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2009



El Paso Tennessee Pipeline Company

San Juan Basin Pit Program Groundwater Sites Project

Final 2009 Annual Report Non-Federal Sites (Volume 2)

April 2010





1801 California Street, Suite 2900 Denver, Colorado 80202

2009 ANNUAL GROUNDWATER REPORT NON-FEDERAL SITES VOLUME II EL PASO TENNESSEE PIPELINE COMPANY

TABLE OF CONTENTS

	METER or LINEID	NMOCD CASE NO.	SITE NAME	TOWNSHIP	RANGE	SECTION	UNIT
• • • •	03906	3RP-179-0	GCU Com A #142E	29N	12W	25	G
	93388	3RP-192-0	Horton #1E	31N	09W	28	Н
, '	70194	3RP-201-0	Johnston Fed #4	31N	09W	33	Н
í . ;	LD087	3RP-205-0	K-31 Line Drip	25N	06W	16	N
•	72556	3RP-207-0	Knight #1	30N	13W	5	А
	94967	3RP-214-0	*Lindrith B #24	24N	03W	9	N
;	70445	3RP-074-0	Standard Oil Com #1	29N	09W	36	N
:	71669	3RP-239-0	State Gas Com N #1	31N	12W	16	Н

*The Lindrith B#24 site was submitted for closure in 2006 and is pending approval from NMOCD. There were no monitoring activities for this site in 2009.



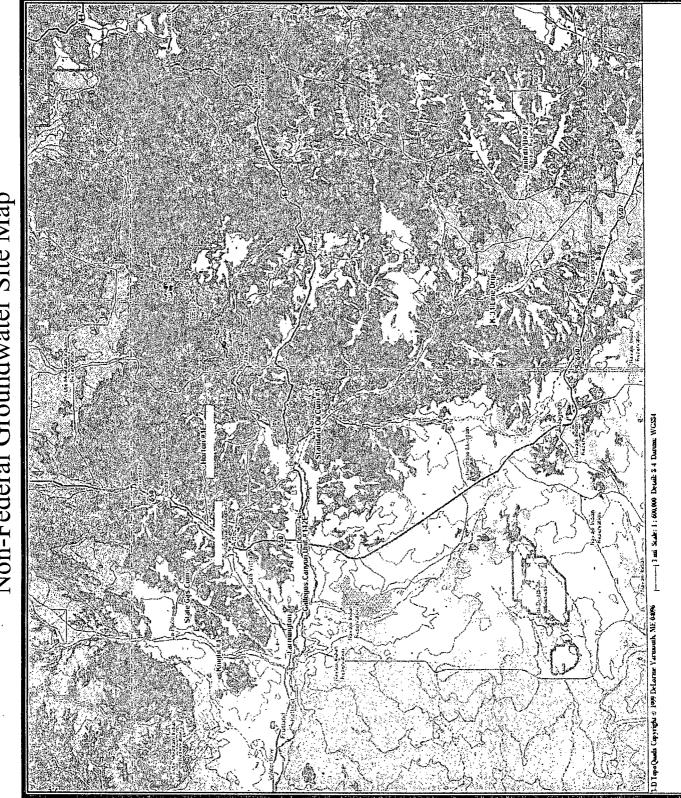


MW-

LIST OF ACRONYMS

AMSL	above mean sea level
В	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
Т	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
Х	total xylenes

1



Non-Federal Groundwater Site Map

2000 (2000) - 10 (2000) - 10 (2000)

EPTPC GROUNDWATER SITES 2009 ANNUAL GROUNDWATER REPORT

Horton #1E Meter Code: 93388

SITE DETAILS						
Legal Description:		Town: 31N	Range:	9W Se	c: 28	Unit: H
NMOCD Haz Ranking:	40	Land Type:	Fee	Operator:	BP / Amoco Company	Production
PREVIOUS ACT	IVITIE	<u>8</u>				
Site Assessment:	8/94	Excavation:	9/94 (50 cy)	Soil Boring:		8/95
Monitor Well:	8/95	Geoprobe:	NA	Additional N	AWs:	10/99
Downgradient MWs:	10/99	Replace MW:	NA	Quarterly Ir	uitiated:	12/96
ORC Nutrient Injection:	NA	Re- Excavation:	NA	PSH Remov	al Initiated:	NA
Annual Initiated:	10/99	Quarterly Resumed:	NA	PSH Remov	al in 2009?:	No

SUMMARY OF 2009 ACTIVITIES

- **MW-1:** Quarterly groundwater sampling and water level monitoring was performed through September 2009.
- **MW-2:** Confirmation sampling of the groundwater was performed in September 2009. Quarterly water level monitoring was performed through September 2009.
- **MW-3:** Confirmation sampling of the groundwater was performed in September 2009. Quarterly water level monitoring was performed through September 2009.

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

SITE MAPS

Site maps (March, June, and September) are attached as Figures 1 through 3.

SUMMARY TABLES AND GRAPHS

- Historic analytical and water level data are summarized in Table 1 and presented graphically in Figures 4 though 6.
- The 2009 laboratory reports are presented in Attachment 1 (included on CD).

EPTPC GROUNDWATER SITES 2009 ANNUAL GROUNDWATER REPORT

Horton #1E Meter Code: 93388

• 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.

ISOCONCENTRATION MAPS

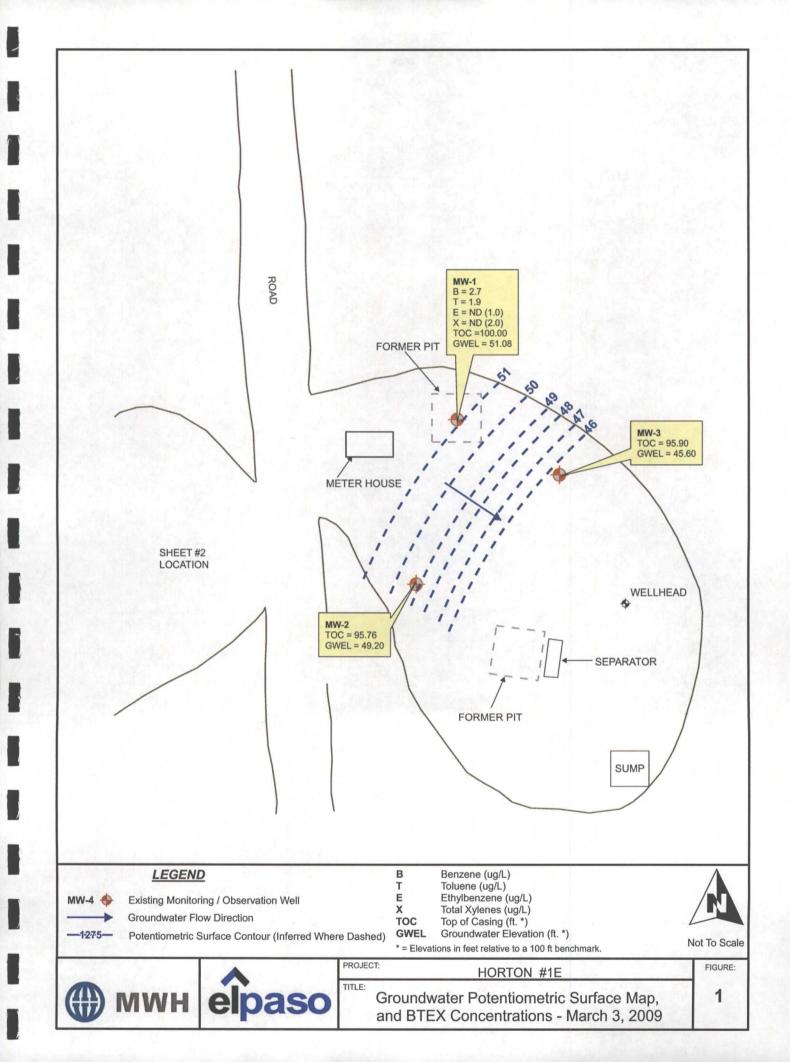
No isoconcentration maps were generated for this Site; however, the attached Site maps present the analytical data collected during 2009.

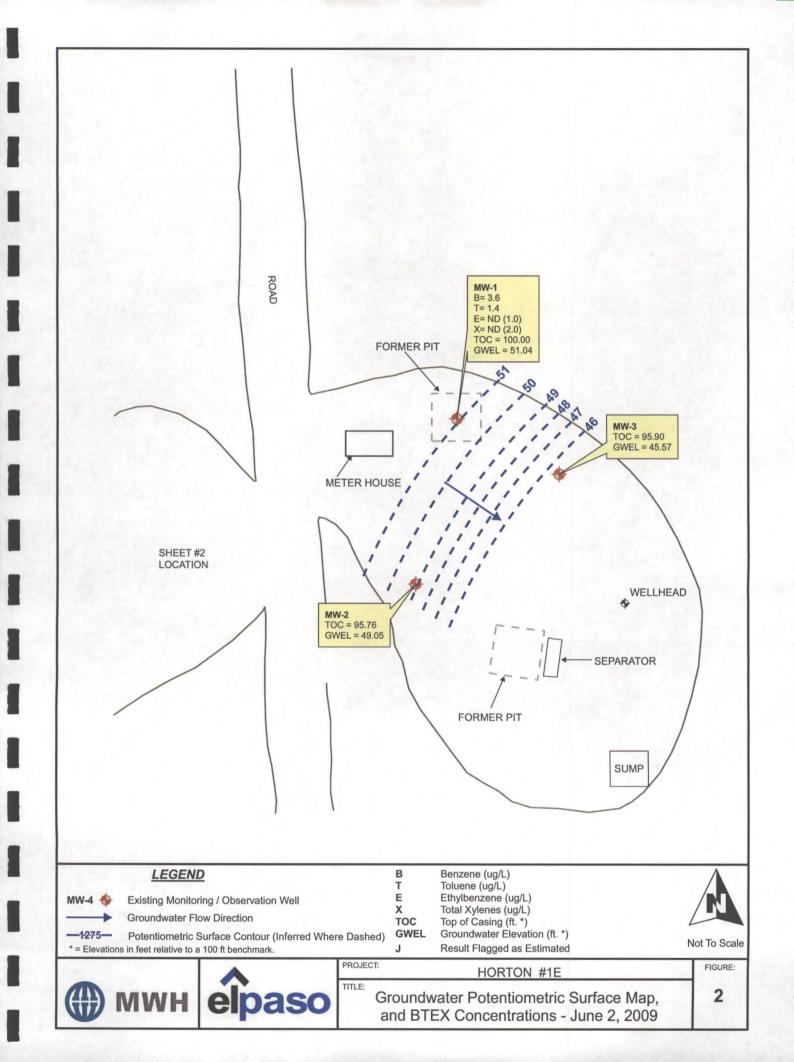
<u>RESULTS</u>

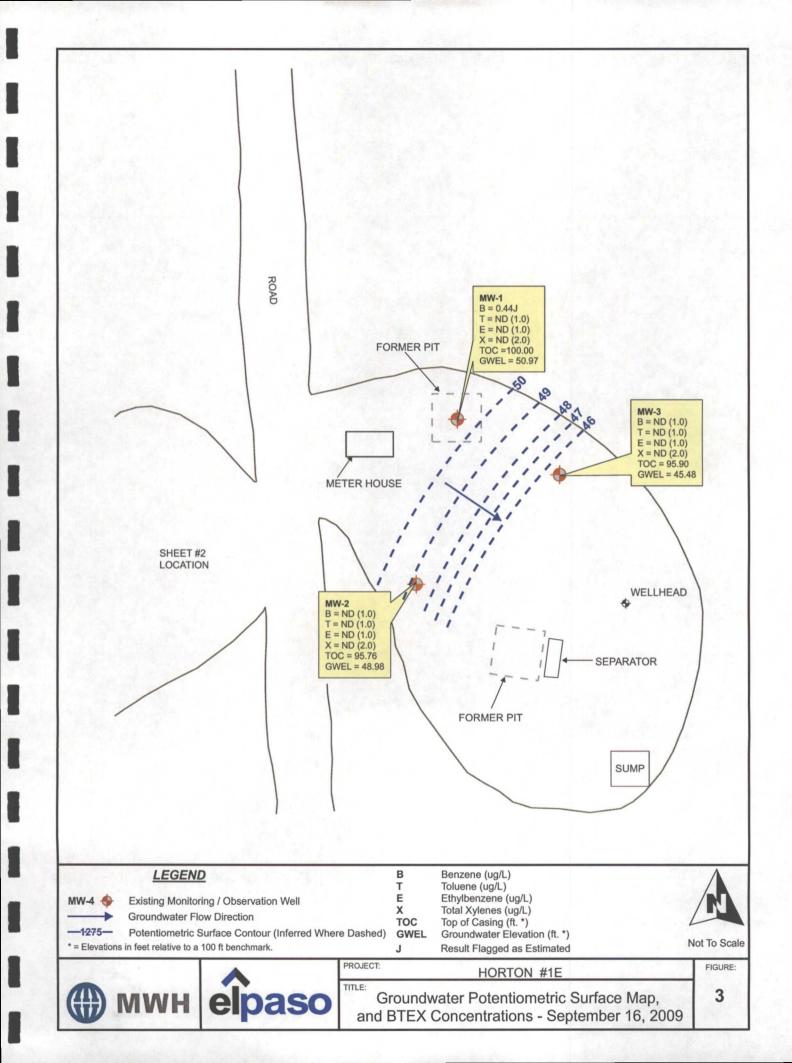
- The groundwater flow direction at this Site trends toward the southeast.
- The three quarterly groundwater samples from MW-1 met the NMWQCC standards. As of September 2009, the groundwater in MW-1 has attained four consecutive clean quarters of sampling.
- The confirmatory samples collected from MW-2 and MW-3 in September 2009 met the NMWQCC standards for BTEX.

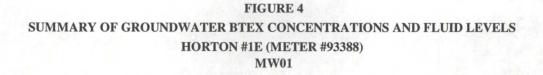
RECOMMENDATIONS

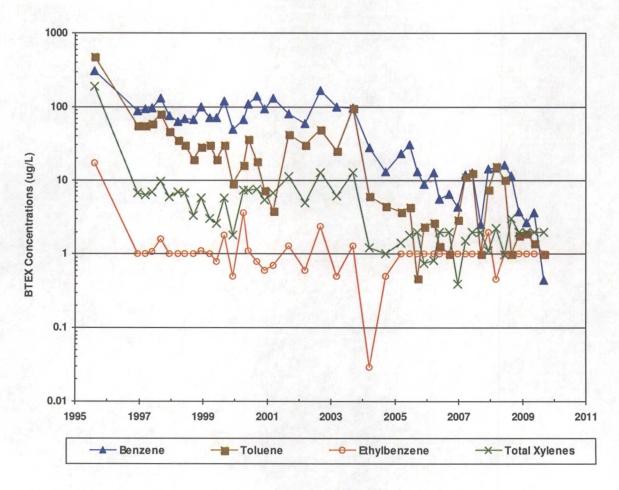
• EPTPC submitted a closure request to the NMOCD for this site in October 2009. EPTPC will abandon the monitoring wells upon closure approval.

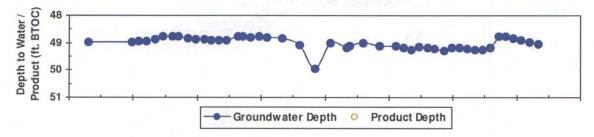


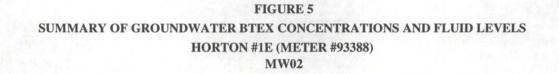


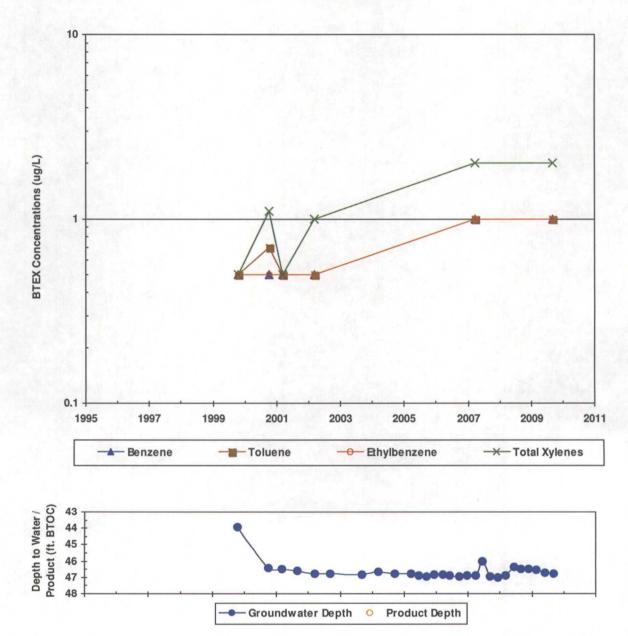


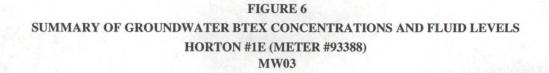












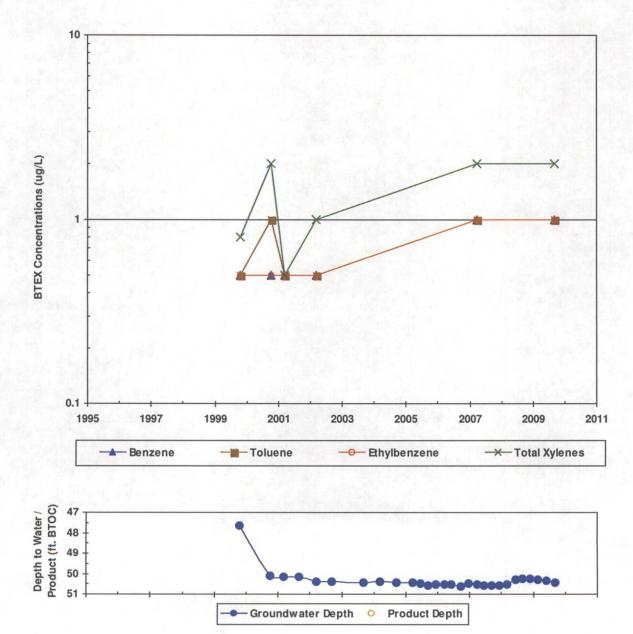


TABLE 1

Monitor Sample Benzene Toluene Ethylbenzene |Total Xylenes Depth to Corrected Well Date (ug/L) (ug/L) (ug/L) (ug/L)Water (ft **GW Elevation** BTOC) (Feet*) NMWOCC GW Std.: 750 10 750 620 **MW01** 8/7/1995 308 483 16.9 190 48.99 51.01 55.5 1 48.96 1.8 **MW01** 12/17/1996 86.8 <1.0 6.66 51.04 **MW01** 3/10/1997 93.3 55.3 1.02 6.34 48.93 51.07 96.1 1.07 51.06 **MW01** 6/2/1997 58.8 6.82 1 48.94 9/8/1997 **MW01** 132 80.7 1.59 9.46 48.88 51.12 47.1 5.94 **MW01** 12/10/1997 74.9 <1.01 48.76 51.24 . **MW01** 3/23/1998 35.9 <1.0 48.78 63.6 6.93 51.22 **MW01** 6/4/1998 68.1 <1.0 6.60 48.76 51.24 **MW01** 9/14/1998 67.7 19.4 <1.0 3.26 48.85 51.15 12/17/1998 **MW01** 100 29 1.1 5.80 48.87 51.13 **MW01** 3/23/1999 70.1 30.6 48.88 <1.0 3.00 51.12 6/11/1999 **MW01** 71 19 0.8 2.60 48.92 51.08 **MW01** 9/2/1999 120 30 1.8 5.80 48.91 51.09 14 **MW01** 12/9/1999 50 9.1 <0.5 1.8 48.89 51.11 **MW01** 4/12/2000 67 16 3.6 7.2 48.77 51.23 110 37 S. 19 7.4 6/9/2000 100 \mathcal{T}_{i} MW01 48.75 100 1.1 51.25 **MW01** 9/8/2000 140 18 0.8 7.6 48.81 51.19 MW01 12/11/2000 7.2 93 0.6 5.3 48,75 51.25 **MW01** 3/13/2001 130 3.8 0.7 6.6 48.81 51.19 **MW01** 9/7/2001 80 1.3 48.83 51.17 11 **MW01** 3/20/2002 60 0.6 4.9 49.07 50.93 30 **MW01** 9/10/2002 167 49.9 2.4 12.7 49.96 50.04 **MW01** 3/14/2003 100 25.5 0.5 6.1 49.00 51.00 **MW01** 9/16/2003 95.5 95.8 1.3 12.5 49.18 50.82 3/23/2004 **MW01** 27.8 6.1 < 0.0 1.2 49.01 50.99 <1.0 9/22/2004 <0.5 49.12 **MW01** 12.8 4.5 50.88 3/23/2005 **MW01** 22.8 3.7 49.12 50.88 <1.0 1.4 MW01 6/23/2005 30.6 4.4 wale -<1.0 1.8 49.18 50.82 . Дт., **MW01** 9/20/2005 12.8 0.47 <1.0 <2.0 49.24 50.76 12/14/2005 0.74 🚓 MW01. 8.8 2.4 <1.0 49.14 50.86 **MW01** 3/27/2006 12.5 2.7 <1.0 0.82J 49.17 50.83 6/7/2006 **MW01** 5.6. 1.3 <1.0 <2.0 49.21 50.79 **MW01** 9/25/2006 6.5 <1.0 <1.0 <2.0 49.28 50.72 **MW01** 12/27/2006 4.3 2.9 <1.0 0.39J 49.19 50.81

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES HORTON #1E (METER #93388)

Page 1

TABLE 1

Monitor Well	Sample Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (ft	Corrected GW Elevation
NMWQCC	GW Std.:	10	750	750	620	BTOC)	(Feet*)
MW01	3/28/2007	11.9	11.3	<1.0.,	1.5J	49.20	50:80
MW01	6/18/2007	12.6	12.5	<1.0	2.0	49.23	50.77
MW01	9/17/2007	2.5	<1.0	<1.0	<2.0	49.27	50.73
MW01	12/17/2007	14.2	7.6	<2.0	1.1J	49.27	50.73
MW01	3/11/2008	14.7	15.5	0.46J	2.2	્રે 49.17	50.83
MW01	6/17/2008	16.2	10.3	<1.0	0.99J	48.75	51.25
MW01	9/10/2008	11.6	1.0	<1.0	<3.0	48.78	51.22
MW01	12/2/2008	3.7	1.8	<1.0	<2.0	48.85	51.15
MW01	3/3/2009	2.7	1.9	<1.0	<2.0	48.92	51.08
.MW01	6/2/2009	3.6	1.4	<1.0	<2.0	48.96	51.04
MW01	9/16/2009	≥ ~0.44J	<1.0	<1.0	<2.0	49.03	50.97
MW02	10/20/1999	<0.5	<0.5	<0.5	<0.5	43.95	51.81
MW02	10/9/2000	<0.5	0.7	<0.5	1.1	46.41	49.35
MW02	3/13/2001	<0.5	<0.5	<0.5	<0.5	46.47	49.29
MW02	3/20/2002	< 0.5.	<0.5	<0.5	<1.0	46.75	49.01
MW02	3/31/2007	<1.0	<1.0	<1.0	<2.0	46.89	48.87
MW02	9/16/2009	<1.0	<1.0	<1.0	<2.0	46.78	48.98
MW03	10/20/1999	<0.5	<0.5	<0.5	0.8	47.65	48.25
MW03	10/10/2000	<0.5	1	<0.5	2	50.12	45:78
MW03	3/13/2001	<0.5	<0.5	<0.5	<0.5	50.18	45.72
MW03	3/20/2002	<0.5	<0.5	<0.5	<1.0	50.40	45.50
MW03	3/31/2007	<1.0	<1.0	<1.0	<2.0	50.52	45.38
MW03	9/16/2009	<1.0	<1.0	<1.0	<2.0	50.42	45.48

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES **HORTON #1E (METER #93388)**

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.

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WELL DEVELOPMENT AND SAMPLING LOG

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Project Name: Client: Project Manager:	MWH		Samp	Location: Date: ler's Name:	6/2/2009		Well No: Time:	
Measuring Point: Well Diameter:	4"		to Water: al Depth: n Height:	65.36	ft		to Product: Thickness:	
Sampling Method: Criteria:	Bottom Va	lve Bailer	Double C	al Pump 🗌 Pe heck Valve Baile noval 🗹 Stabili;	er		•	bail dry
				Water Volum				
Gal/ft x ft of w		Gall		Oun	ces		Volume	to be removed
16.4 x .65		10.6	6 x 3				3	1.98 gal
Time (military)	pH (su)	SC (us)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
8:00	6.69	15.05	60.1				1.25	clear
	6.79	14.98	59.9			· · · · ·	2.5	clear
	6.75	15.05	59.7				3.75	light gray, silty
	6.79	14.88	59.9				5	light gray, silty
	6.71	15.24	59.4				10	light gray, silty, bailing down
	6.75	15.09	59.5		-		15	light gray, silty, bailing down
	6.80	15.06	59.4				20	light gray, silty, bailing down
	6.85	15.12	59.4				24.2	light gray, silty, dry
Final: 8:55	6.85	15.15	59.6				24:5	light gray, silty; dry
COMMENTS:	well bailed	dry.					<u>.</u>	
Instrumentation: Water Disposal:		DO Mor	nitor ☑ C	onductivity Met	er 🗹 Tem	perature Meter	r 🗌 Other	r
Sample ID:	Horton #1	E MW-1	. Sa	mple Time:	8:52	-	•	
Analysis Requested:	BTEX Other		🗌 Alkalini	ty 🗌 TDS	Cations	Anions	Nitrate	Nitrite 🗌 Metals
Trip Blank:	02060	9TB02				Duplica	ate Sample:	

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: Horton #1E

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	7:52 AM	-	48.92	-	-	Sample BTEX
MW-2		-	46.56	-	_	
MW-3			50.30	-	-	

Comments

Operator: BP

Reviewed site map (no changes necessary), made site photos

Signature: Ashley L. Ager

Date: 03/04/2009

Date:

03/03/2009

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: Horton #1E

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	7:40 AM	<u>-</u>	48.96	_	-	Sample BTEX
MW-2		-	46.71	-	-	
MW-3	· · · · · · · · · · · · · · · · · · ·	-	50.33	-	-	
		_				

Comments

Signature: Ashley L. Ager

Date: 06/04/2009 :

Date: 06/02/2009

WELL DEVELOPMENT AND SAMPLING LOG

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Project Name: Client: Project Manager:	MWH		Samp		Horton #11 3/3/2009 Troy Urbar		Well No: Time:	
Measuring Point: Well Diameter:	4"		to Water: al Depth: n Height:	65.36	ft		to Product: Thickness:	
Sampling Method: Criteria:	Bottom Va	lve Bailer [Double C	al Pump 🗌 Pe heck Valve Bail moval 🗹 Stabili	er			bail dry
			1	Water Volun	ne in Well			
Gal/ft x ft of w	ater	Gall	ons	Our	ices		Volume	to be removed
16.44 x 0.6	5	10.6	8 x 3				3	2.04 gal
Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
8:36	6.85	2.07	57.7				1.25	clear
	6.87	2.08	57.9				2.5	light gray, silty
	6.88	2.04	57.9				3.75	light gray, silty
	6.90	2.05	57.7				5	light gray, silty
	6.84	2.04	57.6				10	light gray, silty, bailing down
	6.97	2.02	57.4				15	light gray, silty, bailing down
	6.93	2.01	57.0				20	light gray, silty, bailing down
	7.13	2.02	56.7				25	light gray, silty, bailing down
Final:	7.13	2.02	56.8				26.2	light gray, silty, dry
COMMENTS:	well bailed	dry.						
Instrumentation:	☑ pH Meter	🗌 DO Mor	nitor 🖸 C	onductivity Met	er 🗹 Temj	perature Mete	r 🗌 Othe	r
Water Disposal:	Rio Vista							
Sample ID:	Horton #1	EMW-1	. Sa	mple Time:	9:39		1	
Analysis Requested:	☑ BTEX		Alkalini	ty 🗹 TDS	Cations [Anions	Nitrate	Nitrite 🗌 Metals
Trip Blank:	030320	09TB01				Duplica	ate Sample:	:
			•				•	
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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: Horton #1E

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	8:40 AM	-	49.03	-	-	Sample BTEX
MW-2		-	46.78	-	_	Sample BTEX
MW-3		-	50.42	-		Sample BTEX

Comments

Signature: Ashley L. Ager

Date: 09/18/2009

Date: 09/16/2009

Project Name: Client: Project Manager:	MWH		Samp	-	Horton #11 9/16/2009 Troy Urbar		Well No: Time:	
Measuring Point: Well Diameter:	4"		to Water: al Depth: n Height:	65.36	ft	-	co Product: Thickness:	
Sampling Method: Criteria:	Bottom Va	ve Bailer (Double C	al Pump 🗌 Pe heck Valve Baile noval 🗹 Stabili	er zation of Indic			bail dry
		<u> </u>		Water Volun				
Gal/ft x ft of w 16.33 x .6		Gall 10.6		Oun	ces			to be removedgal
10.55 X .0.			1 X 3			l		91.8 gal
Time (military)	pH (su)	SC (us)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac.	Comments/Flow Rate
8:50	6.79	1504	59.4				1.25	light gray, silty
	6.78	1472	59.2				2.5	light gray, silty
	6.78	1454	59.2				3.75	light gray, silty
· · · · · · · · · · · · · · · · · · ·	6.78	1470	59.2				5	light gray, silty
	6.77	1466	59.2				10	light gray, silty
	6.80	1434	59.2				15	light gray, silty
	6.88	1499	58.8				20	light gray, silty
	6.92	1479	58.8				21.8	light gray, silty, bailing down
Final: 9:40	7.02	1479	58:8				22.25	light gray, silty, dry
COMMENTS:	well bailed	dry.					÷	
Instrumentation:	🗹 pH Meter	DO Mon	iitor 🗹 C	onductivity Met	er 🗹 Tem	perature Meter	· 🗌 Other	r
Water Disposal:	Rio Vista							
Sample ID:	Horton #1E	<u>MW-1</u>	. Sa	mple Time:	9:35			
Analysis Requested:	BTEX Other		🗌 Alkalini	ty 🗆 tos	Cations [Anions 🗌	Nitrate	Nitrite 🗌 Metals
Trip Blank:	1609200	09ТВ01				Duplica	te Sample:	

Client:	San Juan Basin MWH	Location: Hortor Date: 9/16/2		Well No: <u>MW-2</u> Time: 9:48	
Project Manager:	Ashley Ager	Sampler's Name: Troy U	Irban		
Measuring Point:	TOC Dep	th to Water: 46.78 ft	Dept	h to Product:	ft
Well Diameter:		Total Depth: 62.62 ft umn Height: 15.84 ft	Produ	ct Thickness:	ft
ampling Method:	Submersible Pump	Centrifugal Pump Deristaltic	Pump 🗌 Oth	er	
	Bottom Valve Bailer	Double Check Valve Bailer			

Water Volume in Well											
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed								
15.84 x .16	2.53 x 3		7.6	gal							

Time (military)	pH (su)	SC (us)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
9:59	7.03	1427	58.1				0.25	light gray, silty
	7.03	1412	57.6				0.5	light gray, silty
	7.06	1429	57.7				0.75	light gray, silty
	7.07	1430	57.7				1	light gray, silty
	7.08	1471	57.6				2	light gray, silty
	7.04	1644	57.7				3	light gray, silty
	7.06	1432	57.7				4	light gray, silty
	7.06	1444	57.7				5	light gray, silty
	7.10	1439	57.7				7	light gray, silty
	7.10	1436	57.7				7.5	light gray, silty
	7.13	1445	57.7				7.75	light gray, silty
Final: 10:35	7.12	1446	57.7				- 8	light gray, silty

COMMENTS:

Instrumentation:	🗹 pH Meter	🗌 DO Monit	or 🗹 Con	ductivity Meter	☑ Temperature M	leter 🗌	Other		
Water Disposal:	Rio Vista								
Sample ID:	Horton #1E	MW-2	Sam	ple Time: <u>1</u>	0:43				
Analysis Requested:	☑ BTEX		Alkalinity		Cations 🗌 Anions	🗌 Nitrat	e 🗋 Nitrite	Metals	
Trip Blank:	1609200	09TB01			Dup	licate Sa	mple:		

WELL DEVELOPMENT AND SAMPLING LOG

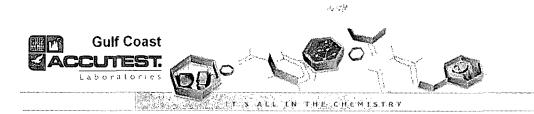
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WELL DEVELOPMENT AND SAMPLING LOG

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Project Name: Client: Project Manager:	MWH		Samp	-	Horton #1E 9/16/2009 Troy Urbar		Well No: Time:	MW-3 10:53
Measuring Point: Well Diameter:	2"		to Water: al Depth: n Height:	57.13	ft		to Product; Thickness:	
Sampling Method: Criteria:	Bottom Val	ve Bailer [Double C	al Pump 🗌 Pe heck Valve Baile moval 🗹 Stabili	er		,	bail dry
			· ·	Water Volum	ne in Well			
Gal/ft x ft of w	ater	Gall	ons	Oun	ces		Volume	to be removed
6.71 x .16		1.07						9.22 gal
<u></u>	ł							
Time (military)	рН . (su)	SC (us)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
10:57	6.98	1540	58.6				0.25	brown, silty, roots
	7.00	1580	59.5				0.5	brown, silty, roots
	7.01	1624	58.1				0.75	brown, silty, roots
	7.02	1609	58.3				1	brown, silty, roots
	7.00	1620	58.1				2	brown, silty, roots
	7.00	1616	58.1				3	brown, silty, roots
	7.00	1594	57.7				3.25	brown, silty, roots
			· · · · ·					
							· · · ·	
Final: 9:40	7.03	1598	57.9				3.5	brown, silty, roots
COMMENTS:					· · · · · · · · · · · · · · · · · · ·			
Instrumentation:		DO Mon	itor 🗹 C	onductivity Mete	er 🗹 Temj	perature Meter	- 🗌 Other	
Water Disposal:								
Sample ID:		<u>MW-3</u>	Sa	mple Time:	11:28			
Analysis Requested:	BTEX Other		🗌 Alkalini	ty 🗌 TDS	Cations [Anions [Nitrate .	Nitrite 🗌 Metals
Trip Blank:	1609200	09TB01				Duplica	ite Sample:	
							,	

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e-Hardcopy 2.0 Automated Report

03/09/09

Technical Report for

Montgomery Watson

San Juan Basin Pit Groundwater Remediation 2008-2009



Accutest Job Number: T25892

Sampling Date: 03/03/09

Report to:

MWH Americas 1801 California St. Suite 2900 Denver, CO 80202 jed.smith@mwhglobal.com; daniel.a.wade@mwhglobal.com; craig.moore@mwhglobal.com **ATTN:** Jed Smith

Total number of pages in report: 15





Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference

Paul K Canevano

Paul Canevaro Laboratory Director

and/or state specific certification programs as applicable.

Client Service contact: William Reeves 713-271-4700

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

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5.3: Matrix Spike/Matrix Spike Duplicate Summary	

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Accutest Laboratories

Sample Summary

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Montgomery Watson

Job No: T25892

San Juan Basin Pit Groundwater Remediation 2008-2009

Sample Number	Collected Date	Time By	Received	Matr Code		Client Sample ID
"T25892-1	03/03/09	09:39 TU	03/04/09	AQ	Ground Water	HORTON 1E MW-1
T25892-2	3/03/09	07:00 TU	03/04/09	AQ	Trip Blank Water	030309TB01







SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Montgomery Watson	Job No	T25892
Site:	San Juan Basin Pit Groundwater Remediation 2008-2009	Report Date	3/9/2009 3:10:05 PM

1 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 03/03/2009 and were received at Accutest on 03/04/2009 properly preserved, at 4.4 Deg. C and intact. These Samples received an Accutest job number of T25892. 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:	GKK1444
L_ <u></u>		

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) T25846-2MS, T25846-2MSD 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 QualityObjectives 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







Section 3



Sample Results

Report of Analysis



Accutest Laboratories

		Repo	rt of An	alvsis		E.	Page 1 of 1
Client Sam Lab Sampl Matrix: Method: Project:		/-1 er		Date S Date R Percen	Campled: Received at Solids 09	03/04/09	
Run #1 Run #2	File ID DF KK029828.D 1	Analyzed 03/07/09	By FI	Prep Da n/a	ate	Prep Batch n/a	Analytical Batch GKK1444
Run #1 Run #2	Purge Volume 5.0 ml						
Purgeable	Aromatics						
CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	ND ND	1.0 1.0 2.0 1.0 1.0	0.21 0.23 0.35 0.55 0.55 0.66	ug/l ug/l ug/l ug/l ug/l ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its		
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	96% 84%		58-1 73-1			

ND = Not detectedMDL - Method Detection Limit

RL = Reporting Limit

- J = Indicates an estimated value
- B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound





E = Indicates value exceeds calibration range

Accutest Laboratories

		Repor	t of An	alysis			Page 1 of 1
Client Sam Lab Samp Matrix: Method: Project:			emediation	Date R Percen	ampled: Received at Solids 09	: 03/04/09	
Run #1 Run #2	File ID DF KK029823.D 1	Analyzed 03/06/09	By FI	Prep Da n/a	ate	Prep Batch n/a	Analytical Batch GKK1444
Run #1 Run #2	Purge Volume 5.0 ml					<u>.</u>	
Purgeable	Aromatics						
CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	ND ND ND ND ND ND	1.0 1.0 2.0 1.0 1.0	0.21 0.23 0.35 0.55 0.55 0.66	ug/l ug/l ug/l ug/l ug/l ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its		
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	\$97% 83%	- - 	58-13 73-13			

. . .

ND = Not detectedMDL - 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







Section 4



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



10165 Harwin, Suite 150 - Houston, T												FED	X Trackin	"	- 0	472	Bottle	Order Con	troi #		
	FX 7	7036 -	713-27	1-47	00 fa	ax:	713	3-27	1-4	770)	40004	nal Causta	2.3	70	912	Accura	et Job #			
												78.44	Preserve !:	4016925	4915-744	ાનદાસ્ત્ર	1000	-	ΓĽ	<u>58</u>	<u>12</u>
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th jed.smith@mwhglobal.com		El Paso	Com				rmal														80 - Soli
		Address																			SL - Skudge
lifornia Street, Suite 2900			ouisiana S	treet, F	Rm S18																01 - Oi
State 2 CO		City Houstor				State TX					Zip 7002										LIQ + Liquid BDL + Other Solid
Fax No.	UULUL	Phone No								Fax No		-									
-2276																					
LName / I		Client Pur	chase Order	#								(8021B)									
oy Urban		Collectic		<u></u>		1.60						18						ľ I			
t Field ID / Point of Collection		Collectic	<u></u>		# of			a li	s s	131	bóttle X	- ព									LAB USE ONL
	Da	sta	Time	Matrix	bottles	Ŷ	ž	¥ I		ž	Č,	15		- +			 	 		4	LAB USE ONL
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7 Day			Com	nercial "	8*) E00) Fom	wit												
4 Day RUSH				ced Tier) Oth	er			_										
3 Day EMERGENCY			- Full D	ata Paci	kage			·						•••••							
1 Day EMERGENCY				arcial ==	." = Resu	he C-	44														
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T25892: Chain of Custody Page 1 of 3



4.1 ×4

SAMPLE INSPECTION FO	RM
# of Coolers Received: Thermometer #:TR Tem	Date/Time Received: $3 - 7 - 9 - 9 = 9 = 9$
Cooler Temps: #1: <u>Y.Y</u> #2: #3: #4: #5:	#6: #7: #8:
Method of Delivery: (FEDEX) UPS Accutest Courier Greyhound	Delivery Other
Airbill Numbers:	`* •
COOLER INFORMATION SAMPLE INFORMATION Custody seal missing or not intact Sample containers received broken Temperature criteria not met VOC vials have headspace Wet ice received in cooler Sample labels missing or fillegible Chain of Custody not received D/T on COC does not match label(s) Chain of Custody not received Sample D/T unclear or missing Analyses unclear or missing Bottles missing for requested analysis COC not properly executed Insufficient volume for analysis Summary of Discrepancies: Sample received improperly preserved	Trip Blank on COC but not received Trip Blank not coc but not on COC Trip Blank not intact Received Water Trip Blank Received Soil TB
TECHNICIAN SIGNATURE/DATE:	Y-9
I	· · · · · · · · · · · · · · · · · · ·

T25892: Chain of Custody Page 2 of 3



4.1 2

		· .	SAMPLE RE	ECEIPT	LOG				
OB #:	. <u> </u>	T25392	•	DATE/TIME	RECEIVED:	<i>(</i> ,	3-4-9_	900	
LIENT:	·/	AWH			INITIALS	<u> </u>	ite		
COOLER#	SAMPLE ID	FIELD (D	DATE	MATRIX	VOL	BOTTLE #	LOCATION	PRESERV	PH
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								5 6 7 8 1 2 3 4	<2 >
/-	f			 				<u>5 6 7 8</u> 1 2 3 4	
RESERVA	1	ne 2: HCL 3: HNO3 4: H2SO4 5: NAC	L	L	I.,	-L	l. 	5678	

T25892: Chain of Custody Page 3 of 3

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4.1



Section 5

GC Volatiles		
QC Data Summari	es	
Includes the following	g where applicable:	
 Method Blank Summarie Blank Spike Summarie 	S	

Matrix Spike and Duplicate Summaries





Method Blank Summary

Job Number:T25892Account:MWHCODE Montgomery WatsonProject:San Juan Basin Pit Groundwater Remediation 2008-2009								
Sample GKK1444-MB	File ID DF KK029812.D1	Analyzed 03/06/09	By FI	Prep I n/a	Date	Prep Batch n/a	Analytical Batch GKK1444	
The QC repor T25892-1, T2	ted here applies to the	e following samp	oles:			Method: SW	7846 8021B	
CAS No. C	ompound	Result	DI	MDI	Linita			
	enzene	ND	RL	MDL 0.21	Units ug/l	Q :		

: •

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 100-41-4 108-88-3 1330-20-7 95-47-6	Benzene Ethylbenzene Toluene Xylenes (total) o-Xylene m,p-Xylene	ND ND ND ND ND ND	1.0 1.0 2.0 2.0 1.0 2.0 2.0 1.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2	0.21 0.35 0.23 0.55 0.55 0.66	ug/l ug/l ug/l ug/l ug/l ug/l	:
CAS No.	Surrogate Recoveries		Limit	s		
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	96% 84%	58-12 73-13			



Page 1 of 1

5.1

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Blank Spike Summary

Account: Project:	r: T25892 MWHCODE Montg San Juan Basin Pit C		mediatio	on 2008-2009		
Sample GKK1444-I	File ID DF 3S KK029808.D1	Analyzed 03/06/09	By FI	Prep Date n/a	Prep Batch n/a	Analytical Batch GKK1444
	··					
	ported here applies to th F25892-2	e following san	iples:		Method: SW	/846 8021B
Γ25892-1, ΄	Γ25892-2	Spike	BSP	BSP	Method: SW	846 8021B
Γ25892-1, ΄ CAS No.	Compound	Spike ug/l	BSP ug/l	% Limits	Method: SW	846 8021B
225892-1, 7 CAS No. 71-43-2	Compound Benzene	Spike ug/l 20	BSP ug/1 19.2	% Limits	Method: SW	846 8021B
C25892-1, 7 CAS No. 71-43-2 00-41-4	Compound Benzene Ethylbenzene	Spike ug/1 20 20	BSP ug/1 19.2 19.5	% Limits 96 98 86-121 81-116	Method: SW	846 8021B
225892-1, 7 CAS No. 1-43-2 00-41-4 08-88-3	Compound Benzene Ethylbenzene Toluene	Spike ug/1 20 20 20	BSP ug/1 19.2 19.5 19.4	% Limits 96 86-121 98 81-116 97 87-117	Method: SW	846 8021B
Γ25892-1, ΄	Compound Benzene Ethylbenzene	Spike ug/1 20 20	BSP ug/1 19.2 19.5	% Limits 96 98 86-121 81-116	Method: SW	846 8021B

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	98%	58-125%
98-08-8	aaa-Trifluorotoluene	85%	73-139%



Page 1 of 1

5.2 T

Matrix Spike/Matrix Spike Duplicate Summary

Job Number Account: Project:	r: T25892 MWHCODE Montge San Juan Basin Pit G	•	rediation 20	008-2009					0
Sample	File ID DF	Analyzed	By	Prep D	ate	Prep Bat	ch A1	nalytical	Batch
T25846-2MS	5 KK029819.D1	03/06/09	FÍ	n/a Î		n/a		KK1444	
T25846-2MS	SD KK029820.D1	03/06/09	FI	n/a		n/a	GI	KK1444	
T25846-2	KK029816.D1	03/06/09	FI	n/a		n/a	GI	KK1444	
The QC rep T25892-1, T	orted here applies to the 25892-2	e following sam	ples:			Method:	SW846	8021B	
CAS No.	Compound	T25846-2 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	0.72	J 20	21.2	102	20.5	99	3	86-121/1
100-41-4	Ethylbenzene	ND	20	20.9	105	20.0	100	4	81-116/14
108-88-3	Toluene	ND	20	20.7	104	20.0	100	3	87-117/16
1330-20-7	Xylenes (total)	ND	60	61 7	103	50 /	00	1	85 115/11

CAS No.	Compound	T25846-2 ug/l	2 Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	Limits RPD Rec/RPD	
71-43-2 100-41-4 108-88-3 1330-20-7 95-47-6	Benzene Ethylbenzene Toluene Xylenes (total) o-Xylene m,p-Xylene	0.72 ND ND ND ND ND	J 20 20 20 60 20 40	21.2 20.9 20.7 61.7 20.6 41.1	102 105 104 103 103 103	20.5 20.0 20.0 59.4 19.8 39.5	99 100 100 99 99 99	4 81-116/14 3 87-117/16	
CAS No. 460-00-4	Surrogate Recoveries 4-Bromofluorobenzene	MS 100%	MSD		25846-2 % ^{The sector}	Limits 58-125			
98-08-8	aaa-Trifluorotoluene	85%	84%		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	73-139			

5.3



Page 1 of 1

e-Hardcopy 2.0 Automated Report



06/11/09

Technical Report for

Montgomery Watson

San Juan Basin Pit Groundwater Remediation 2008-2009

Horton

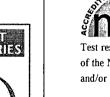
Accutest Job Number: T30414

Sampling Date: 06/02/09

Report to:

MWH Americas 1801 California St. Suite 2900 Denver, CO 80202 jed.smith@mwhglobal.com; daniel.a.wade@mwhglobal.com; craig.moore@mwhglobal.com; ala@lodestarservices.com ATTN: Jed Smith

Total number of pages in report: 15





Paul K Canevard

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)

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Section 3: Sample Results 5	5
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3.2: T30414-2: HORTON 1E MW-1	7
Section 4: Misc. Forms	3
4.1: Chain of Custody)
Section 5: GC Volatiles - QC Data Summaries 1	12
5.1: Method Blank Summary 1	13
5.2: Blank Spike Summary 1	14
5.3: Matrix Spike/Matrix Spike Duplicate Summary 1	15



Sample Summary

Montgomery Watson

Job No: T30414

San Juan Basin Pit Groundwater Remediation 2008-2009 Project No: Horton

Sample Number	AU	Time By	Received	Matr Code		Client Sample ID
T30414-1	\$ 06/02/09	06:55 TU	06/04/09	AQ	Trip Blank Water	020609TB02
T30414-2	6/02/09	08:52 TU	06/04/09	AQ	Ground Water	HORTON 1E, MW-1



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SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Montgomery Watson	Job No	T30414
Site:	San Juan Basin Pit Groundwater Remediation 2008-2009	Report Date	6/8/2009 3:24:25 PM

1 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 06/02/2009 and were received at Accutest on 06/04/2009 properly preserved, at 4 Deg. C and intact. These Samples received an Accutest job number of T30414. 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:	GKK1498

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

• Sample(s) T30414-2MS, T30414-2MSD 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 QualityObjectives 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

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Section 3

Sample Results

Report of Analysis

Taccutest.

			Repo	rt of A	nalysis		Page 1 of 1
Client Sam Lab Samp Matrix: Method: Project:	ole ID: T3041 AQ - 7 SW846	4-1 Frip Blank 5 8021B	Water Pit Groundwater	Remediati	Date Sampled Date Received Percent Solid ion 2008-2009	1: 06/04/09	
Run #1 Run #2	File ID KK031128.D	DF 1	Analyzed 06/05/09	By FI	Prep Date n/a	Prep Batch n/a	Analytical Batch GKK1498
Run #1 Run #2	Purge Volume 5.0 ml						
Purgeable	Aromatics						······································
CAS No.	Compound		Result	RL	MDL Units	Q	

71-43-2 108-88-3	Benzene Toluene		1.0 1.0	0.21 0.23	ug/l ug/l
100-41-4 1330-20-7	Ethylbenzene Xylenes (total)	ND ND	1.0	0.35 0.55	ug/l ug/l
95-47-6	o-Xylene m,p-Xylene	ND	1.0	0.55 0.66	ug/l
CAS No.		Run# 1	Run# 2	U.00 Lim	ug/l
	Surrogate Recoveries		Run# 2	Lim	115
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	85% 88%			25% 39%

MDL - Method Detection Limit ND = Not detected RL = Reporting Limit

- J = Indicates an estimated value
- B = Indicates analyte found in associated method blank
- N = Indicates presumptive evidence of a compound



E = Indicates value exceeds calibration range

		Repor	t of An	alysis		,	Page 1 of 1
Client Sam Lab Sampl Matrix: Method: Project:		er	Remediation	Date H Percer	Sampled: Received: at Solids: 009	06/04/09	
Run #1 Run #2	File ID DF KK031118.D 1	Analyzed 06/05/09	By FI	Prep D n/a	ate	Prep Batch n/a	Analytical Batch GKK1498
Run #1 Run #2	Purge Volume 5.0 ml						
Purgeable	Aromatics						
CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	3'6 1.4 ND ND ND ND	1.0 1.0 2.0 1.0 1.0	0.21 0.23 0.35 0.55 0.55 0.66	ug/l ug/l ug/l ug/l ug/l ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	:	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	84% 90%			25% 39%		

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



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Section 4

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody





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ampany Name	Project N		Hor										1					1	1-1			DW-Drinking Water
IWH	EPTPC BIII to	San Juan	Basin	Pit GW				8008	2009		ŝ							1				GW - Ground Water WW - Wastewater
ed Smithjed.smith@mwhglobal.com	El Paso	Com				nvoice i na Ra					o-xylene											SO - Soil
ddress	Address				NUT	na Ke	inos			-	80									l	_	SL - Sludge
801 California Street, Suite 2900		ouisiana S	treet, R	m S19							e, E,											Oi - Oil
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T30414: Chain of Custody Page 1 of 3



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	SAMPLE INSPECTION FORM	t .
	Client:Da	
Cooler Temps: #1: <u> </u>	#3: #4: #5: #6	
Method of Delivery: FEDEX UPS	Accutest Courier Greyhound De	elivery Other
Airbill Numbers:		
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 Summary of Discrepancies:	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 rcvd 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 on COC but not received Trip Blank neceived but not on COC Trip Blank not intact Received Water Trip Blank Received Soli TB Number of Encores? Number of S035 kits? Number of lab-filtered metals?
TECHNICIAN SIGNATURE/DATE:		- 7 - 9 - 9 - • • • • • • • • •
Client Representative Notified:		Date:
By Accutest Representative: Client Instructions:		Via: Phone Email
l'umvalkanformisarrolemanagamani		······································

T30414: Chain of Custody Page 2 of 3



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T30414: Chain of Custody Page 3 of 3

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Section 5



QC Data Summaries

Includes the following where applicable:

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



Method Blank Summary

Job Number: Account: Project:	T30414 MWHCODE N San Juan Basin	0					
Sample GKK1498-MB	File ID KK031117.1	DF D 1	Analyzed 06/05/09	By FI	Prep Date n/a	Prep Batch n/a	Analytical Batch GKK1498
The QC report	ed here applies	to the fo	ollowing samples	s:	 	Method: SW84	6 8021B

T30414-1, T30414-2

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2 100-41-4 108-88-3 1330-20-7 95-47-6	Benzene Ethylbenzene Toluene Xylenes (total) o-Xylene m,p-Xylene	ND ND	1.0 1.0 2.0 1.0 1.0	0.21 0.35 0.23 0.55 0.55 0.66	ug/1 ug/1 ug/1 ug/1 ug/1 ug/1
CAS No.	Surrogate Recoveries		Limit	S	

460-00-4	4-Bromofluorobenzene	86% 58-1259	6
98-08-8	aaa-Trifluorotoluene	86% 88% 73-1399	6



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Page 1 of 1

5.1.1

Blank Spil Job Number: Account: Project:	ke Summary T30414 MWHCODE Montgome San Juan Basin Pit Grou		iation 20()8-2009		Page 1 of 1
Sample GKK1498-BS	File ID DF KK031113.D1	Analyzed 06/05/09	By FI	Prep Date n/a	Prep Batch n/a	Analytical Batch GKK1498
The QC repor T30414-1, T30	ted here applies to the fo 1414-2	llowing sample	s:		Method: SW84	6 8021B

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP % Limits
71-43-2	Benzene	20	19.1	96 86-121
100-41-4	Ethylbenzene	20	19.3	97 81-116
108-88-3	Toluene	20	19.3	97 87-117
1330-20-7	Xylenes (total)	60	57.7	96 85-115
95-47-6	o-Xylene	20	19.2	96 87-116
	m,p-Xylene	40	38.5	96 84-116
CAS No.	Surrogate Recoveries	BSP	Li	mits
460-00-4	4-Bromofluorobenzene	88%	58	-125%
98-08-8	aaa-Trifluorotoluene	91%	73	-139%



5.2.1 5

Matrix Spike/Matrix Spike Duplicate Summary

Job Number:	T30414	-		-				
Account: MWHCODE Montgomery Watson								
Project:	San Juan Basin Pit Gro	oundwater Remed	iation 200	08-2009				
Sample	File ID DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch		
T30414-2MS	KK031124.D1	06/05/09	FÍ	n/a	n/a	GKK1498		
T30414-2MSD	KK031125.D1	06/05/09	FI	n/a	n/a	GKK1498		
T30414-2	KK031118.D1	06/05/09	FI	n/a	n/a	GKK1498		
The QC report	ed here applies to the t	following sample	s:		Method: SW84	6 8021B		
T30414-1, T304	414-2							

CAS No.	Compound	T30414-2 ug/1 Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	3.6	20	24.5	105		104	•	86-121/19
100-41-4 108-88-3	Ethylbenzene Toluene	ND 1.4	20 20	21.4 22.4	107 105		107 105	U O	81-116/14 87-117/16
1330-20-7	Xylenes (total)	ND	60	63.4	105			.0	85-115/12
95-47-6	o-Xylene	ND	20	21.1	106	21.0			87-116/16
	m,p-Xylene	ND	40	42.3	106	42.2	,106	0.	84-116/13
CAS No.	Surrogate Recoveries	MS	MSD	Т3	0414-2	Limits			
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	89% 91%	89% 91%	84 90	% %	58-1259 73-1399	% %		

T30414 15 of 15 Laboralocies

Page 1 of 1



09/23/09

Technical Report for

Montgomery Watson

San Juan Basin Pit Groundwater Remediation

HORTON #E

Accutest Job Number: T37836

Sampling Date: 09/16/09

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: 17





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 K Canevano

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.

Gulf Coast • 10165 Harwin Drive • Suite 150 • Houston, TX 77036 • tel: 713-271-4700 • fax: 713-271-4770 • http://www.accutest.com



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Section 2: Case Narrative/Conformance Summary	4
Section 3: Sample Results	5
3.1: T37836-1: HORTON 1E MW-1	6
3.2: T37836-2: HORTON 1E MW-2	7
3.3: T37836-3: HORTON 1E MW-3	8
3.4: T37836-4: 160909 TB01	9
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Section 5: GC Volatiles - QC Data Summaries	14
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5.2: Blank Spike Summary	16
5.3: Matrix Spike/Matrix Spike Duplicate Summary	17



Sample Summary

i far i s

Montgomery Watson

Job No: T37836

San Juan Basin Pit Groundwater Remediation Project No: HORTON #E

Sample Number	Collected Date	Time By	Received	Matr Code		Client Sample ID
T37836-1	09/16/09	09:35 TU	09/17/09	AQ	Ground Water	HORTON, 1E MW-1
T37836-2	<u>.</u> 09/16/09	10:43 TU	09/17/09	AQ	Ground Water	HORTON 1E MW-2
T37836-3	09/16/09	11:28 TU	09/17/09	AQ	Ground Water	HORTON 1E MW-3
T37836-4	09/16/09	07:00 TU	09/17/09	AQ	Trip Blank Water	160909 TB01







SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Montgomery Watson	Job No	T37836
Site:	San Juan Basin Pit Groundwater Remediation	Report Date	9/22/2009 4:48:45 PM

3 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 09/16/2009 and were received at Accutest on 09/17/2009 properly preserved, at 2 Deg. C and intact. These Samples received an Accutest job number of T37836. 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:	GKK1554

All samples were analyzed within the recommended method holding time.

- All method blanks for this batch meet method specific criteria.
- Sample(s) T37878-3MS, T37878-3MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Ethylbenzene, m,p-Xylene, o-Xylene, Toluene, Xylenes (total) are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Ethylbenzene, m,p-Xylene, o-Xylene, Xylenes (total) are outside control limits. Probable cause due to matrix interference.

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 QualityObjectives 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

Page 1 of 1





Section 3



Sample Results

Report of Analysis



			Repo	rt of A	nalysis			Page 1 of
Client Sam Lab Samp Matrix: Method: Project:	le ID: T37 AQ SW	RTON 1E M 836-1 - Ground W 846 8021B Juan Basin		Remediatio	Date H Percer	Sampled: Received nt Solids	: 09/17/09	
Run #1 Run #2	File ID KK032485.1	DF D 1	Analyzed 09/21/09	By FI	Prep D n/a	ate	Prep Batch n/a	Analytical Batch GKK1554
Run #1 Run #2	Purge Volu 5.0 ml	me					·	
Purgeable	Aromatics							
CAS No.	Compound	1	Result	RL	MDL	Units	Q	
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenze Xylenes (to o-Xylene m,p-Xylene	otal)	0.44 ND ND ND ND ND	1.0 1.0 2.0 1.0 1.0	0.36 0.28 0.25 0.93 0.36 0.57	ug/l ug/l ug/l ug/l ug/l ug/l	J	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	101%	•	58-125%
98-08-8	aaa-Trifluorotoluene	122%	•	73-139%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

- J = Indicates an estimated value
- B = Indicates analyte found in associated method blank
- N = Indicates presumptive evidence of a compound



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E = Indicates value exceeds calibration range

		Repo	rt of An	alysis			Page 1 of 1
Client Sam Lab Samp Matrix: Method: Project:	le ID: T37836-2 AQ - Ground SW846 8021	Water	Remediatior	Date I Perce	Sampled: Received nt Solids	: 09/17/09	
Run #1 Run #2	File ID DF KK032495.D 1	Analyzed 09/21/09	By FI	Prep D n/a	Date	Prep Batch n/a	Analytical Batch GKK1554
Run #1 Run #2	Purge Volume 5.0 ml					<u> </u>	
Purgeable	Aromatics						
CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	ND ND ND ND ND	1.0 1.0 2.0 1.0	0.36 0.28 0.25 0.93 0.36 0.57	ug/l ug/l ug/l ug/l ug/l ug/l		
CAS No.	Surrogate Recoverie	s Run#1	Run# 2	Lim	its	;	
460-00-4 98-08-8	4-Bromofluorobenze aaa-Trifluorotoluene	ie 96% 120%			25% 39%		

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ND = Not detected MDL - Method Detection Limit RL = Reporting Limit J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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		Repo	rt of An	alysis			Page 1 of 1
Client Sam Lab Samp Matrix: Method: Project:	le ID: T37836-3 AQ - Ground V SW846 8021B		Remediation	Date I Percer	Sampled: Received nt Solids	: 09/17/09	
Run #1 Run #2	File ID DF KK032496.D 1	Analyzed 09/21/09	By FI	Prep D n/a	ate	Prep Batch n/a	Analytical Batch GKK1554
Run #1 Run #2	Purge Volume 5.0 ml						
Purgeable	Aromatics		<u> </u>				
CAS No.	Compound	Result	RL	MDL	Units	Q	
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	ND ND ND ND ND	1.0 1.0 2.0 1.0 1.0	0.36 0.28 0.25 0.93 0.36 0.57	ug/l ug/l ug/l ug/l ug/l ug/l		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its		
460-00-4	4-Bromofluorobenzen	e 99%		58-1	25%		

460-00-4	4-Bromofluorobenzene	99%	58-125%
98-08-8	aaa-Trifluorotoluene	121%	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



			Repo	ort of A	Analysis		Page 1 of 1
Client Sar Lab Samp Matrix: Method: Project:	ole ID: T3783 AQ - SW84	Γrip Blank 6 8021B	Water ² it Groundwater	Remedia	Date Sample Date Receive Percent Solie	ed: 09/17/09	
Run #1 Run #2	File ID KK032484.D	DF 1	Analyzed 09/21/09	By FI	Prep Date n/a	Prep Batch n/a	Analytical Batch GKK1554
Run #1 Run #2	Purge Volume 5.0 ml	;					

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CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	ND ND ND ND ND	1.0 1.0 2.0 1.0 1.0	0.36 0.28 0.25 0.93 0.36 0.57	ug/l ug/l ug/l ug/l ug/l ug/l	1
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	•
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	99% 120%	- - 		25% 39%	

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

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Section 4



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



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Turneround Time (Business days)	L. Market (A.S. 4)	<u></u>	ang selani	Data E	Xeliverabi	i Infor	mation	1 200	Sugar			2 500	1		Com	mants / Re	marke	┶┼ _ݞ	1000	1444	Fai yaleo
X 10 Day STANDARD Approved By:	Deto:	E		vercial "A			TRRP										are receiv				
7 Day				erciel "B		$\overline{\Box}$	E00 P	ormat_									rding hold				
4 Day RUSH				ed Tier 1		Ē	Other														
3 Day EMERGENCY)C	- Full D	eta Paçk	age							<u> </u>									<u> </u>
2 Day EMERGENCY		ļ										1									
1 Day EMERGENCY	<u> </u>	1		ercial "A" ercial "B"																	
Real time analytical data available via Lablink			Comm	acmi 49.	- Hesul	445	under	a QC													
AST ANTICAL STATES	MUST BE DOC	UMENTED	BELOW	ACH TIM	E SAMP	ES C	HANG	E POSS	ÉSSIO	i, IN <u>C</u> LI	DING C	OURIER D	ELIVERY	~	D	1948 <u>(</u>	<u>.</u>	潮出なる	S. Ariel C	0.9.99	9713-5
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- Tuy Car 9/16/09	1490	<u> </u>	<u> </u>					2		رم	77		9/1	<u>+ 4</u>		2	حط	1		\searrow	ſ
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winquished by.	Care tame:	18	woelved BA:					Custo	dy Seal			Preserv	ed where ep;				0n ł		Cooler Terg	P. C.	ł

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cutest Job Number: 137876	Client: Mix H	Date/Time Received: 97 3	
of Coolers Received: Ther	mometer #: <u>IR-1</u>	Temperature Adjustment Factor: <u> </u>	
boler Temps: #1: 7.0° #2:	#3: #4: #5:	#6: #7: #8:	<u> </u>
ethod of Delivery: FEDEX UPS	Accutest Courier Greyhound	Delivery Other	
COOLER INFORMATION	SAMPLE INFORMATION	TRIP BLANK INFORMATION	
Custody seal missing or not intact Temperature criteria not met Wet ice received in coolcr	Sample containers received broken VOC vtals have headspace Sample labels missing or illegible	Trip Blank on COC but not received Trip Blank received but not on COC Trip Blank not intact	
CHAIN OF CUSTODY	ID on COC does not match label(s) D/T on COC does not match label(s)	Received Water Trip Blank Received Soil TB	
Chain of Custody not received Sample D/T unclear or missing	Sample/Bottles revd but no analysis on CO Sample listed on COC, but not received		
Analyses unclear or missing COC not properly executed	Bottles missing for requested analysis Insufficient volume for analysis	Number of Encores? Number of 5035 kits?	
ummary of Discrepancies:	Sample received improperly preserved	Number of lab-filtered metals?	
			··
ECHNICIAN SIGNATURE/DATE:		<u>G/179</u>	
FORMATION AND SAMPLE LABELING VE	RIFIED BY:		
		· · · · · · · · · · · · · · · · ·	
	CORRECTIVE ACT	<u>IONS</u> • • • • • • • •	•
• • • • • • • •		Date:	*
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		Via: Phone Email	
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JOB #:		T37836			DATE/TIME	E RECEIVED:	9	-17-0	1933			
CLIENT:		MWH		i		INITIALS:	7	<u> </u>				-
COOLER#	SAMPLE ID	FIELD ID	DAT	Έ	MATRIX	VOL	BOTTLE #	LOCATION	PRESERV	P	 +] ·
1	Ċ:	Horton 12 mw-1	9-16-9	92-	tu .	yon	113	VR	1 2 3 4	<2	>12	1.
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-1	3	2	7	(123		-			$1 - \frac{2}{5} - \frac{3}{6} - \frac{4}{7} + \frac{4}{8}$	<2	>12	1.
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						<u> </u>				<u>\$2</u>	>12	+
									5 6 7 8 1 2 3 4	<2	>12	-
		2: HCL 3: HNO3 4: H2SO4 5: NAC			l	<u> </u>		<u> </u>	5 8 7 8	<2	>12	}

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Section 5

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: Account: Project:	T37836 MWHCODE M San Juan Basin	0	ery Watson Indwater Remed	iation			-
Sample GKK1554-MB	File ID KK032483.	DF D 1	Analyzed 09/21/09	By FI	Prep Date n/a	Prep Batch n/a	Analytical Batch GKK1554
The QC report	ed here applies	to the fo	ollowing samples	s:]	Method: SW84	6 8021B

T37836-1, T37836-2, T37836-3, T37836-4

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2 100-41-4 108-88-3 1330-20-7 95-47-6	Benzene Ethylbenzene Toluene Xylenes (total) o-Xylene m,p-Xylene	ND ND ND ND ND ND	1.0 1.0 2.0 1.0 1.0	0.36 0.25 0.28 0.93 0.36 0.57	ug/l ug/l ug/l ug/l ug/l ug/l
CAS No.	Surrogate Recoveries		Limit	S	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	99% 120%	58-12 73-13		

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5.1.1 5



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Blank Spike Summary

Sample	File ID D		2	Prep Date	Prep Batch	Analytical Batch
GKK1554-BS	KK032479.D1	09/21/0)9 FI	n/a	n/a	GKK1554

T37836-1, T37836-2, T37836-3, T37836-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2 100-41-4 108-88-3 1330-20-7 95-47-6	Benzene Ethylbenzene Toluene Xylenes (total) o-Xylene m,p-Xylene	20 20 20 60 20 40	19.3 21.3 20.6 63.1 21.3 41.8	97 107 103 105 107 105	86-121 81-116 87-117 85-115 87-116 84-116
CAS No. 460-00-4 98-08-8	Surrogate Recoveries 4-Bromofluorobenzene aaa-Trifluorotoluene	BSP 102% 122%	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	nits 125% 139%	



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5.2.1

Matrix Spike/Matrix Spike Duplicate Summary

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1	Account: Project:	MWHCODE Montgomery Watson San Juan Basin Pit Groundwater Remediation	
	lob Number:	137836	

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch	
T37878-3MS	KK032489	.D1	09/21/09	FI	n/a	n/a	GKK1554	
T37878-3MSD	KK032490	.D1	09/21/09	FI	n/a	n/a	GKK1554	
T37878-3	KK032488	.D1	09/21/09	FI	n/a	n/a	GKK1554	

The QC reported here applies to the following samples:

Method: SW846 8021B

T37836-1, T37836-2, T37836-3, T37836-4

CAS No.	Compound	T37878-3 ug/l	3 Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2 100-41-4 108-88-3 1330-20-7 95-47-6	Benzene Ethylbenzene Toluene Xylenes (total) o-Xylene m,p-Xylene	2.4 1.0 U 0.82 11.7 6.0 5.8	J	20 20 20 60 20 40	24.4 24.8 24.5 84.1 30.2 53.9	110 124* 118* 121* 121* 120*	24.9 24.3 83.9 30.2	125* 117	1 0 0	86-121/19 81-116/14 87-117/16 85-115/12 87-116/16 84-116/13
CAS No.	Surrogate Recoveries	MS		MSD	Т37	7878-3	Limits			
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	103% 124%	1. 4 4	106% 124%	101 123		58-125% 7¦3-139%	-		

5.3.1



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