

**GW – 049 - 0**

**2011 AGWMR**

**03 / 30 / 2012**



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BUILDING A BETTER WORLD

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March 30, 2012

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

**RE: 2011 Annual Report for the EPCGP Blanco North Flare Pit Project  
NMOCD Reference Number: GW-49-2**

Dear Mr. Von Gonten:

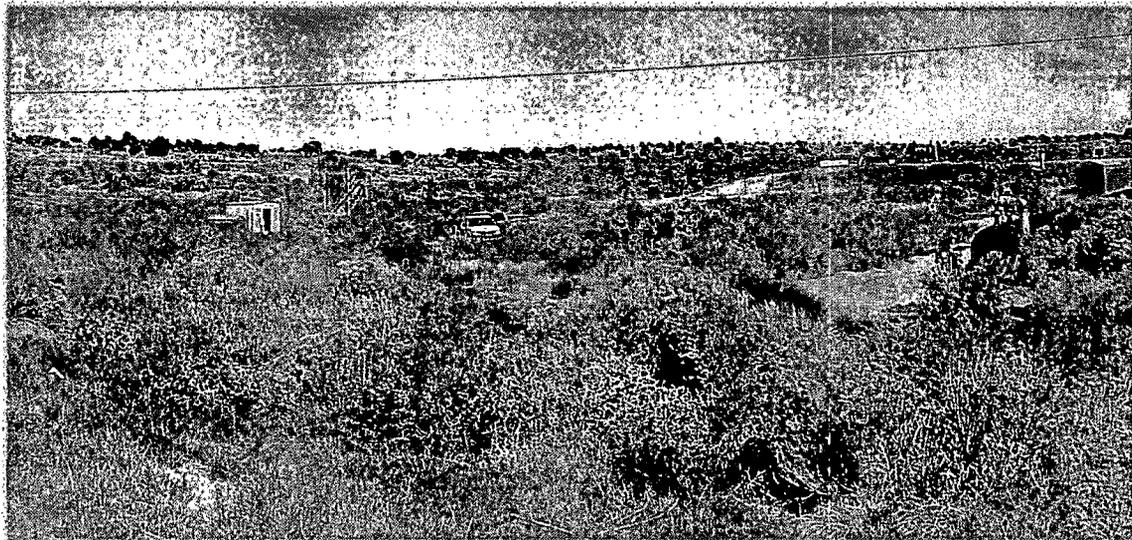
MWH Americas, Inc., on behalf of El Paso CGP Company (EPCGP), is submitting the enclosed *2011 Annual Report* for the Blanco North Flare Pit project. The report presents the 2011 groundwater monitoring and free-product recovery data, and includes recommendations for 2012 activities at the Site.

If you have any questions or comments concerning the enclosed report, please contact Ian Yanagisawa (713-420-7361) or myself (303-291-2276).

Sincerely,

Jed Smith  
Project Manager

cc: Brandon Powell – NMOCD, Aztec, NM  
Ian Yanagisawa – EPCGP (electronic copy)  
Rodney Sartor – EPCO (electronic copy)  
MWH Project File (electronic copy)



**EL PASO CGP COMPANY**  
*1001 LOUISIANA STREET*  
*HOUSTON, TX 77002*

**2011 ANNUAL REPORT**  
**BLANCO PLANT NORTH FLARE PIT**

**MARCH 2012**



**MWH**

1801 California Street  
Suite 2900  
Denver, Colorado 80202  
303 291 2222

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**ACRONYMS**

AS	air sparging
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene and total xylenes
EPCGP	El Paso CGP Company
EPFS	El Paso Field Services
EPNG	El Paso Natural Gas
EPTPC	El Paso Tennessee Pipeline Company
mg/L	milligrams per liter
µg/L	micrograms per liter
NMOCD	New Mexico Oil Conservation Division
NMWQCC	New Mexico Water Quality Control Commission
O&M	operation and maintenance

## 1.0 INTRODUCTION

The Blanco Plant is located in San Juan County just outside Bloomfield, New Mexico. This plant is comprised of three distinct natural gas compressor stations and associated unit operations, which included the North Flare Pit. The Blanco Plant layout is shown on Figure 1.

Site assessment work conducted between 1988 and 1990 identified subsurface petroleum hydrocarbon impacts near the North Flare Pit and a nearby wastewater evaporation pond. Constituents of concern at the Site include free-phase hydrocarbons (i.e., free-product) and benzene, ethylbenzene, toluene and total xylenes (BTEX). After years of remedial actions, the Site is currently being monitored, and free-product is recovered when observed.

This annual report presents the results of product recovery and groundwater monitoring activities conducted at the Blanco North Flare Pit site (Site) between September 2010 and December 2011 (reporting period). During this reporting period, product recovery was generally conducted on a monthly basis, and groundwater monitoring was conducted semiannually.

Section 2.0 summarizes the project history. A site description, particularly with respect to geology and hydrogeology is presented in Section 3.0. Section 4.0 discusses the remedial activities undertaken during the reporting period. The Site monitoring data are presented in Section 5.0. Conclusions and recommendations are discussed in Section 6.0; and Section 7.0 is a selective bibliography of previously submitted reports and work plans.

## 2.0 SITE BACKGROUND AND PREVIOUS ACTIVITIES

In 1987, the New Mexico Environmental Improvement Division, now the New Mexico Environment Department (NMED) conducted a site inspection at the Blanco Plant (Figure 1) and recommended further investigation to support the submittal of a groundwater discharge plan application. One monitor well (MW-2) was installed and sampled in 1988. In January 1990, a second monitor well (MW-19) was installed closer to the North Flare Pit. This well contained an oily sheen on the groundwater and BTEX levels above NMWQCC standards.

In February 1992, hydrocarbon-contaminated soils were excavated and removed from the North Flare Pit. El Paso Natural Gas (EPNG) subsequently submitted a work plan to NMOCD addressing subsurface investigation of the North Flare Pit. The investigation was conducted in September and October of 1992. Five groundwater monitor wells (MW-20, MW-23, MW-24, MW-26, and MW-27) were installed to the south of the North Flare Pit. Several additional soil borings were also advanced in the area, but significant groundwater was not encountered. Therefore, these additional borings were not completed as monitor wells. Free-product (as much as 3.6 feet thick) was encountered in MW-19, MW-26, and MW-27. BTEX concentrations above NMWQCC standards were found in MW-23 and MW-24 (BTEX concentrations from MW-20 were below detection limits). The 1992 investigation suggested two possible sources for hydrocarbon contamination: the North Flare pit and an evaporation pond, which was formerly an unlined pit (see Figure 1). Product analysis during this investigation showed a strong correlation with typical pipeline drip, which was known to have been discharged to both the North Flare Pit as well as the former unlined pit.

Removal of free-product from MW-19 and MW-26 was initiated by EPNG in 1993 and continued through June 1995 along with the regular groundwater monitoring. By August 1995, free-product was not detected in any of the wells; and EPNG submitted a sampling plan to NMOCD in September 1995 that included proposals to remediate BTEX impacts with nitrate addition, monitor groundwater quarterly, and then abandon the monitor wells once asymptotic levels had been attained. This work plan was not subsequently approved by the NMOCD, and routine site groundwater monitoring in the North Flare Pit area was suspended while the project focus shifted to the southern portion of the Blanco Plant.

In August 2001, management of the North Flare Pit project was transferred from EPNG to El Paso Field Services (EPFS), which supported El Paso's upstream/midstream operations. In October 2001, sludge from the lined evaporation pond was excavated and removed. At that time, the primary liner was pulled back and soil samples were collected from depths of 1 to 4 feet. These samples were all non-detect for petroleum hydrocarbons (EPA Method 8015 Modified).

In May 2002, NMOCD requested that EPFS submit all monitoring and remediation data related to the North Flare Pit from 1994 to the present. In July 2002, EPFS submitted this information to NMOCD and a work plan proposing installation and operation of a pilot air sparging (AS) system near monitor wells MW-19 and MW-26 to facilitate

groundwater remediation (MWH, 2002). The work plan was given final approval by NMOCD in February 2003.

One air sparge well (SW-1) was installed to the north of monitor well MW-26. At this time, approximately 1.4 feet of free-product was discovered in MW-26. In April 2003, a skimmer pump was installed in the well and free-product removal was initiated. As of July 2003, approximately 3.1 gallons of free-product had been removed from MW-26. No significant occurrence or accumulation of free-product has subsequently been detected in MW-26 or any other Site wells (except for monitor well MW-32, discussed below). Operation of the AS system began in June 2003 (MWH, 2003b). System maintenance and monitoring visits were generally conducted every two weeks; and groundwater monitoring was initially conducted on a quarterly basis.

In May 2006, three new monitor wells were installed (MW-31, MW-32, and MW-33) in an effort to more fully characterize the Site. Within weeks, monitor well MW-32 was exhibiting a significant free-product presence; and a maximum static free-product thickness of 12.2 feet was measured in August 2006. In September 2006, a pneumatic skimmer was installed in MW-32. The skimmer operated for one year, recovering approximately 27 gallons of free-product. In response to minimal ongoing product recovery rates, the skimmer was replaced by product-absorbing socks.

During a biweekly O&M visit in June 2009, the air sparge compressor was found to be non-operational. El Paso took this opportunity, after six years of operation, to suspend air sparging and evaluate the area for hydrocarbon rebound. Groundwater monitoring and evaluation of any rebound is currently ongoing.

Current activities have primarily consisted of ongoing product recovery from MW-32 and ongoing semiannual site-wide groundwater monitoring. These environmental activities are being conducted by El Paso CGP Company (EPCGP).

### 3.0 SITE GEOLOGY/HYDROGEOLOGY

The geologic framework of the Site has been previously summarized by EPNG (EPNG, 1989), K.W. Brown and Associates (K.W. Brown, 1990), and Burlington Environmental (Burlington, 1992). Based on these assessments, the plant area is located on Quaternary alluvium, consisting of sand, silt, clay, and gravel. At the plant site, the thickness of the alluvium varies from less than 3 feet to more than 75 feet (EPNG, 1989). Underlying the alluvium is the Tertiary Nacimiento Formation, consisting of interbedded coarse- to medium-grained arkosic sandstone, siltstone, and shale, which were deposited as both channel fill and floodplain deposits (EPNG, 1989). Locally, orientation of the channel-fill sandstone deposits may control groundwater flow due to higher hydraulic conductivities through those features.

An initial assessment of Site hydrogeology and groundwater resources of the Blanco Plant area was conducted by EPNG in 1989 (EPNG, 1989). The average hydraulic conductivity was estimated to be  $2.1 \times 10^{-4}$  centimeters per second. Depth to groundwater ranged from 9 feet below ground surface (5,564 to 5,552 feet above sea level) to 50 feet (EPNG, 1989). These results were generally consistent with the findings of a later investigation by K.W. Brown.

Burlington Environmental conducted a hydrogeologic investigation in 1992, specific to the North Flare Pit area (Burlington, 1992). Eight borings were drilled in the area to the south of the North Flare Pit (**Figure 1**). Three of the borings did not encounter significant groundwater, and the other five were completed as monitor wells. In general, these borings were advanced through approximately 19 feet of silty/clayey sand, underlain by silty/sandy clay with laminated siltstone and mudstone. In the MW-24, MW-26, and MW-27 borings, a sand layer with gravel and clay was encountered just above the sandstone bedrock, possibly indicating a relict channel feature. Similarly, a thick sandy unit was encountered in the MW-19 boring (K.W. Brown, 1990). Sandstone was encountered at depths ranging from approximately 50 to 70 feet below ground surface, with the greatest depths occurring beneath the possible relict channel feature. In places, the upper portion of the sandstone was described as friable; however, all borings terminated in gypsum-cemented sandstone that the report characterized as an apparent aquitard. Groundwater saturation was encountered either within or just above the sandstone, depending on the location.

Based on the available data from monitor wells such as MW-2, MW-19, and MW-27, it appears that groundwater potentiometric surface elevations, at least within the apparent relict channel, appear to have decreased by approximately 15 feet since the initial environmental investigation in 1988. It is likely that a large contributor to the observed groundwater was infiltration from the former North Flare Pit and/or the original unlined evaporation pond. It is noted, however, that the groundwater potentiometric surface elevation in monitor well MW-23 has remained stable since 1992. Water level stability or rise appears to be a common pattern among those site wells (i.e., MW-23 and MW-32) that are completed away from the apparent relict channel, in locations where the competent bedrock surface is higher. The hydraulic connection, if any, between groundwater encountered higher in the bedrock with groundwater occurring in the apparent relict channel is currently not well understood.

## 4.0 REMEDIAL ACTIVITIES

### 4.1 AIR SPARGING SYSTEM OPERATION

For the six years between June 2003 and June 2009, EPTPC operated an AS system in the central area of the Site to remediate dissolved-phase hydrocarbon impacts and reduce BTEX concentrations to below NMWQCC standards. The system did not operate during the current reporting period.

### 4.2 FREE-PRODUCT REMOVAL

During the reporting period, free-product was only present in monitor well MW-32. Passive recovery was conducted via product-absorbing socks, which were checked on a monthly basis. Approximately 1.4 gallons of product were recovered during the reporting period. **Table 1** summarizes the product recovery data from monitor well MW-32 since its installation in 2006. Field notes associated with product recovery activities conducted during the reporting period are included as **Appendix A**.

### 4.3 DRAIN OF RECOVERED FLUIDS STORAGE TANK

During August 2011, it was determined that several feet of recovered groundwater and condensate remained in a 210-barrel storage tank located near the air sparge pilot system building. The fluids had been recovered in the 1990's as part of previous remedial activities that were conducted at the time. EPCGP retained a vac truck to remove the fluids and transport them off-site at a commercial E&P waste disposal facility. EPCGP is in the process of evaluating whether the tank should be decommissioned and removed.

## 5.0 GROUNDWATER MONITORING

### 5.1 GROUNDWATER SAMPLING

During the reporting period, semiannual groundwater sampling was conducted at four monitor wells in the North Flare Pit area (MW-23, MW-26, MW-27, and MW-33) and one groundwater sample was collected from monitor well MW-32, which contained product. The groundwater samples were analyzed for BTEX using EPA SW-846 Method 8021B. Sampling events were performed in February 2011 and August 2011. During each sampling event, groundwater levels and field parameters (pH, temperature, and specific conductance) were measured. Groundwater sample collection field forms are attached in **Appendix A**. Laboratory analytical reports are included in **Appendix B**.

Samples were not collected from MW-2, MW-19, MW-24, or MW-31 during the reporting period. These wells were either dry or inaccessible. Monitor well MW-19 has apparently lost structural integrity midway down the casing, precluding gauging and sampling.

### 5.2 DISCUSSION OF MONITORING RESULTS

Analytical results are presented along with the historic data (June 1991 to present) in **Table 2**. BTEX concentrations for each of the groundwater sampling events are presented on **Figures 2 and 3**. These semiannual maps also present the approximate groundwater flow direction, based on the measured static water levels and previous interpretations. **Figure 4** is a trend chart of the historic groundwater elevations measured in the monitor well network. All elevations are shown relative to sea level, based on the September 2009 survey of the monitor wells. **Figure 5** depicts the long-term trends in the benzene data.

The semiannual monitoring results from monitor well MW-23 indicated consistent exceedances of the NMWQCC groundwater standards for benzene and total xylenes (which are 10 µg/L and 620 µg/L, respectively). Benzene was detected at concentrations of 5,840 µg/L (February 2011) and 6,270 µg/L (August 2011). Similarly, total xylenes were present at concentrations of 1,230 µg/L and 1,380 µg/L. Toluene and ethylbenzene were detected below their NMWQCC standard of 750 µg/L. The BTEX concentrations in this well have not historically exhibited significant seasonal fluctuations.

The semiannual monitoring results from monitor well MW-26 did not indicate exceedances of the NMWQCC control standards. BTEX constituents were only detected at low levels (i.e., near the detection limit). The observed benzene concentrations were 5.7 µg/L (February 2011) and 3.0 µg/L (August 2011). These results are similar to previous data.

Monitoring well MW-27 was only sampled once this year (February 2011) and did not exceed any of the NMWQCC control standards. BTEX constituents were only detected

at low levels (i.e., near the detection limit). The observed benzene concentration was 5.8 µg/L. This result was similar to the previous data from MW-27.

Monitor well MW-32 was sampled once, in February 2011. Product droplets were observed floating on the top of the well, but no product was removed. The BTEX results indicated benzene present at 9,450 µg/L; toluene at 12,100 µg/L; ethylbenzene at 386 µg/L; and total xylenes at 4,630 µg/L. These elevated BTEX concentrations were similar to previous analytical results from this well..

Results from the downgradient monitor well, MW-33, indicated that this well is not significantly impacted by BTEX. During the reporting period, benzene was detected at estimated concentrations of 0.55 µg/L (February 2011) and 0.45 µg/L (August 2011). Total xylenes, toluene, and ethylbenzene were not detected. These results are similar to previous monitoring data from this well.

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the monitoring data from the reporting period, the following conclusions can be drawn:

1. Air sparging activities have been effective at reducing dissolved phase BTEX concentrations in the vicinity of the pilot test well, SW-1. A BTEX rebound has not yet been observed in the nearby monitor wells MW-26 and MW-27.
2. The pneumatic pump installed at monitor well MW-32 in 2006 successfully removed the bulk of the free-product from the well. The current use of absorbent socks also appears to be effective, with steady (but low) recovery rates being observed.
3. Long-term groundwater elevation trends indicate that the groundwater has receded significantly since the initial environmental assessments in 1988. The current monitor well network has been completed to depths corresponding with the gypsum-cemented bedrock. Though several of the monitor wells (e.g., MW-2, MW-24, and MW-31) appear to be dry, the current well network still provides adequate delineation of the BTEX impacts. Monitor wells completed within an apparent relict channel, where the sandstone bedrock is deeper, show a hydraulic gradient toward the south; and the groundwater samples from the downgradient monitor well, MW-33, comply with the NMWQCC standards for BTEX.
4. Monitor wells MW-23 and MW-32 are completed in areas of the site where bedrock contact is shallower (i.e., these wells are not directly in the relict channel). The relationship (if any) between the groundwater observed in these wells and the groundwater observed in the other monitor wells is not well understood. Based on fluid level behavior, there does not appear to be a continuous hydraulic connection. Previous groundwater studies of the Site indicated that the shallow groundwater in the Nacimiento formation was essentially a separate aquifer from the deeper groundwater occurring within the relict channel feature.

Therefore, EPTPC has the following recommendations for future Site activities.

1. Groundwater monitoring will continue on a semiannual basis. The groundwater BTEX data do not appear to vary significantly between seasons. **Table 6** shows the proposed sampling schedule. Monitor well MW-32 will be sampled annually until free-product has been mitigated.
2. Water and product levels will be gauged on a quarterly basis to provide data to support the current remedial efforts.
3. The AS system will remain shut down as the potential for BTEX rebound is evaluated from the semiannual monitoring results. Currently, it does not appear that additional remedial benefits will be gained by operating this system.
4. Free-product recovery via oil-absorbing socks will continue in monitor well MW-32.

5. Damaged monitor well MW-19 should be plugged and abandoned in accordance with the applicable NMOCD and Office of the State Engineer requirements. Based on the proximity of MW-26 to MW-19 and the historical similarity in observed groundwater BTEX concentrations, MW-26 is sufficient for monitoring groundwater quality in this area of the site.

## 7.0 REFERENCES

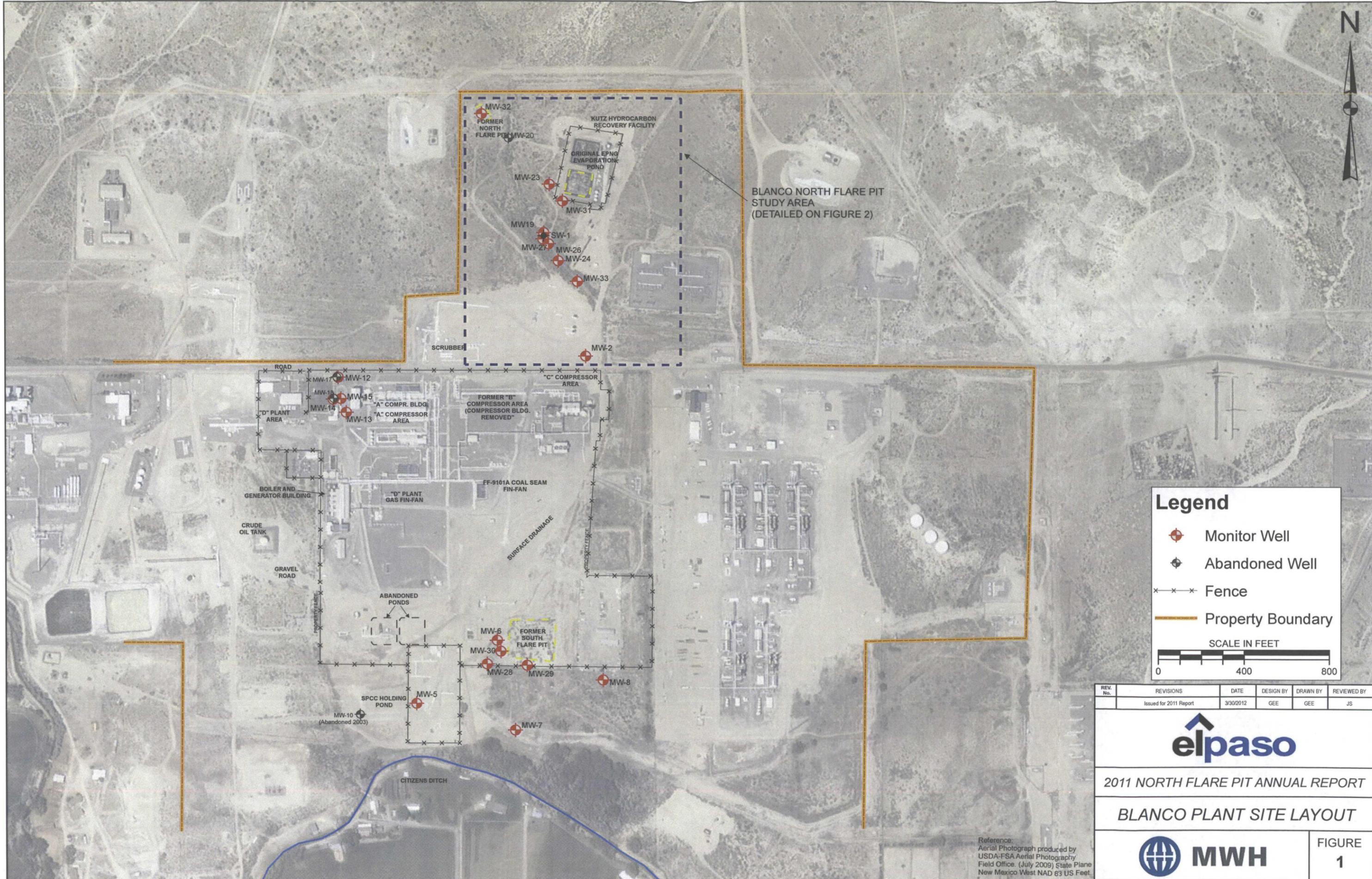
- El Paso Natural Gas Company, 1989. *Groundwater Investigation Report, El Paso Natural Gas Company's Blanco Plant, San Juan County, New Mexico*. January 1989.
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**FIGURES**



**MWH**



**Legend**

- Monitor Well
- Abandoned Well
- Fence
- Property Boundary

SCALE IN FEET

REV. No.	REVISIONS	DATE	DESIGN BY	DRAWN BY	REVIEWED BY
	Issued for 2011 Report	3/30/2012	GEE	GEE	JS



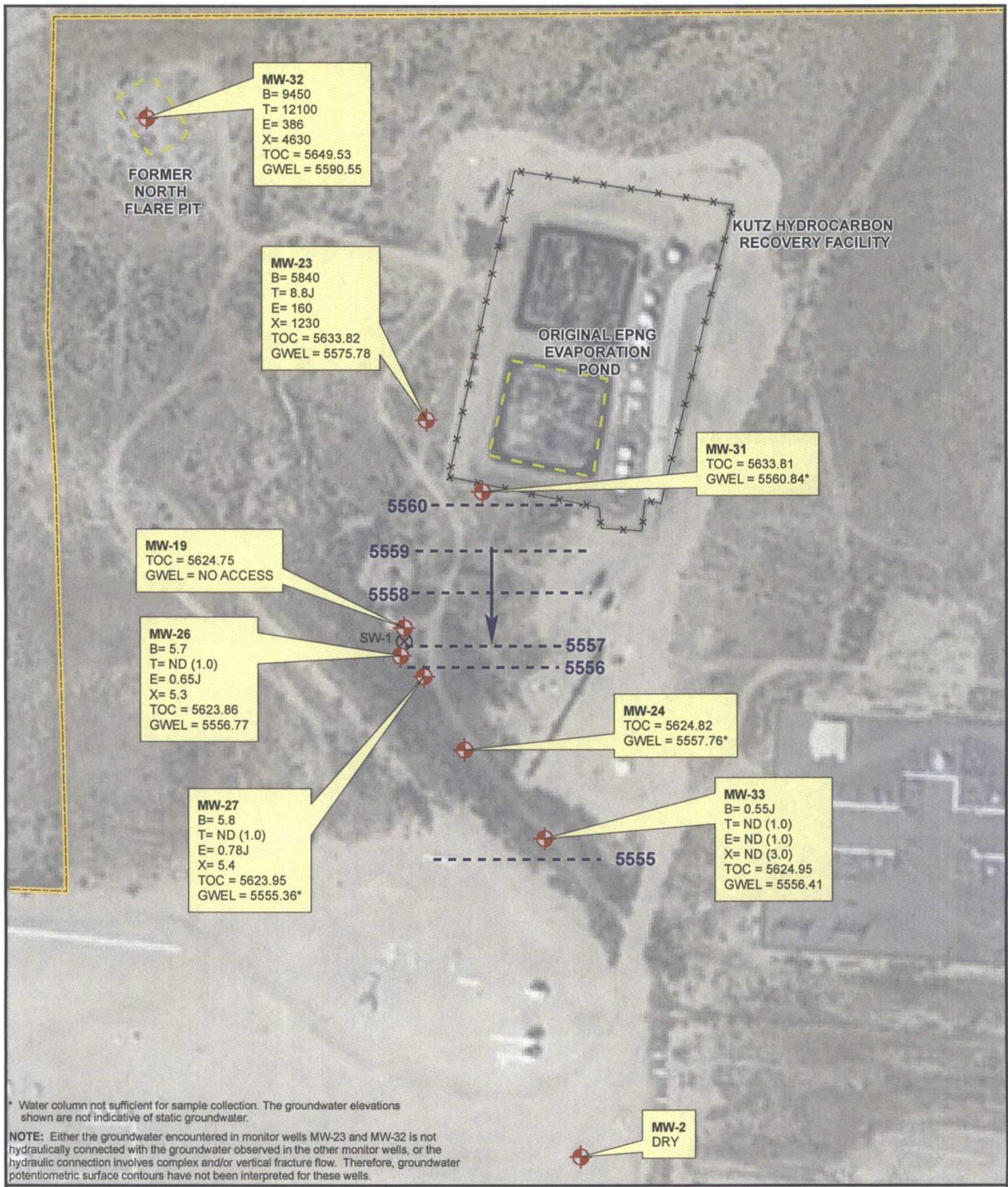
2011 NORTH FLARE PIT ANNUAL REPORT

BLANCO PLANT SITE LAYOUT



FIGURE 1

Reference:  
Aerial Photography produced by  
USDA-FSA Aerial Photography  
Field Office. (July 2009) State Plane  
New Mexico West NAD 83 US Feet.



\* Water column not sufficient for sample collection. The groundwater elevations shown are not indicative of static groundwater.

NOTE: Either the groundwater encountered in monitor wells MW-23 and MW-32 is not hydraulically connected with the groundwater observed in the other monitor wells, or the hydraulic connection involves complex and/or vertical fracture flow. Therefore, groundwater potentiometric surface contours have not been interpreted for these wells.

LEGEND		Reference:	
	Air Sparge Well	B	Benzene (ug/L)
	Existing Monitor/ Observation Well	T	Toluene (ug/L)
	Property Line	E	Ethylbenzene (ug/L)
	Groundwater Flow Direction	X	Total Xylenes (ug/L)
	Potentiometric Surface Contour (Inferred Where Dashed)	TOC	Top of Casing (ft. AMSL)
		GWEL	Groundwater Elevation (ft. AMSL)
		ND	Not Detected; Reporting Limit Shown in Parentheses
		J	Result Flagged as Estimated
			Field Office. (July 2009) State Plane New Mexico West NAD 83 US Feet

	PROJECT: BLANCO NORTH FLARE PIT	
	TITLE: Groundwater Potentiometric Surface Contour Map and BTEX Concentrations - February 22, 2011	

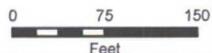


\* Water column not sufficient for sample collection. The groundwater elevations shown are not indicative of static groundwater.

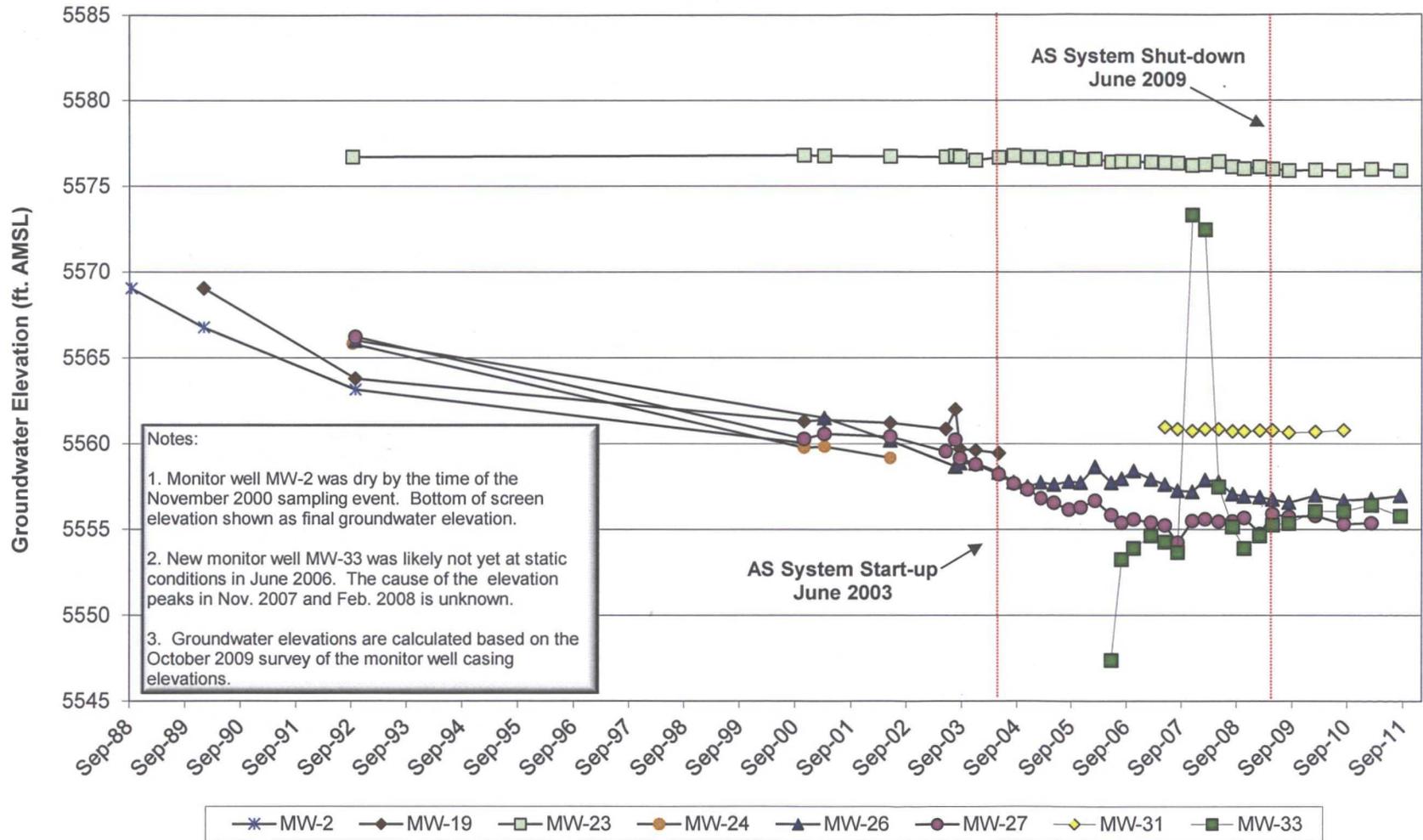
NOTE: Either the groundwater encountered in monitor wells MW-23 and MW-32 is not hydraulically connected with the groundwater observed in the other monitor wells, or the hydraulic connection involves complex and/or vertical fracture flow. Therefore, groundwater potentiometric surface contours have not been interpreted for these wells.

LEGEND		Reference:	
⊗	Air Sparge Well	B	Benzene (ug/L)
MW-4	Existing Monitor/ Observation Well	T	Toluene (ug/L)
---	Property Line	E	Ethylbenzene (ug/L)
→	Groundwater Flow Direction	X	Total Xylenes (ug/L)
---5555---	Potentiometric Surface Contour (Inferred Where Dashed)	TOC	Top of Casing (ft. AMSL)
		GWEL	Groundwater Elevation (ft. AMSL)
		ND	Not Detected; Reporting Limit Shown in Parentheses
		J	Result Flagged as Estimated

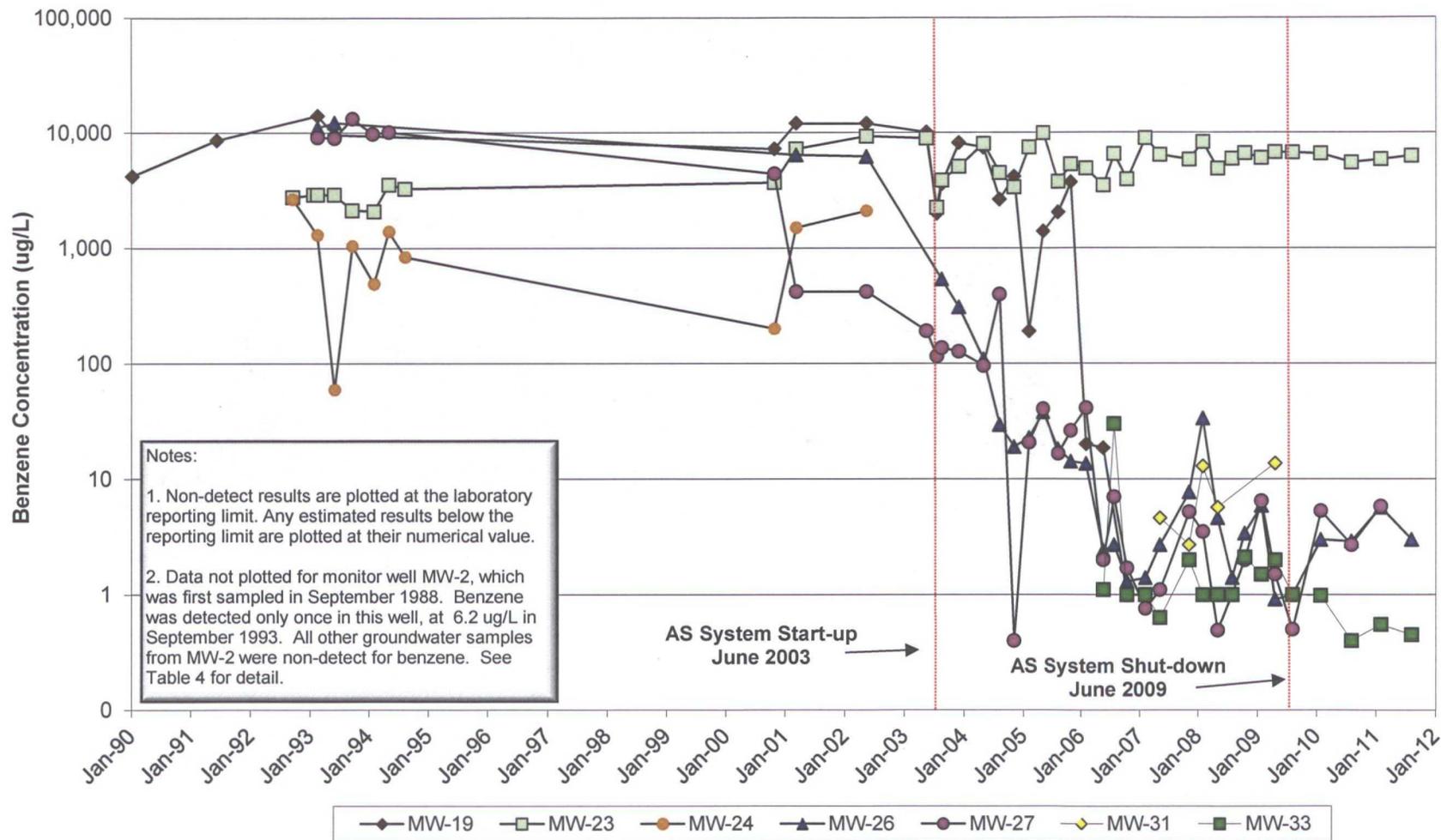
Reference:  
Aerial Photograph produced by  
USDA-FSA Aerial Photography  
Field Office. (July 2009) State Plane  
New Mexico West NAD 83 US Feet.



**FIGURE 4**  
**Historic Groundwater Elevations (1988 - 2011)**  
**2011 Blanco North Flare Pit Annual Report**



**FIGURE 5**  
**Historic Benzene Concentrations in Groundwater (1990 - 2011)**  
**2011 Blanco North Flare Pit Annual Report**



**TABLES**



**MWH**

**TABLE 1**  
**SUMMARY OF MW-32 PRODUCT RECOVERY (2006 - 2011)**  
**BLANCO NORTH FLARE PIT - SAÑ JUAN COUNTY, NEW MEXICO**

<b>Date</b>	<b>Static Product Thickness Measurement (ft)</b>	<b>Product Volume Removed (gal)</b>	<b>Cumulative LNAPL Volume Removed from MW-32 (gal)</b>
5/31/06	5.62	0.00	0
8/15/06	11.25	0.00	0.0
9/8/06	12.20	0.00	0.0
9/11/06		11.58	11.6
9/18/06		0.98	12.6
10/10/06	11.16	3.93	16.5
10/25/06		1.77	18.3
11/3/06	9.60	0.00	18.3
11/10/06		1.37	19.6
11/30/06		1.77	21.4
12/22/06	3.35	0.98	22.4
1/9/07	3.54	0.00	22.4
1/26/07		0.20	22.6
2/13/07	3.60	0.00	22.6
3/16/07	3.60	0.00	22.6
3/30/07		3.14	25.7
4/16/07		0.79	26.5
5/16/07		0.20	26.7
5/21/07	0.38	0.00	26.7
5/31/07		0.20	26.9
6/15/07		0.10	27.0
6/29/07		0.10	27.1
8/17/07		0.19	27.3
8/31/07	0.16	0.00	27.3
9/14/07		0.22	27.5
9/28/07		0.22	27.7
10/31/07		0.22	28.0
11/13/07	0.11	0.00	28.0
11/30/07		0.22	28.2
12/14/07		0.03	28.2
1/14/08		0.16	28.4
1/31/08		0.16	28.5
2/14/08		0.22	28.7
2/28/08		0.16	28.9
3/14/08		0.16	29.1
3/28/08		0.17	29.2
4/15/08		0.27	29.5
5/15/08	2.12	0.00	29.5
5/30/08		0.09	29.6
6/13/08		0.06	29.7

**TABLE 1**  
**SUMMARY OF MW-32 PRODUCT RECOVERY (2006 - 2011)**  
**BLANCO NORTH FLARE PIT - SAN JUAN COUNTY, NEW MEXICO**

<b>Date</b>	<b>Static Product Thickness Measurement (ft)</b>	<b>Product Volume Removed (gal)</b>	<b>Cumulative LNAPL Volume Removed from MW-32 (gal)</b>
6/27/08		0.05	29.7
7/14/08		0.06	29.8
7/31/08		0.12	29.9
8/13/08		0.09	30.0
8/29/08		0.06	30.0
9/15/08		0.06	30.1
9/29/08		0.05	30.1
10/15/08		0.08	30.2
10/30/08		0.08	30.3
11/13/08		0.09	30.4
11/26/08		0.06	30.4
12/15/08		0.08	30.5
12/30/08		0.08	30.6
1/16/09		0.06	30.7
1/30/09		0.05	30.7
2/13/09		0.06	30.8
2/27/09		0.04	30.8
3/12/09		0.06	30.9
3/31/09		0.05	30.9
4/15/09		0.05	31.0
4/30/09		0.03	31.0
5/14/09		0.11	31.1
5/28/09		0.08	31.2
6/16/09		0.09	31.3
8/25/09		0.34	31.6
9/16/09		0.28	31.9
10/19/09		0.30	32.2
2/18/10	0.32	0.03	32.2
3/17/10		0.23	32.5
4/14/10		0.12	32.6
5/25/10		0.14	32.7
6/24/10		0.14	32.9
7/21/10		0.09	33.0
8/25/10		0.14	33.1
9/25/10		0.12	33.2
10/20/10		0.12	33.3
11/1/10		0.08	33.4
12/15/10		0.14	33.6
1/1/11		0.00	33.6
2/22/11		0.00	33.6

**TABLE 1**  
**SUMMARY OF MW-32 PRODUCT RECOVERY (2006 - 2011)**  
**BLANCO NORTH FLARE PIT - SAN JUAN COUNTY, NEW MEXICO**

<b>Date</b>	<b>Static Product Thickness Measurement (ft)</b>	<b>Product Volume Removed (gal)</b>	<b>Cumulative LNAPL Volume Removed from MW-32 (gal)</b>
3/15/11		0.08	33.6
4/20/11		0.09	33.7
5/18/11		0.12	33.8
6/16/11		0.09	33.9
7/22/11		0.06	34.0
8/31/11		0.09	34.1
9/21/11		0.14	34.2
10/19/11		0.12	34.3
11/1/11		0.06	34.4
12/19/11		0.12	34.5

**TABLE 2**  
**HISTORICAL SITE GROUNDWATER ANALYTICAL DATA**  
**BLANCO NORTH FLARE PIT - SAN JUAN COUNTY, NEW MEXICO**

Monitor Well	Sample Date	Water Depth (ft BTOC)	Analytical Parameters (µg/l)			
			Benzene	Toluene	Ethylbenzene	Total Xylenes
NMWQCC Standard (µg/l) <sup>1,2</sup> :			10	750	750	620
	9/28/88	49.60	<0.2	<0.2	<0.2	<0.6
<b>MW-2</b>	1/15/90	51.87	<0.5	<0.5	<0.5	<0.5
	6/18/91	NA	<0.5	<0.5	<b>0.7</b>	<b>0.9</b>
	10/13/92	55.48	No Sample Collected			
	2/23/93	NA	<0.5	<0.5	<0.5	<0.5
	6/8/93	NA	<2.0	<2.0	<2.0	<2.0
	9/29/93	NA	<b>6.2</b>	<2.0	<2.0	<2.0
	2/10/94	NA	<2.0	<2.0	<2.0	<2.0
	5/13/94	NA	<2.0	<2.0	<2.0	<2.0
	8/22/94	NA	<2.0	<2.0	<2.0	<2.0
	11/9/00	Dry	Well Dry - No Sample Collected			
	3/25/01	Dry	Well Dry - No Sample Collected			
	6/2/03	Dry	Well Dry - No Sample Collected			
	8/4/03	Dry	Well Dry - No Sample Collected			
	9/3/03	Dry	Well Dry - No Sample Collected			
	12/16/03	Dry	Well Dry - No Sample Collected			
	5/17/04	Dry	Well Dry - No Sample Collected			
	8/23/04	Dry	Well Dry - No Sample Collected			
	11/22/04	Dry	Well Dry - No Sample Collected			
	2/23/05	Dry	Well Dry - No Sample Collected			
	5/23/05	Dry	Well Dry - No Sample Collected			
	8/30/05	Dry	Well Dry - No Sample Collected			
	11/17/05	Dry	Well Dry - No Sample Collected			
	2/21/06	Dry	Well Dry - No Sample Collected			
	6/8/06	Dry	Well Dry - No Sample Collected			
	8/15/06	Dry	Well Dry - No Sample Collected			
	11/3/06	Dry	Well Dry - No Sample Collected			
	2/26/07	Dry	Well Dry - No Sample Collected			
	5/29/07	Dry	Well Dry - No Sample Collected			
	8/22/07	Dry	Well Dry - No Sample Collected			
	11/28/07	Dry	Well Dry - No Sample Collected			
	2/20/08	Dry	Well Dry - No Sample Collected			
	5/22/08	Dry	Well Dry - No Sample Collected			
	8/21/08	Dry	Well Dry - No Sample Collected			
	1/15/90	55.70	<b>4,200</b>	<50	<b>340</b>	<b>3,740</b>
<b>MW-19</b>	6/19/91	NA	<b>8,600</b>	<b>210</b>	<25.0	<b>4,200</b>
	10/13/92	60.95	Product - No Sample Collected			

**TABLE 2**  
**HISTORICAL SITE GROUNDWATER ANALYTICAL DATA**  
**BLANCO NORTH FLARE PIT - SAN JUAN COUNTY, NEW MEXICO**

Monitor Well	Sample Date	Water Depth (ft BTOC)	Analytical Parameters (µg/l)			
			Benzene	Toluene	Ethylbenzene	Total Xylenes
NMWQCC Standard (µg/l) <sup>1,2</sup> :			10	750	750	620
	2/25/93	NA	14,000	450	3,900	5,100
<b>MW-19</b>	6/10/93	NA	9,580	159	928	1,087
	11/13/00	63.45	7,200	<25	3,500	88
	3/26/01	63.37	12,000	<50	4,500	110
	5/30/02	63.54	12,000	<50	4,300	140
	6/2/03	63.90	10,100	<10	3,900	<30
	8/4/03	62.75	2,000	<10	304	<30
	9/3/03	65.06	3,580	<1.0	1,020	<3.0
	12/16/03	65.14	8,130	<50	<50	<100
	5/17/04	65.31	7,410	<13	1,160	45
	8/23/04	NM	2,650	<25	303	<50
	11/22/04	NM	4,150	7	<1	<2
	2/23/05	NM	191	<10	<10	<20
	5/23/05	NM	8,520	<20	176	176
	8/30/05	NM	2,040	<20	117	<40
	11/17/05	NM	3,730	<20	340	<40
	2/21/06	NM	20.1	<5	9	4.4
	6/8/06	NM	18.6	<1	<1	2.9
	8/15/06	NM	Well Damaged - No Sample Collected			
	11/3/06	NM	<1.0 <sup>3</sup>	<1.0	<1.0	<2.0
	2/26/07	NM	<1.0 <sup>3</sup>	<1.0	<1.0	<2.0
	5/29/07	NM	Well Damaged - No Sample Collected			
	8/22/07	NM	Well Damaged - No Sample Collected			
	11/28/07	NM	Well Damaged - No Sample Collected			
	2/20/08	NM	Well Damaged - No Sample Collected			
	5/22/08	NM	Well Damaged - No Sample Collected			
	8/21/08	NM	Well Damaged - No Sample Collected			
	11/6/08	NM	Well Damaged - No Sample Collected			
	2/17/09	NM	Well Damaged - No Sample Collected			
	5/11/09	NM	Well Damaged - No Sample Collected			
	8/26/09	NM	Well Damaged - No Sample Collected			
	9/25/92	48.83	<1	<1	<1	<1
<b>MW-20</b>	2/24/93	NA	<0.5	<0.5	<0.5	<0.5
	6/10/93	NA	<2.0	<2.0	<2.0	<2.0
	9/29/93	NA	<2.0	<2.0	<2.0	<2.0
	1/27/94	NA	<2.0	<2.0	<2.0	<2.0
	5/13/94	NA	<2.0	<2.0	<2.0	<2.0

**TABLE 2**  
**HISTORICAL SITE GROUNDWATER ANALYTICAL DATA**  
**BLANCO NORTH FLARE PIT - SAN JUAN COUNTY, NEW MEXICO**

Monitor Well	Sample Date	Water Depth (ft BTOC)	Analytical Parameters (µg/l)			
			Benzene	Toluene	Ethylbenzene	Total Xylenes
NMWQCC Standard (µg/l) <sup>12</sup> :			10	750	750	620
	8/22/94	NA	<2.0	<2.0	<2.0	<2.0
MW-20	11/13/00	NA	Well Damaged - No Sample Collected			
	6/2/03	NA	Well Abandoned in 2002			
	9/25/92	57.11	2,770	221	7,690	6,090
MW-23	2/1/93	NA	2,900	3,500	190	4,100
	2/25/93	NA	2,900	190	3,500	4,100
	6/8/93	NA	1,680	30	1,850	2,906
	9/29/93	NA	2,133	216	1,807	3,823
	2/10/94	NA	2,090	151	1,150	2,660
	5/13/94	NA	3,530	255	852	2,150
	8/22/94	NA	3,270	212	353	1,176
	11/13/00	57.02	3,700	<25	840	1,400
	3/26/01	57.07	7,200	<25	520	1,300
	5/30/02	57.08	9,300	<50	360	1,500
	6/2/03	57.12	8,920	<10	337	1,450
	8/4/03	57.06	2,250	<10	100	337
	9/3/03	57.11	3,860	8	208	768
	12/16/03	57.31	5,080	<50	<50	219
	5/17/04	57.14	8,020	<13	208	1,490
	8/23/04	57.04	4,480	<25	160	966
	11/22/04	57.13	3,360	<1	<1	<2
	2/23/05	57.13	7,450	<1	321	1,380
	5/23/05	57.22	9,900	37	270	1,650
	8/30/05	57.18	3,760	<5	53	199
	11/17/05	57.29	5,280	2.6	203	863
	2/21/06	57.25	4,900	4.9	57	710
	6/8/06	57.44	3,470	<1	<1	373
	8/15/06	57.40	6,490	26.6	165	1,270
	11/3/06	57.41	3,920	26.3	103	735
	2/26/07	57.44	8,910	30.7	276	1,600
	5/29/07	57.47	6,410	<11	276	1,240
	8/22/07	57.49	5,110	14.5	172	855
	11/28/07	57.62	5,820	<50	147	1,080
	2/20/08	57.57	8290 B	9.3	271	1870 B
	5/22/08	57.40	4,860	<100	140	891
	8/21/08	57.70	5,920	<100	146	1,250
	11/6/08	57.81	6590	4.2	186	1400

**TABLE 2**  
**HISTORICAL SITE GROUNDWATER ANALYTICAL DATA**  
**BLANCO NORTH FLARE PIT - SAN JUAN COUNTY, NEW MEXICO**

Monitor Well	Sample Date	Water Depth (ft BTOC)	Analytical Parameters (µg/l)			
			Benzene	Toluene	Ethylbenzene	Total Xylenes
NMWQCC Standard (µg/l) <sup>1,2</sup> :			10	750	750	620
	2/17/09	57.69	6010	<50	219	1520
MW-23	5/11/09	57.83	6740	5.4	162	1530
	8/26/09	57.93	6710	35.8J	278	1720
	2/18/10	57.89	6550	<100	227	1500
	8/25/10	58.11	5500	<25	152	1220
	2/23/11	58.04	5840	8.8	160	1230
	8/31/11	58.12	6270	3.8	174	1380
	9/25/92	58.99	2,650	95	<50	1,340
MW-24	2/23/93	NA	1,300	71	<12.5	600
	6/10/93	NA	59	15	7	95
	9/29/93	NA	1,040	63	8	918
	2/10/94	NA	490	44	<2.0	395
	5/13/94	NA	1,390	69	<2.0	898
	8/22/94	NA	836	60	<2.5	154
	11/13/00	65.06	200	<1	5	22
	3/26/01	65.00	1,500	<5.0	18	35
	5/30/02	65.65	2,100	13	29	<25
	6/2/03	66.38	Well Bailed Dry - No Sample Collected			
	8/4/03	66.91	Well Bailed Dry - No Sample Collected			
	9/3/03	Dry	Well Dry - No Sample Collected			
	12/16/03	67.17	Well Bailed Dry - No Sample Collected			
	5/17/04	Dry	Well Dry - No Sample Collected			
	8/23/04	67.11	Well Bailed Dry - No Sample Collected			
	11/22/04	66.37	Well Bailed Dry - No Sample Collected			
	2/23/05	67.11	Well Bailed Dry - No Sample Collected			
	8/30/05	67.11	Not Enough Water to Sample - TD 67.19			
	11/17/05	67.12	Not Enough Water to Sample - TD 67.19			
	2/21/06	67.11	Not Enough Water to Sample - TD 67.19			
	6/8/06	Dry	Not Enough Water to Sample - TD 67.19			
	8/15/06	67.12	Not Enough Water to Sample - TD 67.19			
	11/3/06	67.13	Not Enough Water to Sample - TD 67.19			
	2/26/07	67.16	Not Enough Water to Sample - TD 67.19			
	5/29/07	67.13	Not Enough Water to Sample - TD 67.19			
	8/22/07	67.14	Not Enough Water to Sample - TD 67.19			
	11/28/07	67.13	Not Enough Water to Sample - TD 67.19			
	2/20/08	67.13	Not Enough Water to Sample - TD 67.19			
	5/22/08	67.14	Not Enough Water to Sample - TD 67.19			

**TABLE 2**  
**HISTORICAL SITE GROUNDWATER ANALYTICAL DATA**  
**BLANCO NORTH FLARE PIT - SAN JUAN COUNTY, NEW MEXICO**

Monitor Well	Sample Date	Water Depth (ft BTOC)	Analytical Parameters (µg/l)			
			Benzene	Toluene	Ethylbenzene	Total Xylenes
NMWQCC Standard (µg/l) <sup>1,2</sup> :			10	750	750	620
	8/21/08	67.12	Not Enough Water to Sample - TD 67.19			
<b>MW-24</b>	11/6/08	67.12	Not Enough Water to Sample - TD 67.19			
	2/17/09	67.12	Not Enough Water to Sample - TD 67.19			
	5/11/09	67.12	Not Enough Water to Sample - TD 67.19			
	8/26/09	67.12	Not Enough Water to Sample - TD 67.19			
	2/18/10	67.09	Not Enough Water to Sample - TD 67.19			
	8/25/10	67.08	Not Enough Water to Sample - TD 67.19			
	10/13/92	57.84	Product - No Sample Collected. DTW shown is corrected.			
<b>MW-26</b>	2/25/93	NA	11,000	860	9,900	10,000
	6/10/93	NA	12,180	470	7,504	4,959
	3/26/01	62.36	6,400	100	280	1,900
	5/30/02	63.68	6,200	50	270	1,300
	6/2/03	NA	Product Recovery Pump in Well - No Sample Collected			
	8/4/03	65.19	Well Bailed Dry - No Sample Collected			
	9/4/03	65.00	538	9.6	139	466
	12/17/03	65.02	307	<0.5	158	685
	5/17/04	65.54	109	14.3	87.1	280
	8/23/04	66.11	29.5	<5	40	93.6
	11/22/04	66.37	19.0	<1	3.5	56.8
	2/23/05	66.12	22.7	<10	<10	11
	5/23/05	66.25	38.0	6.3	62.3	173
	8/30/05	66.08	18.2	<5	3.2	30.4
	11/17/05	66.14	14.2	<5	17	34.8
	2/21/06	65.21	13.6	<2	<2	2.9
	6/8/06	66.15	2.4	<1	1.8	3.6
	8/15/06	65.92	2.7	21	11.1	41
	11/3/06	65.46	1.3	<1.0	<1.0	<2.0
	2/26/07	65.94	1.4	<1.0	<1.0	<2.0
	5/29/07	66.25	2.7	<1.0	<1.0	<2.0
	8/22/07	66.61	<1.0	<1.0	<1.0	<2.0
	11/28/07	66.67	7.7	1.8 J	0.89 J	4.9 J
	2/20/08	65.97	33.7 B	0.30 J	2.60	16.2
	5/22/08	66.10	4.6	0.45 J	0.58 J	0.62 J
	8/21/08	66.81	1.4	<1.0	<1.0	<3.0
	11/6/08	66.93	3.4	<2.0	<2.0	2.8J
	2/17/09	66.98	5.9	0.44J	0.86J	7.0
	5/11/09	67.12	0.91J	0.78J	<2.0	2.9J

**TABLE 2**  
**HISTORICAL SITE GROUNDWATER ANALYTICAL DATA**  
**BLANCO NORTH FLARE PIT - SAN JUAN COUNTY, NEW MEXICO**

Monitor Well	Sample Date	Water Depth (ft BTOC)	Analytical Parameters (µg/l)			
			Benzene	Toluene	Ethylbenzene	Total Xylenes
NMWQCC Standard (µg/l) <sup>1,2</sup> :			10	750	750	620
	8/26/09	67.30	1.0	<1.0	<1.0	1.1J
MW-26	2/18/10	66.89	3.0	0.39J	0.33J	2.6
	8/25/10	67.17	2.9	<1.0	<1.0	<2.0
	2/22/11	67.09	5.7	<1.0	0.65	5.3
	8/31/11	67.05	3.0	<1.0	<1.0	1.8
	10/13/92	57.72	Product - No Sample Collected. DTW shown is corrected.			
MW-27	2/26/93	NA	9,100	470	5,700	4,900
	6/10/93	NA	8,970	376	137	5,406
	9/30/93	NA	13,200	402	420	3,100
	2/2/94	NA	9,740	212	209	1,750
	5/14/94	NA	10,100	358	180	4,500
	11/13/00	63.67	4,400	4,700	12,000	60,000
	3/26/01	63.38	420	27	260	1,600
	5/30/02	63.54	420	13	170	1,100
	6/2/03	64.41	192	<25	328	1,480
	8/4/03	63.72	116	<10	145	697
	9/3/03	64.80	137	17	274	1,240
	12/16/03	65.16	127	17	250	1,060
	5/17/04	65.74	95.9	28	317	1,600
	8/23/04	66.27	398	<25	<25	4,830
	11/22/04	66.63	<1	<1	330	1,520
	2/23/05	67.15	20.7	28	419	2,210
	5/23/05	67.41	<1	<1	<1	<2
	8/30/05	67.80	16.6	14	383	1,860
	11/17/05	67.68	26.3	4	175	1,070
	2/21/06	67.28	41.3	<5	<5	264
	6/8/06	68.12	2.0	<1	3.2	156
	8/15/06	68.57	7.0	<5	<5	<2
	11/3/06	68.38	1.7	2.5	2.8	13
	2/26/07	68.56	<1.0	<1.0	<1.0	<2.0
	5/29/07	68.73	1.1	<1.0	<1.0	<2.0
	8/22/07	69.73	<1.0	<1.0	<1.0	<2.0
	11/28/07	68.47	5.20	12.3 B	0.61 J	9.6
	2/20/08	68.36	3.50 UB	0.45	0.70 J	4.70 B
	5/22/08	68.50	0.49 J	<1	<1.0	<2.0
	8/21/08	68.48	<1.0	<1.0	<1.0	<2.0
	11/6/08	68.28	<2.0	<2.0	<2.0	<6

**TABLE 2**  
**HISTORICAL SITE GROUNDWATER ANALYTICAL DATA**  
**BLANCO NORTH FLARE PIT - SAN JUAN COUNTY, NEW MEXICO**

Monitor Well	Sample Date	Water Depth (ft BTOC)	Analytical Parameters (µg/l)			
			Benzene	Toluene	Ethylbenzene	Total Xylenes
NMWQCC Standard (µg/l) <sup>1,2</sup> :			10	750	750	620
	2/17/09	69.21	6.5	0.66J	1.3	8.7
MW-27	5/11/09	68.06	1.5J	0.75J	<2.0	1.6J
	8/26/09	68.23	0.50J	<1.0	<1.0	1.5J
	2/18/10	68.16	5.3	0.5J	7.0	5.3
	8/25/10	68.65	2.7	0.3J	0.46J	1.4J
	2/22/11	68.59	5.8	<1.0	0.78	5.4
		5/29/07	72.85	4.6	<1.0	<1.0
MW-31	8/22/07	72.97	4.8	<1.0	<1.0	<2.0
	11/28/07	73.07	2.7	0.68 UB	0.61 J	3.5 J
	2/20/08	72.97	12.9B	0.29 J	1.7	11.6 B
	5/22/08	72.97	5.7	<1.0	0.70 J	5.20
	8/21/08	73.09	Not Enough Water to Sample - TD 73.38			
	11/6/08	73.09	Not Enough Water to Sample - TD 73.38			
	2/17/09	73.05	Not Enough Water to Sample - TD 73.38			
	5/11/09	73.03	13.7	5.1	3.6	22.5
	8/26/09	73.17	Not Enough Water to Sample - TD 73.38			
	2/18/10	73.13	Not Enough Water to Sample - TD 73.27			
8/25/10	73.03	Not Enough Water to Sample - TD 73.27				
	8/26/09	59.09	9050	16300	480	6390
MW-32	2/18/10	58.93	11300	16200	397	4960
	2/22/11	58.98	9450	12100	386	4630
	6/8/06	77.58	1.1	4.2	<1	4.5
MW-33	8/15/06	71.71	30.1	37.7	<50	24.6
	11/3/06	71.07	<1.0	1.3	<1.0	<2.0
	2/26/07	70.33	<1.0	<1.0	<1.0	<2.0
	5/29/07	70.71	<1.0	<1.0	<1.0	<2.0
	8/22/07	71.29	<1.0	<1.0	<1.0	<2.0
	11/28/07	51.66	<2.0	<2.0	<2.0	<6.0
	2/20/08	52.51	0.99 UB	1.0 UB	<1.0	1.0 UB
	5/22/08	67.47	<1.0	<1.0	<1.0	<2.0
	8/21/08	69.81	<1.0	<1.0	<1.0	<3.0
	11/6/08	71.07	2.1	<2.0	<2.0	2J
	2/17/09	70.33	1.5	0.30J	<1.0	2.2
	5/11/09	69.70	<2.0	<2.0	<2.0	<6.0
	8/26/09	69.60	<1.0	<1.0	<1.0	<2.0
	2/18/10	68.90	0.98J	<1.0	<1.0	0.99J
8/25/10	68.90	0.4J	<1.0	<1.0	<2.0	

**TABLE 2**  
**HISTORICAL SITE GROUNDWATER ANALYTICAL DATA**  
**BLANCO NORTH FLARE PIT - SAN JUAN COUNTY, NEW MEXICO**

Monitor Well	Sample Date	Water Depth (ft BTOC)	Analytical Parameters (µg/l)			
			Benzene	Toluene	Ethylbenzene	Total Xylenes
NMWQCC Standard (µg/l) <sup>1,2</sup>			<b>10</b>	<b>750</b>	<b>750</b>	<b>620</b>
<b>MW-33</b>	2/22/11	68.54	<b>.55 J</b>	<1.0	<1.0	<1.0
	8/31/11	69.18	<b>.45 J</b>	<1.0	<1.0	<1.0

B = Analyte detected in an associated QA/QC blank; sample result unaffected.

BTOC = Below Top of Casing.

Dry = Well was dry.

J = Estimated result beneath the laboratory reporting limit (RL).

NA = Not Applicable or Not Available

NM = Water level was not measured.

UB = Analyte detected in an associated QA/QC blank; sample result considered non-detect.

"<" = Analyte not detected at or above the RL. Value shown is the RL.

Notes:

1. Shaded data exceed their New Mexico Water Quality Control Commissions (NMWQCC) standards.
2. All detected concentrations are shown in bold type.
3. Monitor well MW-19 formed a restriction in the casing in 2004 which worsened over time. For the final 2 quarters of sampling, a small diameter pipe was still insertable, which allowed for sample collection.

**TABLE 3**  
**GROUNDWATER MONITORING SCHEDULE**  
**BLANCO NORTH FLARE PIT - SAN JUAN COUNTY, NEW MEXICO**

Monitoring Well	Monitoring Schedule	Analyses
MW-23	Semiannual	Field Parameters, BTEX
MW-24	Semiannual	Field Parameters, BTEX
MW-26	Semiannual	Field Parameters, BTEX
MW-27	Semiannual	Field Parameters, BTEX
MW-31	Semiannual	Field Parameters, BTEX
MW-32	Annual	Field Parameters, BTEX
MW-33	Semiannual	Field Parameters, BTEX

Notes:

1. Field Parameters include temperature, pH, and specific conductance. BTEX: Benzene, Toluene, Ethylbenzene and Total Xylenes.
2. Monitor wells MW-24 and MW-31 will be sampled if possible. The water levels in these wells has recently been near or below the bottom of the screen.
3. MW-32 is sampled annually and will be sampled semiannually once free-product subsides.

**APPENDIX A**



**MWH**



## WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Blanco North Flare Pit

**Date:** 2/22/2011

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-19	7:35 AM		dry			dry at 27.15'
MW-23			58.04			Sample BTEX
MW-24			67.06			too little volume to sample; 0.06' in well.
MW-26			67.09			Sample BTEX
MW-27			68.59			Sample BTEX
MW-31			72.97			too little volume to sample; 0.48' in well.
MW-32			58.98			Sample BTEX; no parameters measured due to product observed in well; droplets of light yellow product on top of water
MW-33			68.54			Sample BTEX

## Comments

Meter house at MW-32 was sanitized and sealed by Four Corners Hanta Clean.

Signature: Ashley L. Ager

Date: 2/25/2011



WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin Location: Blanco Well No: MW-23  
 Client: MWH Date: 2/22/2011 Time: 7:42  
 Project Manager: Ashley Ager Sampler's Name: Troy Urban

Measuring Point: TOC Depth to Water: 58.04 ft Depth to Product: \_\_\_\_\_ ft  
 Well Diameter: 4" Total Depth: 66.85 ft Product Thickness: \_\_\_\_\_ ft  
 Water Column Height: 8.81 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
8.81 x .65	5.7 x 3		17.2 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
7:45	7.03	31.00	60.6				1	light yellow, HC odor
	7.03	31.30	61.5				2	light yellow, HC odor
	7.03	31.30	61.2				3	light tan, HC odor
	7.05	31.80	60.1				5	light gray, HC odor
	7.08	31.60	60.8				6.25	dark gray, bailing down
8:23	7.22	32.00	59.5				6.8	dark gray, bailed dry
<b>Final:</b>								
8:32	7.25	31.8	59.6				7.2	dark gray, dry, HC odor

COMMENTS: Sample is unpreserved due to reaction of groundwater with HCl preservative

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: Rio Vista

Sample ID: MW-23 Sample Time: 8:23

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other \_\_\_\_\_

Trip Blank: 220211TB01 Duplicate Sample: \_\_\_\_\_







WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin Location: Blanco Well No: MW-33  
 Client: MWH Date: 2/22/2011 Time: 10:52  
 Project Manager: Ashley Ager Sampler's Name: Troy Urban

Measuring Point: TOC Depth to Water: 68.54 ft Depth to Product: \_\_\_\_\_ ft  
 Well Diameter: 2" Total Depth: 83.82 ft Product Thickness: \_\_\_\_\_ ft  
 Water Column Height: 15.28 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
15.28 x .16	2.44 x 3		7.33 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
10:02	7.69	12.26	59.0				0.25	light gray, silty
	7.80	12.20	61.0				0.5	light gray, silty
	7.81	12.14	60.6				0.75	light gray, silty
	7.83	12.45	60.1				1	light gray, silty
	7.81	12.26	59.2				1.3	light gray, silty, obstruction in well, unable to get bailer to water.
<b>Final:</b>								
10:20	7.79	12.5	60.1				1.5	light gray, silty, obstruction in well, unable to get bailer to water

COMMENTS: Appears to be obstruction in well that bailer cannot get past.

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: Rio Vista

Sample ID: MW-33 Sample Time: 10:18

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other \_\_\_\_\_

Trip Blank: 220211TB01 Duplicate Sample: \_\_\_\_\_



### WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Blanco North Flare Pit

**Date:** 3/15/2011

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-19	11:50 AM					
MW-23						
MW-24						
MW-26						
MW-27						
MW-31						
MW-32		-	58.52	-	10 oz	Reinstalled PR sock
MW-33						

Comments

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Signature: Ashley L. Ager

Date: 3/17/2011



## WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Blanco North Flare Pit

**Date:** 4/20/2011

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-19	9:02 AM					
MW-23						
MW-24						
MW-26						
MW-27						
MW-31						
MW-32		-	59.08	-	12 oz	Replaced PR sock
MW-33						

## Comments

Removed all equipment from MW-32 meter house and stored in locked compressor building on site. Disinfected meter house and removed mice. Poured concrete floor in meter house to prevent future tunneling, and reinforced door seal.

Signature: Ashley L. Ager

Date: 4/21/2011



### WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Blanco North Flare Pit

**Date:** 5/17/2011

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-19	7:56 AM					
MW-23						
MW-24						
MW-26						
MW-27						
MW-31						
MW-32		-	57.98	-	15 oz	Replaced PR sock
MW-33						

Comments

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Signature: Ashley L. Ager

Date: 5/18/2011



### WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Blanco North Flare Pit

**Date:** 6/16/2011

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-19	8:20 AM					
MW-23						
MW-24						
MW-26						
MW-27						
MW-31						
MW-32		-	58.92	-	12 oz	Replaced PR sock
MW-33						

Comments

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Signature: Ashley L. Ager

Date: 6/16/2011



### WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Blanco North Flare Pit

**Date:** 7/19/2011

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-19	1:31 PM					
MW-23						
MW-24						
MW-26						
MW-27						
MW-31						
MW-32		-	58.93	-	7.2 oz	Replaced PR sock
MW-33						

Comments

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Signature: Ashley L. Ager

Date: 7/22/2011



### WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Blanco North Flare Pit

**Date:** 8/19/2011

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-19	1:08 PM					
MW-23						
MW-24						
MW-26						
MW-27						
MW-31						
MW-32			58.92		12 oz	Replaced PR sock
MW-33						

Comments

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Signature: Ashley L. Ager

Date: 8/31/2011



### WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Blanco North Flare Pit

**Date:** 8/31/2011

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-19	7:57 AM		-			Dry at 27.13
MW-23			58.12			sample BTEX
MW-24			67.05			too little water to sample
MW-26			67.13			Sample BTEX
MW-27			68.98			too little water to sample
MW-31			73.05			too little water to sample
MW-32			58.9			PR Sock in well, no sample
MW-33			69.18			Sample BTEX

Comments

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Signature: Ashley L. Ager

Date: 9/1/2011



WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin Location: Blanco Well No: MW-23  
 Client: MWH Date: 8/31/2011 Time: 8:03  
 Project Manager: Ashley Ager Sampler's Name: Troy Urban

Measuring Point: TOC Depth to Water: 58.12 ft Depth to Product: \_\_\_\_\_ ft  
 Well Diameter: 4" Total Depth: 66.84 ft Product Thickness: \_\_\_\_\_ ft  
 Water Column Height: 8.72 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
8.72 x .65	5.67 x 3		17 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
8:13	6.72	31.20	64.6				1	yellow tint, HC odor
	6.77	33.00	64.6				2	yellow tint, HC odor
	6.78	31.80	64.6				3	light tan, HC odor
	6.78	32.90	64.2				5	light tan, HC odor, bailing down
8:42	6.90	33.30	64.8				7.4	dark gray, silty, bailed dry
<b>Final:</b>								
8:50	6.91	33.2	64.8				7.5	dark gray, silty, bailed dry

COMMENTS: Sample is unpreserved due to reaction of groundwater with HCl preservative

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: Rio Vista

Sample ID: MW-23 Sample Time: 8:43

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other \_\_\_\_\_

Trip Blank: 310811TB01 Duplicate Sample: \_\_\_\_\_





WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin Location: Blanco Well No: MW-33  
 Client: MWH Date: 8/31/2011 Time: 9:55  
 Project Manager: Ashley Ager Sampler's Name: Troy Urban

Measuring Point: TOC Depth to Water: 69.18 ft Depth to Product: \_\_\_\_\_ ft  
 Well Diameter: 4" Total Depth: 82.62 ft Product Thickness: \_\_\_\_\_ ft  
 Water Column Height: 13.44 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
13.44 x .16	2.15 x 3		6.45 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
9:59	7.49	12.77	65.5				0.25	clear, roots
	7.62	12.72	64.2				0.75	light gray
	7.65	12.76	63.9				1	light gray
	7.58	12.40	65.3				1.8	light gray, silty, obstructed
<b>Final:</b>								
10:25	7.6	12.42	65.5				2	

COMMENTS: Well is obstructed. Can bail no more water out.

Instrumentation:  pH Meter  DO Monitor  Conductivity Meter  Temperature Meter  Other \_\_\_\_\_

Water Disposal: Rio Vista

Sample ID: MW-33 Sample Time: 10:23

Analysis Requested:  BTEX  VOCs  Alkalinity  TDS  Cations  Anions  Nitrate  Nitrite  Metals  
 Other \_\_\_\_\_

Trip Blank: 310811TB01 Duplicate Sample: \_\_\_\_\_



### WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Blanco North Flare Pit

**Date:** 9/21/2011

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-19	8:21 AM					
MW-23						
MW-24						
MW-26						
MW-27						
MW-31						
MW-32			58.9		18 oz	Replaced PR sock
MW-33						

Comments

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Signature: Ashley L. Ager

Date: 9/23/2011



### WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Blanco North Flare Pit

**Date:** 10/19/2011

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-19	7:34 AM					
MW-23						
MW-24						
MW-26						
MW-27						
MW-31						
MW-32			58.85		15 oz	Replaced PR sock
MW-33						

Comments

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Signature: Ashley L. Ager

Date: 10/24/2011



### WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Blanco North Flare Pit

**Date:** 11/1/2011

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-19	12:09 PM					
MW-23						
MW-24						
MW-26						
MW-27						
MW-31						
MW-32			58.77		7.5 oz	Replaced PR sock
MW-33						

Comments

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Signature: Ashley L. Ager

Date: 11/2/2011



### WATER LEVEL DATA

**Project Name:** San Juan Basin Groundwater  
**Project Manager:** Ashley Ager  
**Client:** MWH  
**Site Name:** Blanco North Flare Pit

**Date:** 12/19/2011

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-19	12:53 PM					
MW-23						
MW-24						
MW-26						
MW-27						
MW-31						
MW-32			59.00		15 oz	Replaced PR sock
MW-33						

Comments

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Signature: Ashley L. Ager

Date: 12/20/2011

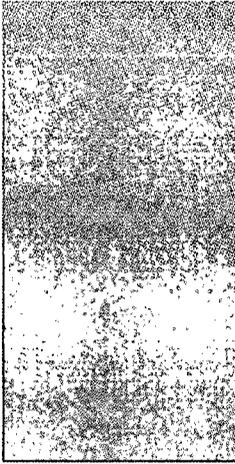
**APPENDIX B**



**MWH**



03/09/11



**Technical Report for**

**MWH Americas, Inc.**  
**EPTPC San Juan Basin Blanco North Flare Pit**

Accutest Job Number: T69730

Sampling Date: 02/22/11

**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: 22



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 (T104704220-10-3) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)  
OK (9103)

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Test results relate only to samples analyzed.

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### Sample Summary

MWH Americas, Inc.

Job No: T69730

EPTPC San Juan Basin Blanco North Flare Pit

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
T69730-1	02/22/11	11:00 TU	02/23/11	AQ	Ground Water	BLANCO NEP MW-32
T69730-2	02/22/11	08:23 TU	02/23/11	AQ	Ground Water	BLANCO NEP MW-23
T69730-3	02/22/11	09:13 TU	02/23/11	AQ	Ground Water	BLANCO NEP MW-26
T69730-4	02/22/11	09:42 TU	02/23/11	AQ	Ground Water	BLANCO NEP MW-27
T69730-5	02/22/11	10:18 TU	02/23/11	AQ	Ground Water	BLANCO NEP MW-33
T69730-6	02/22/11	06:45 TU	02/23/11	AQ	Ground Water	220211 TB01

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** MWH Americas, Inc.

**Job No** T69730

**Site:** EPTPC San Juan Basin Blanco North Flare Pit

**Report Date** 3/8/2011 8:17:30 AM

6 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 02/22/2011 and were received at Accutest on 02/23/2011 properly preserved, at 2.4 Deg. C and intact. These Samples received an Accutest job number of T69730. 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

<b>Matrix</b> AQ	<b>Batch ID:</b> GKK1804
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T69809-1MS, T69809-1MSD were used as the QC samples indicated.
- Sample(s) T69730-2 have surrogates outside control limits. Probable cause due to matrix interference.

<b>Matrix</b> AQ	<b>Batch ID:</b> GKK1805
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T69931-3MS, T69931-3MSD were used as the QC samples indicated.
- Sample(s) T69730-2 have surrogates outside control limits. Probable cause due to matrix interference.
- T69730-2 for aaa-Trifluorotoluene: Outside control limits due to matrix interference. Confirmed by reanalysis.
- T69730-2 for Toluene: More than 40% RPD for detected concentrations between two GC columns.

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



Gulf Coast

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LABORATORIES



Sample Results

Report of Analysis

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### Report of Analysis

3.1  
3

<b>Client Sample ID:</b> BLANCO NFP MW-32	<b>Date Sampled:</b> 02/22/11
<b>Lab Sample ID:</b> T69730-1	<b>Date Received:</b> 02/23/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> EPTPC San Juan Basin Blanco North Flare Pit	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK037742.D	100	02/28/11	LB	n/a	n/a	GKK1804
Run #2							

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

**Purgeable Aromatics**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	9450	100	36	ug/l	
108-88-3	Toluene	12100	100	28	ug/l	
100-41-4	Ethylbenzene	386	100	25	ug/l	
1330-20-7	Xylenes (total)	4630	300	93	ug/l	
95-47-6	o-Xylene	921	100	36	ug/l	
	m,p-Xylene	3710	200	57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	90%		58-125%
98-08-8	aaa-Trifluorotoluene	134%		73-139%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

## Report of Analysis

3.2

<b>Client Sample ID:</b> BLANCO NFP MW-23	<b>Date Sampled:</b> 02/22/11
<b>Lab Sample ID:</b> T69730-2	<b>Date Received:</b> 02/23/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> EPTPC San Juan Basin Blanco North Flare Pit	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK037778.D	10	03/01/11	LB	n/a	n/a	GKK1805
Run #2	KK037764.D	50	03/01/11	LB	n/a	n/a	GKK1804

Run #	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	5840 <sup>a</sup>	50	18	ug/l	
108-88-3	Toluene <sup>b</sup>	8.8	10	2.8	ug/l	J
100-41-4	Ethylbenzene	160	10	2.5	ug/l	
1330-20-7	Xylenes (total)	1230	30	9.3	ug/l	
95-47-6	o-Xylene	36.1	10	3.6	ug/l	
	m,p-Xylene	1190	20	5.7	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	117%	100%	58-125%
98-08-8	aaa-Trifluorotoluene	166% <sup>c</sup>	121%	73-139%

- (a) Result is from Run# 2
- (b) More than 40% RPD for detected concentrations between two GC columns.
- (c) Outside control limits due to matrix interference. Confirmed by reanalysis.

ND = Not detected	MDL - Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

## Report of Analysis

33  
3

<b>Client Sample ID:</b> BLANCO NFP MW-26	<b>Date Sampled:</b> 02/22/11
<b>Lab Sample ID:</b> T69730-3	<b>Date Received:</b> 02/23/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> EPTPC San Juan Basin Blanco North Flare Pit	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK037756.D	1	02/28/11	LB	n/a	n/a	GKK1804
Run #2							

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

**Purgeable Aromatics**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	5.7	1.0	0.36	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
100-41-4	Ethylbenzene	0.65	1.0	0.25	ug/l	J
1330-20-7	Xylenes (total)	5.3	3.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	5.3	2.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	106%		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

3.4  
3

<b>Client Sample ID:</b> BLANCO NFP MW-27	<b>Date Sampled:</b> 02/22/11
<b>Lab Sample ID:</b> T69730-4	<b>Date Received:</b> 02/23/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> EPTPC San Juan Basin Blanco North Flare Pit	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK037757.D	1	02/28/11	LB	n/a	n/a	GKK1804
Run #2							

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

**Purgeable Aromatics**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	5.8	1.0	0.36	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
100-41-4	Ethylbenzene	0.78	1.0	0.25	ug/l	J
1330-20-7	Xylenes (total)	5.4	3.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	5.1	2.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	103%		58-125%
98-08-8	aaa-Trifluorotoluene	106%		73-139%

ND = Not detected      MDL - Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

3.5  
3

<b>Client Sample ID:</b> BLANCO NFP MW-33	
<b>Lab Sample ID:</b> T69730-5	<b>Date Sampled:</b> 02/22/11
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 02/23/11
<b>Method:</b> SW846 8021B	<b>Percent Solids:</b> n/a
<b>Project:</b> EPTPC San Juan Basin Blanco North Flare Pit	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK037758.D	1	02/28/11	LB	n/a	n/a	GKK1804
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	0.55	1.0	0.36	ug/l	J
108-88-3	Toluene	ND	1.0	0.28	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	ND	2.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	106%		58-125%
98-08-8	aaa-Trifluorotoluene	109%		73-139%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

### Report of Analysis

3.6  
3

<b>Client Sample ID:</b> 220211 TB01	<b>Date Sampled:</b> 02/22/11
<b>Lab Sample ID:</b> T69730-6	<b>Date Received:</b> 02/23/11
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> EPTPC San Juan Basin Blanco North Flare Pit	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK037755.D	1	02/28/11	LB	n/a	n/a	GKK1804
Run #2							

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

**Purgeable Aromatics**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.36	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	ND	2.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	104%		58-125%
98-08-8	aaa-Trifluorotoluene	107%		73-139%

ND = Not detected. MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

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

Misc. Forms

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Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody



**SAMPLE INSPECTION FORM**

Accutest Job Number: T69730 Client: MWH Date/Time Received: 2-23-11 1015

# of Coolers Received: 1 Thermometer #: 110 Temperature Adjustment Factor: -5°C

Cooler Temperatures (Initial/adjusted): #1: 2.9°C/2.4°C #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_ #5: \_\_\_\_\_

#6: \_\_\_\_\_ #7: \_\_\_\_\_ #8: \_\_\_\_\_ #9: \_\_\_\_\_ #10: \_\_\_\_\_ #11: \_\_\_\_\_ #12: \_\_\_\_\_

Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other

**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:

1) COC says 220211 TB 01 / Bottle ID says Trip Blank 2211  
2) 1 of 2 Trip Blank vial with headspace larger than spec size.

TECHNICIAN SIGNATURE/DATE: [Signature] 2-23-11

INFORMATION AND SAMPLE LABELING VERIFIED BY: ORA 2/23/11

**CORRECTIVE ACTIONS**

Client Representative Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Accutest Representative: \_\_\_\_\_ Via: Phone Email  
 Client Instructions: \_\_\_\_\_

I:\walker\forms\samplemanagement SM023 Revised 8/11/10

4.1  
**4**

**SAMPLE RECEIPT LOG**

JOB #: T69730 DATE/TIME RECEIVED: 2-23-11 10:15  
 CLIENT: MWH INITIALS: EC

COOLER#	SAMPLE ID	FIELD ID	DATE	MATRIX	VOL	BOTTLE #	LOCATION	PRESERV	PH
1	1	Banco NFP MW-32	022211 1100	W	43ml	1-3	VR	5 2 3 4 6 7 8	<2 >12
	2	MW-23	0823					5 2 3 4 6 7 8	<2 >12
	3	MW-26	0913					1 2 3 4 5 6 7 8	<2 >12
	4	MW-27	0942					1 2 3 4 5 6 7 8	<2 >12
	5	MW-33	1017					1 2 3 4 5 6 7 8	<2 >12
	6	Trig Blank	2-23-11 1430	WTB		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
								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 (Solts) VR: Volatile Fridge M: Metals SUB: Subcontract EF: Encore Freezer  
 Rev 8/13/01 ewp

4.1  
4

**T69730: Chain of Custody**  
**Page 3 of 3**

## GC Volatiles

---

5

## QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

**Job Number:** T69730  
**Account:** MWHCODE MWH Americas, Inc.  
**Project:** EPTPC San Juan Basin Blanco North Flare Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1804-MB	KK037738.D 1		02/28/11	LB	n/a	n/a	GKK1804

The QC reported here applies to the following samples:

Method: SW846 8021B

T69730-1, T69730-2, T69730-3, T69730-4, T69730-5, T69730-6

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.36	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	ND	2.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Limits
460-00-4	4-Bromofluorobenzene	77% 58-125%
98-08-8	aaa-Trifluorotoluene	79% 73-139%

5.1.1  
5

## Method Blank Summary

Page 1 of 1

**Job Number:** T69730  
**Account:** MWHCODE MWH Americas, Inc.  
**Project:** EPTPC San Juan Basin Blanco North Flare Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1805-MB	KK037775.D	1	03/01/11	LB	n/a	n/a	GKK1805

The QC reported here applies to the following samples:

Method: SW846 8021B

T69730-2

CAS No.	Compound	Result	RL	MDL	Units	Q
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	ND	2.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Limits	
460-00-4	4-Bromofluorobenzene	92%	58-125%
98-08-8	aaa-Trifluorotoluene	99%	73-139%

5.1.2  
5

# Blank Spike Summary

**Job Number:** T69730  
**Account:** MWHCODE MWH Americas, Inc.  
**Project:** EPTPC San Juan Basin Blanco North Flare Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1804-BS	KK037730.D 1		02/28/11	LB	n/a	n/a	GKK1804

The QC reported here applies to the following samples:

Method: SW846 8021B

T69730-1, T69730-2, T69730-3, T69730-4, T69730-5, T69730-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	20.1	101	86-121
100-41-4	Ethylbenzene	20	19.6	98	81-116
108-88-3	Toluene	20	19.7	99	87-117
1330-20-7	Xylenes (total)	60	58.7	98	85-115
95-47-6	o-Xylene	20	20.1	101	87-116
	m,p-Xylene	40	38.6	97	84-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	74%	58-125%
98-08-8	aaa-Trifluorotoluene	78%	73-139%

5.2.1  
5

# Blank Spike Summary

**Job Number:** T69730  
**Account:** MWHCODE MWH Americas, Inc.  
**Project:** EPTPC San Juan Basin Blanco North Flare Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1805-BS	KK037772.D	1	03/01/11	LB	n/a	n/a	GKK1805

The QC reported here applies to the following samples:

Method: SW846 8021B

T69730-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
100-41-4	Ethylbenzene	20	19.1	96	81-116
108-88-3	Toluene	20	19.1	96	87-117
1330-20-7	Xylenes (total)	60	57.5	96	85-115
95-47-6	o-Xylene	20	19.7	99	87-116
	m,p-Xylene	40	37.9	95	84-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	103%	58-125%
98-08-8	aaa-Trifluorotoluene	106%	73-139%

5.2.2  
5

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** T69730  
**Account:** MWHCODE MWH Americas, Inc.  
**Project:** EPTPC San Juan Basin Blanco North Flare Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T69809-1MS	KK037751.D	1	02/28/11	LB	n/a	n/a	GKK1804
T69809-1MSD	KK037752.D	1	02/28/11	LB	n/a	n/a	GKK1804
T69809-1	KK037739.D	1	02/28/11	LB	n/a	n/a	GKK1804

The QC reported here applies to the following samples:

Method: SW846 8021B

T69730-1, T69730-2, T69730-3, T69730-4, T69730-5, T69730-6

CAS No.	Compound	T69809-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	20	18.9	95	19.0	95	1	86-121/19	
100-41-4	Ethylbenzene	ND	20	18.9	95	18.9	95	0	81-116/14	
108-88-3	Toluene	ND	20	18.7	94	18.6	93	1	87-117/16	
1330-20-7	Xylenes (total)	ND	60	56.3	94	56.3	94	0	85-115/12	
95-47-6	o-Xylene	ND	20	19.2	96	19.2	96	0	87-116/16	
	m,p-Xylene	ND	40	37.1	93	37.1	93	0	84-116/13	

CAS No.	Surrogate Recoveries	MS	MSD	T69809-1	Limits
460-00-4	4-Bromofluorobenzene	104%	107%	92%	58-125%
98-08-8	aaa-Trifluorotoluene	107%	110%	93%	73-139%

5.3.1  
5

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** T69730  
**Account:** MWHCODE MWH Americas, Inc.  
**Project:** EPTPC San Juan Basin Blanco North Flare Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T69931-3MS	KK037780.D	5	03/01/11	LB	n/a	n/a	GKK1805
T69931-3MSD	KK037781.D	5	03/01/11	LB	n/a	n/a	GKK1805
T69931-3 <sup>a</sup>	KK037777.D	5	03/01/11	LB	n/a	n/a	GKK1805

The QC reported here applies to the following samples:

Method: SW846 8021B

T69730-2

CAS No.	Compound	T69931-3 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD	
100-41-4	Ethylbenzene	1.7	J	100	93.3	92	90.4	89	3	81-116/14
108-88-3	Toluene	5.0 U		100	94.9	95	90.4	90	5	87-117/16
1330-20-7	Xylenes (total)	15 U		300	277	92	270	90	3	85-115/12
95-47-6	o-Xylene	5.0 U		100	94.1	94	92.5	93	2	87-116/16
	m,p-Xylene	10 U		200	183	92	178	89	3	84-116/13

CAS No.	Surrogate Recoveries	MS	MSD	T69931-3	Limits
460-00-4	4-Bromofluorobenzene	88%	97%	84%	58-125%
98-08-8	aaa-Trifluorotoluene	97%	102%	88%	73-139%

(a) Reported for QC purposes only.

5.3.2  
5



09/15/11



Technical Report for

EL PASO CORPORATION

MWHCODE: San Juan Basin River Plant Sites Project (SJRP)

Accutest Job Number: T85990

Sampling Date: 08/31/11

Report to:

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

ATTN: Jed Smith

Total number of pages in report: **19**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Paul Canevaro  
Laboratory Director

Client Service contact: Sonia West 713-271-4700

Certifications: TX (T104704220-10-3) AR (88-0756) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (9103)

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Test results relate only to samples analyzed.

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### Sample Summary

EL PASO CORPORATION

Job No: T85990

MWHCODE:San Juan Basin River Plant Sites Project (SJRP)

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
T85990-1	08/31/11	07:00	09/01/11	AQ	Trip Blank Water	310811TB02
T85990-2	08/31/11	08:43	09/01/11	AQ	Water	BLANCO NEP MW-23
T85990-3	08/31/11	09:25	09/01/11	AQ	Water	BLANCO NEP MW-26
T85990-4	08/31/11	10:23	09/01/11	AQ	Water	BLANCO NEP MW-33

Sample Results

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Report of Analysis

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## Report of Analysis

2.1  
2

<b>Client Sample ID:</b> 310811TB02	
<b>Lab Sample ID:</b> T85990-1	<b>Date Sampled:</b> 08/31/11
<b>Matrix:</b> AQ - Trip Blank Water	<b>Date Received:</b> 09/01/11
<b>Method:</b> SW846 8021B	<b>Percent Solids:</b> n/a
<b>Project:</b> MWHCODE:San Juan Basin River Plant Sites Project (SJRP)	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT001301.D	1	09/02/11	WV	n/a	n/a	GTT54
Run #2							

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

**Purgeable Aromatics**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.36	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	ND	2.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	86%		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

## Report of Analysis

<b>Client Sample ID:</b>	BLANCO NFP MW-23	<b>Date Sampled:</b>	08/31/11
<b>Lab Sample ID:</b>	T85990-2	<b>Date Received:</b>	09/01/11
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8021B		
<b>Project:</b>	MWHCODE:San Juan Basin River Plant Sites Project (SJRP)		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT001308.D	1	09/02/11	WV	n/a	n/a	GTT54
Run #2	TT001324.D	25	09/06/11	WV	n/a	n/a	GTT55
Run #3	TT001323.D	50	09/06/11	WV	n/a	n/a	GTT55

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml
Run #3	5.0 ml

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	6270 <sup>a</sup>	50	18	ug/l	
100-41-4	Ethylbenzene	174	1.0	0.25	ug/l	
108-88-3	Toluene	3.8	1.0	0.28	ug/l	
1330-20-7	Xylenes (total)	1380 <sup>b</sup>	75	23	ug/l	
95-47-6	o-Xylene <sup>c</sup>	11.9	1.0	0.36	ug/l	
	m,p-Xylene	1370 <sup>b</sup>	50	14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
460-00-4	4-Bromofluorobenzene	195%	91%	88%	58-125%
98-08-8	aaa-Trifluorotoluene	256% <sup>d</sup>	102%	97%	73-139%

(a) Result is from Run# 3

(b) Result is from Run# 2

(c) More than 40% RPD for detected concentrations between two GC columns.

(d) Outside control limits due to matrix interference. Confirmed by reanalysis.

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

<b>Client Sample ID:</b> BLANCO NFP MW-26	<b>Date Sampled:</b> 08/31/11
<b>Lab Sample ID:</b> T85990-3	<b>Date Received:</b> 09/01/11
<b>Matrix:</b> AQ - Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> MWHCODE:San Juan Basin River Plant Sites Project (SJRP)	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT001312.D	1	09/02/11	WV	n/a	n/a	GTT54
Run #2							

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

**Purgeable Aromatics**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	3.0	1.0	0.36	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
1330-20-7	Xylenes (total)	1.8	3.0	0.93	ug/l	J
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	1.8	2.0	0.57	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	88%		58-125%
98-08-8	aaa-Trifluorotoluene	97%		73-139%

ND = Not detected      MDL - Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	BLANCO NFP MW-33		
<b>Lab Sample ID:</b>	T85990-4	<b>Date Sampled:</b>	08/31/11
<b>Matrix:</b>	AQ - Water	<b>Date Received:</b>	09/01/11
<b>Method:</b>	SW846 8021B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	MWHCODE:San Juan Basin River Plant Sites Project (SJRP)		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT001340.D	1	09/06/11	WV	n/a	n/a	GTT55
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	0.45	1.0	0.36	ug/l	J
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	ND	2.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	88%		58-125%
98-08-8	aaa-Trifluorotoluene	95%		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

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Includes the following where applicable:

- Chain of Custody



Accutest Job Number: T85990      Client: MWH      Project: \_\_\_\_\_  
 Date / Time Received: 9/1/2011      Delivery Method: \_\_\_\_\_      Airbill #'s: 503110821452  
 No. Coolers: 1      Therm ID: 110;      Temp Adjustment Factor: -0.5;  
 Cooler Temps (Initial/Adjusted): #1: (3.7/3.2)

 31  

**Cooler Security**

	Y or N			Y or N	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Cooler Temperature**

	Y or N	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	<u>Glass Thermometer</u>	
3. Cooler media:	<u>Ice (Bag)</u>	

**Quality Control Preservation**

	Y or N			WTB STB	
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

**Sample Integrity - Documentation**

	Y or N	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Sample Integrity - Condition**

	Y or N	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	<u>Intact</u>	

**Sample Integrity - Instructions**

	Y or N		N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering Instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

Job #: T85990

Date / Time Received: 9/1/2011 9:15:00 AM

Initials: VG

Client: MWH

3.1  
3

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	T85990-1	40 ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	110	3.7	-0.5	3.2
1	T85990-1	40 ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	110	3.7	-0.5	3.2
1	T85990-2	40 ml	1	VR	N/P	Note #2 - Preservative check not applicable.	110	3.7	-0.5	3.2
1	T85990-2	40 ml	2	VR	N/P	Note #2 - Preservative check not applicable.	110	3.7	-0.5	3.2
1	T85990-2	40 ml	3	VR	N/P	Note #2 - Preservative check not applicable.	110	3.7	-0.5	3.2
1	T85990-3	40 ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	110	3.7	-0.5	3.2
1	T85990-3	40 ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	110	3.7	-0.5	3.2
1	T85990-3	40 ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	110	3.7	-0.5	3.2
1	T85990-4	40 ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	110	3.7	-0.5	3.2
1	T85990-4	40 ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	110	3.7	-0.5	3.2
1	T85990-4	40 ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	110	3.7	-0.5	3.2

T85990: Chain of Custody  
Page 3 of 3

GC Volatiles

QC Data Summaries

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Includes the following where applicable:

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

# Method Blank Summary

**Job Number:** T85990  
**Account:** ELPASOX EL PASO CORPORATION  
**Project:** MWHCODE:San Juan Basin River Plant Sites Project (SJRP)

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GTT54-MB	TT001298.D	1	09/02/11	WV	n/a	n/a	GTT54

4.1.1  
4

The QC reported here applies to the following samples:

Method: SW846 8021B

T85990-1, T85990-2, T85990-3

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.36	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	ND	2.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Limits	
460-00-4	4-Bromofluorobenzene	86%	58-125%
98-08-8	aaa-Trifluorotoluene	96%	73-139%

# Method Blank Summary

**Job Number:** T85990  
**Account:** ELPASOX EL PASO CORPORATION  
**Project:** MWHCODE:San Juan Basin River Plant Sites Project (SJRP)

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GTT55-MB	TT001322.D 1		09/06/11	WV	n/a	n/a	GTT55

4.12  
4

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

T85990-2, T85990-4

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.36	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	0.93	ug/l	
95-47-6	o-Xylene	ND	1.0	0.36	ug/l	
	m,p-Xylene	ND	2.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Limits
460-00-4	4-Bromofluorobenzene	85% 58-125%
98-08-8	aaa-Trifluorotoluene	93% 73-139%

## Blank Spike Summary

**Job Number:** T85990  
**Account:** ELPASOX EL PASO CORPORATION  
**Project:** MWHCODE:San Juan Basin River Plant Sites Project (SJRP)

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GTT54-BS	TT001297.D	1	09/02/11	WV	n/a	n/a	GTT54

The QC reported here applies to the following samples:

Method: SW846 8021B

T85990-1, T85990-2, T85990-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	20.1	101	86-121
100-41-4	Ethylbenzene	20	19.0	95	81-116
108-88-3	Toluene	20	19.6	98	87-117
1330-20-7	Xylenes (total)	60	57.0	95	85-115
95-47-6	o-Xylene	20	19.3	97	87-116
	m,p-Xylene	40	37.7	94	84-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	93%	58-125%
98-08-8	aaa-Trifluorotoluene	101%	73-139%

4.2.1  
4

# Blank Spike Summary

Job Number: T85990  
 Account: ELPASOX EL PASO CORPORATION  
 Project: MWHCODE:San Juan Basin River Plant Sites Project (SJRP)

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GTT55-BS	TT001321.D 1		09/06/11	WV	n/a	n/a	GTT55

4.2.2  
4

The QC reported here applies to the following samples:

Method: SW846 8021B

T85990-2, T85990-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	20.4	102	86-121
100-41-4	Ethylbenzene	20	19.2	96	81-116
108-88-3	Toluene	20	19.8	99	87-117
1330-20-7	Xylenes (total)	60	57.7	96	85-115
95-47-6	o-Xylene	20	19.5	98	87-116
	m,p-Xylene	40	38.2	96	84-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	93%	58-125%
98-08-8	aaa-Trifluorotoluene	100%	73-139%

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** T85990  
**Account:** ELPASOX EL PASO CORPORATION  
**Project:** MWHCODE:San Juan Basin River Plant Sites Project (SJRP)

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T85982-1MS	TT001304.D	1	09/02/11	WV	n/a	n/a	GTT54
T85982-1MSD	TT001305.D	1	09/02/11	WV	n/a	n/a	GTT54
T85982-1	TT001303.D	1	09/02/11	WV	n/a	n/a	GTT54

4.3.1  
4

The QC reported here applies to the following samples:

Method: SW846 8021B

T85990-1, T85990-2, T85990-3

CAS No.	Compound	T85982-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	20	23.2	116	22.5	113	3	86-121/19
100-41-4	Ethylbenzene	ND	20	21.9	110	21.2	106	3	81-116/14
108-88-3	Toluene	ND	20	22.5	113	21.9	110	3	87-117/16
1330-20-7	Xylenes (total)	ND	60	65.0	108	63.3	106	3	85-115/12
95-47-6	o-Xylene	ND	20	21.9	110	21.4	107	2	87-116/16
	m,p-Xylene	ND	40	43.0	108	41.9	105	3	84-116/13

CAS No.	Surrogate Recoveries	MS	MSD	T85982-1	Limits
460-00-4	4-Bromofluorobenzene	90%	90%	86%	58-125%
98-08-8	aaa-Trifluorotoluene	98%	98%	95%	73-139%

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** T85990  
**Account:** ELPASOX EL PASO CORPORATION  
**Project:** MWHCODE:San Juan Basin River Plant Sites Project (SJRP)

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T86120-2MS	TT001329.D	5	09/06/11	WV	n/a	n/a	GTT55
T86120-2MSD	TT001330.D	5	09/06/11	WV	n/a	n/a	GTT55
T86120-2	TT001328.D	5	09/06/11	WV	n/a	n/a	GTT55

The QC reported here applies to the following samples:

Method: SW846 8021B

T85990-2, T85990-4

CAS No.	Compound	T86120-2 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	192	100	295	103	284	92	4	86-121/19
100-41-4	Ethylbenzene	33.9	100	138	104	133	99	4	81-116/14
108-88-3	Toluene	316	100	410	94	396	80* a	3	87-117/16
1330-20-7	Xylenes (total)	740	300	1020	93	985	82* a	3	85-115/12
95-47-6	o-Xylene	314	100	405	91	392	78* a	3	87-116/16
	m,p-Xylene	426	200	612	93	593	84	3	84-116/13

CAS No.	Surrogate Recoveries	MS	MSD	T86120-2	Limits
460-00-4	4-Bromofluorobenzene	100%	99%	100%	58-125%
98-08-8	aaa-Trifluorotoluene	98%	98%	98%	73-139%

(a) Outside control limits due to high level in sample relative to spike amount.

4.3.2  
4