

**3R - 155**

**AGWMR**

**2009**



El Paso Tennessee  
Pipeline Company

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San Juan Basin Pit Program  
Groundwater Sites Project

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Final 2009 Annual Report  
Federal Sites (Volume 1)

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April 2010



**MWH**

*1801 California Street, Suite 2900  
Denver, Colorado 80202*

**2009 ANNUAL GROUNDWATER REPORT  
FEDERAL SITES VOLUME I  
EL PASO TENNESSEE PIPELINE COMPANY**

**TABLE OF CONTENTS**

METER or LINE ID	NMOCD CASE NO.	SITE NAME	TOWNSHIP	RANGE	SECTION	UNIT
87640	3RP-155-0	Canada Mesa #2	24N	06W	24	I
89961	3RP-170-0	Fields A#7A	32N	11W	34	E
73220	3RP-068-0	Fogelson 4-1 Com. #14	29N	11W	4	P
89894	3RP-186-0	Hammond #41A	27N	08W	25	O
97213	3RP-190-0	Hamner #9	29N	09W	20	A
94715	3RP-196-0	James F. Bell #1E	30N	13W	10	P
89232	3RP-202-0	Johnston Fed #6A	31N	09W	35	F
LD072	3RP-204-0	K27 LD072	25N	06W	4	E
LD174	3RP-212-0	LAT L 40	28N	04W	13	H
LD151	3RP-213-0	Lat 0-21 Line Drip	30N	09W	12	O
94810	3RP-223-0	Miles Fed 1A	26N	07W	5	F
89620	3RP-235-0	Sandoval GC A #1A	30N	09W	35	C

\* The Hamner #9 site was submitted for closure in January 2009 and is pending approval from NMOCD. There were no monitoring activities for this site in 2009.





**MWH**

**BUILDING A BETTER WORLD**

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April 16, 2010

Mr. Glenn von Gonten  
New Mexico Oil Conservation Division (NMOCD)  
1220 South St., Francis Drive  
Santa Fe, New Mexico 87505

**RE: El Paso Tennessee Pipeline Company Pit Groundwater Remediation Sites  
2009 Annual Reports**

Dear Mr. Von Gonten:

MWH Americas, Inc., on behalf of El Paso Tennessee Pipeline Company (EPTPC), is submitting the enclosed 2009 Annual Reports for each of EPTPC's 21 remaining San Juan River Basin pit groundwater remediation sites. The reports present the 2009 sampling and product recovery data and include recommendations for 2010 activities at these sites.

The 2009 Annual Reports are divided into three volumes based on location type. The volumes are as follows:

<u>Volume</u>	<u>Location Type</u>
1	Federal Land
2	Non-Federal Land (Excl. Navajo Nation)
3	Navajo Nation

If you have any questions concerning the enclosed reports, please call either Doug Stavinoha of EPTPC (713-420-5150), Ian Yanagisawa of EPTPC (713-420-7361), or me (303-291-2276).

Sincerely,

Jed Smith  
Project Manager

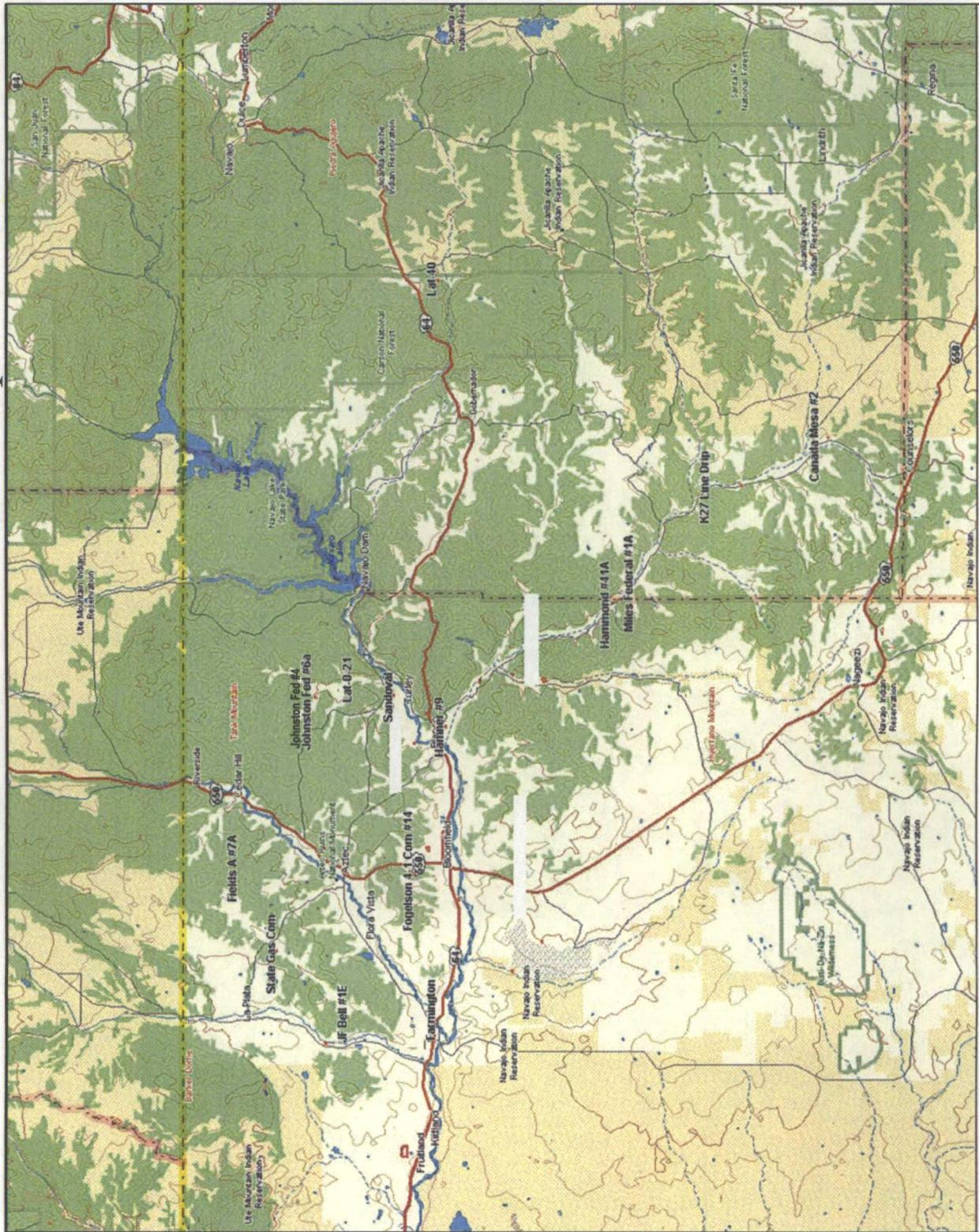
encl.

cc: Bill Freeman – NNEPA, Shiprock, NM (Volume 3 Only)  
Bill Liese – BLM, Farmington, NM (Volume 1 Only)  
Brandon Powell – NMOCD, Aztec, NM (Volumes 1, 2, and 3)  
Doug Stavinoha – EPTPC (Volumes 1, 2, and 3)

## LIST OF ACRONYMS

AMSL	above mean sea level
B	benzene
btoc	below top of casing
E	ethylbenzene
EPTPC	El Paso Tennessee Pipeline Company
ft	foot/feet
GWEL	groundwater elevation
ID	identification
MW	monitor well
NMWQCC	New Mexico Water Quality Control Commission
T	toluene
TOC	top of casing
NA	not applicable
NMOCD	New Mexico Oil Conservation Division
NS	not sampled
ORC	oxygen-releasing compound
µg/L	micrograms per liter
X	total xylenes

# Federal Groundwater Site Map



3-D TopoQuad Copyright © 1999 DeLorme Vermont, ME 04096 1" = 3 mi Scale: 1:600,000 Detail: 8:4 Datum: WGS84

**EPTPC GROUNDWATER SITES  
2009 ANNUAL GROUNDWATER REPORT**

**Canada Mesa #2  
Meter Code: 87640**

**SITE DETAILS**

<b>Legal Description:</b>	<b>Town:</b> 24N	<b>Range:</b> 6W	<b>Sec:</b> 24	<b>Unit:</b> I
<b>NMOCD Haz Ranking:</b>	40	<b>Land Type:</b>	Federal	<b>Operator:</b> Merrion Oil & Gas Company

**PREVIOUS ACTIVITIES**

<b>Site Assessment:</b>	7/94	<b>Excavation:</b>	8/94	<b>Soil Boring:</b>	8/95
<b>Monitor Well:</b>	8/95	<b>Geoprobe:</b>	NA	<b>Additional MWs:</b>	10/00
<b>Downgradient MWs:</b>	10/00	<b>Replace MW:</b>	NA	<b>Quarterly Initiated:</b>	8/95
<b>ORC Nutrient Injection:</b>	NA	<b>Re-Excavation:</b>	NA	<b>PSH Removal Initiated:</b>	8/97
<b>Annual Initiated:</b>	11/00	<b>Quarterly Resumed:</b>	NA	<b>PSH Removal in 2009?</b>	Yes

**SUMMARY OF 2009 ACTIVITIES**

**MW-1:** Annual groundwater sampling (November) and quarterly free-product recovery were performed during 2009.

**MW-2:** Annual groundwater sampling (November) and quarterly water level monitoring were performed during 2009.

**MW-3:** Annual groundwater sampling (November) and quarterly water level monitoring were performed during 2009.

**Site-Wide Activities:** No other activities were performed at this Site during 2009.

**SITE MAP**

A Site map (November) is attached as Figure 1.

**SUMMARY TABLES AND GRAPHS**

- Historic analytical and water level data are summarized in Table 1 and presented graphically in Figures 2 through 4. Where applicable, static water level elevations were corrected for measurable thicknesses of free-product (specific gravity of 0.8).
- Historic free-product recovery data are summarized in Table 2 and presented graphically in Figure 2.

**EPTPC GROUNDWATER SITES  
2009 ANNUAL GROUNDWATER REPORT**

**Canada Mesa #2  
Meter Code: 87640**

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- The 2009 laboratory report is presented in Attachment 1 (included on CD).
- The 2009 field documentation is presented in Attachment 2 (included on CD).

**GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS**

No subsurface activities were performed at this Site during 2009.

**DISPOSITION OF GENERATED WASTES**

All purge water was taken to the El Paso Natural Gas Rio Vista Compressor Station. Spent absorbent socks were managed as non-hazardous solid waste.

**ISOCONCENTRATION MAPS**

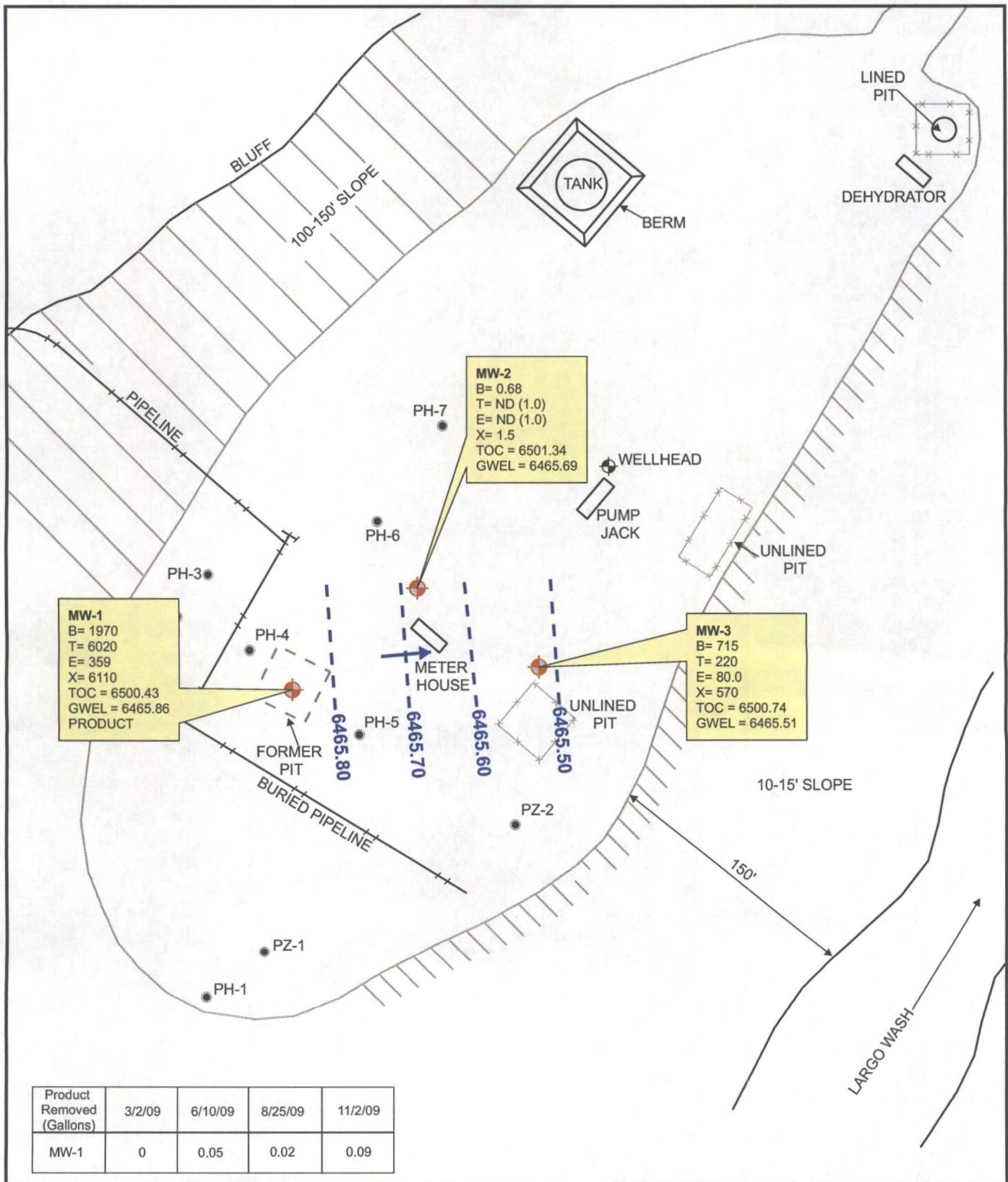
The attached Site map presents both water level and analytical data collected during the December 2009 annual sampling event.

**RESULTS**

- The groundwater flow direction is generally to the east-northeast at this Site.
- Approximately 0.16 gallons of free-product was recovered from MW-1 in 2009, bringing the cumulative total recovered to approximately 47.10 gallons. Concentrations of benzene, toluene and total xylenes remain elevated in the groundwater. Benzene appears to have attenuated significantly since the last sampling event (May 1997), dropping from 4,650 µg/L to 1,970 µg/L.
- Benzene and total xylenes were detected around their reporting limits in MW-2; however, these parameters did not exceed the NMWQCC standards. The benzene concentration in MW-2 first dropped below the NMWQCC standard in 2006 and has remained in compliance since that time.
- The benzene concentration in MW-3 was 715 µg/L in November 2009, similar to previous years. Overall, the benzene concentrations have decreased significantly from a high of 1,430 µg/L in 2002. Toluene, ethylbenzene and total xylenes concentrations remain below their respective NMWQCC standards.

**RECOMMENDATIONS**

- EPTPC will continue quarterly free-product recovery efforts at MW-1; however, the frequency of monitoring may be adjusted based on the amount of product recovered during the monitoring visits.
- EPTPC will continue sampling MW-1, MW-2, and MW-3 on an annual basis. Once the results approach closure criteria, sampling will be conducted on a quarterly basis until the closure criteria are met.



**LEGEND**

- MW-4 Existing Monitoring / Observation Well
- PZ-01 Abandoned Monitoring Well
- Groundwater Flow Direction
- Potentiometric Surface Contour (Inferred Where Dashed)

- B** Benzene (ug/L)
- T** Toluene (ug/L)
- E** Ethylbenzene (ug/L)
- X** Total Xylenes (ug/L)
- TOC** Top of Casing (ft. AMSL)
- GWEL** Groundwater Elevation (ft. AMSL)



Not To Scale

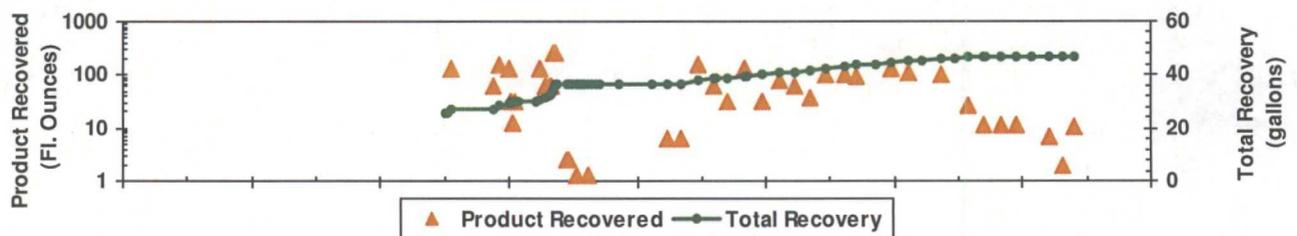
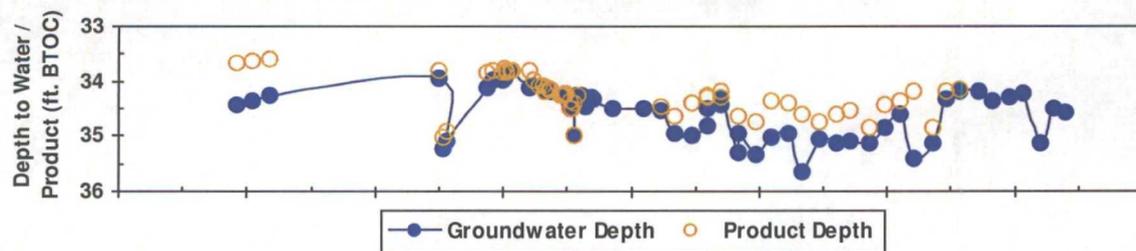
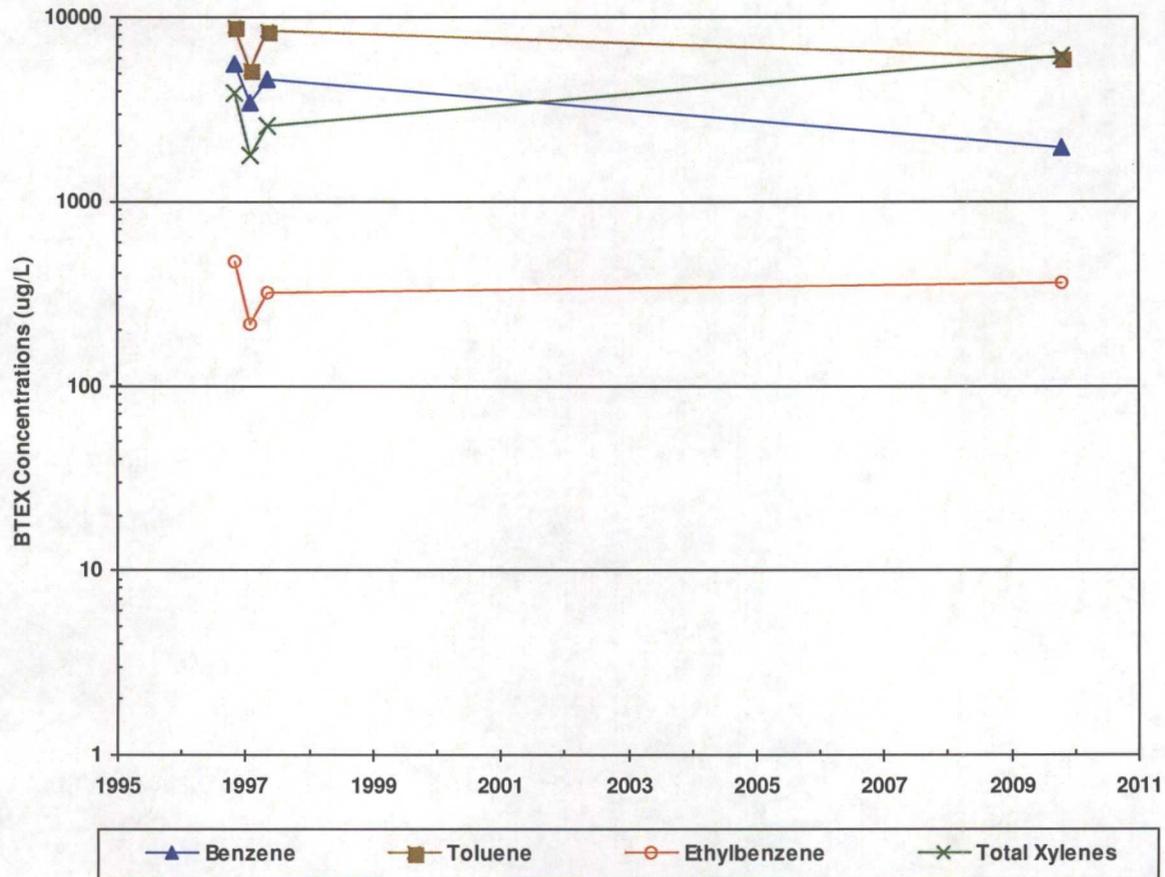


PROJECT: CANADA MESA #2

TITLE: Groundwater Potentiometric Surface Map, and BTEX Concentrations - November 3, 2009

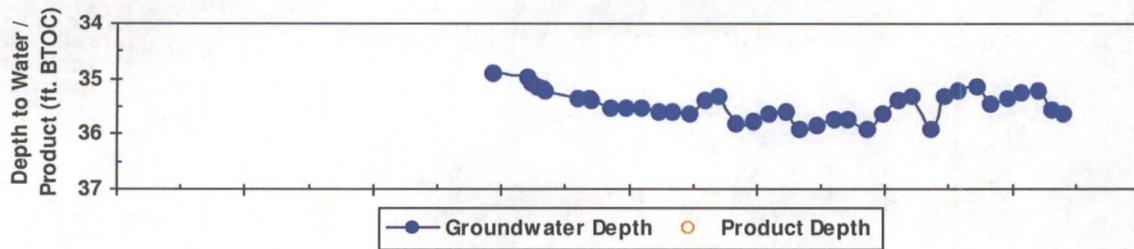
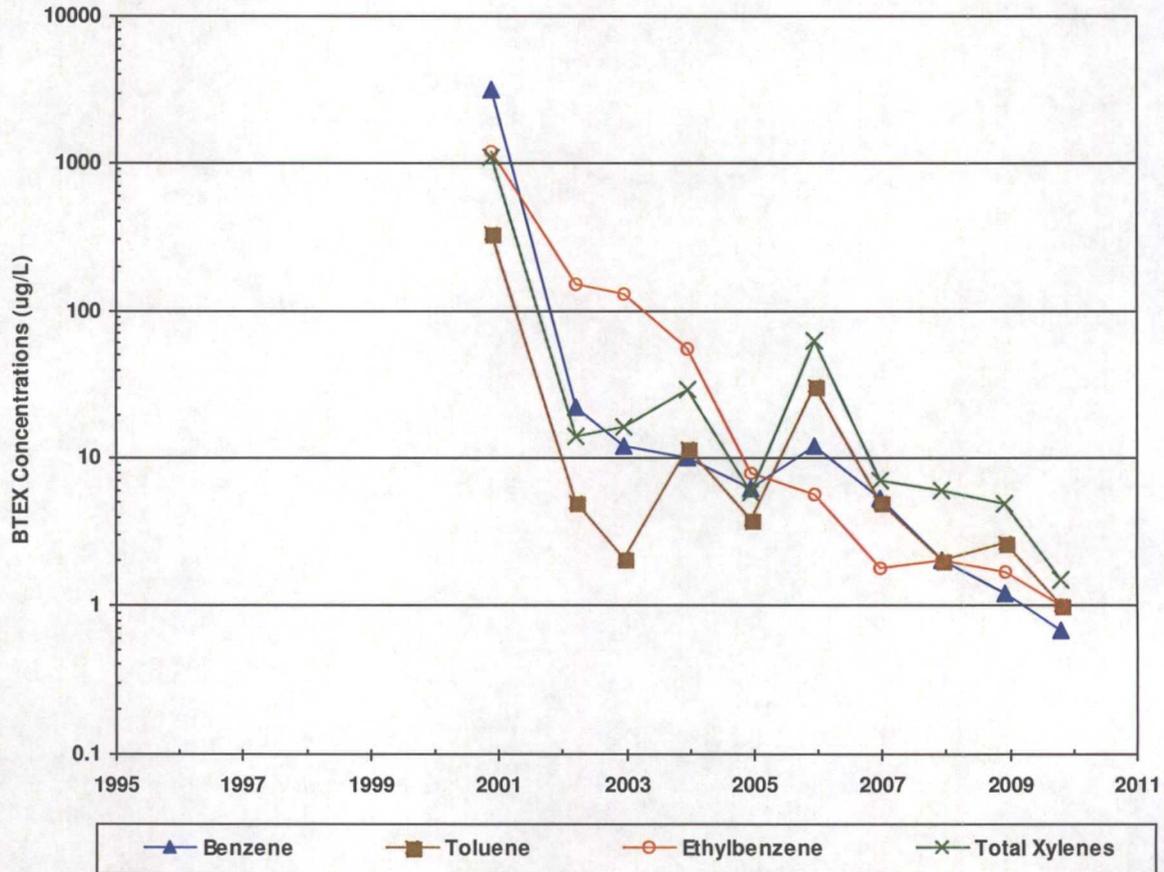
FIGURE: 1

**FIGURE 2**  
**SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY**  
**CANADA MESA #2 (METER #87640)**  
**MW01**



*\*In some cases, older recovery event data are not available. However, the cumulative totals still include all historic recovery.*

**FIGURE 3**  
**SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS**  
**CANADA MESA #2 (METER #87640)**  
**MW02**



**FIGURE 4**  
**SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS**  
**CANADA MESA #2 (METER #87640)**  
**MW03**

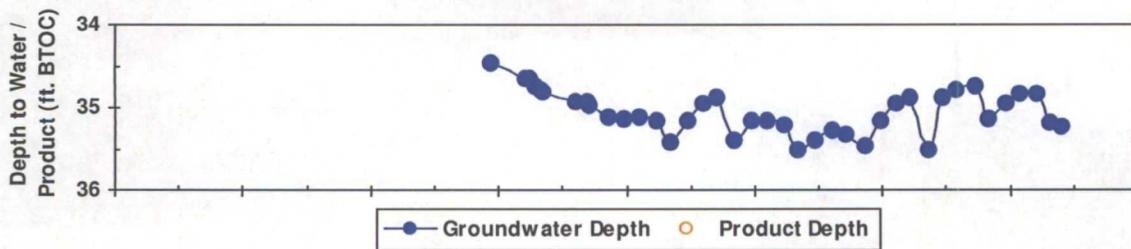
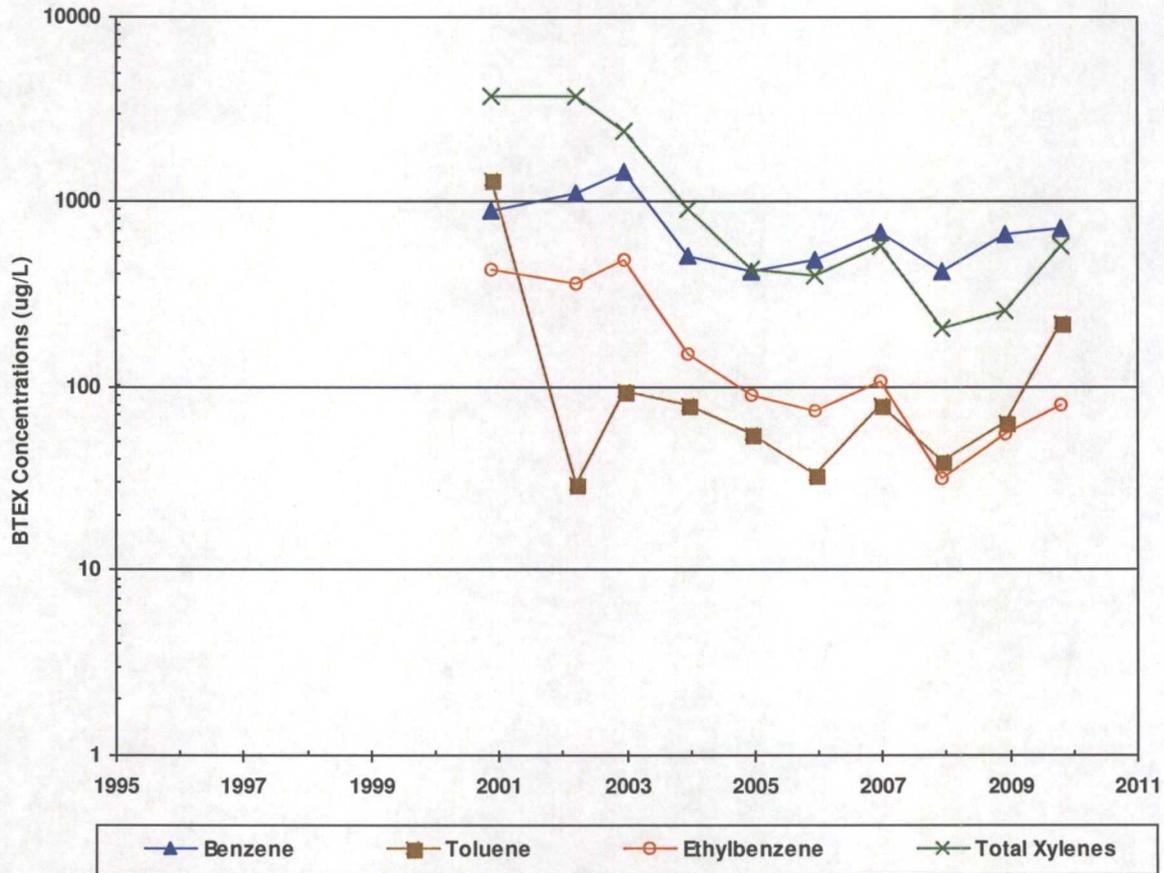


TABLE 1

**SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES  
CANADA MESA #2 (METER #87640)**

Monitor Well	Sample Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (ft BTOC)	Corrected GW Elevation (ft AMSL)
NMWQCC GW Std.:		<b>10</b>	<b>750</b>	<b>750</b>	<b>620</b>		
MW01	11/4/1996	<b>5520</b>	<b>8880</b>	469	<b>3920</b>	34.42	6466.61
MW01	2/5/1997	<b>3450</b>	<b>5200</b>	214	<b>1770</b>	34.35	6466.65
MW01	5/7/1997	<b>4650</b>	<b>8440</b>	317	<b>2580</b>	34.24	6466.69
MW01	11/3/2009	<b>1970</b>	<b>6020</b>	359	<b>6110</b>	34.57	6465.86
MW02	11/16/2000	<b>3200</b>	330	<b>1200</b>	<b>1100</b>	34.90	6466.44
MW02	3/19/2002	<b>22</b>	<5.0	150	14	35.36	6465.98
MW02	12/24/2002	<b>12.1</b>	2.1	129	16.4	35.52	6465.82
MW02	12/15/2003	10	11.7	55.3	29.7	35.63	6465.71
MW02	12/15/2004	6.3	3.8	8.0	5.9	35.79	6465.55
MW02	12/15/2005	<b>12.1</b>	30.9	5.6	61.9	35.85	6465.49
MW02	12/26/2006	5.3	5.0	1.8	7.1	35.63	6465.71
MW02	12/18/2007	<2.0	<2.0	<2.0	<6.0	35.32	6466.02
MW02	12/10/2008	1.2	2.7	1.7	4.9	35.37	6465.97
MW02	11/3/2009	0.68J	<1.0	<1.0	1.5J	35.65	6465.69
MW03	11/16/2000	<b>880</b>	<b>1300</b>	420	<b>3700</b>	34.46	6466.28
MW03	3/19/2002	<b>1100</b>	29	360	<b>3700</b>	34.92	6465.82
MW03	12/24/2002	<b>1430</b>	95	483	<b>2359</b>	35.15	6465.59
MW03	12/15/2003	<b>503J</b>	79.7J	148J	<b>891J</b>	35.17	6465.57
MW03	12/15/2004	<b>410</b>	54.9	88.7	420	35.17	6465.57
MW03	12/15/2005	<b>482</b>	32.7	74.1	399	35.40	6465.34
MW03	12/26/2006	<b>679</b>	78.9	106	565	35.16	6465.58
MW03	12/18/2007	<b>412</b>	39.4	31.5	207	34.88	6465.86
MW03	12/10/2008	<b>653</b>	63.2	55.5	253	34.95	6465.79
MW03	11/3/2009	<b>715</b>	220	80.0	570	35.23	6465.51

**Notes:**

Results shown in bold typeface exceed their respective New Mexico Water Quality Control Commission standards.

"J" = result is qualified as estimated. See laboratory report and/or supplemental data validation report for further detail.

"<" = analyte was not detected at the indicated reporting limit.

Static groundwater elevations have been corrected for product thickness where applicable. Specific gravity of 0.8 used.

**TABLE 2**  
**SUMMARY OF FREE-PRODUCT REMOVAL**  
**CANADA MESA #2 (METER #87640)**

Monitor Well	Removal Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (feet)	Volume Removed (gallons)	Cumulative Removal (gallons)	Corrected GW Elevation (ft AMSL)
MW01	11/4/1996	33.67	34.42	0.75	NA	NA	6466.61
MW01	2/5/1997	33.64	34.35	0.71	NA	NA	6466.65
MW01	5/7/1997	33.61	34.24	0.63	NA	NA	6466.69
MW01	1/9/2000	33.79	33.93	0.14	--	25.73	6466.61
MW01	1/26/2000	35.03	35.22	0.19	--	25.73	6465.36
MW01	2/15/2000	34.93	35.11	0.18	1.00	26.73	6465.46
MW01	10/6/2000	33.82	34.11	0.29	0.50	27.23	6466.55
MW01	11/14/2000	33.81	33.98	0.17	1.25	28.48	6466.59
MW01	1/3/2001	33.83	33.96	0.13	1.00	29.48	6466.57
MW01	1/15/2001	33.78	33.93	0.15	--	29.48	6466.62
MW01	1/22/2001	33.81	33.81	0.00	0.25	29.73	6466.62
MW01	1/30/2001	33.82	33.83	0.01	0.10	29.83	6466.61
MW01	2/13/2001	33.80	33.80	0.00	0.25	30.08	6466.63
MW01	2/20/2001	33.81	33.81	0.00	--	30.08	6466.62
MW01	2/28/2001	33.81	33.81	0.00	--	30.08	6466.62
MW01	6/4/2001	33.81	34.13	0.32	--	30.08	6466.56
MW01	7/3/2001	33.96	34.09	0.13	1.00	31.08	6466.44
MW01	8/6/2001	34.07	34.08	0.01	0.50	31.58	6466.36
MW01	8/20/2001	34.09	34.10	0.01	0.50	32.08	6466.34
MW01	8/31/2001	34.17	34.17	0.00	0.50	32.58	6466.26
MW01	9/14/2001	34.13	34.14	0.01	2.02	34.60	6466.30
MW01	9/26/2001	34.14	34.15	0.01	2.02	36.62	6466.29
MW01	10/2/2001	34.15	34.17	0.02	--	36.62	6466.28
MW01	10/10/2001	34.16	34.18	0.02	--	36.62	6466.27
MW01	12/5/2001	34.25	34.26	0.01	0.02	36.64	6466.18
MW01	12/14/2001	34.27	34.27	0.00	0.02	36.66	6466.16
MW01	12/21/2001	34.24	34.24	0.00	--	36.66	6466.19
MW01	12/28/2001	34.22	34.22	0.00	--	36.66	6466.21
MW01	1/2/2002	34.23	34.23	0.00	--	36.66	6466.20
MW01	1/7/2002	34.23	34.25	0.02	--	36.66	6466.20
MW01	1/23/2002	34.37	34.42	0.05	0.01	36.67	6466.05
MW01	1/30/2002	34.50	34.51	0.01	0.01	36.68	6465.93
MW01	2/7/2002	34.49	34.50	0.01	--	36.68	6465.94
MW01	2/14/2002	34.41	34.42	0.01	--	36.68	6466.02

**TABLE 2**  
**SUMMARY OF FREE-PRODUCT REMOVAL**  
**CANADA MESA #2 (METER #87640)**

Monitor Well	Removal Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (feet)	Volume Removed (gallons)	Cumulative Removal (gallons)	Corrected GW Elevation (ft AMSL)
MW01	2/20/2002	34.99	35.00	0.01	--	36.68	6465.44
MW01	3/7/2002	34.24	34.25	0.01	--	36.68	6466.19
MW01	3/12/2002	34.24	34.25	0.01	--	36.68	6466.19
MW01	3/28/2002	--	34.27	0.00	0.01	36.69	6466.16
MW01	6/22/2003	34.48	34.55	0.07	0.05	36.74	6465.94
MW01	9/15/2003	34.65	34.97	0.32	0.05	36.79	6465.72
MW01	12/15/2003	34.41	34.98	0.57	1.25	38.04	6465.91
MW01	3/17/2004	34.24	34.80	0.56	0.50	38.54	6466.08
MW01	3/22/2004	34.29	34.49	0.20	--	38.54	6466.10
MW01	6/3/2004	34.30	34.44	0.14	0.25	38.79	6466.10
MW01	6/4/2004	34.20	34.30	0.10	--	38.79	6466.21
MW01	9/13/2004	34.64	35.30	0.66	1.00	39.79	6465.66
MW01	9/14/2004	34.65	34.95	0.30	--	39.79	6465.72
MW01	12/15/2004	34.74	35.32	0.58	0.25	40.04	6465.57
MW01	3/22/2005	34.36	35.01	0.65	0.64	40.68	6465.94
MW01	6/24/2005	34.39	34.97	0.58	0.50	41.18	6465.92
MW01	9/14/2005	34.60	35.65	1.05	0.30	41.48	6465.62
MW01	12/14/2005	34.74	35.05	0.31	0.80	42.28	6465.63
MW01	3/28/2006	34.59	35.14	0.55	0.80	43.08	6465.73
MW01	6/7/2006	34.52	35.11	0.59	0.75	43.83	6465.79
MW01	9/29/2006	34.85	35.14	0.29	--	43.83	6465.52
MW01	12/26/2006	34.44	34.85	0.41	1.00	44.83	6465.91
MW01	3/26/2007	34.35	34.60	0.25	0.84	45.67	6466.03
MW01	6/13/2007	34.20	35.39	1.19	--	45.67	6465.99
MW01	9/28/2007	34.86	35.12	0.26	0.79	46.46	6465.52
MW01	12/18/2007	34.18	34.34	0.16	--	46.46	6466.22
MW01	3/5/2008	34.15	34.17	0.02	0.21	46.67	6466.28
MW01	6/4/2008	NA	NA	NA	0.09	46.76	NA
MW01	9/10/2008	--	34.35	0.00	0.09	46.85	6466.08
MW01	12/10/2008	--	34.30	0.00	0.09	46.94	6466.13
MW01	6/9/2009	NA	NA	NA	0.05	47.00	NA
MW01	8/25/2009	--	34.50	0.00	0.02	47.01	6465.93
MW01	11/2/2009	NA	NA	NA	0.09	47.10	NA

**TABLE 2**  
**SUMMARY OF FREE-PRODUCT REMOVAL**  
**CANADA MESA #2 (METER #87640)**

Monitor Well	Removal Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (feet)	Volume Removed (gallons)	Cumulative Removal (gallons)	Corrected GW Elevation (ft AMSL)
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**Notes:**

"--" indicates either that product was not measurably detected or that product was not recovered.

"NA" indicates that the respective data point is not available.

Groundwater elevations may not be static due to removal of equipment. Corrections for product thickness utilize SG of 0.8.



Lodestar Services, Incorporated  
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

## WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Canada Mesa

**Date:** 03/02/2009

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	8:33 AM	-	34.22	-	8 oz	set new sock
MW-2		-	35.27	-	-	
MW-3		-	34.83	-	-	

### Comments

Operator: Merrion - Bayless (old sign, may not be current).

Reviewed site map, made site photos

Signature: Ashley L. Ager

Date: 03/02/2009



Lodestar Services, Incorporated  
 PO Box 4465, Durango, CO 81302 Office (970) 946-1093

### WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Canada Mesa

**Date:** 06/10/2009

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	1:46 PM	-	35.14	-	7 oz	static, set new sock
MW-2		-	35.23	-	-	
MW-3		-	34.83	-	-	

Comments

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Signature: Ashley L. Ager

Date: 06/11/2009



Lodestar Services, Incorporated  
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

## WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Canada Mesa

**Date:** 08/25/2009

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	2:35 PM	-	34.5	-	1.7 oz	re-installed sock
MW-2		-	35.58	-	-	
MW-3		-	35.18	-	-	

Comments

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Signature: Ashley L. Ager

Date: 08/25/2009



Lodestar Services, Incorporated  
 PO Box 4465, Durango, CO 81302 Office (970) 946-1093

### WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Canada Mesa

**Date:** 11/03/2009

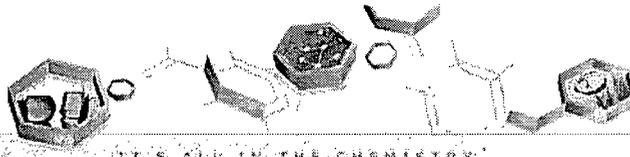
Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	8:33 AM	34.54	34.57	0.03	11 oz	sample BTEX; set new sock - no parameters collected due to product
MW-2		-	35.65	-	-	sample BTEX
MW-3		-	35.23	-	-	sample BTEX

**Comments**

purged 4 gallons from MW-1 before sampling. Included product and water. Sampled at 10:57, dark gray, HC odor, sheen. Product bailed down.

Signature: Ashley L. Ager

Date: 11/06/2009



IT'S ALL IN THE CHEMISTRY

11/13/09

## Technical Report for

Montgomery Watson

San Juan Basin Pit Groundwater Remediation

Canada Mesa/ WO94293

Accutest Job Number: T41527

Sampling Date: 11/03/09



Report to:

MWH Americas  
1801 California St. Suite 2900  
Denver, CO 80202  
jed.smith@mwhglobal.com

ATTN: Jed Smith

Total number of pages in report: 19



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.

Paul Canevaro  
Laboratory Director

Client Service contact: Georgia Jones 713-271-4700

Certifications: TX (T104704220-06-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)  
OK (9103) UT(7132714700)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.

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### Sample Summary

Montgomery Watson

Job No: T41527

San Juan Basin Pit Groundwater Remediation  
Project No: Canada Mesa/ WO94293

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
T41527-1	11/03/09	09:57 TU	11/05/09	AQ	Ground Water	CANADA MESA MW-3
T41527-2	11/03/09	10:25 TU	11/05/09	AQ	Ground Water	CANADA MESA MW-2
T41527-3	11/03/09	10:57 TU	11/05/09	AQ	Ground Water	CANADA MESA MW-1

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Montgomery Watson

**Job No** T41527

**Site:** San Juan Basin Pit Groundwater Remediation

**Report Date** 11/12/2009 4:36:26 PM

3 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 11/03/2009 and were received at Accutest on 11/05/2009 properly preserved, at 2.4 Deg. C and intact. These Samples received an Accutest job number of T41527. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GC By Method SW846 8021B

**Matrix** AQ

**Batch ID:** GKK1582

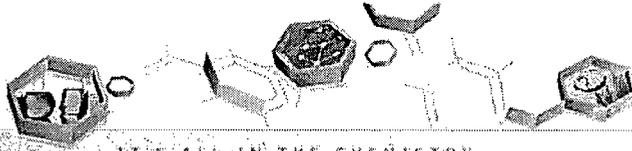
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T41575-2MS, T41575-2MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Benzene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Benzene are outside control limits. Probable cause due to matrix interference.

**Matrix** AQ

**Batch ID:** GKK1583

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T41699-9MS, T41699-9MSD were used as the QC samples indicated.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



## Sample Results

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## Report of Analysis

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## Report of Analysis



Client Sample ID:	CANADA MESA MW-3	Date Sampled:	11/03/09
Lab Sample ID:	T41527-1	Date Received:	11/05/09
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8021B		
Project:	San Juan Basin Pit Groundwater Remediation		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK033105.D	25	11/11/09	FI	n/a	n/a	GKK1582
Run #2							

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

**Purgeable Aromatics**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	715	25	9.0	ug/l	
108-88-3	Toluene	220	25	7.1	ug/l	
100-41-4	Ethylbenzene	80.0	25	6.3	ug/l	
1330-20-7	Xylenes (total)	570	50	23	ug/l	
95-47-6	o-Xylene	92.1	25	8.9	ug/l	
	m,p-Xylene	478	25	14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	94%		58-125%
98-08-8	aaa-Trifluorotoluene	120%		73-139%

ND = Not detected      MDL - Method Detection Limit  
 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

### Report of Analysis

3.2  
3

Client Sample ID:	CANADA MESA MW-2	
Lab Sample ID:	T41527-2	Date Sampled: 11/03/09
Matrix:	AQ - Ground Water	Date Received: 11/05/09
Method:	SW846 8021B	Percent Solids: n/a
Project:	San Juan Basin Pit Groundwater Remediation	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK033095.D	1	11/11/09	FI	n/a	n/a	GKK1582
Run #2							

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

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.68	1.0	0.36	ug/l	J
108-88-3	Toluene	ND	1.0	0.28	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
1330-20-7	Xylenes (total)	1.5	2.0	0.93	ug/l	J
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	1.2	1.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	92%		58-125%
98-08-8	aaa-Trifluorotoluene	110%		73-139%

ND = Not detected      MDL - Method Detection Limit  
 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

## Report of Analysis



Client Sample ID: CANADA MESA MW-1 Lab Sample ID: T41527-3 Matrix: AQ - Ground Water Method: SW846 8021B Project: San Juan Basin Pit Groundwater Remediation	Date Sampled: 11/03/09 Date Received: 11/05/09 Percent Solids: n/a
--	--

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK033117.D	100	11/11/09	FI	n/a	n/a	GKK1583
Run #2							

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

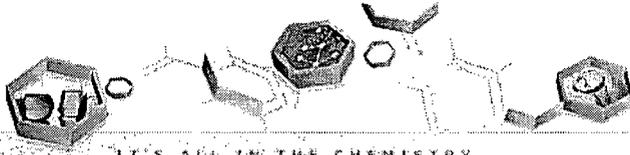
### Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	1970	100	36	ug/l	
108-88-3	Toluene	6020	100	28	ug/l	
100-41-4	Ethylbenzene	359	100	25	ug/l	
1330-20-7	Xylenes (total)	6110	200	93	ug/l	
95-47-6	o-Xylene	1020	100	36	ug/l	
	m,p-Xylene	5080	100	57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	91%		58-125%
98-08-8	aaa-Trifluorotoluene	119%		73-139%

ND = Not detected      MDL - Method Detection Limit  
 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

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody



**SAMPLE INSPECTION FORM**

Accutest Job Number: T41527 Client: MWH Date/Time Received: 11/5/09

# of Coolers Received: 1 Thermometer #: 121 Temperature Adjustment Factor: +0.4

Cooler Temps: #1: 2.4 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_ #5: \_\_\_\_\_ #6: \_\_\_\_\_ #7: \_\_\_\_\_ #8: \_\_\_\_\_

Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other

Airbill Numbers: 8706-6705-1164

- COOLER INFORMATION**
- Custody seal missing or not intact
  - Temperature criteria not met
  - Wet ice received in cooler

- CHAIN OF CUSTODY**
- Chain of Custody not received
  - Sample D/T unclear or missing
  - Analyses unclear or missing
  - COC not properly executed

- SAMPLE INFORMATION**
- Sample containers received broken
  - VOC vials have headspace
  - Sample labels missing or illegible
  - ID on COC does not match label(s)
  - D/T on COC does not match label(s)
  - Sample/Bottles recvd but no analysis on COC
  - Sample listed on COC, but not received
  - Bottles missing for requested analysis
  - Insufficient volume for analysis
  - Sample received improperly preserved

- TRIP BLANK INFORMATION**
- Trip Blank on COC but not received
  - Trip Blank received but not on COC
  - Trip Blank not intact
  - Received Water Trip Blank
  - Received Soil TB

Number of Encores? \_\_\_\_\_  
Number of 5035 kits? \_\_\_\_\_  
Number of lab-filtered metals? \_\_\_\_\_

Summary of Discrepancies: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

TECHNICIAN SIGNATURE/DATE: T. Clanch 11/05/09

INFORMATION AND SAMPLE LABELING VERIFIED BY: EC 11-5-9

**CORRECTIVE ACTIONS**

Client Representative Notified: \_\_\_\_\_ Date: \_\_\_\_\_

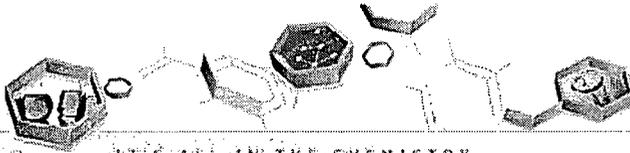
By Accutest Representative: \_\_\_\_\_ Via: Phone Email

Client Instructions: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4.1  
4





IT'S ALL IN THE CHEMISTRY

## GC Volatiles



### QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

Job Number: T41527  
 Account: MWHCODE Montgomery Watson  
 Project: San Juan Basin Pit Groundwater Remediation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1582-MB	KK033089.D1		11/10/09	FI	n/a	n/a	GKK1582

5.1.1  
5

The QC reported here applies to the following samples:

Method: SW846 8021B

T41527-1, T41527-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.36	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
1330-20-7	Xylenes (total)	ND	2.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	ND	1.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Limits	
460-00-4	4-Bromofluorobenzene	84%	58-125%
98-08-8	aaa-Trifluorotoluene	112%	73-139%

# Method Blank Summary

Job Number: T41527  
 Account: MWHCODE Montgomery Watson  
 Project: San Juan Basin Pit Groundwater Remediation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1583-MB	KK033111.D	1	11/11/09	FI	n/a	n/a	GKK1583

The QC reported here applies to the following samples:

Method: SW846 8021B

T41527-3

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.36	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
1330-20-7	Xylenes (total)	ND	2.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	ND	1.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Results	Limits
460-00-4	4-Bromofluorobenzene	92%	58-125%
98-08-8	aaa-Trifluorotoluene	114%	73-139%

5.1.2

5

# Blank Spike Summary

Job Number: T41527  
 Account: MWHCODE Montgomery Watson  
 Project: San Juan Basin Pit Groundwater Remediation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1582-BS	KK033085.D1		11/10/09	FI	n/a	n/a	GKK1582

5.2.1  
5

The QC reported here applies to the following samples:

Method: SW846 8021B

T41527-1, T41527-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	21.5	108	86-121
100-41-4	Ethylbenzene	20	20.6	103	81-116
108-88-3	Toluene	20	20.5	103	87-117
1330-20-7	Xylenes (total)	60	62.2	104	85-115
95-47-6	o-Xylene	20	20.8	104	87-116
	m,p-Xylene	40	41.5	104	84-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	95%	58-125%
98-08-8	aaa-Trifluorotoluene	115%	73-139%

# Blank Spike Summary

Job Number: T41527  
 Account: MWHCODE Montgomery Watson  
 Project: San Juan Basin Pit Groundwater Remediation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1583-BS	KK033107.D1		11/11/09	FI	n/a	n/a	GKK1583

5.2.2  
5

The QC reported here applies to the following samples:

Method: SW846 8021B

T41527-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	22.1	111	86-121
100-41-4	Ethylbenzene	20	20.8	104	81-116
108-88-3	Toluene	20	22.3	112	87-117
1330-20-7	Xylenes (total)	60	64.3	107	85-115
95-47-6	o-Xylene	20	21.1	106	87-116
	m,p-Xylene	40	43.3	108	84-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	91%	58-125%
98-08-8	aaa-Trifluorotoluene	116%	73-139%

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T41527  
 Account: MWHCODE Montgomery Watson  
 Project: San Juan Basin Pit Groundwater Remediation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T41575-2MS	KK033096.D1		11/11/09	FI	n/a	n/a	GKK1582
T41575-2MSD	KK033097.D1		11/11/09	FI	n/a	n/a	GKK1582
T41575-2	KK033090.D1		11/10/09	FI	n/a	n/a	GKK1582

The QC reported here applies to the following samples:

Method: SW846 8021B

T41527-1, T41527-2

CAS No.	Compound	T41575-2 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD	
71-43-2	Benzene	0.51	J	20	25.4	124*	25.7	126*	1	86-121/19
100-41-4	Ethylbenzene	ND		20	22.5	113	22.4	112	0	81-116/14
108-88-3	Toluene	ND		20	22.8	114	22.9	115	0	87-117/16
1330-20-7	Xylenes (total)	ND		60	66.9	112	66.9	112	0	85-115/12
95-47-6	o-Xylene	ND		20	22.2	111	22.2	111	0	87-116/16
	m,p-Xylene	ND		40	44.7	112	44.7	112	0	84-116/13

CAS No.	Surrogate Recoveries	MS	MSD	T41575-2	Limits
460-00-4	4-Bromofluorobenzene	91%	91%	88%	58-125%
98-08-8	aaa-Trifluorotoluene	111%	112%	109%	73-139%

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T41527  
 Account: MWHCODE Montgomery Watson  
 Project: San Juan Basin Pit Groundwater Remediation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T41699-9MS	KK033118.D	20	11/11/09	FI	n/a	n/a	GKK1583
T41699-9MSD	KK033119.D	20	11/11/09	FI	n/a	n/a	GKK1583
T41699-9	KK033114.D	20	11/11/09	FI	n/a	n/a	GKK1583

The QC reported here applies to the following samples:

Method: SW846 8021B

T41527-3

CAS No.	Compound	T41699-9 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD	
71-43-2	Benzene	328		400	778	113	761	108	2	86-121/19
100-41-4	Ethylbenzene	597		400	1020	106	1010	103	1	81-116/14
108-88-3	Toluene	5.6	J	400	424	105	414	102	2	87-117/16
1330-20-7	Xylenes (total)	926		1200	2190	105	2170	104	1	85-115/12
95-47-6	o-Xylene	ND		400	433	108	429	107	1	87-116/16
	m,p-Xylene	926		800	1760	104	1740	102	1	84-116/13

CAS No.	Surrogate Recoveries	MS	MSD	T41699-9	Limits
460-00-4	4-Bromofluorobenzene	95%	97%	95%	58-125%
98-08-8	aaa-Trifluorotoluene	115%	115%	115%	73-139%

5.3.2

# Site Visit Memo

**To:** Jed Smith  
**From:** Ashley Ager  
**CC:** File  
**Date:** June 9, 2009  
**Re:** Canada Mesa Site Visit

13:02, Pulled absorbent sock from MW-1 for static water levels. Removed approximately 7 oz of product.

# Site Visit Memo

**To:** Jed Smith  
**From:** Ashley Ager  
**CC:** File  
**Date:** November 3, 2009  
**Re:** Canada Mesa Site Visit

11/02/09  
0913, Pulled absorbent sock from MW-1 for static water levels. Removed approximately 11 oz of product.



