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AGWMR

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

MWH

1801 California Street, Suite 2900
Denver, Colorado 80202

2009 ANNUAL GROUNDWATER REPORT
NON-FEDERAL SITES VOLUME II

EL PASO TENNESSEE PIPELINE COMPANY

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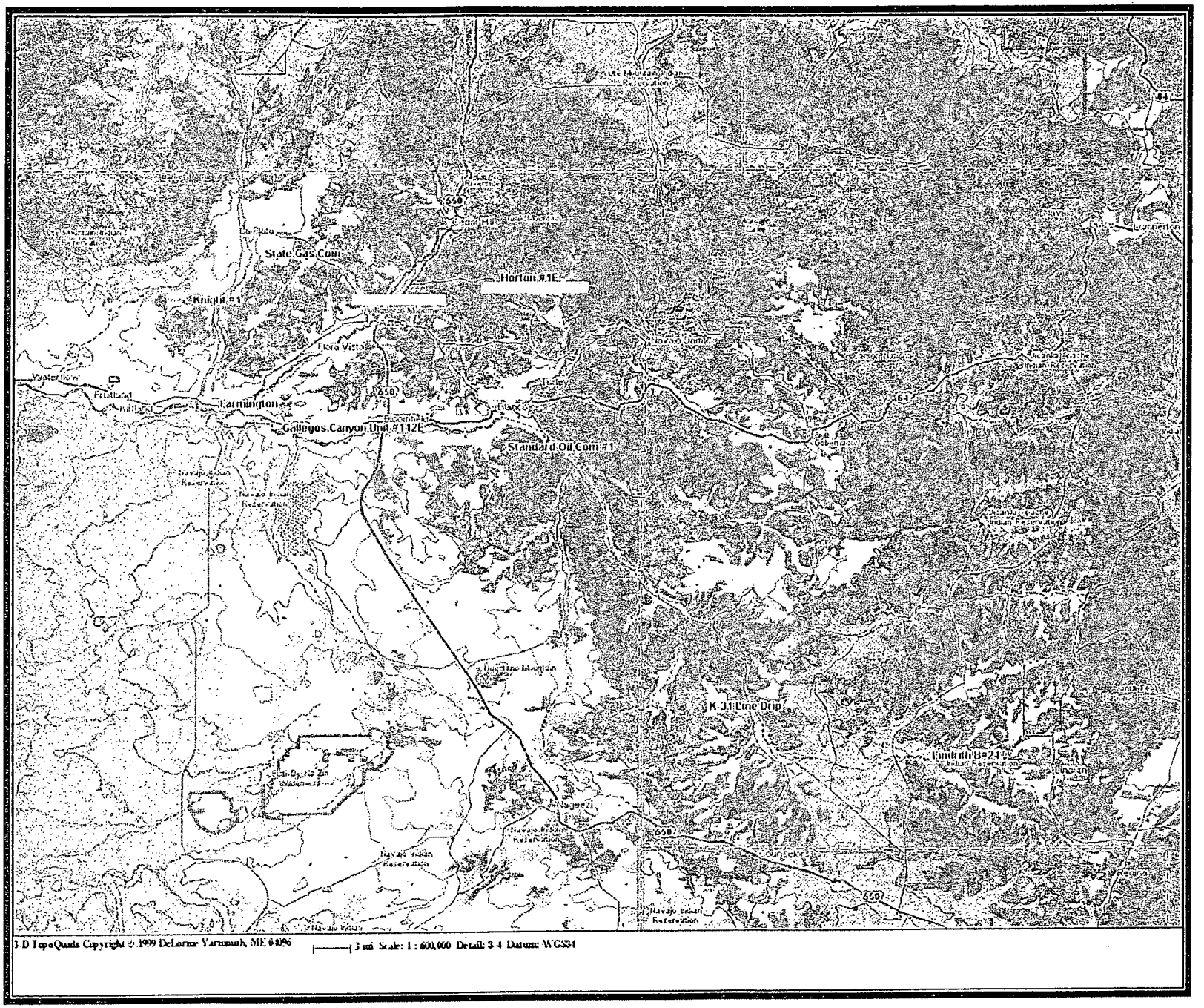
*The Lindrith B#24 site was submitted for closure in 2006 and is pending approval from NMOCD. There were no monitoring activities for this site in 2009.

elpaso MWH

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

Non-Federal Groundwater Site Map



EPTPC GROUNDWATER SITES
2009 ANNUAL GROUNDWATER REPORT

Standard Oil Com #1
Meter Code: 70445

SITE DETAILS

Legal Description:		**Town:**	29N	**Range:**	9W	**Sec:** 36	**Unit:** N
NMOCD Haz Ranking:	30	**Land Type:**	State	**Operator:**	Burlington Resources		

PREVIOUS ACTIVITIES

Site Assessment:	5/94	**Excavation:**	5/94 (60 cy)	**Soil Boring:**	9/95
Monitor Well:	9/95	**Geoprobe:**	7/97	**Additional MWs:**	12/01
Downgradient MWs:	12/01	**Replace MW:**	NA	**Quarterly Initiated:**	11/96
ORC Nutrient Injection:	NA	**Re-Excavation:**	NA	**PSH Removal Initiated:**	NA
Annual Initiated:	NA	**Quarterly Resumed:**	NA	**PSH Removal in 2009?**	No

SUMMARY OF 2009 ACTIVITIES

MW-1: Annual groundwater sampling (June) was performed in 2009.

MW-2: Annual groundwater sampling (June) was performed in 2009.

MW-3: Annual water level monitoring (June) was performed in 2009.

MW-4: Annual water level monitoring (June) was performed in 2009.

MW-5: Annual groundwater sampling (June) was performed in 2009.

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

SITE MAPS

A Site map (June 2009) is attached as Figure 1.

EPTPC GROUNDWATER SITES
2009 ANNUAL GROUNDWATER REPORT

Standard Oil Com #1
Meter Code: 70445

SUMMARY TABLES AND GRAPHS

- Historic analytical and water level data are summarized in Table 1 and presented graphically in Figures 2 through 6.
- 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.

ISOCONCENTRATION MAPS

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

RESULTS

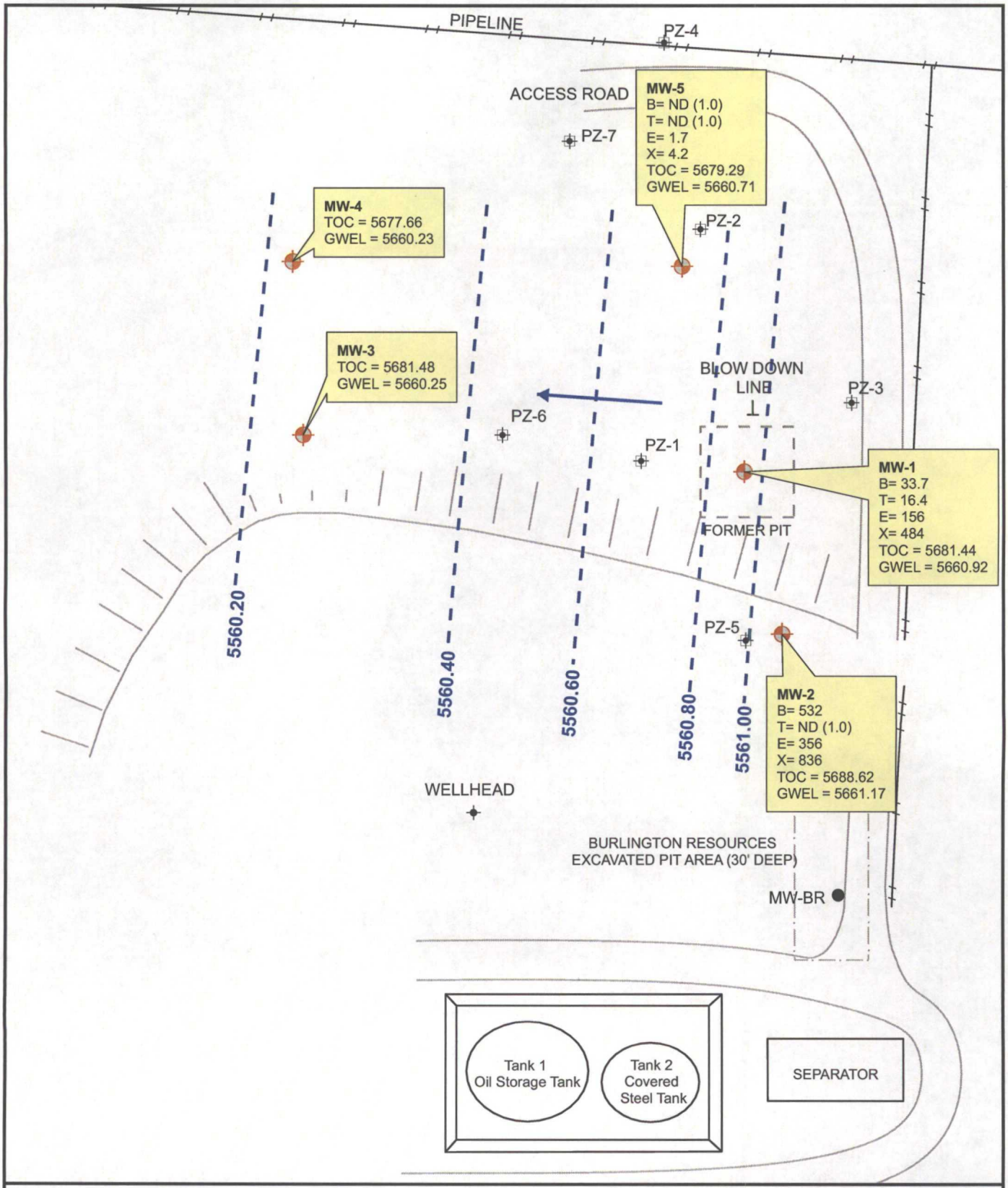
- The groundwater flow direction at this Site is generally toward the west.
- Benzene in the sample collected from MW-1 was above the NMWQCC standard, at 33.7 µg/L. The remaining BTEX constituents were below their respective standards. As a long-term trend, concentrations have attenuated significantly in this well.
- The benzene and total xylenes concentrations in the sample collected from MW-2 were 532 µg/L and 836 µg/L, respectively, exceeding their NMWQCC standards. The remaining BTEX constituents were below their respective standards. As a long-term trend, BTEX concentrations have attenuated significantly in this well.
- In 1997, temporary piezometer data were collected that indicated other potential sources of contamination at the Site. Piezometer locations are shown on Figure 1. PZ-1, PZ-5, and PZ-6 had benzene concentrations ranging from 1,420 µg/L to 10,400 µg/L; juxtaposed against a benzene concentration of 91.4 µg/L in monitor well MW-1, located in the former El Paso pit.
- Monitoring wells MW-3 and MW-4 have historically had high levels of BTEX constituents that are not believed to be from the former EPTPC pit, based on the 1997 piezometer sampling results. These wells are therefore only used for water level monitoring.

- The annual samples collected from new monitor well MW-5 in 2007, 2008, and 2009 have appeared clean with respect to BTEX.

RECOMMENDATIONS

- EPTPC recommends that sampling at MW-1, MW-2, and MW-5 be performed on an annual basis until BTEX concentrations approach closure criteria. These wells will then be scheduled for quarterly sampling until four consecutive samples are below closure standards.

- New well MW-5 helped to clarify the gradient direction at the Site. EPTPC will evaluate this Site further, and particularly the impacts observed in monitoring wells MW-3, and MW-4 and present any additional recommendations in future annual reports.



LEGEND

MW-4	Existing Monitoring / Observation Well
PZ-01	Abandoned Temporary Piezometer
	Groundwater Flow Direction
—5561—	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)

0 15 30 Feet

MWH elpaso

PROJECT: STANDARD OIL COM #1

TITLE: Groundwater Potentiometric Surface Map, and BTEX Concentrations - June 10, 2009

FIGURE: 1

FIGURE 2
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
STANDARD OIL COM #1 (METER #70445)
MW01

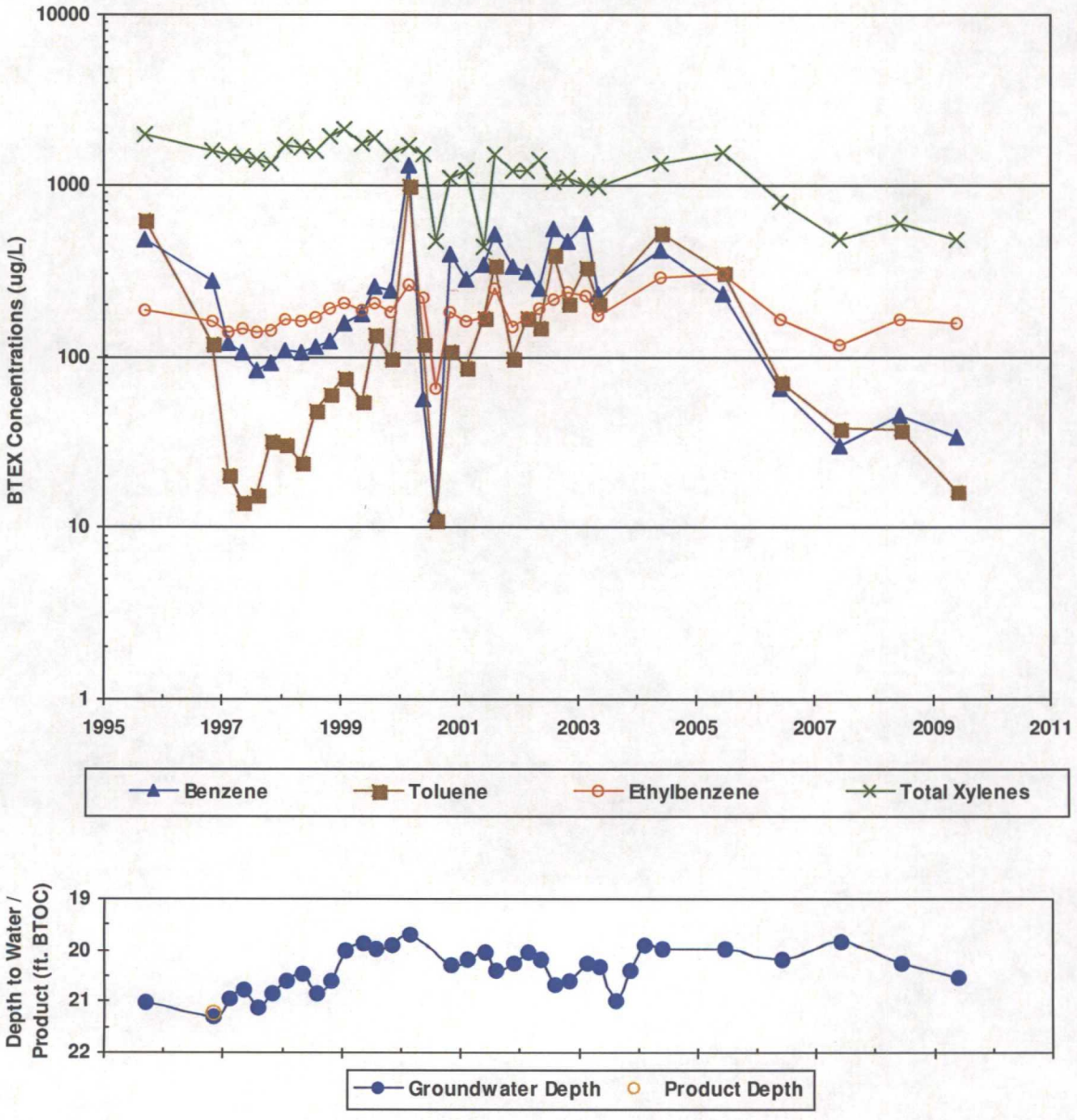


FIGURE 3
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
STANDARD OIL COM #1 (METER #70445)
MW02

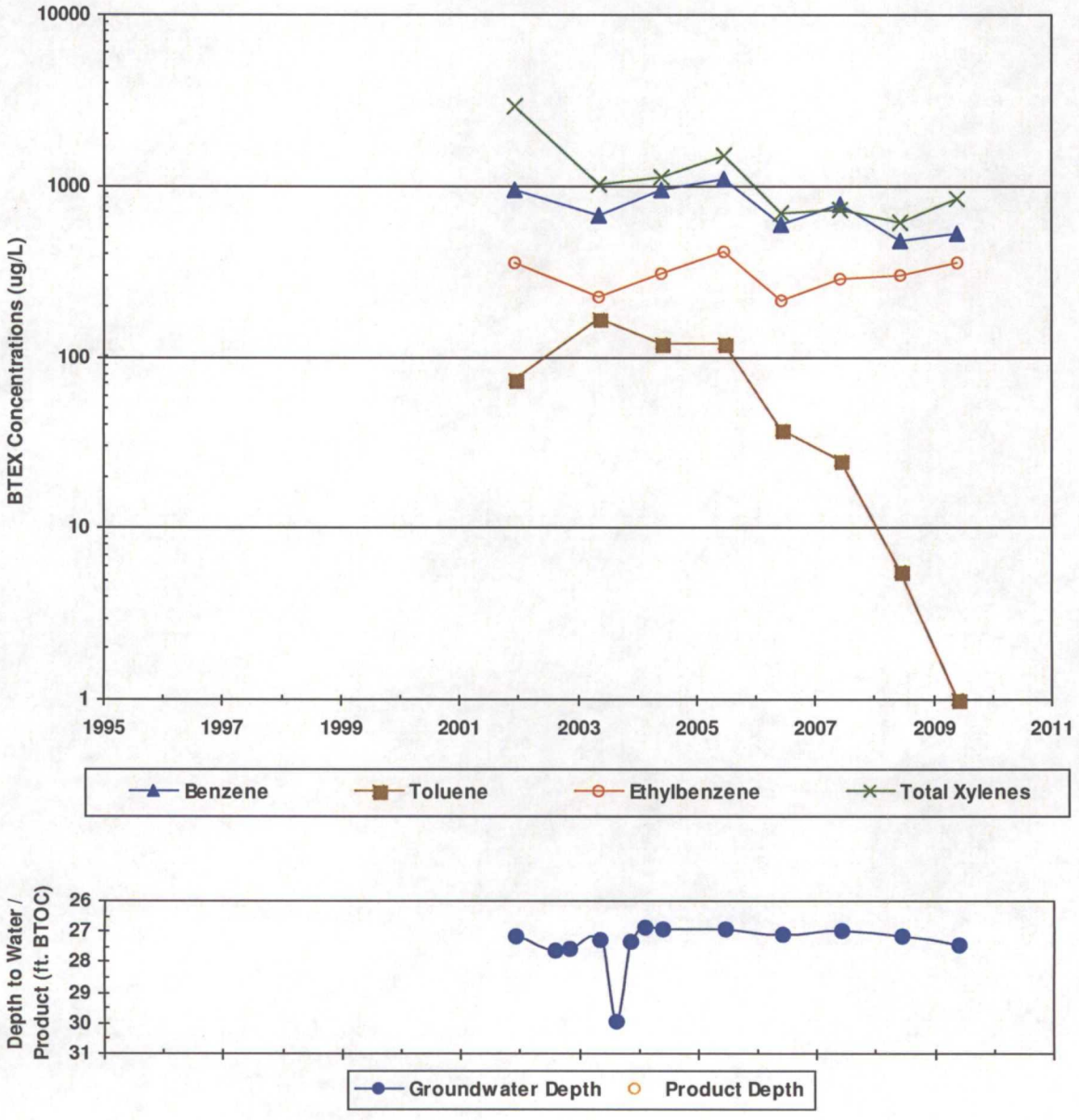


FIGURE 4
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
STANDARD OIL COM #1 (METER #70445)
MW03

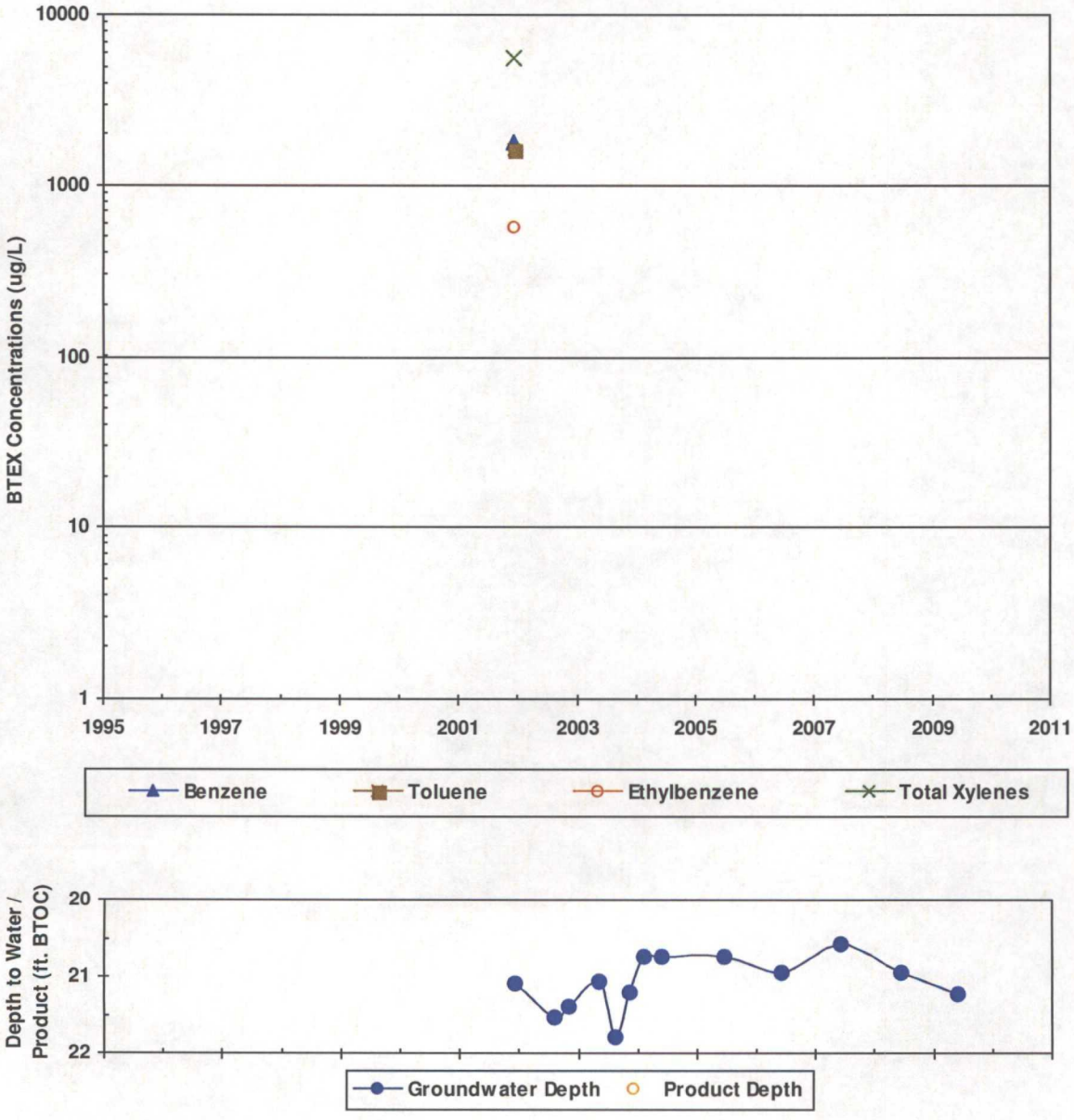
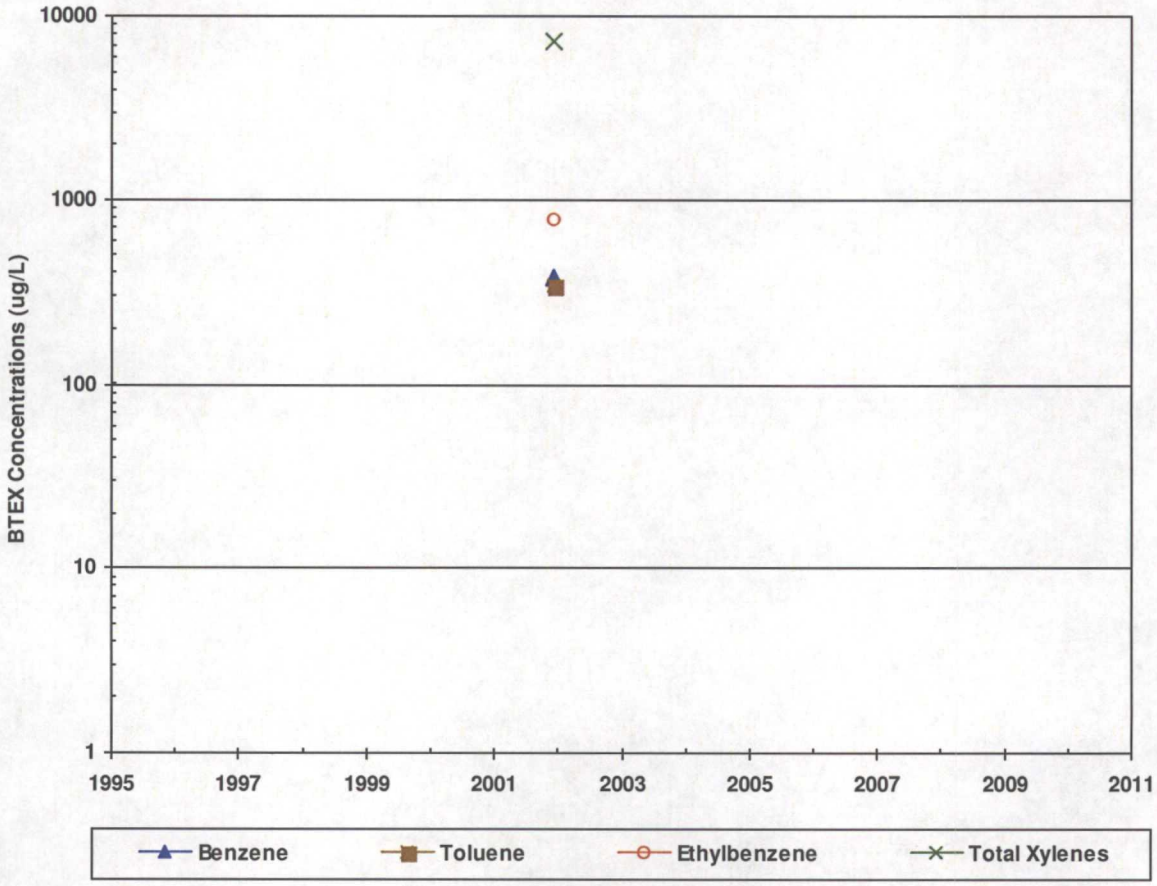


FIGURE 5
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
STANDARD OIL COM #1 (METER #70445)
MW04



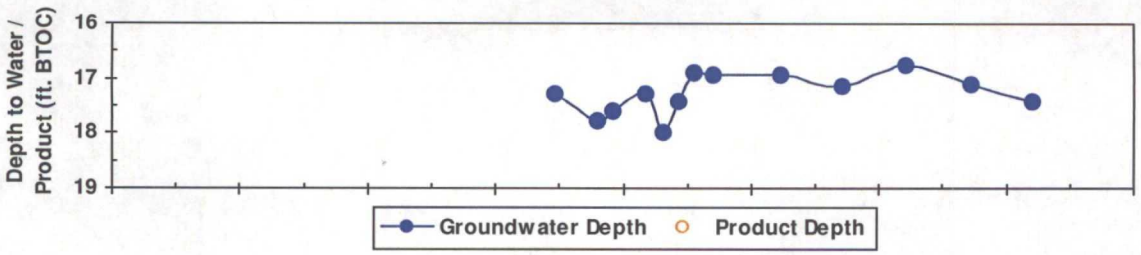


FIGURE 6
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
STANDARD OIL COM #1 (METER #70445)
MW05

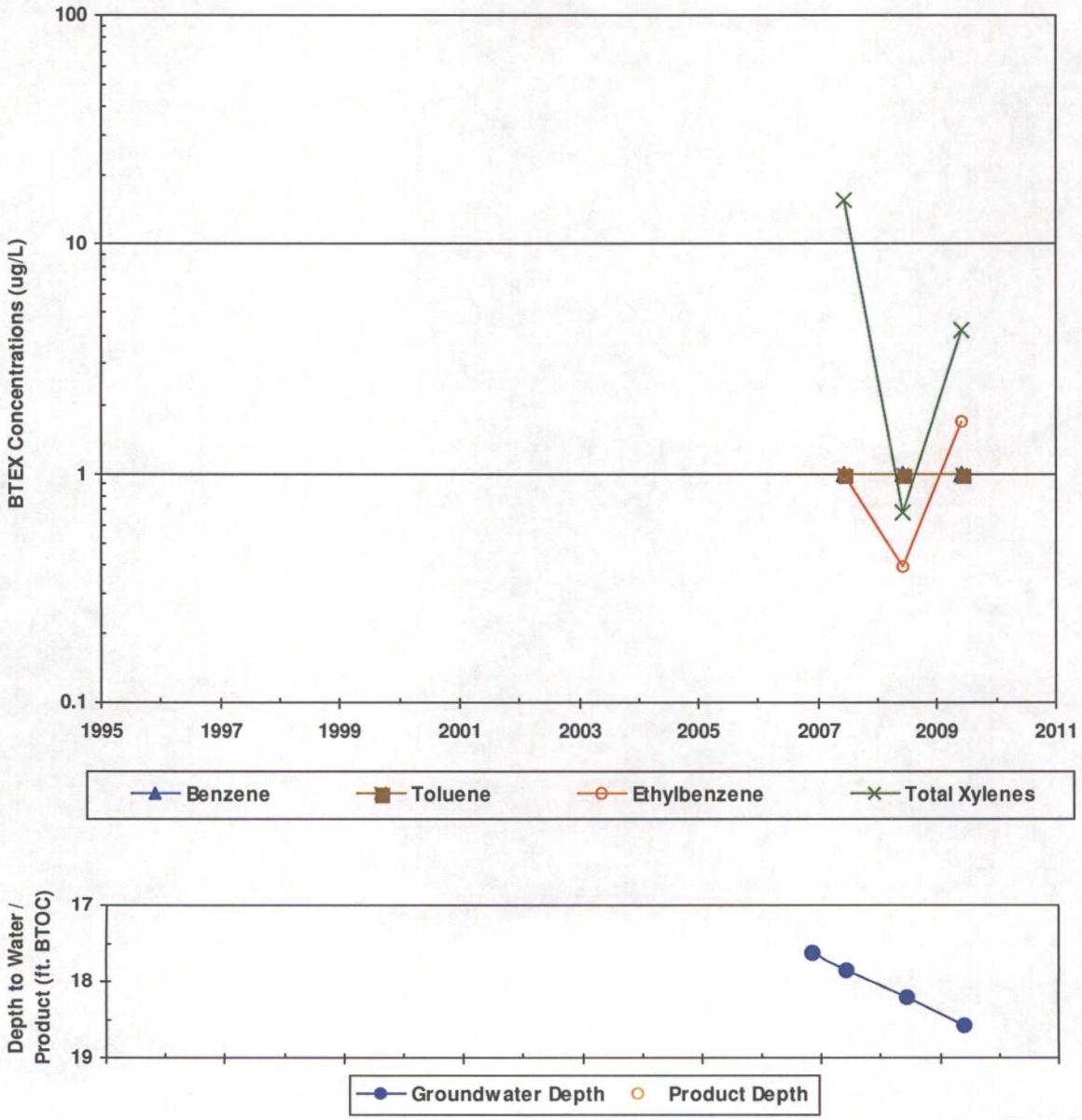


TABLE 1

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES
STANDARD OIL COM #1 (METER #70445)

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.:		10	750	750	620		
MW01	9/12/1995	**482**	629	188	**1980**	21.03	5660.41
MW01	11/7/1996	**277**	121	161	**1590**	21.30	5660.19
MW01	2/7/1997	**119**	20.2	139	**1490**	20.96	5660.48
MW01	5/9/1997	**105**	14.2	145	**1480**	20.78	5660.66
MW01	8/8/1997	**82.6**	15.6	140	**1400**	21.13	5660.31
MW01	11/4/1997	**91.4**	32.4	141	**1320**	20.86	5660.58
MW01	2/3/1998	**109**	31	163	**1680**	20.61	5660.83
MW01	5/7/1998	**107**	24.2	161	**1640**	20.47	5660.97
MW01	8/4/1998	**113**	48.7	167	**1580**	20.85	5660.59
MW01	11/3/1998	**122**	61.3	190	**1930**	20.62	5660.82
MW01	2/2/1999	**157**	75.8	204	**2100**	20.02	5661.42
MW01	5/19/1999	**178**	55.2	184	**1730**	19.86	5661.58
MW01	8/4/1999	**252**	136	203	**1890**	19.98	5661.46
MW01	11/9/1999	**240**	98	180	**1500**	19.91	5661.53
MW01	2/25/2000	**1300**	**1000**	260	**1700**	19.69	5661.75
MW01	5/24/2000	**56**	120	220	**1500**	NA	NA
MW01	8/8/2000	**12**	11	66	470	NA	NA
MW01	11/6/2000	**390**	110	180	**1100**	20.29	5661.15
MW01	2/15/2001	**280**	88	160	**1200**	20.18	5661.26
MW01	6/4/2001	**340**	170	170	430	20.05	5661.39
MW01	8/7/2001	**510**	340	250	**1500**	20.41	5661.03
MW01	12/4/2001	**330**	98	150	**1200**	20.26	5661.18
MW01	2/25/2002	**310**	170	170	**1200**	20.06	5661.38
MW01	5/14/2002	**250**	150	190	**1400**	20.17	5661.27
MW01	8/6/2002	**551**	398	214	**1041**	20.69	5660.75
MW01	11/4/2002	**464**	207	235	**1085**	20.60	5660.83
MW01	2/27/2003	**600**	330	225	**993**	20.24	5661.20
MW01	5/19/2003	**230**	206	172	**977**	20.31	5661.13
MW01	6/2/2004	**416**	534	287	**1330**	19.99	5661.46
MW01	6/24/2005	**234**	310	305	**1530**	19.98	5661.46
MW01	6/7/2006	**66.0**	71.9	165	**804**	20.18	5661.26
MW01	6/12/2007	**29.8**	38.2	116	477	19.85	5661.59
MW01	6/16/2008	**45.4**	37.7	164	598	20.24	5661.20
MW01	6/10/2009	**33.7**	16.4	156	484	20.52	5660.92

TABLE 1

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES
STANDARD OIL COM #1 (METER #70445)

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.:		**10**	**750**	**750**	**620**		
MW02	12/13/2001	**940**	74	360	**2900**	27.15	5661.47
MW02	5/19/2003	**673**	167	228	**1010**	27.29	5661.33
MW02	6/2/2004	**943**	120	309	**1130**	26.94	5661.68
MW02	6/24/2005	**1090**	120	418	**1510**	26.92	5661.70
MW02	6/7/2006	**592**	37.7	216	**692**	27.12	5661.50
MW02	6/12/2007	**781**	<25	286	**733**	26.96	5661.66
MW02	6/16/2008	**480**	5.6J	299	614	27.17	5661.45
MW02	6/10/2009	**532**	<1.0	356	**836**	27.45	5661.17
MW03	12/13/2001	**1800**	**1600**	570	**5600**	21.10	5660.38
MW04	12/13/2001	**380**	340	**780**	**7300**	17.30	5660.36
MW05	6/12/2007	<1.0	<1.0	<1.0	15.6	17.85	5661.44
MW05	6/16/2008	<1.0	<1.0	0.39J	0.68J	18.20	5661.09
MW05	6/10/2009	<1.0	<1.0	1.7	4.2	18.58	5660.71

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
STANDARD OIL COM #1 (METER #70445)

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	11/7/1996	21.24	21.30	0.06	--	0.00	5660.19

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 **Date:** 06/10/2009
Project Manager: Ashley Ager
Client: MWH
Site Name: Standard Oil Com #1

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	7:51 AM	-	20.52	-	-	sample BTEX
MW-2		-	27.45	-	-	sample BTEX
MW-3		-	21.23	-	-	
MW-4		-	17.43	-	-	
MW-5		-	18.58	-	-	sample BTEX

Comments
Operator: Burlington Resources
Review site map (map is ok), take site pictures.

Signature: *Ashley L. Ager* Date: 06/11/2009

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

WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin | Location: Standard Oil Com | Well No: MW-1
Client: MWH | Date: 6/10/2009 | Time: 8:57
Project Manager: Ashley Ager | Sampler's Name: Troy Urban

Measuring Point: TOC | Depth to Water: 20.52 ft | Depth to Product: ft
Well Diameter: 4" | Total Depth: 32.86 ft | Product Thickness: ft
Water Column Height: 12.34 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☑ Other bail dry

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
12.34 x .65	8.02 x 3		24.06 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
9:02	7.17	2.33	57.0				1.25	clear
	7.08	2.34	57.2				2.5	light gray, sheen
	7.14	2.30	57.0				3.75	light gray, sheen
	7.16	2.30	57.2				5	light gray, sheen
	7.26	2.27	57.0				10	light gray, sheen
	7.25	2.25	57.2				15	light gray, sheen
	7.41	2.28	57.0				20	light gray, sheen
	7.40	2.25	57.0				22.5	light gray, sheen
	7.42	2.22	57.2				24	light gray, sheen
Final:	7.40	2.21	57.0				24.5	light gray, sheen

COMMENTS: Replaced bailer

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other

Water Disposal: Rio Vista

Sample ID: MW-1 Sample Time: 9:34

Analysis Requested: ☑ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other

Trip Blank: 100609TB01 Duplicate Sample:

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

WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin | Location: Standard Oil Com | Well No: MW-2
Client: MWH | Date: 6/10/2009 | Time: 8:06
Project Manager: Ashley Ager | Sampler's Name: Troy Urban

Measuring Point: TOC | Depth to Water: 27.45 ft | Depth to Product: ft
Well Diameter: 2" | Total Depth: 36.99 ft | Product Thickness: ft
Water Column Height: 9.54 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☑ Other bail dry

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
3.54 x .16	1.52 x 3		4.57 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
8:06	7.24	2.56	58.3				0.25	clear, white precipitate
	7.25	2.57	58.3				0.5	gray, white precipitate, sheen
	7.25	2.56	58.5				0.75	gray, white precipitate, sheen
	7.26	2.51	58.3				1	gray, sheen, HC odor
	7.37	2.56	58.6				2	gray, sheen, HC odor
	7.38	2.60	58.3				3	gray, sheen, HC odor
	7.43	2.55	58.1				4	gray, sheen, HC odor
	7.44	2.62	58.1				4.5	gray, sheen, HC odor
Final:	7.41	2.58	58.1				4.75	gray, sheen, HC odor

COMMENTS:

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other

Water Disposal: Rio Vista

Sample ID: MW-2 | Sample Time: 8:45

Analysis Requested: ☑ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other

Trip Blank: 100609TB01 | Duplicate Sample:

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

WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin | Location: Standard Oil Com | Well No: MW-5
Client: MWH | Date: 6/10/2009 | Time: 9:40
Project Manager: Ashley Ager | Sampler's Name: Troy Urban

Measuring Point: TOC | Depth to Water: 18.58 ft | Depth to Product: ft
Well Diameter: 2" | Total Depth: 22.15 ft | Product Thickness: ft
Water Column Height: 3.57 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☑ Other bail dry

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
3.57 x .16	0.57 x 3		1.71 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
9:48	7.23	2.51	55.8				0.25	light brown, silty
	7.22	2.46	55.8				0.5	brown, silty
	7.30	2.49	55.8				0.75	dark brown, silty
	7.38	2.45	55.8				1	dark brown, silty
	7.35	2.51	55.8				1.4	dark brown, silty
Final:	7.36	2.47	55.8				1.75	dark brown, silty, bailing down

COMMENTS:

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other

Water Disposal: Rio Vista

Sample ID: MW-5 | Sample Time: 10:00

Analysis Requested: ☑ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other

Trip Blank: 100609TB01 | Duplicate Sample:

Gulf Coast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

06/17/09

Technical Report for

Montgomery Watson

San Juan Basin Pit Groundwater Remediation 2008-2009

Standard Oil TU

Accutest Job Number: T30982

Sampling Date: 06/10/09

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: **20**

ACCUTEST LABORATORIES 50 YEARS 1956-2006

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.

Paul K Canevaro

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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Sample Summary

Montgomery Watson

Job No: T30982

San Juan Basin Pit Groundwater Remediation 2008-2009
Project No: Standard Oil TU

Sample Number	Collected Date	Time By	Received	Matrix Code	Matrix Type	Client Sample ID
T30982-1	06/10/09	08:45	06/11/09	AQ	Ground Water	STANDARD OIL #1 MW-2
T30982-2	06/10/09	09:34	06/11/09	AQ	Ground Water	STANDARD OIL #1 MW-1
T30982-3	06/10/09	10:00	06/11/09	AQ	Ground Water	STANDARD OIL #1 MW-5
T30982-4	06/10/09	07:00	06/11/09	AQ	Trip Blank Water	100609TB02

ACCUTEST Laboratories

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Montgomery Watson	**Job No**	T30982
Site:	San Juan Basin Pit Groundwater Remediation 2008-2009	**Report Date**	6/16/2009 5:06:13 PM

3 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 06/10/2009 and were received at Accutest on 06/11/2009 properly preserved, at 3.1 Deg. C and intact. These Samples received an Accutest job number of T30982. 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:** GKK1503

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T30983-1MS, T30983-1MSD were used as the QC samples indicated.

Matrix AQ **Batch ID:** GKK1504

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T31085-1MS, T31085-1MSD 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

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	STANDARD OIL #1 MW-2		
Lab Sample ID:	T30982-1	Date Sampled:	06/10/09
Matrix:	AQ - Ground Water	Date Received:	06/11/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation 2008-2009		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK031273.D	1	06/12/09	FI	n/a	n/a	GKK1503
Run #2	KK031294.D	25	06/15/09	FI	n/a	n/a	GKK1504

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

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	532 [a]	25	5.2	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
100-41-4	Ethylbenzene	356 [a]	25	8.7	ug/l	
1330-20-7	Xylenes (total)	836 [a]	50	14	ug/l	
95-47-6	o-Xylene	7.3	1.0	0.55	ug/l	
	m,p-Xylene	836 [a]	25	17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	96%	85%	58-125%
98-08-8	aaa-Trifluorotoluene	124%	102%	73-139%

(a) Result is from Run# 2

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:	STANDARD OIL #1 MW-1		
Lab Sample ID:	T30982-2	Date Sampled:	06/10/09
Matrix:	AQ - Ground Water	Date Received:	06/11/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation 2008-2009		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK031278.D	1	06/12/09	FI	n/a	n/a	GKK1503
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	33.7	1.0	0.21	ug/l	
108-88-3	Toluene	16.4	1.0	0.23	ug/l	
100-41-4	Ethylbenzene	156	1.0	0.35	ug/l	
1330-20-7	Xylenes (total)	484	2.0	0.55	ug/l	
95-47-6	o-Xylene	180	1.0	0.55	ug/l	
	m,p-Xylene	304	1.0	0.66	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	94%		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:	STANDARD OIL #1 MW-5		
Lab Sample ID:	T30982-3	Date Sampled:	06/10/09
Matrix:	AQ - Ground Water	Date Received:	06/11/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation 2008-2009		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK031279.D	1	06/12/09	FI	n/a	n/a	GKK1503
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
100-41-4	Ethylbenzene	1.7	1.0	0.35	ug/l	
1330-20-7	Xylenes (total)	4.2	2.0	0.55	ug/l	
95-47-6	o-Xylene	1.2	1.0	0.55	ug/l	
	m,p-Xylene	3.0	1.0	0.66	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	83%		58-125%
98-08-8	aaa-Trifluorotoluene	96%		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

Accutest Laboratories

Report of Analysis

Client Sample ID:	100609TB02		
Lab Sample ID:	T30982-4	Date Sampled:	06/10/09
Matrix:	AQ - Trip Blank Water	Date Received:	06/11/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation 2008-2009		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK031269.D	1	06/12/09	FI	n/a	n/a	GKK1503
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	75%		58-125%
98-08-8	aaa-Trifluorotoluene	82%		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

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

ACCUTEST Laboratories

CHAIN OF CUSTODY

Page 1 of 2

10165 Harwin, Suite 150 - Houston, TX 77036 - 713-271-4700 fax: 713-271-4770

Standard Oil TU

FED-EX Tracking #	Bottle Order Control #
Accutest Quote # 8693 8850 8186	Accutest Job # T30982

Client / Reporting Information

Company Name: MWH		
Project Contact: Jed Smith	E-Mail: jed.smith@mwhglobal.com	
Address: 1801 California Street, Suite 2900		
City: Denver	State: CO	Zip: 80202
Phone No.: 303-291-2276	Fax No.:	
Samplers's Name:		

Project Information

Project Name / No.: ~~Tkste Oil Com Kr-3~~ EPTPC San Juan Basin Pit GW Remediation 2008-2009		
Bill to: El Paso Corp	Invoice Attn.: Norma Ramos	
Address: 1001 Louisiana Street, Rm S1904B		
City: Hou	State: TX	Zip: 77002
Phone No.:	Fax No.:	
Client Purchase Order #:		

Requested Analyses: BTEX (8021B) include m,p, & o-xylene

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Wastewater; SO - Soil; SL - Sludge; OI - Oil; LIQ - Liquid; SOL - Other Solid

Accutest Sample #	Field ID / Point of Collection	Collection Date	Collection Time	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	ENCORE	NaHSO4	MEOH	NONE	BTEX (8021B) include m,p, & o-xylene	LAB USE ONLY
	Standard oil #1 mw-2	061009	0845	GW	3	X								X	
	Standard Oil #1 MW-1	061009	0934	GW	3	X								X	
	Standard Oil #1 MW-5	061009	1000	GW	3	X								X	
	100609TBØ2	061009	0700	GW	2	X								X	

Turnaround Time (Business days)

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

Approved By:/ Date:

Real time analytical data available via Lablink

Data Deliverable Information

- [ ] Commercial "A"
- [X] Commercial "B"
- [ ] Reduced Tier 1
- [ ] Full Data Package
- [ ] TRRP-13
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only

Commercial "B" = Results & Standard QC

Comments / Remarks

If samples are received unpreserved, please notify MWH regarding holding time!!!

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 [signature] 6/10/09	1610	1	2 Fed Ex	06/11/09 1000	2 [signature]
Relinquished by: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Preserved where applicable ☐	On Ice ☒ Cooler Temp. 3.1

4.1

4

T30982: Chain of Custody

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SAMPLE INSPECTION FORM

Accutest Job Number: T30982 Client: MWH Date/Time Received: 04/11/09 1000

# of Coolers Received: 1 Thermometer #: 110 Temperature Adjustment Factor: -0.3

Cooler Temps: #1: 3.1 #2: _____ #3: _____ #4: _____ #5: _____ #6: _____ #7: _____ #8: _____

Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery 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

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 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: [signature] 4/11/09

INFORMATION AND SAMPLE LABELING VERIFIED BY: GC 6/11/9

CORRECTIVE ACTIONS

Client Representative Notified: _____ **Date:** _____

By Accutest Representative: _____ **Via:** Phone Email

Client Instructions:

4.1

JOB #: T30982 DATE/TIME RECEIVED: 06/11/09 1000

CLIENT: MWH INITIALS: FF

COOLER#	SAMPLE ID	FIELD ID	DATE	MATRIX	VOL	BOTTLE #	LOCATION	PRESERV	PH
1	1	standard oil #1 MW-2	06/10/09 845	W	40ml	1-3	VR	1 2 3 4 5 6 7 8	<2 >12
↓	2	MW-1	" 0934	↓	↓	"	↓	1 2 3 4 5 6 7 8	<2 >12
↓	3	MW-5	" 1000	↓	↓	"	↓	1 2 3 4 5 6 7 8	<2 >12
↓	4	Trip Blank	—	↓	↓	1-2	↓	1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
			FF 06/11/09					1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NAOH 6: DI 7: MeOH 8: Other

LOCATION: 1: Walk-In #1 (Waters) 2: Walk-In #2 (Soils) VR: Volatile Fridge M: Metals SUB: Subcontract EF: Encore Freezer

Rev 8/13/01 ewp

4.1

4

T30982: Chain of Custody

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GC Volatiles

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QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: T30982
Account: MWHCODE Montgomery Watson
Project: San Juan Basin Pit Groundwater Remediation 2008-2009

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1503-MB	KK031268.D	1	06/12/09	FI	n/a	n/a	GKK1503

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

T30982-1, T30982-2, T30982-3, T30982-4

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

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	76%	58-125%
98-08-8	aaa-Trifluorotoluene	82%	73-139%

Method Blank Summary

Job Number: T30982
Account: MWHCODE Montgomery Watson
Project: San Juan Basin Pit Groundwater Remediation 2008-2009

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1504-MB	KK031288.D	1	06/15/09	FI	n/a	n/a	GKK1504

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

T30982-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.35	ug/l	
1330-20-7	Xylenes (total)	ND	2.0	0.55	ug/l	
	m,p-Xylene	ND	1.0	0.66	ug/l	

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	81%	58-125%
98-08-8	aaa-Trifluorotoluene	96%	73-139%

Blank Spike Summary

Job Number: T30982
Account: MWHCODE Montgomery Watson
Project: San Juan Basin Pit Groundwater Remediation 2008-2009

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1503-BS	KK031264.D	1	06/12/09	FI	n/a	n/a	GKK1503

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

T30982-1, T30982-2, T30982-3, T30982-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	17.6	88	86-121
100-41-4	Ethylbenzene	20	17.6	88	81-116
108-88-3	Toluene	20	17.7	89	87-117
1330-20-7	Xylenes (total)	60	52.4	87	85-115
95-47-6	o-Xylene	20	17.6	88	87-116
	m,p-Xylene	40	34.8	87	84-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	81%	58-125%
98-08-8	aaa-Trifluorotoluene	85%	73-139%

Blank Spike Summary

Job Number: T30982
Account: MWHCODE Montgomery Watson
Project: San Juan Basin Pit Groundwater Remediation 2008-2009

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1504-BS	KK031284.D	1	06/15/09	FI	n/a	n/a	GKK1504

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

T30982-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	19.5	98	86-121
100-41-4	Ethylbenzene	20	17.8	89	81-116
1330-20-7	Xylenes (total)	60	51.7	86	85-115
	m,p-Xylene	40	34.6	87	84-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	80%	58-125%
98-08-8	aaa-Trifluorotoluene	91%	73-139%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T30982
Account: MWHCODE Montgomery Watson
Project: San Juan Basin Pit Groundwater Remediation 2008-2009

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T30983-1MS	KK031274.D	1	06/12/09	FI	n/a	n/a	GKK1503
T30983-1MSD	KK031275.D	1	06/12/09	FI	n/a	n/a	GKK1503
T30983-1	KK031270.D	1	06/12/09	FI	n/a	n/a	GKK1503

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

T30982-1, T30982-2, T30982-3, T30982-4

CAS No.	Compound	T30983-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	34.7		20	54.2	98	53.5	94	1	86-121/19
100-41-4	Ethylbenzene	ND		20	20.3	102	19.5	98	4	81-116/14
108-88-3	Toluene	ND		20	19.7	99	19.5	98	1	87-117/16
1330-20-7	Xylenes (total)	ND		60	60.6	101	57.8	96	5	85-115/12
95-47-6	o-Xylene	ND		20	19.9	100	19.1	96	4	87-116/16
	m,p-Xylene	ND		40	40.7	102	38.7	97	5	84-116/13

CAS No.	Surrogate Recoveries	MS	MSD	T30983-1	Limits
460-00-4	4-Bromofluorobenzene	83%	80%	75%	58-125%
98-08-8	aaa-Trifluorotoluene	87%	82%	81%	73-139%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T30982
Account: MWHCODE Montgomery Watson
Project: San Juan Basin Pit Groundwater Remediation 2008-2009

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T31085-1MS	KK031295.D	1	06/15/09	FI	n/a	n/a	GKK1504
T31085-1MSD	KK031296.D	1	06/15/09	FI	n/a	n/a	GKK1504
T31085-1	KK031289.D	1	06/15/09	FI	n/a	n/a	GKK1504

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

T30982-1

CAS No.	Compound	T31085-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U		20	21.5	108	21.3	107	1	86-121/19
100-41-4	Ethylbenzene	1.0 U		20	20.0	100	19.7	99	2	81-116/14
1330-20-7	Xylenes (total)	2.0 U		60	58.1	97	57.4	96	1	85-115/12
	m,p-Xylene	1.0 U		40	39.0	98	38.4	96	2	84-116/13

CAS No.	Surrogate Recoveries	MS	MSD	T31085-1	Limits
460-00-4	4-Bromofluorobenzene	87%	79%	78%	58-125%
98-08-8	aaa-Trifluorotoluene	100%	91%	92%	73-139%