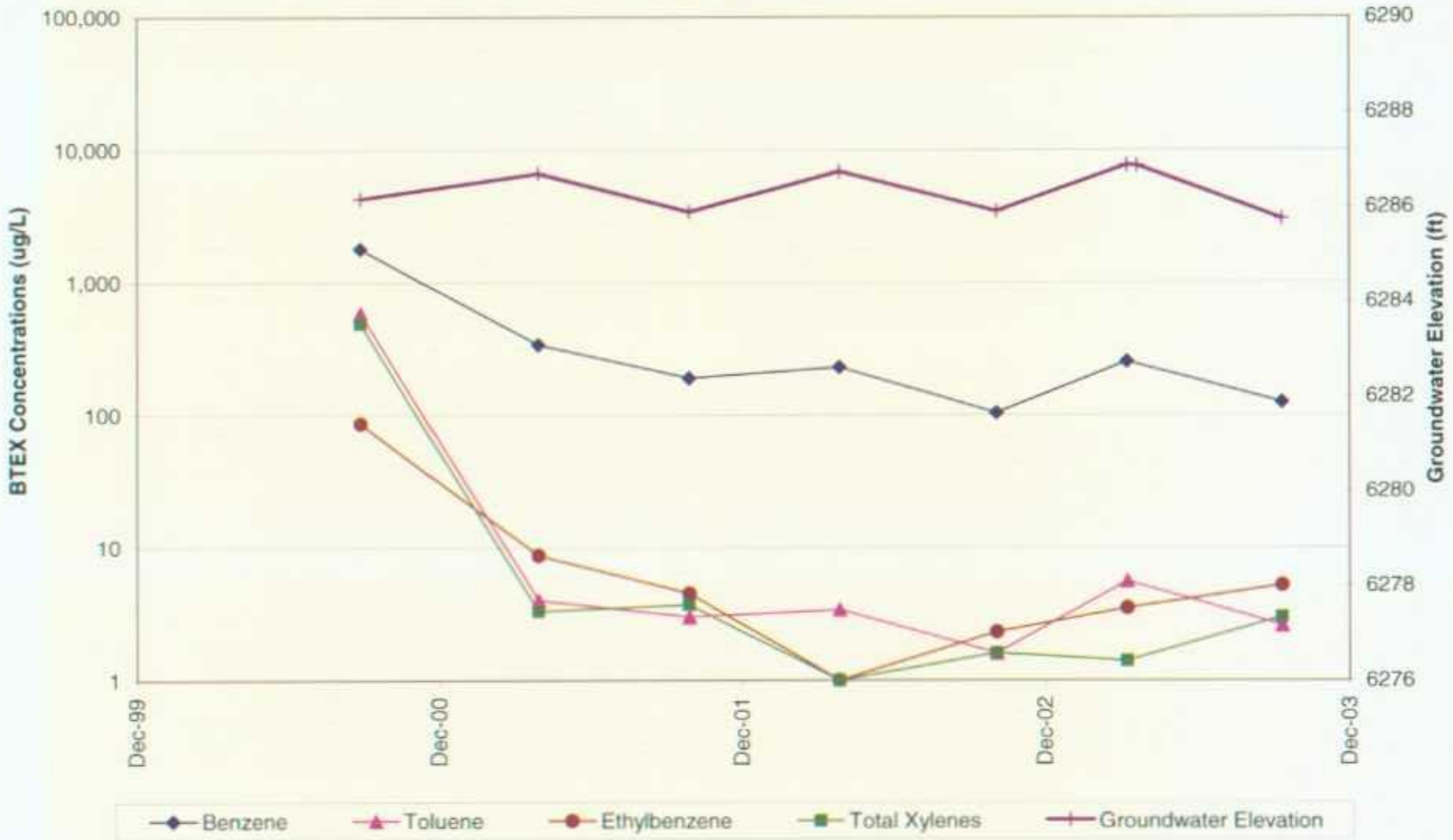
Site Name	Monitoring Well	Sample Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (ft btoc)
K-31 Line Drip	MW-2	3/13/2003	254	5.6	3.5	1.4	16.64
K-31 Line Drip	MW-2	9/15/2003	125	2.6	5.2	3.0	17.78

FIGURE 3
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
K-31 LINE DRIP
MW-1



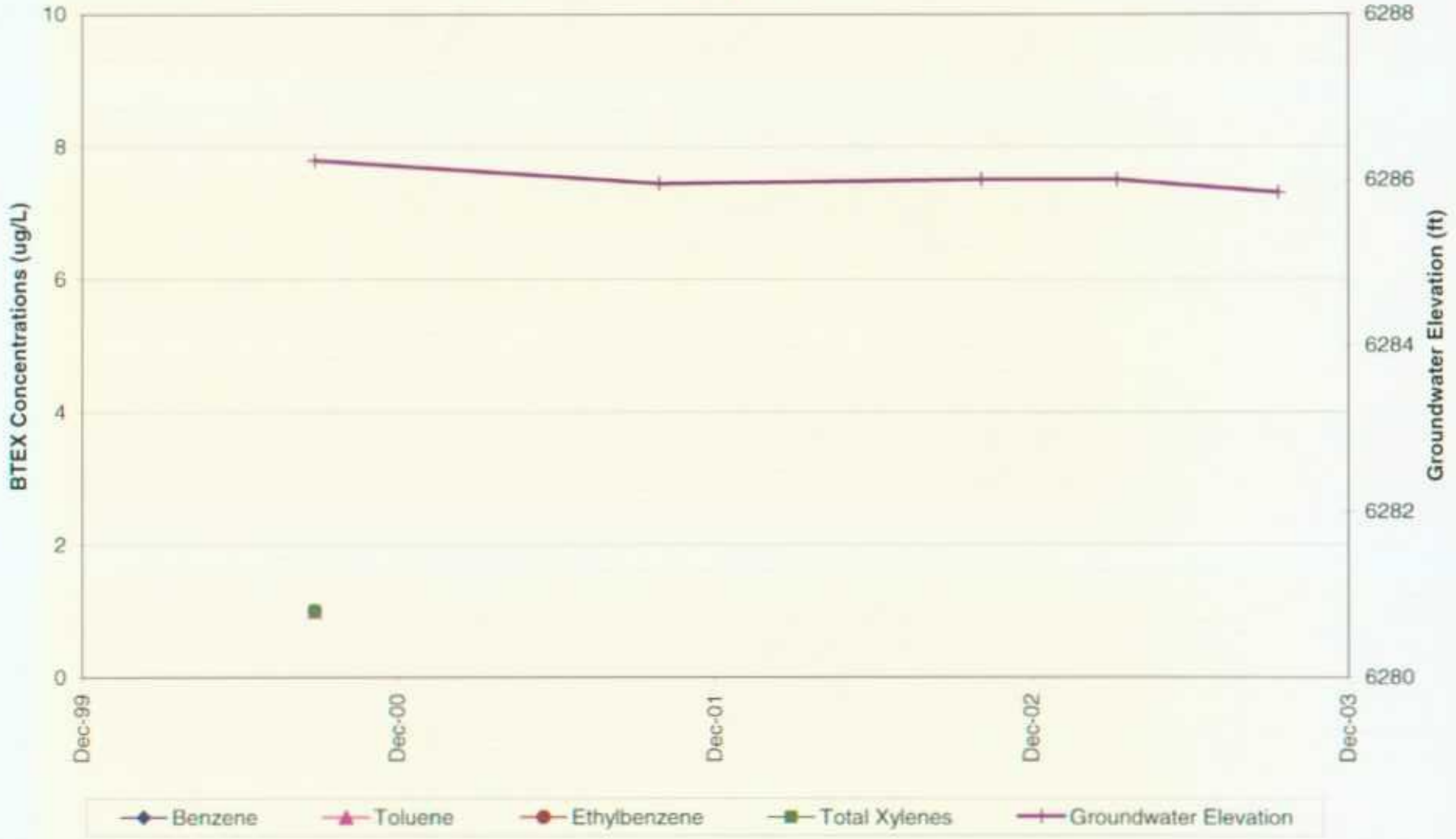
2003 K31 Line Drip.xls,K31 MW1

FIGURE 4
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
K-31 LINE DRIP
MW-2



2003 K31 Line Drip.xls,K31 MW2

FIGURE 5
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
K-31 LINE DRIP
MW-3



2003 K31 Line Drip.xls,K31 MW3

ATTACHMENT 1

LABORATORY REPORTS

DATA VALIDATION WORKSHEET

Analytical Method/Analytes: SW-846 8021B (BTEX) **Sample Collection Date(s):** 09/15/03

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

Batch Identification: T5378 **Matrix:** Water

MS/MSD Parent(s)[a]: T5378-01 **Field Replicate Parent(s):** None

Validation Complete: Brian Bottaro 9-30-03 (Date/Signature)

Foot Notes	Site ID	Sample ID	Lab. ID	Hits (Y/N)	Quals.	Comments
None	K-31	TMW	T5378-01	Y		Benzene @ 125 µg/l Toluene @ 2.6 µg/l Ethylbenzene @ 5.2 µg/l Xylenes (total) @ 3.0 µg/l o-Xylene @ 1.4 µg/l m,p-Xylene @ 1.6 T µg/l
None	Trip Blank	150903TB01	T5378-02	N		

DATA VALIDATION WORKSHEET

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

Laboratory: Accutest **Batch Identification:** T5378

Validation Criteria								
Sample ID	**K-31 MW-2**	**150903TB 01**						
Lab ID	**T5378-01**	**T5378-02**						
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)	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:

CHAIN CUSTODY 150903 MW 92

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

FED-EX Tracking # 836557900592 | Bottle Order Control #
Accutest Quote # | Accutest Job #

Client / Reporting Information

Company Name: MWH / El Paso
Address: 614 Reilly
City: Farmington State: NM Zip: 87401
Project Contact: Scott Pope E-mail:
Phone #: 505 599 2124
Sampler's Name: M. J. Nee

Project Information

Project Name: 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
OL - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

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	MeOH	NaHSO4	MEOH	EnCore	BTEX	LAB USE ONLY
	K31 MW-2		9-15-03	1133	MN	WG	2	2								X	
	150903TB01		9-15-03	0700	MN	WQ	1	1								X	

Turnaround Time (Business Days)

- [X] 10 Day *STANDARD*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*
- [ ] Other

Approved By: / Date:

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

T5378

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 9/15/03	1600hrs	1	2		2
Relinquished by:	Date Time:	Received by:	Relinquished by:	Date Time:	Received by:
3	9/16/03 0800	3	4		4
Relinquished by:	Date Time:	Received by:	Custody Seal #	Preserved where applicable ☐	On Ice ☒ Cooler Temp 4.0°C
5		5			

Gulf Coast
ACCUTEST.
Laboratories

09/25/03

Technical Report for

Montgomery Watson

EPFS San Juan Basin Groundwater Site

D-LAB-GROUNDREM-001

Accutest Job Number: T5378

Report to:

MWH

pamela.j.anderson@us.mwhglobal.com

ATTN: Pam Anderson

K-31

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

Accutest Laboratories

Sample Summary

Montgomery Watson

Job No: T5378

EPFS San Juan Basin Groundwater Site
Project No: D-LAB-GROUNDREM-001

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
T5378-1	09/15/03	11:33	MJN	09/16/03	AQ	Water	K31 MW-2
T5378-2	09/15/03	07:00	MJN	09/16/03	AQ	Trip Blank Water	150903TB01

Accutest Laboratories

Report of Analysis

Client Sample ID:	K31 MW-2		
Lab Sample ID:	T5378-1	Date Sampled:	09/15/03
Matrix:	AQ - Water	Date Received:	09/16/03
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	KK005797.D	1	09/22/03	BC	n/a	n/a	GKK312
Run #2	KK005799.D	10	09/22/03	BC	n/a	n/a	GKK312

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	125 [a]	10	ug/l	
108-88-3	Toluene	2.6	1.0	ug/l	
100-41-4	Ethylbenzene	5.2	1.0	ug/l	
1330-20-7	Xylenes (total)	3.0	3.0	ug/l	
95-47-6	o-Xylene	1.4	1.0	ug/l	
	m,p-Xylene	1.6	2.0	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	103%	95%	64-121%
98-08-8	aaa-Trifluorotoluene	96%	89%	71-121%

(a) Result is from Run# 2

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:	150903TB01		
Lab Sample ID:	T5378-2	Date Sampled:	09/15/03
Matrix:	AQ - Trip Blank Water	Date Received:	09/16/03
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	KK005794.D	1	09/22/03	BC	n/a	n/a	GKK312
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)	1.1	3.0	ug/l	J
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	102%		64-121%
98-08-8	aaa-Trifluorotoluene	97%		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: T5378
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin Groundwater Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK312-BS	KK005791.D	1	09/22/03	BC	n/a	n/a	GKK312

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

T5378-1, T5378-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	22.9	115	74-119
100-41-4	Ethylbenzene	20	22.9	115	82-115
108-88-3	Toluene	20	22.4	112	77-116
1330-20-7	Xylenes (total)	60	67.7	113	79-115
95-47-6	o-Xylene	20	22.4	112	78-114
	m,p-Xylene	40	45.2	113	79-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	115%	64-121%
98-08-8	aaa-Trifluorotoluene	106%	71-121%

Method Blank Summary

Job Number: T5378
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin Groundwater Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK312-MB	KK005792.D	1	09/22/03	BC	n/a	n/a	GKK312

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

T5378-1, T5378-2

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	104%	64-121%
98-08-8	aaa-Trifluorotoluene	101%	71-121%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T5378
Account: MWHSLCUT Montgomery Watson
Project: EPFS San Juan Basin Groundwater Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T5378-1MS	KK005800.D	10	09/22/03	BC	n/a	n/a	GKK312
T5378-1MSD	KK005801.D	10	09/22/03	BC	n/a	n/a	GKK312
T5378-1	KK005797.D	1	09/22/03	BC	n/a	n/a	GKK312
T5378-1	KK005799.D	10	09/22/03	BC	n/a	n/a	GKK312

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

T5378-1, T5378-2

CAS No.	Compound	T5378-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	125 [a]		200	345	110	346	111	0	64-124/16
100-41-4	Ethylbenzene	5.2		200	229	112	230	112	0	64-123/14
108-88-3	Toluene	2.6		200	228	113	227	112	0	64-120/13
1330-20-7	Xylenes (total)	3.0		600	700	116	697	116	0	66-118/18
95-47-6	o-Xylene	1.4		200	235	117	235	117	0	65-119/20
	m,p-Xylene	1.6	J	400	465	116	461	115	1	66-120/14

CAS No.	Surrogate Recoveries	MS	MSD	T5378-1	T5378-1	Limits
460-00-4	4-Bromofluorobenzene	111%	103%	103%	95%	64-121%
98-08-8	aaa-Trifluorotoluene	99%	90%	96%	89%	71-121%

(a) Result is from Run #2.

CHAIN OF CUSTODY 150903 MN 92

ACCUTEST Laboratories

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

FED-EX Tracking # 836557900592 | Bottle Order Control #

Accutest Quote # | Accutest Job #

Client / Reporting Information

Company Name: MWH / El Paso
Address: 614 Reilly
City: Farmington State: NM Zip: 87401
Project Contact: Scott Pope E-mail:
Phone #: 505 599 2124
Sampler's Name: M. T Nee

Project Information

Project Name: 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	Collection Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	BTEX	LAB USE ONLY
	K31 MW-2		9-15-03	1133	MN	WG	2	2								X	
	150903TB01		9-15-03	0700	MN	WQ	1	1								X	

Turnaround Time (Business Days)

- [X] 10 Day *STANDARD*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*
- [ ] Other

Approved By: / Date:

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

T5578

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 9/15/03	1600hrs	1	2		2
Relinquished by:	Date Time:	Received by:	Relinquished by:	Date Time:	Received by:
3	9/16/03 0800	3	4		4
Relinquished by:	Date Time:	Received by:	Custody Seal #	Preserved where applicable: ☐	On Ice: ☒ Cooler Temp. 4.0°C
5		5			

ACCUTEST.

SAMPLE RECEIPT LOG

JOB #: T5378 DATE/TIME RECEIVED: 9/16/03 0850

CLIENT: El Paso / MWH INITIALS: KD

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) N 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	1-2	9/15/03	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
		9/16/03 KD				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

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

pH of waters checked excluding volatiles

pH of soils N/A

Comments:

Delivery method: Courier:

Tracking#:

COOLER TEMP: 4.0°C COOLER TEMP:

COOLER TEMP: COOLER TEMP:

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

Form: SM012

DATA VALIDATION WORKSHEET

(Page 1 of 2)

Analytical Method/Analytes: SW-846 8021B (BTEX) **Sample Collection Date(s):** 03/13-14/03

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

Batch Identification: 03-02234 **Matrix:** Water

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

Validation Complete: Luigi Buttaro 4-16-03 (Date/Signature)

Foot Notes	Site ID	Sample ID	Lab. ID	Hits (Y/N)	Quals.	Comments
1	Horton #1	MW-1	03-02234-01	Y	B	Toluene @ 25.5 µg/l
2	Rementa Et Al #1	MW-1	03-02234-03	Y	B	Toluene @ 8.6 µg/l
2	K-31 Line Drip	MW-2	03-02234-04	Y	B	Toluene @ 5.6 µg/l
2	Trip Blank	TB130303-1	03-02234-05	Y		Toluene @ 0.2 T µg/l
1	Trip Blank	TB140303-1	03-02234-06	Y		Toluene @ 0.2 T µg/l

DATA VALIDATION WORKSHEET
(Page 2 of 2)

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

Laboratory: APCL **Batch Identification:** 03-02234

Validation Criteria								
Sample ID	**Horton #1 MW-1**	**Rementa Et Al #1 MW-1**	**K-31 Line Drip MW-2**	**TB 130303-1**	**TB 140303-1**			
Lab ID	**03-02234-01**	**03-02234-03**	**03-02234-04**	**03-02234-05**	**03-02234-06**			
Holding Time	A	A	A	A	A			
Analyte List	A	A	A	A	A			
Reporting Limits	A	A	A	A	A			
Trip Blank	A[1]	A[2]	A[2]	A[2]	A[1]			
Equipment Rinseate Blanks	N/A	N/A	N/A	N/A	N/A			
Field Duplicate/Replicate	N/A	N/A	N/A	N/A	N/A			
Initial Calibration	N	N	N	N	N			
Initial Calibration Verification (ICV)	N	N	N	N	N			
Continuing Calibration Verification (CCV)	A	A	A	A	A			
Method Blank	A	A	A	A	A			
Laboratory Control Sample (LCS)	A	A	A	A	A			
Laboratory Control Sample Duplicate (LCSD)	N	N	N	N	N			
Matrix Spike/Matrix Spike Dup. (MS/MSD)	N/A	N/A	N/A	N/A	N/A			
Surrogate Spike Recovery	A	A	A	A	A			
Retention Time Window	N	N	N	N	N			
Injection Time(s)	N	N	N	N	N			
Hardcopy vs. Chain-of-Custody	A	A	A	A	A			
EDD vs. Hardcopy	N	N	N	N	N			
EDD vs. Chain of Custody	N	N	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) The following compounds were detected in the trip blank (TB 140303-1):
   a) Toluene @ 0.2 T µg/l, qualify associated sample concentrations greater than 1.0 µg/l with "B" flags and associated sample concentrations less than 1.0 µg/l with "UB" flags.
2) The following compounds were detected in the trip blank (TB 130303-1):
   a) Toluene @ 0.2 T µg/l, qualify associated sample concentrations greater than 1.0 µg/l with "B" flags and associated sample concentrations less than 1.0 µg/l with "UB" flags.

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
Montgomery Watson Harza
Attention: Brian Buttars
10619 South Jordan Gateway
Salt Lake City UT 84095
Tel: (801)617-3200 Fax: (801)617-4200

Service ID #: 801-032234
Collected by: M.J. Nee.
Collected on: 03/13-14/03

Received: 03/17/03
Extracted: N/A
Tested: 03/18-19/03
Reported: 03/24/03

Sample Description: Water
Project Description: 220013 San Juan Basin

Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result MW-1 Horton #1 03-02234-1	MW-1 ~~Remote~~ Remenda El Al #1 BB 4-16-03 03-02234-3
BTXE					
Dilution Factor				1	1
BENZENE	8021B	µg/L	0.5	100	4.8
ETHYLBENZENE	8021B	µg/L	0.5	0.5	6.3
TOLUENE	8021B	µg/L	0.5	25.5	8.6
O-XYLENE	8021B	µg/L	0.5	1.0	2.9
M,P-XYLENE	8021B	µg/L	1	5.1	15

Component Analyzed	Method	Unit	PQL	Analysis Result K-31 MW-2 Line Drip 03-02234-4	TB130303-1 03-02234-5	TB140303-1 03-02234-6
BTXE						
Dilution Factor				1	1	1
BENZENE	8021B	µg/L	0.5	254	<0.5	<0.5
ETHYLBENZENE	8021B	µg/L	0.5	3.5	<0.5	<0.5
TOLUENE	8021B	µg/L	0.5	5.6	0.2J	0.2J
O-XYLENE	8021B	µg/L	0.5	1.4	<0.5	<0.5
M,P-XYLENE	8021B	µg/L	1	<1	<1	<1

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit
N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.
J: Reported between PQL and MDL.
Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

Dominic Lau
Laboratory Director
Applied P & Ch Laboratory

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

LABORATORY APCL
Contract El Paso Corp., San Jaun River Basin

MWH
Phone (801) 617-3200 FAX (801) 617-4200
MWH Contact Brian Buttars
Project San Juan Basin
Project Number 3720913
Date Due Standard
Sampler's Name MJ Nee
(print clearly)

Chain of Custody ID mN 140303mN
Page 1 of 1
Air Bill No. 936557891528

Location ID	Sample ID	Depth Interval (ft)	Date Collected	Time Collected	Matrix [a]	Sampling Technique [b]	ANALYSES REQUESTED: BTEX SW-846 8021B	Alkalinity SM 2320B	TDS USEPA 160.1	NM WQCC Metals SW-846 6010B & 7470A	Cations SW-846 6010B	Anions USEPA 300.0	Nitrate USEPA 300.0	Nitrite USEPA 300.0				
GW K-31 Line drip MW-1	MW-1		3-13-03	1303	WG	B	X											
GW Remuda 2 + AL #1	MW-1		3-13-03	1040	WG	B	X											
GW Jennapah #1	MW-1		3-13-03	0917	WG	B	X											
TB 130303-1	TB		3-13-03	0700	WQ		X											
GW Horton #1E	MW-1		3-14-03	0923	WG	B	X											
TB 140303-1	TB		3-14-03	0700	WQ		X											

2234

[a] **Matrix:**
SO – Soil
WS – Surface Water
WG – Ground Water
AA – Air
WQ – Trip Blank/ Equipment Blanks
WW – Wastewater

[b] **Sampling Technique:**
Composite=C
Grab=G
Hand Auger=HA
Submersible Pump=SP
Bladder Pump=BP
Bailer=B
Wellhead Faucet=WF
Hydropunch=HP

Location IDs:
Groundwater Sites=GW
Bisti=BI
Jaquez=JA
North Flare Pit=NF
South Flare Pit=SF
San Juan River Plant=SJ

Relinquished by/Affiliation	Received by/Affiliation	Date	Time
	Paul C	3-14-03	1400
		3/17/03	1033

LABORATORY USE ONLY

SAMPLES WERE:
1 Shipped or hand delivered
Notes:
2 Ambient or Chilled
Notes:
3 Temperature _____
4 Received Broken/Leaking (Improperly Sealed)
Y N
Notes:
5 Properly Preserved
Y N
Notes:
6 Received Within Holding Times
Y N
Notes:

COC Tape Was:
1 Present on Outer Package
Y N NA
2 Unbroken on Outer Package
Y N NA
3 Present on Sample
Y N NA
4 Unbroken on Sample
Y N NA
Notes:

Discrepancies Between Sample Labels and COC Record?
Y N
Notes:

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL QA/QC Report

Submitted to:
Montgomery Watson Harza
Attention: Brian Buttars
10619 South Jordan Gateway
Salt Lake City, UT 84095
Tel: (801)617-3200 Fax: (801)617-4200

Service ID #: 801-032234
Collected by: M.J. Nee.
Collected on: 03/13-14/03
Sample description:
Water
Project: San Juan Basin /220013

Received: 03/17/03
Tested: 03/18-19/03
Reported: 04/01/03

Analysis of Water

801-032234QC

Component Name	Analysis Batch #	CCV (μg/L)	CCV %Rec	M-Blank	Conc. Unit	SP Level	LCS %Rec	MS %Rec	MSD %Rec	MS/MSD %RPD	Control Limit %Rec	Control Limit %Diff
BTXE												
Benzene	03G1758	100	94	N.D.	μg/L	18.0	96	97	92	5	71-126	28
Toluene	03G1758	100	99	N.D.	μg/L	70.0	98	96	93	4	70-117	24
Ethylbenzene	03G1758	100	102	N.D.	μg/L	18.0	104	97	94	4	65-131	33
m/p-Xylene	03G1758	200	95	N.D.	μg/L	70.0	99	90	87	3	66-122	28
o-Xylene	03G1758	100	95	N.D.	μg/L	25.0	96	88	85	3	65-130	33

Notation:
ICV – Initial Calibration Verification
CCV – Continuation Calibration Verification
LCS – Lab Control Spike
MS – Matrix Spike
MSD – Matrix Spike Duplicate
ICS – Interference Check Standard
MD – Matrix Duplicate
N.D. – Not detected or less than PQL
CCB – Continuation Calibration Blank
M-blank – Method Blank
SP Level – Spike Level
%Rec – Recovery Percent
%RPD – Relative Percent Differences
%Diff – Control Limit for %RPD
ICP-SD – ICP Serial Dilution
N.A. – Not Applicable

Respectfully submitted,

Regina Kirakozova,
Associate QA/QC Director
Applied P & Ch Laboratory

FORM-2A

Applied P & Ch Laboratory

Surrogate Recovery Summary for Method 8021B

Client Name:	Montgomery Watson Harza	Contract No:		Lab Code:	APCL
Case No:		SAS No:		SDG Number:	032234
Project ID:	San Juan Basin	Project No:	220013	Sample Matrix:	Water
		Batch No:	03G1758		

#	Client Sample No	Lab Sample ID	S1 %	#	TOT OUT
1		03G1758-LCS-01	91		0
2		03G1758-LSD-01	88		0
3		03G1758-MB-01	94		0
4	TB130303-1	03-2234-5	93		0
5	TB140303-1	03-2234-6	93		0
6	MW-1 HORTON	03-2234-1	94		0
7	MW-1 REMOTE	03-2234-3	111		0
8	MW-2 LINE DRIP	03-2234-4	94		0
9	21180-MW01-GW02	03-2197-5MS	91		0
10	21180-MW01-GW02	03-2197-5MSD	90		0
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

	QC Control Limit
S1 = 4-BROMO-FLUOROBENZENE (PID)	66-133

Column to be used to flag recovery values:

* – Values outside of contract required QC Limits D – Surrogate diluted out I – Matrix Interference

Part 2: Sample Information

Seq. #	Sample ID (on COC)	Sample Sub-ID	APCL Sample ID	Matrix	Cont-tainer	Preser-vative	Vol, ml Am. g	# of Replica	Condition G, L, B	Collected mmddyy	Hold ?	Composite Group	TAT Days	
1	MW-2 Line Drip	VOA	03-02234-4	W	V	C	40	2	G	031303	N	0	6	☐
2	MW-1 Remote	VOA	03-02234-3	W	V	C	40	2	G	031303	N	0	6	☐
3	MW-1 Jennepah	VOA	03-02234-2	W	V	C	40	2	G	031303	N	0	6	☐
4	TB130303-1	VOA	03-02234-5	W	V	C	40	1	G	031303	N	0	6	☐
5	MW-1 Horton	VOA	03-02234-1	W	V	C	40	2	G	031403	N	0	6	☐
6	TB140303-1	VOA	03-02234-6	W	V	C	40	1	G	031403	N	0	6	☐

Part 3: Analysis Information

Test Items: ☑ *8021B* BTXE

Seq. #	Client"s Sample ID (as given on COC)	Sample Sub-ID	APCL Sample ID	Matrix	BTXE	
1	MW-2 Line Drip	VOA	03-02234-4	W	X	☐
2	MW-1 Remote	VOA	03-02234-3	W	X	☐
3	MW-1 Jennepah	VOA	03-02234-2	W	.	☐
4	TB130303-1	VOA	03-02234-5	W	X	☐
5	MW-1 Horton	VOA	03-02234-1	W	X	☐
6	TB140303-1	VOA	03-02234-6	W	X	☐

Login By En-Yu Paul Kou

Check By EK

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Sample Login: Check List

03-02234 (0984_1039) (2721900_1039)

03/17/03

Part 1: General Information

☐	Company Information	Name:	*Montgomery Watson Harza*
		Address:	*10619 South Jordan Gateway ,Salt Lake City ,UT 84095*
☐	Project Information	Project Description:	*San Juan Basin*
			Hill AFB
		Project #:	*220013*
☐	Billing Information	P.O. #:	
		Bill Address:	*10619 South Jordan Gateway ,Salt Lake City ,UT 84095*
		Lab Project ID:	*1999_0746*
		Client Database #:	*04*
☐	Receiving Information	Who Received Sample?	*Paul Kou*
		Receiving Date/Time:	*03/17/03 1000*
		COC No.	
☐	Shipping Information	Shipping Company	*Express*
		Packing Information:	*Cooler/Ice Chester*
		Cooler Temperature:	*5.7 °C*
☐	Container Information	Container Provider:	*Client*
☐	Sampling Information	Sampling Person:	
		Sampling Company:	*Client*
☐	Turn-Around-Time Option:		*Rush 5 working day(s)*
☐	QC Option:		*QC and Surro. Rep.*
☐	Disposal Option:		*Not specify*

Applied P & Ch Labo
13760 Magnolia Ave., Chino CA 9171
Tel: (909) 590-1828 Fax: (909) 590-1498

Sample Receiving Checklist

APCL ServiceID: 2234 Client Name/Project: Montgomery Watson

1. Sample Arrival

Date/Time Received 3/17/03 1005 Date/Time Opened 3/17/03 1005 By (name): Paul Kar

Custody Transfer: ☐ Client ☐ Golden State ☐ UPS ☐ US Mail ☑ FedEx ☐ APCL Empl: _____

2. Chain-of-Custody (CoC)

☑ With Samples? ☐ Faxed? ☐ Client has Copy? ☐ Signed, dated? By: _____
☑ Project ID? ☑ Analyses Clear? ☐ Hold Samples? #on Hold _____ # Received _____
☑ CoC/Docs Zip-Locked under lid? ☐ Compos.#: _ ☑ #Samples OK? _____
☐ Discrepancies? ☐ Client notified? ☐ Response (attach docs): _____

3. Shipping Container/Cooler

☑ Cooler Used? # of 1 Cooled by: ☑ Ice ☐ Blue Ice ☐ Dry Ice ☐ None
Temp °C 5.7°C _____ _____ _____ _____ _____
(Cooler temperature measured from temp blank if present, otherwise measured from the cooler).
Cooler Custody Seal? ☐ Absent ☑ Intact ☐ Tampered?

4. Sample Preservation

☐ pH <2 ☐ pH >12
if Not, pH = _____ Preserved by: ☐ Client ☐ APCL ☐ Third Party _____

5. Holding-time Requirements

☐ pH 24hr ☐ BACT 6/24hr ☐ Cr^{VI} 24hr ☐ NO_3^- 48hr ☐ BOD 48hr
☐ Cl_2 ASAP ☐ Turbidity 48hr ☐ DO ASAP ☐ Fe(II) ASAP
☐ HT Expired? ☐ Client notified?

6. Sample Container Condition

☑ Intact? ☑ Broken? ☐ Documented? Number: _____
Type: ☐ plastic ☑ glass ☐ Tube: brass/SS ☐ Tedlar Bag
☑ Quantity OK? ☐ Leaking? ☐ Anomaly?
☑ Caps tight? ☐ Air Bubbles? ☐ Anomaly?
Labels: ☐ Unique ID? ☐ Date/Time ☐ Preserved?

7. Turn Around Time

☑ RUSH TAT: 5 day ☐ Std (7-10 days) ☐ Not Marked

8. Sample Matrix

☐ Drinking H_2O ☑ Other Liq ☐ Soil ☐ Wipe ☐ Polymer ☐ Air ☐ Other: _____
☐ Ground H_2O ☐ Sludge ☐ Filter ☐ Oil/Petro ☐ Paint ☐ W. Water ☐ Extract ☐ Unknown

9. Pre-Login Check List Completed & OK?

☑ ALL OK? (if not, attach docs) ☐ Client Contact? (Name:_____)Date/Time:_____
Received/Checked by: Paul C Date: 17 Mar 2003 Time: 7:37 a.m.

*HT: Samples must be analyzed for results to reflect total concentrations. Results generated outside required of holding times are considered minimal values and may be used to define waste as hazardous but not as non-hazardous.

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

LABORATORY APCL
Contract El Paso Corp., San Jaun River Basin

Chain of Custody ID MN 140303MN
Page 1 of 1
Air Bill No. 836557891528

MWH
Phone (801) 617-3200 FAX (801) 617-4200
MWH Contact Brian Buttars
Project San Juan Basin
Project Number 2700913
Date Due Standard
Sampler's Name MJ Nee
(print clearly)

Location ID	Sample ID	Depth Interval (ft)	Date Collected	Time Collected	Matrix [a]	Sampling Technique [b]	ANALYSES REQUESTED: BTEX SW-846 8021B	Alkalinity SM 2320B	TDS USEPA 160.1	NM WQCC Metals SW-846 6010B & 7470A	Cations SW-846 6010B	Anions USEPA 300.0	Nitrate USEPA 300.0	Nitrite USEPA 300.0				
GW K-31 line drip MW-1	MW-1		3-13-03	1303	WG	B	X											
GW Rements 2+AL #1	MW-1		3-13-03	1040	WG	B	X											
GW Jennopah #1	MW-1		3-13-03	0917	WG	B	X											
TB 130303-1	TB		3-13-03	0700	WQ		X											
GW Horton #1 E	MW-1		3-14-03	0923	WG	B	X											
TB 140303-1	TB		3-14-03	0700	WG		X											

Broken in shipment

2234

[a] **Matrix:**
SO – Soil
WS – Surface Water
WG – Ground Water
AA – Air
WQ – Trip Blank/ Equipment Blanks
WW – Wastewater

[b] **Sampling Technique:**
Composite=C
Grab=G
Hand Auger=HA
Submersible Pump=SP
Bladder Pump=BP
Bailer=B
Wellhead Faucet=WF
Hydropunch=HP

Location IDs:
Groundwater Sites=GW
Bisti=BI
Jaquez=JA
North Flare Pit=NF
South Flare Pit=SF
San Juan River Plant=SJ

Relinquished by/Affiliation	Received by/Affiliation	Date	Time
	Paul C	3-14-03	1400
		3/19/03	1003

LABORATORY USE ONLY

SAMPLES WERE:
1 Shipped or hand delivered
Notes:
2 Ambient or Chilled
Notes:
3 Temperature _____
4 Received Broken/Leaking (Improperly Sealed)
Y N
Notes:
5 Properly Preserved
Y N
Notes:
6 Received Within Holding Times
Y N
Notes:

COC Tape Was:
1 Present on Outer Package
Y N NA
2 Unbroken on Outer Package
Y N NA
3 Present on Sample
Y N NA
4 Unbroken on Sample
Y N NA
Notes:

Discrepancies Between Sample Labels and COC Record?
Y N
Notes:

ATTACHMENT 2

FIELD DOCUMENTATION

WELL DEVELOPMENT AND SAMPLING LOG

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

Location: K31 Well No: MW-2 Development **Sampling**

Project Manager MJN Date 9/15/03 Start Time 1112 Weather Sunny 70s

Depth to Water 17.78 Depth to Product na Product Thickness na Measuring Point TOC

Water Column Height 5.62 Well Dia. 2"

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	
5.62 x .16	0.899 x 3		2.697

Time (military)	pH (su)	SC (umhos/cm)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gallons)	Comments/ Flow rate
1116	**6.67**	**9020**	**20.2**				**0.25**	**clear**
	6.88	**8530**	**18.2**				**0.5**	**tan**
	6.85	**8460**	**17.9**				**0.75**	
	6.98	**8480**	**17.9**				**1.15**	**well is bailing down**
	7.04	**8310**	**18.1**				**1.62**	
	7.03	**7980**	**17.9**				**1.745**	
1130	**7.06**	**7800**	**17.9**		1.67		**1.87**	**well has bailed dry**

Final: Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow Rate
1130	**7.06**	**7800**	**17.9**					**1.87**	**well has bailed dry**

COMMENTS:

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

DO Monitor _____ Other _____

Conductivity Meter **X** _____

Water Disposal Kutz Sample ID K31 MW-2 Sample Time 1133

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

MS/MSD _____ BD _____ BD Name/Time _____ TB 150903tb01

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**	**9-15-03**
Site Name	**K31**		

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed
MW-1	**1059**	-	**19.03**	-	-
MW-2		-	**17.78**	-	-
MW-3		-	**18.08**	-	-

Comments

Signature: Martin J. Nee Date: June 19, 2003

WELL DEVELOPMENT AND SAMPLING LOG

Project No: 226013 Project Name: San Juan Basin Client: MWH

Location: K-31 Line Drip Well No: MW-2 Development ☐ Sampling ☒

Project Manager MJN Date 3-13-03 Start Time 1217 Weather 60s Clear

Depth to Water 116.64 Depth to Product — Product Thickness — Measuring Point TOC

Water Column Height 6.76 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 on building

Gal/ft x ft of water	Water Volume In Well		Gal/oz to be removed
	Gallons	Ounces	
6.67x.16	1.08x3		3.24

Time (military)	pH	SC (umhos/cm)	Temp (°C)	Eh-ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. (gal.)	Comments/ Flow rate
1229	6.42	1352	19.3				.25	Brown
	6.75	990	17.9				.5	
	6.88	968	17.0				.75	
	6.81	952	16.2				1	
	6.84	950	16.4				1.25	
	6.84	978	16.1				1.5	Silty
	6.83	940	17.0				1.75	
	6.85	910	16.7				2	
	6.93	927	17.2				2.25	
	6.88	985	16.7				2.5	
	6.91	908	16.9				2.75	
	6.84	886	16.7				3	
1301	6.92	898	16.6				3.25	Very Silty

Final:

Time	pH	SC	Temp	Eh-ORP	D.O.	Turbidity	Ferrous Iron	Vol Evac.	Comments/Flow rate
1301	6.92	898	16.6					325	

COMMENTS: _____

INSTRUMENTATION: pH Meter ☑ _____ Temperature Meter ☒ _____

DO Monitor ☐ _____ Other ☐ _____

Conductivity Meter ☑ _____

Water Disposal Kutz

Sample ID K-31 Line Drip MW-X2 (DUP) Sample Time 1303 BTEX ☒ VOCs ☐ Alkilinity ☐

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

Total Phosphorus ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐

MS/MSD _____ BD _____ BD Name/Time _____ TB030363-1

AESE
906 San Juan Blvd.Ste.D
Farmington, NM 87401
505.566.9116(9120fax)

WELL OBSERVATION DATA

Project Name San Juan Basin Project No. 220013

Project Manager MJN Date 3-25-03

Client Company MWH

Site Name K-31 LD

Well	Time	Depth to Water (ft)	Depth to Product (ft)	Total Well Depth (ft)	Product Thickness (ft)	Comments
MW2	0920	16.65	No	No	No	DO = 1.05 mg/L

Comments

Signature Date 3-25-03

Product Recovery and Well Observation Data

Project Name: San Juan Basin
Project Manager: MJN
Client Company: MWH
Site Name: K-31 Line Drip

Project No: 220013
Date: 3-13-03

Well	Time	Depth to Water (ft)	Depth to Product (ft)	Total Well Depth (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	1217	17.91	—	—	—	—	—
MW-2	1222	16.67	—	—	—	—	—
MW-3	1227	16.98	—	—	—	—	—

COMMENTS:

Signature: _____ Date: 3-13-03