AP-01

Annual GW Report

DATE:
Feb, 2010

HUNTSMAN

Enriching lives through innovation

25 February 2010

Mr. Glenn von Gonten
New Mexico Oil Conservation District
Environmental Bureau
1220 So. St. Francis Dr.
Santa Fe, NM 87505

RE: **Submission of the 2009 Annual Groundwater Report for the Former Brickland Refinery Site**
Sunland Park, New Mexico
Huntsman Corporation
Case No. AP-01

Dear Mr. von Gonten:

Enclosed is a copy of the 2009 Annual Groundwater Report for the Former Brickland Refinery Site. As agreed upon on 11 February 2003, the report will be submitted on or before 1 April for the previous year.

Please do not hesitate to contact me at 281-719-3039 any time you have questions or need additional information.

A copy of this report is also being sent to the District 2 office in Artesia.

Sincerely,

Edward L Gunderson

Edward L. Gunderson
Manager EHS Center of Excellence – Americas
Huntsman International

cc: NMOCD District 2 – Artesia
Ronald Keichline – Huntsman
Lon Tullos – Huntsman EHS Library

cc w/o enclosures:
Brad Stokes – ERM

Huntsman International, LLC

2009 Annual Groundwater Monitoring Report: *Former Brickland Refinery*

February 23, 2010

Project No. 0102010
Sunland Park, New Mexico

Franz K. Hiebert, Ph.D.
Partner-in-Charge

Brad Stokes, P.G.
Project Manager

Environmental Resources Management Southwest, Inc.
206 E. 9th St., Suite 1700
Austin, Texas 78701
T: 512-459-4700
F: 512-459-4711

Texas Registered Engineering Firm F-2393

TABLE OF CONTENTS

TABLE OF CONTENTS (CONT'D)

List of Tables

List of Figures

EXECUTIVE SUMMARY

This 2009 Annual Groundwater Monitoring Report documents the results of two semi-annual groundwater monitoring operations conducted at the former Brickland Refinery site in Sunland Park, New Mexico. The semi-annual groundwater monitoring operations were conducted in June (June 30 thru July 2) and December (December 9 thru December 11) 2009. The report contains summaries of groundwater elevation and analytical data for the past seven years.

This monitoring program was conducted in accordance with the Groundwater Monitoring Plan included as Section 3.5 of the Stage 2 Abatement Plan approved by Mr. Bill Olson of the New Mexico Oil Conservation Division (NMOCD) in a letter dated December 17, 1998, and revised in 2006. Since 2009 is an odd-numbered year, samples were collected from:

- the five off-site wells (MW-3S, MW-3D, MW-6S, MW-6D, and MW-9S), and
- upstream and downstream in the river.

Analytical results report that benzene, toluene, ethylbenzene, and toluene (BTEX) were not detected in any of the samples during the June or December sampling events.

Polynuclear aromatic hydrocarbons (PAH) were not reported in any sample during the June 2009 monitoring event. PAH analysis was not required for the December event.

Lead was not reported in any sample above the detection limit during the June 2009 monitoring event. Lead analysis was not required for the December event.

In accordance with a June 19, 2009 agreement to conduct a statistical analysis comparing background concentrations to site-wide concentrations, samples were collected from MW-12, the upgradient background well, for analysis of boron, iron and manganese. The results support Huntsman's contention that the concentrations of boron, iron, and manganese in on-site wells are not statistically higher than background concentrations.

Light non-aqueous phase liquid (LNAPL) was not detected in the product recovery/monitoring well, MW-10, during the 2009 monitoring events. Well points WP-25 and WP-26S had measurable thicknesses of 0.07 foot and 0.25 foot, respectively, during the June 2009 monitoring event. LNAPL was not detected in any well during the December 2009 monitoring event. This is attributed to 2009 LNAPL recovery efforts including use of oil-absorbent socks and the use of a vacuum truck to remove LNAPL from wells.

Based on the results of ongoing monitoring, Huntsman recommends the following actions:

- In accordance with Section 5.1 of the Stage 2 Abatement Plan, LNAPL will be observed for one additional semiannual sampling event.
- Sampling should commence in wells without LNAPL. If all wells in the monitoring network are below regulatory action levels for two consecutive sampling events, quarterly closure monitoring will be implemented.
- Remove metals analyses from the sampling program.

1.0 INTRODUCTION

1.1 BACKGROUND

The Brickland Refinery Site is located in Sunland Park, New Mexico and consists of approximately 33 acres situated along the west bank of the Rio Grande (Figure 1). Huntsman International, LLC. (Huntsman) currently owns the site. From 1933 to 1958, the site was operated as a petroleum refinery, producing both gasoline and jet fuel. The site was closed and the plant dismantled in 1958. Between 1964 and 1989, the site was leased to various parties to service trucks, conduct automobile salvage operations, graze livestock and store used bricks. Petroleum hydrocarbons have been reported in soil and groundwater at the site. The distribution of petroleum hydrocarbons was investigated and these investigations provided the basis for the Stage 2 Abatement Plan. The Stage 2 Abatement Plan provides the methods for abating contamination of groundwater and soil in compliance with New Mexico Water Quality Control Commission (NMWQCC) regulations on prevention and abatement of water pollution (20NMAC 6.2, Subpart IV), and New Mexico Oil Conservation Division (NMOCD) requirements to protect public health and the environment with respect to wastes from the refinement of crude oil (s70-2-12.8 (22) NMSA 1978). Huntsman maintained a stand-alone light non-aqueous phase liquid (LNAPL) recovery system on the site as part of the Stage 2 Abatement Plan. The system was installed in December 1998 and is currently shut down because LNAPL is no longer detected in MW-10. Site visits are now being made quarterly to measure hydrocarbon thicknesses and to remove LNAPL from several wells. The site layout and monitoring well and sampling locations are shown on Figure 2.

1.2 SCOPE OF SERVICES

ERM performed semi-annual groundwater monitoring at the subject site in June and December 2009. The monitoring program was conducted in accordance with the Groundwater Monitoring Plan and Stage 2 Abatement Plan, approved by Mr. Bill Olsen of the NMOCD in his letter dated December 23, 1998. The sampling protocol was modified in 2006 with the modifications implemented during the June 2006 monitoring event. The revised protocol is in general accordance with applicable NMOCD, New Mexico Environment Department (NMED) and Environmental Protection Agency (EPA) regulations, procedures and guidelines. The following items were included in the semi-annual monitoring as required by the Groundwater Monitoring Plan and Stage 2 Abatement Plan and approved by the NMOCD:

- Depth to groundwater measurements were recorded in the ten on-site monitoring wells and eight off-site monitoring wells.

- LNAPL thicknesses were measured, if present, in the 18 monitoring wells and 14 well points, and a summary of the LNAPL thicknesses is included in Table 6 and Figure 5.
- Groundwater sampling was conducted in each of the five required off-site monitoring wells (MW-3S, MW-3D, MW-6S, MW-6D, and MW-9S) in June and December.
- Surface water samples were collected from the Rio Grande during each semi-annual monitoring event for laboratory analytical testing. One sample was collected from the upstream end of the site, north of MW-1, and the other sample was collected from the downstream end of the site, south of MW-9s.
- Analytical testing for the June monitoring event included benzene, toluene, ethylbenzene, and toluene (BTEX), polynuclear aromatic hydrocarbons (PAH), and lead (using US EPA Test Methods 8021B, 8270C, 7470, and 6020, respectively). Samples were analyzed for BTEX only for the December monitoring event. In addition, pursuant to a NMOCD request in June 2009, groundwater samples were collected in MW-12 to determine background concentrations of boron, iron and manganese by Method 6020.
- Purged water and used personal protection wastes were managed by Safety Kleen at their Denton, Texas facility.
- Extraction system O&M reports were not prepared because the extraction system was shut down in 2009, due to an absence of LNAPL in the recovery well.

2.0 *GROUNDWATER ELEVATION, HYDRAULIC GRADIENT AND FLOW DIRECTION*

The hydraulic gradient beneath the former Brickland Refinery varies slightly across the site, and in response to river stage. In June 2009 the gradient was approximately 0.0005 foot/foot. The groundwater flow direction on the east boundary of the site adjacent to the river is east towards the river, and on the western boundary is slightly west of south, likely due to elevated river stage. The hydraulic gradient in December 2009 was calculated to be approximately 0.0006 foot/foot and on the east boundary of the site adjacent to the river is east towards the river, and on the western boundary is slightly east of south at S 5° E. Historical groundwater elevations for the monitoring wells are provided in Table 2. Water levels are not listed for the well points because the well points were specifically designed to detect LNAPL product at discrete depth and the screened intervals do not correlate with the monitoring well screens. Groundwater elevation contour maps for the June and December 2009 monitoring events are depicted in Figures 3 and 4, respectively.

Groundwater levels in the monitoring wells are influenced by the stage of the Rio Grande bordering the site. Due to observed seasonal fluctuations in the river, water levels in the monitoring wells may vary as much as two feet over the course of a year. Monitoring over the past 15 years indicates a consistent pattern of higher water elevations in the wells and the river during summer sampling events and lower water elevations during the winter sampling events.

3.0 *LNAPL PRODUCT REMOVAL*

3.1 *LNAPL PRODUCT THICKNESS*

LNAPL product thickness in each monitoring well and well point was measured, if present, with an oil/water interface meter. Figure 5 shows a graph of LNAPL thickness. The historical product thickness measurements for each monitoring point are listed in Table 6. In June, there were only two wells with measurable LNAPL thickness. In December, no wells had measureable thickness of LNAPL. LNAPL Hydrocarbon Thickness maps were not prepared because an insufficient number of wells contained LNAPL to prepare a useful contour map.

3.2 *REMOVAL AND DISPOSAL OF LNAPL PRODUCT*

A total of approximately 235 gallons of LNAPL product had been removed from recovery well MW-10 since 1998. There was no product removed from MW-10 in 2006, 2007, 2008, or 2009.

In 2009, LNAPL was encountered in only two well points, WP-25 and WP-26S. On July 1, these well points were purged clean of LNAPL and oil-absorbent socks were installed. On August 25, the sock was removed from WP-25, and the well was evacuated dry with a vacuum truck, however the sock was stuck in WP-26S. On September 29, the sock was removed from WP-36S and both wells were evacuated until dry. The purged liquids were managed by Safety Kleen.

4.0 SAMPLE COLLECTION AND LABORATORY ANALYTICAL TESTING PROCEDURES

4.1 FLUID LEVEL MEASUREMENTS

The ten on-site monitoring wells and eight off-site monitoring wells were probed for the presence of LNAPL using an oil/water interface probe. LNAPL was not detected in the wells to be sampled. The fluid elevations in each well and monitoring point were measured and recorded. The water surface elevations for the two monitoring periods are shown in Table 2.

4.2 DECONTAMINATION

The interface probe was decontaminated prior to each use and between each well to prevent the introduction of external contamination or artifacts into a well. A wash and double-rinse decontamination procedure was used. The procedure consisted of washing the probe with Liquinox, a mild, non- phosphate detergent, then double-rinsing with water.

4.3 CALIBRATION OF THE MULTI-PROBE WATER ANALYZER

The multi-probe analyzer was calibrated prior to use at the former Brickland Refinery site. Each calibration was carried out in accordance with the equipment manufacturer's procedures and recommendations. Date, time, calibration readings, and the method of calibration were recorded on Calibration Logs presented in Appendix A.

4.4 WELL PURGING AND FIELD PARAMETER MEASUREMENTS

The monitoring wells were micropurged prior to sampling. Micropurging consists of removing small volumes of groundwater at very low pumping rates until certain physiochemical field parameters stabilized. Field parameter measurements were recorded while each well was purged through the multi-probe flow cell. The groundwater temperature, pH, specific conductance, dissolved oxygen, redox potential, and turbidity was documented on the Sampling Information Form provided in Appendix A. Micropurging of each well was continued until two consecutive readings for three field parameters (dissolved oxygen, redox potential, and turbidity) stabilized within 10% of one another. When stabilization was achieved, well purging was discontinued and the well sampled. The total volume of water purged prior to sample collection was recorded on the Sampling Information Form. The purged water was containerized for disposal.

Approximately 2 gallons (8 liters) were removed from each well with pumping rates of 0.2 liter per minute. Field data collected during the purging of each well

is provided in Appendix A. Groundwater odor, color, and other physically apparent characteristics were also documented. Monitor well integrity was also documented (see the Sampling Information Forms provided in Appendix A).

Since each pump is dedicated to a specific well, no decontamination was required. Approximately 12 gallons of water were purged from the sampled monitoring wells during the June 2009 monitoring event. Approximately 12 gallons were purged from the sampled wells during the December 2009 monitoring event. The purged water collected during these monitoring events was transported Safety Kleen's Denton, Texas facility. A copy of the disposal manifest is provided in Appendix C.

4.5 *GROUNDWATER SAMPLE COLLECTION*

Samples were collected for laboratory analysis in the order of volatilization sensitivity of the analytical parameters, (first, volatile organics; second, polynuclear aromatic hydrocarbons; and third, metals). All samples were properly labeled with the correct sampling location, date, time, and testing requirements written on self-adhering labels provided by the laboratory. Metals samples were filtered during the June event to determine if suspended solids were affecting the analytical results.

4.5.1 *Volatile Organic Compounds (VOCs)*

The groundwater samples were analyzed by US EPA Method 8021B for the following volatile organic compounds (VOCs): benzene, ethylbenzene, toluene, and total xylenes (BTEX). The VOC sample containers were 40 milliliter (mL) glass vials that contained a premeasured amount of hydrochloric acid (HCl), prepared by the laboratory. The HCl is a preservative, and sample containers for VOCs were not rinsed or allowed to overflow during the collection of samples. Water was collected from the well and slowly poured into the glass vial until a convex meniscus formed above the lip of the bottle. Once capped, the vial was checked for air bubbles (headspace) by turning it upside down, tapping the cap of the inverted bottle, and visually inspecting the bottle contents. No bubbles were observed.

4.5.2 *Polynuclear Aromatic Hydrocarbons*

Wells sampled in the June 2009 monitoring event were analyzed by US EPA Method 8270C for the presence of PAHs. Sample containers for PAH were 1 liter amber glass bottles with no preservative. Water was collected from the well and slowly poured into the sample container until filled to the neck.

4.5.3 *Metals*

Wells sampled in the June 2009 monitoring event were analyzed by US EPA Method 6020 for lead. Groundwater samples collected in July, August, and September for boron, iron, and manganese were analyzed by Method 6020.

Sample bottles were 500 mL plastic bottles that contained a pre-measured amount of nitric acid (HNO_3) prepared in the laboratory. The HNO_3 is a preservative and sample containers for metals were not rinsed before or allowed to overflow during sample collection.

4.6 *SURFACE WATER SAMPLING*

Surface water samples from the Rio Grande were collected for chemical analysis from one location up-river and one location down-river from the Brickland facility. The samples were subjected to the same group of analytical testing listed previously for the groundwater samples. Surface water grab samples were collected by submerging a decontaminated Teflon® dipper into the river. The dipper was decontaminated between sampling sites with Liquinox, a non-phosphate detergent followed by a double rinse with distilled water. Sampling protocols outlined in the Monitoring and Sampling Protocol was strictly adhered to during the sampling process.

4.7 *FIELD QUALITY ASSURANCE / QUALITY CONTROL*

The Field Quality Assurance/Quality Control (QA/QC) program includes collection of field blanks, equipment blanks, trip blanks, and duplicate samples. Descriptions of the QA/QC samples are presented below.

4.7.1 *Field Blanks*

Field blanks were used to determine potential absorption of volatile organics from the air into the water samples. The blanks for volatile organics were collected by filling one 40 mL glass vial with distilled water. The field blanks were analyzed for BTEX. Additionally, field blanks were collected during the June event for metals analyses to assess if windblown dusts and airborne particles could affect samples. The blanks for metals were collected in a 500 mL plastic bottle with acid preservative. The field blanks did not detect any BTEX constituents. One of the field blanks detected aluminum, indicating a possible airborne source of aluminum.

4.7.2. *Equipment Blanks*

Equipment blanks were collected on non-dedicated or new sampling equipment. During the June sampling event, an equipment blank was collected on the water level indicator, and during the December sampling event,

equipment blanks were collected on the Teflon® dipper, the poly sample tubing, and the water level indicator. The Teflon® dipper and water level indicator were decontaminated with Liquinox, a non-phosphate detergent followed by a double rinse with distilled water. Immediately following decontamination, the equipment blank was collected by pouring distilled water into the equipment, and then filling one 40 mL, glass vial with the water from the equipment. The equipment blank was analyzed for volatile organic compounds (BTEX).

The equipment blanks did not report any BTEX constituents.

4.7.3. *Trip Blanks*

The trip blank is used to detect and quantify potential organic chemical artifacts occurring in the samples which originate from either the sample containers or the de-ionized water comprising the blank. One bottle set for each ice chest was filled with de-ionized water by the laboratory prior to field mobilization. These bottles were transported to the sampling location and returned to the laboratory in the ice chests used to transport groundwater and surface water samples. The trip blanks were analyzed for the same volatile organic compounds (BTEX) as the groundwater and surface water samples.

The trip blanks did not report any BTEX constituents.

4.7.4. *Duplicate Samples*

One duplicate sample was collected during the monitoring events. The duplicate samples collected during the June and December monitoring events were collected from monitor well MW-6S.

The duplicate sample results were similar to the MW-6S concentrations.

4.8 *SAMPLE SHIPPING AND CHAIN-OF-CUSTODY RECORDS*

The water samples collected during the monitoring events were placed in ice-filled coolers immediately after collection and shipped to ALS Laboratories in Houston, Texas for analysis. In each event, chain-of-custody (COC) forms, documenting sample identification numbers, the required analysis for each sample, collection times, and delivery times to the laboratories were completed for each set of samples. Copies of COC forms are provided in Appendix B.

5.0 GROUNDWATER ANALYTICAL RESULTS

5.1 BENZENE, TOLUENE, ETHYLBENZENE AND TOTAL XYLENES (BTEX)

Historical reported BTEX concentrations for the five off-site monitoring wells (MW-3S, MW-3D, MW-6S, MW-6D, and MW-9S) and four on-site monitoring wells (MW-4, MW-7, MW14, and MW-15) are summarized in Table 3. This table lists BTEX concentrations for the period from June 2002 to December 2009. BTEX concentrations for monitoring events prior to June 2002 are included in previously submitted reports.

The analytical results for the 2009 reporting period indicate that BTEX were not reported in samples collected from any of the on-site wells, or from the river.

The laboratory reports and Chain-of-Custody (COC) documentation are included in Appendix B.

5.2 POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)

Historical analytical results for PAHs for five off-site monitoring wells (MW-3S, MW-3D, MW-6S, MW-6D, and MW-9S) and four on-site monitoring wells (MW-4, MW-7, MW14, and MW-15) indicate that PAH constituents have not been detected since 1999. The June 2009 monitoring results indicate that groundwater and river water do not contain PAH constituents. Analytical results for PAHs for the period of December 1993 to December 2009 are listed in Table 4.

5.3 PRIORITY POLLUTANT METALS

On June 19, 2009, NMOCD approved a change to the sampling program for metals, removing all metals from the list of analytes except lead. Additionally, in order to support Huntsman's contention that the on-site wells are not affected above background levels, NMOCD requested that Huntsman conduct a statistical evaluation of background boron, iron, and manganese compared to the concentrations in on-site wells.

Groundwater and river water samples were analyzed for lead in July 2009. All results were reported below detection limits.

In order to develop sufficient data for a statistical evaluation, groundwater samples were collected from the background monitoring well, MW-12, on July 2, July 28, August 25, and September 29. Two samples were collected at each sampling, and the results from each sampling were averaged and treated as a single sample. These were combined with all available past data for the statistical evaluation. The statistical method is the Tolerance Limit with 95% coverage, which is appropriate for comparing background concentrations with compliance wells (EPA Guidance, 1989, 2009). Concentrations reported below

detection limits were given a value of ½ the detection limit. The concentration data and statistical results are shown on Table 7.

The upper tolerance limits determined from the data are:

- Boron - 1.87 mg/L,
- Iron - 13.40 mg/L, and
- Manganese - 25.48 mg/L.

Any concentration exceeding the tolerance limit indicates statistically significant evidence of contamination, with a 5% error rate. Comparing these background limits to the monitoring data presented in Table 5:

- Boron concentrations have not exceeded the statistical limit in any well except MW-6S during the June 2006 and June 2007 sampling events. The concentrations in June 2006 were 1.98 and 1.99 mg/L, and the concentrations in June 2007 were 3.1 and 3.3 mg/L. Boron concentrations in MW-6S have not exceeded the statistical limit before or after these two events.
- Iron concentrations have not exceeded the statistical limit.
- Manganese concentrations have not exceeded the statistical limit.

6.0 *REMEDIATION SYSTEM PERFORMANCE*

The remediation system installed in MW-10 was shut down in June 2008 because LNAPL was no longer present in MW-10. The system was checked quarterly to verify absence of LNAPL in MW-10.

7.0 *CONCLUSIONS*

The analytical results for this reporting period indicate that benzene, toluene, ethylbenzene, and toluene (BTEX) were not reported in samples collected from any of the on-site or off-site wells, or from the river.

Polynuclear aromatic hydrocarbons (PAHs) were not reported in any well sample or river sample during the June 2009 monitoring event.

Lead concentrations were reported below detection limits in well samples and the river samples during 2009 sampling. A statistical evaluation of background boron, iron, and manganese with on-site conditions was conducted. The evaluation indicates that iron and manganese concentrations reported in the wells on-site are statistically similar to background concentrations. Boron concentrations reported in MW-6S have exceeded the background statistical range twice in the past, but the most recent data do not exceed the background.

LNAPL was not detected in the product recovery/monitoring well, MW-10, during the 2009 monitoring events. LNAPL was detected in well points WP-25 and WP-26S in June, and recovery efforts were undertaken. As of the December monitoring event, LNAPL was not detected in these well points.

8.0 *RECOMMENDATIONS*

The following recommendations are proposed for the remediation system and monitoring operations at the Brickland Refinery.

- LNAPL is no longer detected in any well on-site. In accordance with Section 5.1 of the Stage 2 Abatement Plan, LNAPL will be observed for one additional semiannual sampling event.
- Sampling should commence in wells without LNAPL. If all wells in the monitoring network are below regulatory action levels for two consecutive sampling events, quarterly closure monitoring will be implemented.
- All metals analyses should be removed from the sampling program. Lead is not detected in groundwater. Iron and Manganese are background constituents that are unrelated to site activities. Boron has been detected only twice above background concentrations, but the most recent data do not exceed background concentrations. Section 5 of the Abatement Plan "Termination of Abatement Activities" does not provide a procedure for termination of metals abatement activities.

Tables

Table 1
Brickland Refinery
Well Sampling and Purging Methods

Well No.	Sample Date	Purge Method	Sampling Method	Purge Volume	Laboratory Analytes
MW-3S	7/1/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX, Semi-Vols, and Metals
	12/10/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX only
MW-3D	7/1/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX, Semi-Vols, and Metals
	12/10/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX only
MW-4	7/1/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX, Semi-Vols, and Metals
	12/10/2009	NS	NS	NS	NS
MW-6S	7/1/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX, Semi-Vols, and Metals
	12/11/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX only
MW-6D	7/1/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX, Semi-Vols, and Metals
	12/11/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX only
MW-7	7/1/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX, Semi-Vols, and Metals
	12/11/2009	NS	NS	NS	NS
MW-9S	7/1/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX, Semi-Vols, and Metals
	12/10/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX only
MW-12	1/7/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	Boron only
MW-14	7/1/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX, Semi-Vols, and Metals
	1/8/2009	NS	NS	NS	NS
MW-15	7/1/2009	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX, Semi-Vols, and Metals
	1/8/2009	NS	NS	NS	NS
River Upstream	7/1/2009	NA	Teflon Dipper	NA	BTEX, Semi-Vols, and Metals
	12/10/2009	NA	Teflon Dipper	NA	BTEX only
River Downstream	7/1/2009	NA	Teflon Dipper	NA	BTEX, Semi-Vols, and Metals
	12/10/2009	NA	Teflon Dipper	NA	BTEX only

Total volume purged during semi-annual monitoring event in June 2008:	18 gallons
Total volume purged during annual monitoring event in January 2009:	8 gallons
Total volume purged during semi-annual and annual monitoring events:	26 gallons

NS Not sampled during an odd-numbered year.
NA Not applicable

Table 2
Brickland Refinery
Monitoring Well Groundwater Elevations (Feet, MSL)

Well ID	6/18/2003	12/16/2003	6/16/2004	12/16/2004	6/15/2005	12/14/2005	6/13/2006	12/14/2006	6/13/2007	12/11/2007	6/25/2008	1/7/2009	6/30/2009	12/9/2009
MW-1	3725.55	3723.69	3725.56	3723.6	3726.5	3724.01	3725.89	3724.29	3726.74	3724.57	3726.88	3724.4	3726.94	3724.20
MW-2	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99
MW-3S	3724.65	3722.69	3724.61	3722.71	3725.56	3723.1	3725.02	3723.34	3725.82	3723.49	3725.99	3723.53	3725.98	3723.24
MW-3D	3724.57	3722.61	3724.62	3722.64	3725.49	3723.04	3724.96	3723 29	3725.78	3723.57	3725.96	3723.5	3725.92	3723.68
MW-4	3724.87	3722.88	3724.76	3722.96	3725.75	3723.37	3725.21	3723.62	3726.06	3723.77	3726.26	3723.82	3726.22	3723.52
MW-5	3724.91	3722.85	3724.83	3722.98	3725.68	3723.38	3725.15	3723.65	3726.02	3723.84	3726.14	3723.85	3726.21	3723.51
MW-6S	3724.4	3722.38	3724.4	3722.45	3725.21	3722.9	3724.76	3722.99	3725.53	3723.13	3725.7	3723.29	3725.68	3722.99
MW-6D	3724.36	3722.33	3724.38	3722.41	3725.22	3722.86	3724.74	3722.98	3725.58	3723.28	3725.76	3723.25	3725.69	3722.95
MW-7	3724.76	3722.69	3724.75	3722.82	3725.53	3723.24	3725.06	3723.45	3725.92	3723.78	3726.05	3723.64	3726.39	3723.42
MW-8	3724.67	3722.63	3724.62	3722.84	3725.28	3723.25	3724.91	3723.46	3725.53	3723.67	3725.79	3723.62	3725.78	3723.39
MW-9S	3724.04	3722.02	3723.97	3722.18	3724.85	3722.65	3724.39	3722.89	3725.4	3723.17	3725.41	3723.17	3725.41	3722.88
MW-9D	Dry	Dry	Dry	Dry	Dry	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05
MW-10	3725.67	3722.31	3724.41	3722.56	3725.24	3723.11	3724.53	3723.29	3725.83	3723.54	3732.54	3723.47	3725.82	3723.22
MW-11	3724.51	3721.17	3724.42	3722.74	3725.24	3723.21	3724.65	3723.43	3725.77	3723.62	3725.74	3723.53	3725.76	3723.30
MW-12	3725.93	3724.09	3725.9	3723.86	3726.74	3724.4	3726.24	3724.66	3727.1	3724.8	3726.95	3724.79	3727.28	3724.49
MW-13	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99
MW-14	3725.3	3722.79	3724.81	3722.88	3725.67	3723.3	3725.17	3723.55	3726.03	3723.82	3726.13	3723.77	3726.14	3723.45
MW-15	3724.35	3722.38	3724.28	3722.58	3725.16	3723.04	3724.69	3723.42	3725.75	3723.57	3725.73	3723.58	3725.74	3723.26
MW-16	3724.17	3722.14	3724.13	3722.34	3725	3722.78	3724.48	3723.05	3725.53	3723.29	3725.51	3723.28	3725.51	3722.99
MW-17	3724.67	3722.61	3724.67	3722.71	3725.53	3723.15	3725.06	3723.33	3725.93	3723.63	3726	3723.63	3726.02	3723.28

Notes: MSL = Mean Sea Level

Table 3
Brickland Refinery
BTEX Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples
June 2003 through December 2009

Well	Date	Benzene	Toluene	Ethylbenzene	Xylenes
MW-3S	6/19/2003	ND	ND	ND	ND
	12/17/2003	ND	ND	ND	ND
	6/16/2004	ND	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/15/2005	ND	ND	ND	ND
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	ND	ND	ND	ND
	12/17/2007	ND	ND	ND	ND
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	71/109	ND	ND	ND	ND
	12/10/2009	ND	ND	ND	ND
MW-3D	6/19/2003	ND	ND	ND	ND
	12/17/2003	ND, ND	ND, ND	ND, ND	ND, ND
	6/16/2004	ND	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/15/2005	ND	ND	ND	ND
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	ND	ND	ND	ND
	12/17/2007	ND	ND	ND	ND
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	ND	ND	ND	ND
	12/10/2009	ND	ND	ND	ND
MW-4	6/28/2002	**100, 87**	ND,ND	ND,ND	ND,ND
	12/6/2002	NS	NS	NS	NS
	6/19/2003	NS	NS	NS	NS
	12/17/2003	NS	NS	NS	NS
	6/16/2004	**45**	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/14/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	NS	NS	NS	NS
	12/17/2007	NS	NS	NS	NS
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	NS	NS	NS	NS
	12/10/2009	NS	NS	NS	NS

Table 3
Brickland Refinery
BTEX Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples
June 2003 through December 2009

Well	Date	Benzene	Toluene	Ethylbenzene	Xylenes
MW-6S	6/19/2003	ND	ND	ND	**8.7**
	12/17/2003	ND	ND	ND	ND
	6/16/2004	ND, ND	ND, ND	ND, ND	ND, ND
	12/16/2004	ND, ND	ND, ND	ND, ND	ND, ND
	6/15/2005	**0.8**	ND	ND	**0.86**
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND, ND	ND, ND	ND, ND	ND, ND
	12/14/2006	**11 , 6.1**	ND, ND	**7.3** , ND	**1.6**, ND
	6/14/2007	ND, ND	ND, ND	**8.0 , 9.2**	**1.5**, ND
	12/17/2007	ND, ND	ND, ND	**2.2** , ND	ND, ND
	6/25/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	**1.7, 1.8**	ND, ND	**4.6, 4.2**	ND, ND
	12/11/2009	ND, ND	ND, ND	ND, ND	ND, ND
MW-6D	6/19/2003	ND	ND	ND	ND
	12/17/2003	ND	ND	ND	ND
	6/16/2004	ND	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/15/2005	ND	ND	ND	ND
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	ND	ND	ND	ND
	12/17/2007	ND	ND	ND	ND
	6/25/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	ND	ND	ND	ND
	12/11/2009	ND	ND	ND	ND
MW-7	6/28/2002	ND	ND	ND	ND
	12/6/2002	NS	NS	NS	NS
	6/19/2003	NS	NS	NS	NS
	12/17/2003	NS	NS	NS	NS
	6/16/2004	ND	ND	ND	ND
	12/16/2004	NS	NS	NS	NS
	6/14/2006	ND	ND	ND	ND
	12/14/2006	NS	NS	NS	NS
	6/14/2007	ND	ND	ND	ND
	12/17/2007	NS	NS	NS	NS
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	NS	NS	NS	NS
	12/10/2009	NS	NS	NS	NS

Table 3
Brickland Refinery
BTEX Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples
June 2003 through December 2009

Well	Date	Benzene	Toluene	Ethylbenzene	Xylenes
MW-9S	6/19/2003	ND, ND	ND, ND	ND, ND	ND, ND
	12/17/2003	ND	ND	ND	ND
	6/16/2004	ND	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/15/2005	ND	**0.60**	ND	**1.4**
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	ND	ND	ND	ND
	12/17/2007	ND	ND	ND	ND
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/2/2009	ND	ND	ND	ND
	12/10/2009	ND	ND	ND	ND
MW-14	6/28/2002	**11**	ND	ND	ND
	12/6/2002	NS	NS	NS	NS
	6/19/2003	NS	NS	NS	NS
	12/17/2003	NS	NS	NS	NS
	6/16/2004	**230**	ND	ND	ND
	12/16/2004	NS	NS	NS	NS
	6/14/2006	ND	ND	ND	ND
	12/14/2006	NS	NS	NS	NS
	6/14/2007	NS	NS	NS	NS
	12/17/2007	NS	NS	NS	NS
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	NS	NS	NS	NS
	12/10/2009	NS	NS	NS	NS
MW-15	6/28/2002	ND	ND	ND	ND
	12/6/2002	NS	NS	NS	NS
	6/19/2003	NS	NS	NS	NS
	12/17/2003	NS	NS	NS	NS
	6/16/2004	ND	ND	ND	ND
	12/16/2004	NS	NS	NS	NS
	6/14/2006	ND	ND	ND	ND
	12/14/2006	NS	NS	NS	NS
	6/14/2007	NS	NS	NS	NS
	12/17/2007	NS	NS	NS	NS
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	NS	NS	NS	NS
	12/10/2009	NS	NS	NS	NS

Table 3
Brickland Refinery
BTEX Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples
June 2003 through December 2009

Well	Date	Benzene	Toluene	Ethylbenzene	Xylenes
River Upstream	6/19/2003	ND	ND	ND	ND
	12/17/2003	ND	ND	ND	ND
	6/16/2004	ND	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/15/2005	ND	ND	ND	ND
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	ND	ND	ND	ND
	12/17/2007	ND	ND	ND	ND
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	ND	ND	ND	ND
	12/10/2009	ND	ND	ND	ND
River Downstream	6/19/2003	ND	ND	ND	ND
	12/17/2003	ND	ND	ND	ND
	6/16/2004	ND	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/15/2005	ND	ND	ND	ND
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	ND	ND	ND	ND
	12/17/2007	ND	ND	ND	ND
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	ND	ND	ND	ND
	12/10/2009	ND	ND	ND	ND
Human Health Limits		10	750	750	620

Notes: ND = Not detected
NS = Not sampled

Table 4
Brickland Refinery
Total PAH Concentrations (µg/L) in the River and Monitoring Wells

Well ID	12/8/1993	3/25/1994	7/12/1994	9/28/1994	12/13/1994	3/28/1995	6/21/1995	9/1/1995	6/21/1996	6/26/1997	6/25/1998	6/3/1999	6/14/2000	7/27/2001	6/27/2002	6/19/2003	6/16/2004	6/15/2005	6/14/2006	6/14/2007	6/25/2008	7/1/2009
MW-3S	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3D	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND,ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-6S	ND	ND	ND	ND	ND	ND	**15, 10**	ND	ND	ND	ND	**22, 32**	ND	ND	ND,ND	ND	ND,ND	ND	ND,ND	ND,ND	ND, ND	ND, ND
MW-6D	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-7	--	ND	ND	ND	ND	--	--	--	--	--	--	ND,ND	ND,ND	ND	ND	--	ND	--	ND	--	ND	ND
MW-9S	ND	ND	ND	ND	ND	ND	ND	ND	ND,ND	ND	ND,ND	ND	ND	ND	ND	ND,ND	ND	ND	ND	ND	ND	ND
MW-14	--	--	**570**	**40**	ND	ND	**.12**	ND	--	--	--	ND	ND	ND,ND	ND	--	ND	--	ND	--	ND	ND
MW-15	--	--	**117**	**126**	**84**	ND	ND	ND	--	--	--	ND	ND	ND	ND	--	ND	--	ND	--	ND	ND
River-Upstream	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
River-Down	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes: ND = Not Detected
"--" = Not Sampled

Table 5
Brickland Refinery
Metals Concentrations (mg/L)

MW-3S										
Parameter	NMWQCC Std.	Reference	6/28/2002	6/19/2003	6/16/2004	6/15/2005	6/15/2006	6/14/2007	6/25/2008	7/1/2009
Aluminum	*5*	*C*	*ND*	*ND*	*0.13*	*ND*	*ND*	*ND*	*ND*	*NA*
Antimony	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Arsenic	0.1	A	0.008	ND	ND	ND	ND	ND	0.01	NA
Barium	1	A	0.081	0.083	0.085	0.075	ND	0.046	0.045	NA
Beryllium	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Boron	0.8	C	**0.88**	**0.94**	**1**	**0.89**	**0.973**	**1.1**	0.67	NA
Cadmium	0.01	A	ND	ND	ND	ND	ND	ND	ND	NA
Chromium	0.05	A	ND	ND	ND	ND	ND	ND	ND	NA
Cobalt	0.05	Cobalt	ND	ND	ND	ND	ND	ND	ND	NA
Copper	1	B	ND	ND	0.013	ND	ND	ND	ND	NA
Iron	1	B	**1.5**	**1.7**	**3.9**	**1.8**	**1.25**	**1.3**	**1.01**	NA
Lead	0.05	A	ND	ND	ND	ND	ND	ND	ND	<0.005
Manganese	0.2	B	**1.7**	**1.7**	**1.8**	**1.6**	**1.64**	**1.4**	**1.36**	NA
Mercury	0.002	A	NS	ND	ND	ND	ND	NS	ND	NA
Molybdenum	1	C	ND	ND	ND	ND	ND	0.032	0.01	NA
Nickel	0.2	C	ND	ND	ND	ND	ND	ND	ND	NA
Selenium	0.05	A	0.021	ND	ND	ND	ND	ND	ND	NA
Silver	0.05	A	ND	ND	ND	ND	ND	ND	ND	NA
Thallium	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Zinc	10	B	ND	ND	ND	ND	ND	ND	ND	NA

MW-3D										
Parameter	NMWQCC Std.	Reference	6/28/02	6/19/03	6/16/04	6/15/05	6/14/06	6/14/2007	6/25/2008	7/1/2009
Aluminum	5	C	ND	ND	0.070	ND	ND	ND	ND	NA
Antimony	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Arsenic	*0.1*	A	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*NA*
Barium	1.0	A	0.060	0.063	0.071	0.062	ND	0.062	0.0606	NA
Beryllium	*NA*	*NA*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*NA*
Boron	0.8	C	**1.500**	**1.500**	**1.800**	**1.2**	**1.43**	**1.6**	**0.911**	NA
Cadmium	0.0100	A	ND	ND	ND	ND	ND	ND	ND	NA
Chromium	0.050	A	ND	ND	ND	ND	ND	ND	ND	NA
Cobalt	0.050	Cobalt	ND	ND	ND	ND	ND	ND	ND	NA
Copper	1.0	B	ND	ND	ND	ND	ND	ND	ND	NA
Iron	1.0	B	**2.300**	**2.100**	**2.300**	**2.3**	**1.92**	**2.2**	**1.59**	NA
Lead	0.05	A	ND	ND	ND	ND	ND	ND	ND	<0.01
Manganese	0.20	B	**3.800**	**3.300**	**3.700**	**3.3**	**3.05**	**3.4**	**2.62**	NA
Mercury	0.0020	A	NS	ND	ND	ND	ND	NS	ND	NA
Molybdenum	1.0000	C	ND	ND	ND	ND	ND	0.011	0.0088	NA
Nickel	0.2	C	ND	ND	ND	ND	ND	ND	0.00672	NA
Selenium	0.05	A	0.024	ND	ND	ND	ND	ND	0.00565	NA
Silver	0.05	A	ND	ND	ND	ND	ND	ND	ND	NA
Thallium	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Zinc	10.0	B	ND	ND	ND	ND	ND	ND	0.00535	NA

Table 5
Brickland Refinery
Metals Concentrations (mg/L)

MW-4										
Parameter	NMWQCC Std.	Reference	8/2/01	6/28/02	6/19/03	6/16/04	6/14/06	6/14/2007	6/24/2008	7/1/2009
Aluminum	5	C	0.271	0.36.0.23	*NS	0.12	ND	NS	ND	NA
Antimony	NA	NA	<0.025	ND,ND	*NS	ND	ND	NS	ND	NA
Arsenic	0.1	A	<0.05	0.007,ND	*NS	ND	ND	NS	ND	NA
Barium	1.0	A	0.617	0.083, 0.059	*NS	0.087	ND	NS	0.0315	NA
Beryllium	NA	NA	<0.0025	0.005, 0.005	*NS	ND	ND	NS	ND	NA
Boron	0.8	C	**0.932**	**1.400, 1.400**	*NS	**1.3**	**1.24**	NS	**0.845**	NA
Cadmium	0.0100	A	<0.025	ND,ND	*NS	ND	ND	NS	ND	NA
Chromium	0.050	A	<0.01	0.014,ND	*NS	ND	ND	NS	ND	NA
Cobalt	0.050	Cobalt	<0.025	0.014,ND	*NS	ND	ND	NS	ND	NA
Copper	1.0	B	<0.0125	0.021,ND	*NS	ND	ND	NS	0.00755	NA
Iron	1.0	B	**3.170**	**2.900, 3.100**	*NS	**3.70**	**2.26**	NS	**1.85**	NA
Lead	0.05	A	0.018	ND,ND	*NS	ND	ND	NS	ND	NA
Manganese	0.20	B	**4.310**	**5.800, 5.800**	*NS	**5.5**	**4.36**	NS	**4.52**	NA
Mercury	0.0020	A	<0.0002	NS	*NS	ND	ND	NS	ND	NA
Molybdenum	1.0000	C	<0.050	ND,ND	*NS	ND	ND	NS	ND	NA
Nickel	0.2	C	<0.025	ND,ND	*NS	ND	ND	NS	ND	NA
Selenium	0.05	A	<0.050	0.032, 0.032	*NS	ND	ND	NS	ND	NA
Silver	0.05	A	<0.0125	0.036, ND	*NS	ND	ND	NS	ND	NA
Thallium	NA	NA	<0.050	ND,ND	*NS	ND	ND	NS	ND	NA
Zinc	10.0	B	<0.025	ND,ND	*NS	ND	ND	NS	0.00721	NA

MW-6S										
Parameter	NMWQCC Std.	Reference	6/28/02	6/19/03	6/17/04	06/15/05	6/14/06	6/14/2007	6/25/2008	7/1/2009
Aluminum	5	C	0.21	ND	0.14,0.11	0.098	ND,ND	0.13,0.13	ND	NA
Antimony	NA	NA	ND	ND	ND,ND	ND	ND,ND	ND,ND	ND	NA
Arsenic	0.1	A	0.053	ND	ND,ND	ND	ND,ND	0.039,0.030	0.0456	NA
Barium	1.0	A	0.490	0.780	0.65,0.60	0.72	ND,ND	0.11,0.10	0.21	NA
Beryllium	NA	NA	ND	ND	ND,ND	ND	ND,ND	ND,ND	ND	NA
Boron	0.8	C	**1.300**	**1.300**	**1.10,1.10**	**1.1**	**1.97,1.96**	**3.3,3.1**	**1.65**	NA
Cadmium	0.0100	A	ND	ND	ND,ND	ND	ND,ND	ND,ND	ND	NA
Chromium	0.050	A	ND	ND	ND,ND	ND	ND,ND	ND,ND	ND	NA
Cobalt	0.050	Cobalt	ND	ND	ND,ND	ND	ND,ND	ND,ND	ND	NA
Copper	1.0	B	0.044	ND	0.057,0.014	0.016	ND,ND	0.097, 0.088	0.00981	NA
Iron	1.0	B	**3.900**	**2.100**	**7.70,3.80**	**4.7**	**8.42,8.64**	**12.0,12.0**	**6.74**	NA
Lead	0.05	A	ND	ND	ND,ND	ND	ND,ND	ND,ND	ND	<0.025
Manganese	0.20	B	**1.700**	**3.400**	**1.40,1.50**	**1.6**	**0.999,1.03**	**0.92, 0.88**	**0.782**	NA
Mercury	0.0020	A	NS	ND	ND,ND	ND	ND,ND	NS,NS	ND	NA
Molybdenum	1.0000	C	ND	ND	ND,ND	ND	ND,ND	0.041, 0.038	0.0164	NA
Nickel	0.2	C	ND	ND	ND,ND	ND	ND,ND	ND,ND	0.00588	NA
Selenium	0.05	A	**0.099**	ND	ND,ND	ND	ND,ND	ND,ND	0.014	NA
Silver	0.05	A	ND	ND	ND,ND	ND	ND,ND	ND,ND	ND	NA
Thallium	NA	NA	ND	ND	ND,ND	ND	ND,ND	ND,ND	ND	NA
Zinc	10.0	B	ND	ND	ND,ND	ND	ND,ND	ND,ND	ND	NA

Table 5
Brickland Refinery
Metals Concentrations (mg/L)

MW-6D										
Parameter	NMWQCC Std.	Reference	6/28/02	6/19/03	6/17/04	6/15/05	6/15/06	6/14/2007	6/24/2008	7/1/2009
Aluminum	5	C	0.18	ND	ND	ND	ND	ND	ND	NA
Antimony	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Arsenic	0.1	A	ND	ND	ND	ND	ND	ND	ND	NA
Barium	1.0	A	0.050	0.053	0.052	0.055	ND	0.049	0.051	NA
Beryllium	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Boron	0.8	C	**1.400**	**1.400**	**1.500**	**1.1**	**1.28**	**1.4**	**0.81**	NA
Cadmium	0.0100	A	ND	ND	ND	ND	ND	ND	ND	NA
Chromium	0.050	A	ND	ND	ND	ND	ND	ND	ND	NA
Cobalt	0.050	Cobalt	ND	ND	ND	ND	ND	ND	ND	NA
Copper	1.0	B	ND	ND	ND	ND	ND	ND	0.01	NA
Iron	1.0	B	**1.000**	0.900	0.910	**1.2**	ND	0.89	0.83	NA
Lead	0.05	A	ND	ND	ND	ND	ND	ND	ND	<0.01
Manganese	0.20	B	**5.700**	**5.300**	**5.500**	**6.1**	**4.98**	**6.1**	**6.91**	NA
Mercury	0.0020	A	NS	ND	ND	ND	ND	NS	ND	NA
Molybdenum	1.0000	C	ND	ND	ND	ND	ND	0.0073	0.00719	NA
Nickel	0.2	C	ND	ND	ND	ND	ND	ND	ND	NA
Selenium	0.05	A	0.015	ND	ND	ND	ND	ND	ND	NA
Silver	0.05	A	ND	ND	ND	ND	ND	ND	ND	NA
Thallium	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Zinc	10.0	B	ND	ND	ND	ND	ND	ND	ND	NA

MW-7										
Parameter	NMWQCC Std.	Reference	8/2/01	6/28/02	6/19/03	6/16/04	6/14/06	6/14/2007	6/24/2008	7/1/2009
Aluminum	5	C	<0.200	0.200	*NS	0.66	ND	NS	ND	NA
Antimony	NA	NA	<0.025	ND	*NS	ND	ND	NS	ND	NA
Arsenic	0.1	A	<0.05	0.047	*NS	ND	ND	NS	0.0129	NA
Barium	1.0	A	0.211	0.210	*NS	0.24	ND	NS	0.212	NA
Beryllium	NA	NA	<0.0025	ND	*NS	ND	0.003	NS	ND	NA
Boron	0.8	C	0.618	0.750	*NS	**0.920**	ND	NS	0.555	NA
Cadmium	0.0100	A	<0.025	ND	*NS	ND	ND	NS	ND	NA
Chromium	0.050	A	<0.01	ND	*NS	ND	ND	NS	ND	NA
Cobalt	0.050	Cobalt	<0.025	ND	*NS	ND	ND	NS	ND	NA
Copper	1.0	B	<0.0125	ND	*NS	0.31	ND	NS	ND	NA
Iron	1.0	B	**3.020**	**2.700**	*NS	**4.90**	**2.93**	NS	**1.35**	NA
Lead	0.05	A	0.022	ND	*NS	**0.190**	ND	NS	ND	NA
Manganese	0.20	B	**1.690**	**1.400**	*NS	**2.00**	**0.910**	NS	**0.712**	NA
Mercury	0.0020	A	<0.0002	NS	*NS	0.00045	ND	NS	ND	NA
Molybdenum	1.0000	C	<0.050	0.011	*NS	0.017	ND	NS	0.0267	NA
Nickel	0.2	C	<0.025	ND	*NS	ND	ND	NS	ND	NA
Selenium	0.05	A	<0.05	**0.090**	*NS	ND	ND	NS	0.00707	NA
Silver	0.05	A	<0.0125	ND	*NS	ND	ND	NS	ND	NA
Thallium	NA	NA	<0.05	ND	*NS	ND	ND	NS	ND	NA
Zinc	10.0	B	0.026	ND	*NS	0.110	ND	NS	ND	NA

Table 5
Brickland Refinery
Metals Concentrations (mg/L)

MW-9S										
Parameter	NMWQCC Std.	Reference	6/28/02	6/19/03	6/16/04	6/15/05	6/15/06	6/14/2007	6/26/2008	7/1/2009
Aluminum	5	C	ND	ND	0.061	0.43	ND	ND	ND	NA
Antimony	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Arsenic	0.1	A	0.024	ND	ND	ND	ND	ND	ND	NA
Barium	1.0	A	0.130	0.130	0.13	0.13	ND	0.059	0.057	NA
Beryllium	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Boron	0.8	C	**1.200**	**1.100**	**1.100**	**1.0**	**0.954**	**1.5**	**1.16**	NA
Cadmium	0.0100	A	ND	ND	ND	ND	ND	ND	ND	NA
Chromium	0.050	A	ND	ND	ND	ND	ND	ND	ND	NA
Cobalt	0.050	Cobalt	ND	ND	ND	ND	ND	ND	ND	NA
Copper	1.0	B	ND	ND	ND	ND	ND	ND	ND	NA
Iron	1.0	B	**6.400**	**6.400**	**8.00**	**9.8**	**6.13**	**4.2**	**4.16**	NA
Lead	0.05	A	ND	ND	ND	ND	ND	ND	ND	<0.01
Manganese	0.20	B	**2.600**	**2.400**	**3.00**	**2.7**	**2.38**	**1.9**	**2.56**	NA
Mercury	0.0020	A	NS	ND	ND	ND	ND	NS	ND	NA
Molybdenum	1.0000	C	ND	ND	ND	ND	ND	0.01	0.0105	NA
Nickel	0.2	C	ND	ND	ND	ND	ND	ND	ND	NA
Selenium	0.05	A	0.036	ND	ND	ND	ND	ND	ND	NA
Silver	0.05	A	ND	ND	ND	ND	ND	ND	ND	NA
Thallium	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Zinc	10.0	B	ND	ND	ND	ND	ND	ND	ND	NA

MW-14										
Parameter	NMWQCC Std.	Reference	8/2/01	6/28/02	6/19/03	6/16/04	6/14/06	6/14/2007	6/26/2008	7/1/2009
Aluminum	5	C	3.040	0.200	*NS	0.056	ND	NS	ND	NA
Antimony	NA	NA	<0.025	ND	*NS	ND	ND	NS	ND	NA
Arsenic	0.1	A	<0.05	0.010	*NS	ND	ND	NS	ND	NA
Barium	1.0	A	0.780	0.110	*NS	0.14	ND	NS	0.057	NA
Beryllium	NA	NA	<0.0025	ND	*NS	ND	0.003	NS	ND	NA
Boron	0.8	C	**1.260**	**1.700**	*NS	**1.80**	**1.39**	NS	**0.95**	NA
Cadmium	0.0100	A	<0.025	ND	*NS	ND	ND	NS	ND	NA
Chromium	0.050	A	<0.01	ND	*NS	ND	ND	NS	ND	NA
Cobalt	0.050	Cobalt	0.110	ND	*NS	ND	ND	NS	ND	NA
Copper	1.0	B	<0.0125	ND	*NS	ND	ND	NS	ND	NA
Iron	1.0	B	**10.500**	**7.300**	*NS	**8.30**	**5.24**	NS	**5.32**	NA
Lead	0.05	A	0.015	ND	*NS	ND	ND	NS	ND	NA
Manganese	0.20	B	<0.0002	**7.200**	*NS	**7.10**	**5.32**	NS	**6.25**	NA
Mercury	0.0020	A	<0.002	NS	*NS	ND	ND	NS	ND	NA
Molybdenum	1.0000	C	<0.050	ND	*NS	0.011	ND	NS	0.00825	NA
Nickel	0.2	C	<0.025	ND	*NS	ND	ND	NS	ND	NA
Selenium	0.05	A	<0.05	0.041	*NS	ND	ND	NS	ND	NA
Silver	0.05	A	<0.0125	ND	*NS	ND	ND	NS	ND	NA
Thallium	NA	NA	<0.05	ND	*NS	0.17	ND	NS	ND	NA
Zinc	10.0	B	<0.025	ND	*NS	ND	ND	NS	ND	NA

Table 5
Brickland Refinery
Metals Concentrations (mg/L)

MW-15										
Parameter	NMWQCC Std.	Reference	8/2/01	6/28/02	6/19/03	6/16/04	6/14/06	6/14/2007	6/26/2008	7/1/2009
Aluminum	*5*	*C*	*<0.200*	*0.24*	**NS*	*ND*	*ND*	*NS*	*ND*	*NA*
Antimony	NA	NA	<0.025	ND	*NS	ND	ND	NS	ND	NA
Arsenic	0.1	A	<0.05	0.014	*NS	ND	ND	NS	ND	NA
Barium	1.0	A	0.158	0.170	*NS	0.14	ND	NS	0.072	NA
Beryllium	NA	NA	<0.0025	0.006	*NS	ND	0.003	NS	ND	NA
Boron	0.8	C	**1.000**	**1.500**	*NS	**1.500**	**1.40**	NS	**1.15**	NA
Cadmium	0.0100	A	<0.025	ND	*NS	ND	ND	NS	ND	NA
Chromium	0.050	A	<0.01	ND	*NS	ND	ND	NS	ND	NA
Cobalt	0.050	Cobalt	<0.025	ND	*NS	ND	ND	NS	ND	NA
Copper	1.0	B	0.020	ND	*NS	ND	ND	NS	ND	NA
Iron	1.0	B	**1.860**	**2.000**	*NS	**2.300**	**3.67**	NS	**1.59**	NA
Lead	0.05	A	0.012	ND	*NS	ND	ND	NS	ND	NA
Manganese	0.20	B	**2.100**	**2.300**	*NS	**2.300**	**3.01**	NS	**1.59**	NA
Mercury	0.0020	A	<0.0002	NS	*NS	ND	ND	NS	ND	NA
Molybdenum	1.0000	C	<0.050	ND	*NS	ND	ND	NS	0.00904	NA
Nickel	0.2	C	<0.025	ND	*NS	ND	ND	NS	ND	NA
Selenium	0.05	A	<0.050	0.038	*NS	ND	ND	NS	ND	NA
Silver	0.05	A	<0.0125	ND	*NS	ND	ND	NS	ND	NA
Thallium	NA	NA	<0.050	ND	*NS	ND	ND	NS	ND	NA
Zinc	10.0	B	<0.025	ND	*NS	ND	ND	NS	ND	NA

River-Upstream										
Parameter	NMWQCC Std.	Reference	6/28/02	6/19/03	6/17/04	6/15/05	6/14/06	6/14/2007	6/25/2008	7/1/2009
Aluminum	5	C	1.2	3.2	**5.20**	**8.8**	**5.14**	**16**	**5.98**	NA
Antimony	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Arsenic	0.1	A	*0.005*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	NA
Barium	1.0	A	0.083	0.110	0.14	0.14	ND	0.24	0.137	NA
Beryllium	NA	NA	ND	ND	ND	ND	0.003	ND	ND	NA
Boron	0.8	C	0.190	0.200	0.220	0.16	ND	ND	0.13	NA
Cadmium	0.0100	A	ND	ND	ND	ND	ND	ND	ND	NA
Chromium	0.050	A	ND	ND	ND	ND	ND	ND	ND	NA
Cobalt	0.050	Cobalt	ND	ND	ND	ND	ND	ND	ND	NA
Copper	1.0	B	0.015	ND	ND	0.0072	ND	ND	ND	NA
Iron	1.0	B	0.850	**2.100**	**3.500**	**5.7**	**2.85**	**9.3**	**3.41**	NA
Lead	0.05	A	ND	ND	ND	ND	ND	0.0071	ND	<0.005
Manganese	0.20	B	0.180	0.180	**0.240**	**0.20**	ND	**0.3**	0.16	NA
Mercury	0.0020	A	NS	ND	ND	ND	ND	NS	ND	NA
Molybdenum	1.0000	C	0.010	0.012	ND	ND	ND	0.0082	0.0054	NA
Nickel	0.2	C	ND	ND	ND	ND	ND	ND	ND	NA
Selenium	0.05	A	ND	ND	ND	ND	ND	ND	ND	NA
Silver	0.05	A	ND	ND	ND	ND	ND	ND	ND	NA
Thallium	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Zinc	10.0	B	ND	ND	ND	ND	ND	0.036	ND	NA

Table 5
Brickland Refinery
Metals Concentrations (mg/L)

			River-Downstream							
Parameter	NMWQCC Std.	Reference	6/28/02	6/19/03	6/17/04	6/15/05	6/14/06	6/14/2007	6/25/2008	7/1/2009
Aluminum	5	C	2.1	3.000	**5.50**	**8.7**	**5.65**	**16**	**5.98**	NA
Antimony	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Arsenic	0.1	A	0.006	ND	ND	ND	ND	ND	ND	NA
Barium	1.0	A	0.094	0.110	0.14	0.14	ND	0.24	0.006	NA
Beryllium	NA	NA	ND	ND	ND	ND	0.003	ND	ND	NA
Boron	0.8	C	0.200	0.210	0.220	0.16	ND	0.2	0.13	NA
Cadmium	0.0100	A	ND	ND	ND	ND	ND	ND	ND	NA
Chromium	0.050	A	ND	ND	ND	ND	ND	ND	ND	NA
Cobalt	0.050	Cobalt	ND	ND	ND	ND	ND	ND	ND	NA
Copper	1.0	B	ND	ND	ND	0.0070	ND	ND	ND	NA
Iron	1.0	B	**1.800**	**2.100**	**3.600**	**5.8**	**3.06**	**9**	**3.52**	NA
Lead	0.05	A	ND	ND	ND	ND	ND	0.0057	ND	<0.005
Manganese	0.20	B	**0.220**	**0.200**	**0.240**	**0.20**	ND	**0.3**	0.17	NA
Mercury	0.0020	A	NS	ND	ND	ND	ND	NS	ND	NA
Molybdenum	1.0000	C	ND	0.010	ND	ND	ND	0.0084	0.00535	NA
Nickel	0.2	C	ND	ND	ND	ND	ND	ND	ND	NA
Selenium	0.05	A	ND	ND	ND	ND	ND	ND	ND	NA
Silver	0.05	A	ND	ND	ND	ND	ND	ND	ND	NA
Thallium	NA	NA	ND	ND	ND	ND	ND	ND	ND	NA
Zinc	10.0	B	ND	ND	ND	ND	ND	0.038	0.02	NA

NOTES

mg/L = Milligrams per liter

Concentrations in **shaded boldface** type during the current year indicate levels exceed New Mexico Water Quality Control Commission (NMWQCC) standards

A = standard is from NMWQCC Regulatory Standards Section 3103A - Human Health Standard

NS (*NS) = sample was not collected/analyzed for this constituent (not collected in odd-numbered years).

B = standard is from NMWQCC Regulatory Standards Section 3103B - Domestic Water Supply

ND = concentration was below laboratory detection limits.

C = standard is from NMWQCC Regulatory Standards Section 3103C - Irrigation Use

NA = no NMWQCC standard established.

ND,ND or 0.13,0.13 are the laboratory results for the primary and duplicate (QA/QC) samples, respectively.

Table 6
Brickland Refinery
LNAPL Thickness Measurements (Feet)

Well ID	Jun-03	Dec-03	Jun-04	Dec-04	Jun-05	Dec-05	Jun-06	Dec-06	Jun-07	Dec-07	Jun-08	Jan-09	Jul-09	Dec-09
MW-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-2	A	A	A	A	A	A	A	A	A	A	A	A	A	A
MW-3S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-3D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-6S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-6D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-9S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-10	0.00	0.13	0.08	0.05	0.10	0.00	Trace	Trace	0.00	Trace	0.00	0.00	0.00	0.00
MW-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-13	A	A	A	A	A	A	A	A	A	A	A	A	A	A
MW-14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Trace	0.00	0.00	0.00
WP-14	Tar	Tar	Tar	Tar	Tar	Tar	Tar	Tar	Tar	Tar	Trace	0.00	0.00	0.00
WP-25	Dry	Dry	Dry	Dry	Dry	Dry	0.70	0.52	0.54	0.52	0.45	0.08	0.07	0.00
WP-26S	0.35	0.60	0.63	0.66	0.66	0.52	0.58	0.47	0.48	0.35	0.73	0.38	0.25	0.00
WP-26D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP-27S	0.01	0.00	0.00	0.00	0.00	0.00	Trace	0.02	0.00	Trace	0.00	0.01	0.00	0.00
WP-27D	0.12	0.26	0.06	0.11	0.00	0.04	0.00	0.04	0.00	0.03	0.00	0.00	0.00	0.00
WP-30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP-31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Dry	0.00	Dry	0.00	0.00	0.00
WP-32	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Trace	Dry	Dry	NM	NM	NM
WP-33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NOTES
Tar = Thickness measurement not obtainable because of presence of thick tar-like substance in well point.
A = Plugged and Abandoned
Dry = Monitoring point was dry

Table 7
Brickland Refinery
Background Concentrations and Statistical Limits

Sample Date	Boron	Iron	Manganese
Jun-94	NA	3.89	5.9
Sep-94	NA	5.89	10.8
Dec-94	NA	1.1	6.18
Jan-09	1.2	0.1	0.282
Jul-09	0.584	0.2	9.31
Jul-09	0.546	9.415	12.0
Aug-09	0.617	3.02	14.9
Sep-09	0.579	1.33	15.3

Statistical Evaluation			
Mean	0.705	3.118	9.334
Standard Deviation	0.278	3.226	5.064
Number	5	8	8
K-statistic	4.202	3.188	3.188
Upper Tolerance Limit	**1.873**	**13.402**	**25.478**

Notes:

NA - not analyzed

Concentrations reported after Jan 09 are the average of two results

Concentrations reported in red represent 1/2 the detection limit for non-detect results

Figures

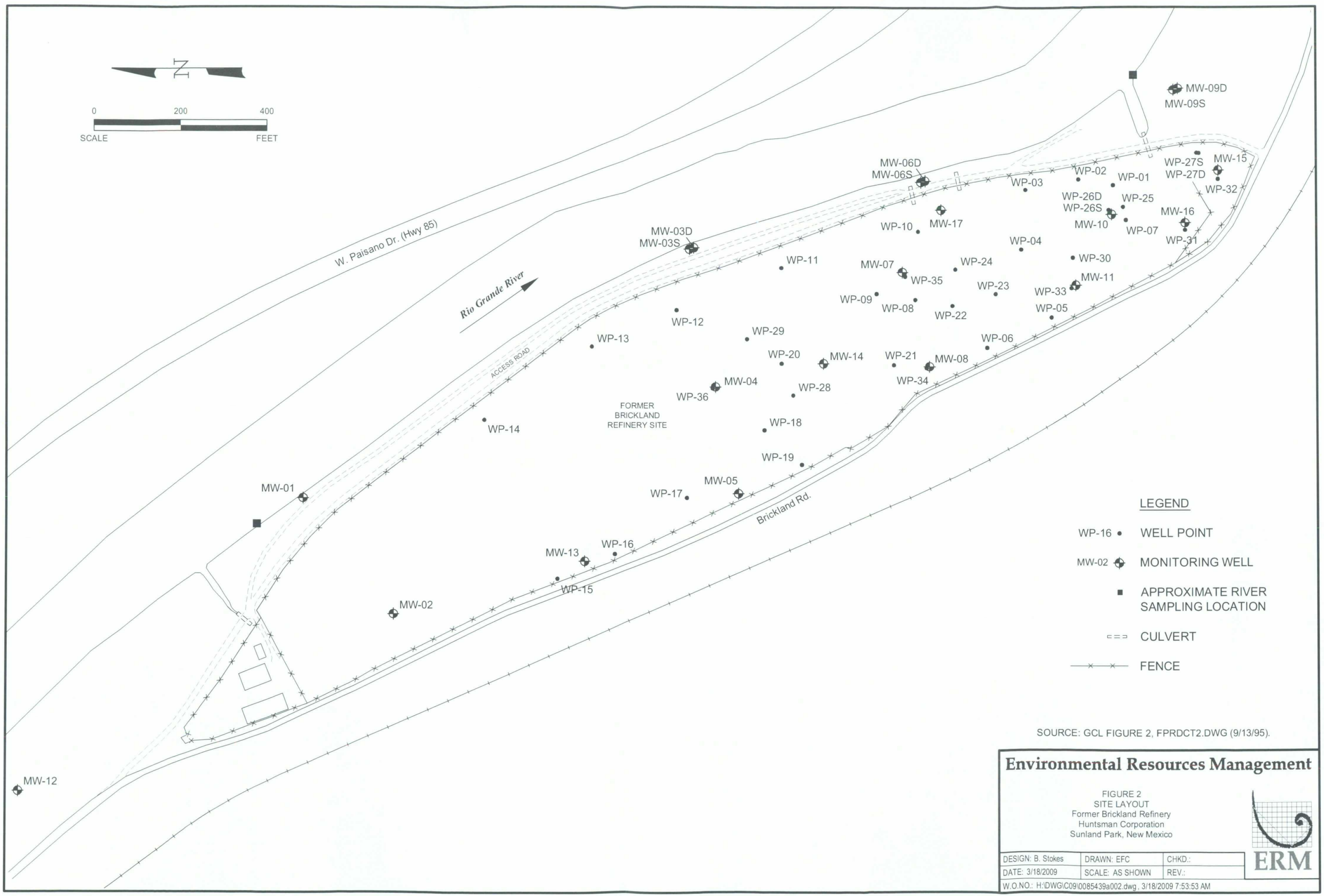
SOURCE: U.S.G.S. 7.5' QUADRANGLE, SMELTERTOWN, TX, 1994 (o31106G5).

Environmental Resources Management

DESIGN: B. Stokes	DRAWN: EFC	CHKD.: B. Stokes
DATE: 2/3/2009	SCALE: AS SHOWN	REV.:
PROJ. NO.: H:\DWG\B09\0085439_site.dwg, 2/3/2009 2:59:51 PM		

FIGURE 1
SITE LOCATION MAP
Brickland Refinery Site
Sunland Park, New Mexico

ERM



SOURCE: GCL FIGURE 2, FPRDCT2.DWG (9/13/95).

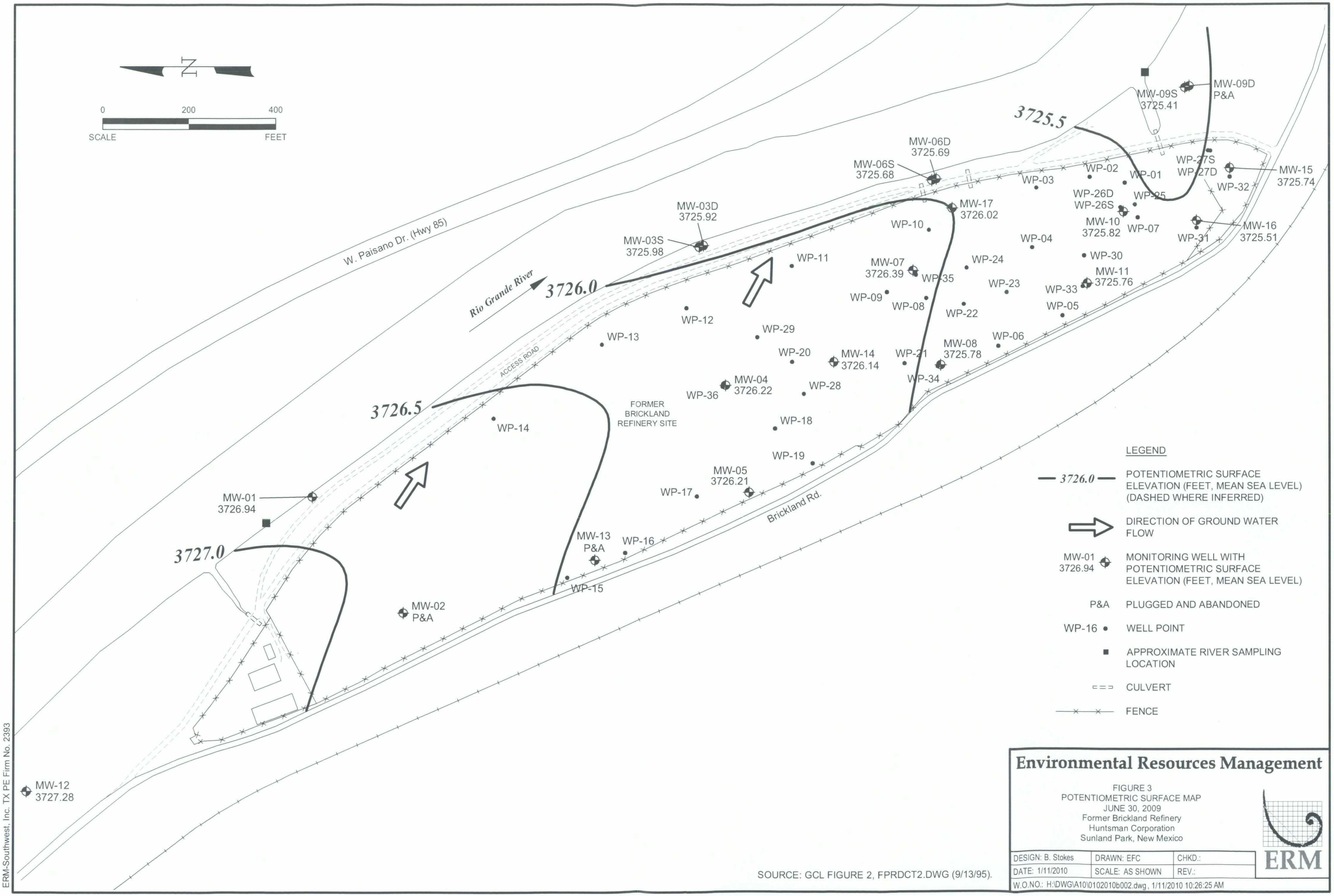
Environmental Resources Management

FIGURE 2
SITE LAYOUT
Former Brickland Refinery
Huntsman Corporation
Sunland Park, New Mexico

DESIGN: B. Stokes	DRAWN: EFC	CHKD.:
DATE: 3/18/2009	SCALE: AS SHOWN	REV.:

W.O.NO.: H:\DWG\C09\0085439a002.dwg, 3/18/2009 7:53:53 AM

ERM



ERM-Southwest, Inc. TX PE Firm No. 2393

SOURCE: GCL FIGURE 2, FPRDCT2.DWG (9/13/95).

Environmental Resources Management

FIGURE 3
POTENTIOMETRIC SURFACE MAP
JUNE 30, 2009
Former Brickland Refinery
Huntsman Corporation
Sunland Park, New Mexico

DESIGN: B. Stokes	DRAWN: EFC	CHKD.:
DATE: 1/11/2010	SCALE: AS SHOWN	REV.:

W.O.NO.: H:\DWG\A10\0102010b002.dwg, 1/11/2010 10:26:25 AM

ERM

N

0 200 400
SCALE FEET

W. Paisano Dr. (Hwy 85)

Rio Grande River

3723.5

3723.0

3724.0

ACCESS ROAD

FORMER BRICKLAND REFINERY SITE

Brickland Rd.

MW-09S 3722.88
MW-09D P&A
MW-06D 3722.95
MW-06S 3722.99
MW-03D 3723.68
MW-03S 3723.24
MW-17 3723.28
MW-10 3723.22
MW-15 3723.26
MW-16 3722.99
MW-07 3723.42
MW-11 3723.30
MW-14 3723.45
MW-08 3723.39
MW-04 3723.52
MW-05 3723.51
MW-13 P&A
MW-01 3724.20
MW-02 P&A
MW-12 3724.49

WP-01 WP-02 WP-03 WP-04 WP-05 WP-06 WP-07 WP-08 WP-09 WP-10 WP-11 WP-12 WP-13 WP-14 WP-15 WP-16 WP-17 WP-18 WP-19 WP-20 WP-21 WP-22 WP-23 WP-24 WP-25 WP-26D WP-26S WP-27D WP-27S WP-28 WP-29 WP-30 WP-31 WP-32 WP-33 WP-34 WP-35 WP-36

LEGEND

— 3723.5 — POTENTIOMETRIC SURFACE ELEVATION (FEET, MEAN SEA LEVEL) (DASHED WHERE INFERRED)

DIRECTION OF GROUND WATER FLOW

MW-01 3724.20 MONITORING WELL WITH POTENTIOMETRIC SURFACE ELEVATION (FEET, MEAN SEA LEVEL)

P&A PLUGGED AND ABANDONED

WP-16 • WELL POINT

■ APPROXIMATE RIVER SAMPLING LOCATION

⊏=⊐ CULVERT

—×—×— FENCE

SOURCE: GCL FIGURE 2, FPRDCT2.DWG (9/13/95).

ERM-Southwest, Inc. TX PE Firm No. 2393

Environmental Resources Management

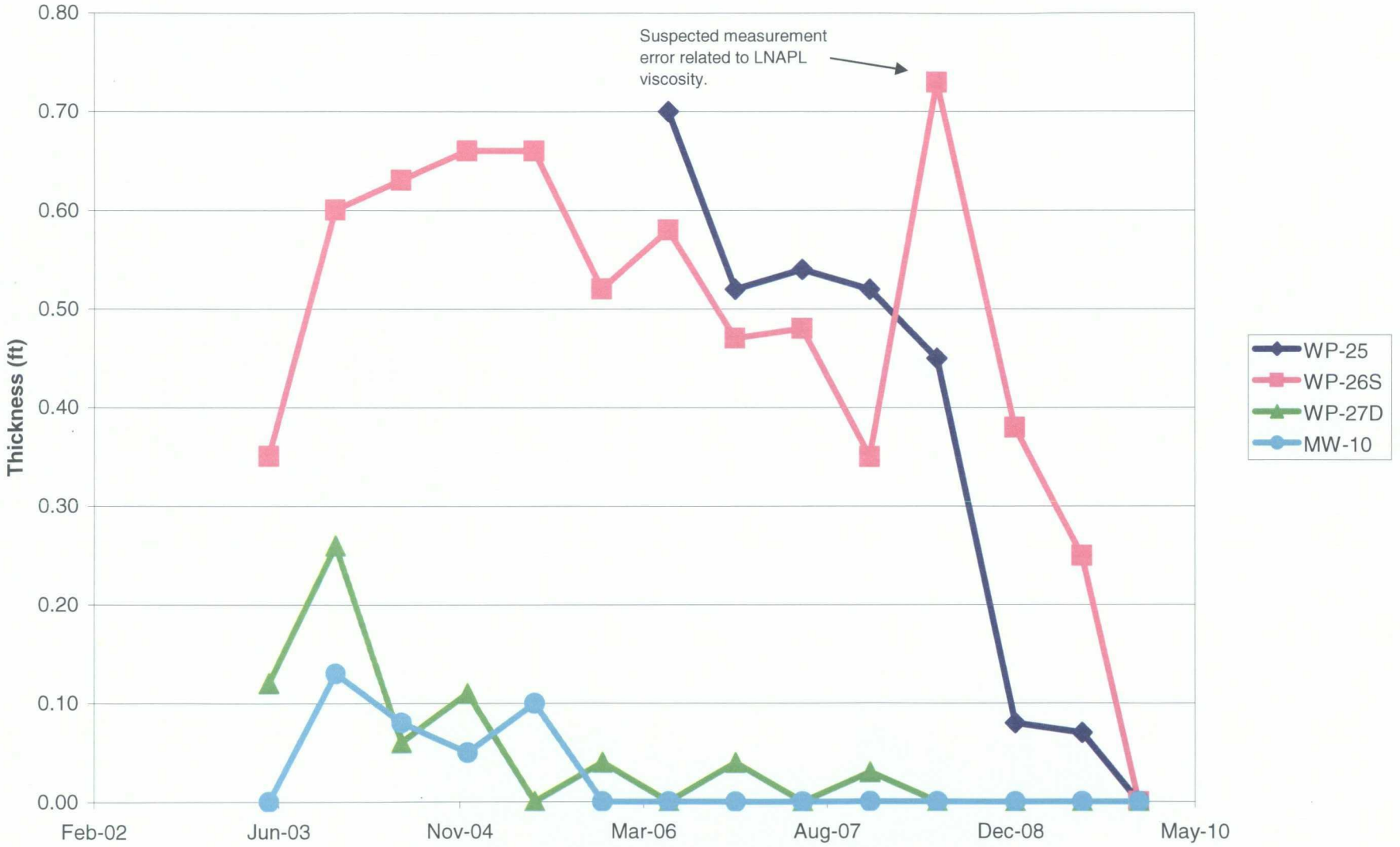
FIGURE 4
POTENTIOMETRIC SURFACE MAP
DECEMBER 9, 2009
Former Brickland Refinery
Huntsman Corporation
Sunland Park, New Mexico

DESIGN: B. Stokes	DRAWN: EFC	CHKD.:
DATE: 1/11/2010	SCALE: AS SHOWN	REV.:

W.O.NO.: H:\DWG\A10\0102010b002.dwg; 1/11/2010 10:26:41 AM

ERM

Figure 5 - LNAPL Thickness



Field Data

Appendix A

February 23, 2010
Project No. 0102010

Environmental Resources Management Southwest, Inc.
206 E. 9th St., Suite 1700
Austin, Texas 78701
(512) 459-4700

DATE	12/9/09
SHEET	1 of 1

FIELD DAILY ACTIVITY LOG

PROJECT NAME: Huntsman Buckeye	PROJECT NUMBER: 0102010

FIELD ACTIVITY SUBJECT:
12/9/09 monitor well ~~Sampling~~ Gauging

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

08:30 on Site @ Huntsman to begin Gauging wells
12:00 Lunch
12:45 Resume Gauging
13:30 well Gaging complete Offsite
All locks Secured Gate closed & locked.

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
None	
WEATHER CONDITIONS: Cool Sunny clear 30's - 50's	IMPORTANT TELEPHONE CALLS:

PERSONNEL ON SITE:
Damian Pyle (ERM) Hector Diaz (Viva)

SIGNATURE

DATE	12/18/09
SHEET	1 of 1

FIELD DAILY ACTIVITY LOG

PROJECT NAME: Huntsman Brickland	PROJECT NUMBER: 0102010
FIELD ACTIVITY SUBJECT: 12/18/09 monitor well ~~Groundwater~~ Sampling	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

8:30 arrive on site
09:30 Setup Equipment @ mw35
09:45 Go to River to Collect Sample upStream location
10:45 Collect Down Stream River Sample
11:00 begin Groundwater Sampling.

16:30 offsite Secure all locks.

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
None	
WEATHER CONDITIONS: Cool Sunny Dry 30's-50's	IMPORTANT TELEPHONE CALLS:
PERSONNEL ON SITE: Amran Alk (ERM) Hector Diaz (Viva)	
SIGNATURE	

DATE	12/11/09
SHEET	1 of 1

FIELD DAILY ACTIVITY LOG

PROJECT NAME: Huntsman Brookland	PROJECT NUMBER: 0102010

FIELD ACTIVITY SUBJECT:
Monitor well Sampling

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

07:30 on site Conduct Daily tailgate Safety meety
Hosp Review + PSC card

08:05 Setup + begin Sampling

10:00 Sampling Complete

10:20 Put Purge water in drums onsite + Lock + Secure Site/offsite

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
none	
WEATHER CONDITIONS: Cool Clear 30's-50's	IMPORTANT TELEPHONE CALLS:

PERSONNEL ON SITE:
Dennis Pyle (ERM) Hector Diaz (Viva)

SIGNATURE

Daily Safety Meeting

Date	Meeting Facilitator	Project Name	Project Number
12/9/09	Damian Rile	Huntsman	0102010

AWARENESS ISSUES (special EHS concerns, pollution prevention, recent incidents)

Slips/trips/falls, uneven ground, gravel, burrows slopes (mud) (white) Soft soil (truck) UV Rays PPE Sunscreen (Hat, Glove) Drink water Bio Hazards, Spiders, insects, Dogs Big Picture while driving Nap L nitrile gloves, Plastic Sheeting, spill kit PPE, eyewash buckets w lids PID Readings upwind. obey speed limits emergency brake when Parked Pinch Points, Lifting techniques, buddy system

OTHER ISSUES (HASP changes, new JHAs, attendee comments)

Reviewed + Signed HASP
Reviewed + Signed Daily Tailgate Safety meeting
Reviewed + Signed PSC Cards (ERM)

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

Gauge + Sample wells

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

Border Patrol - Illegal Immigrants

ATTENDEES (Print name and initial)

Damian Rile (DR)	
Hector Diaz HD	

Daily Safety Meeting

Date	Meeting Facilitator	Project Name	Project Number
12/10/09	DanVanPelt	HuntSman	0102010

AWARENESS ISSUES (special EHS concerns, pollution prevention, recent incidents)

Slips trips falls uneven ground, Gravel, mud, burrows
Slopes, River bank, UV Rays, Dehydration, Bio hazards insects, Dogs, Snakes
PPE nitrile gloves, Plastic Sheets, Spill Kit, Eye wash, buddy system
upwind, obey speed limits emergency brake when parked, Pinch Points
Lifting techniques, buddy system

OTHER ISSUES (HASP changes, new JHAs, attendee comments)

Review hasp
Review Daily tailgate Safety meeting
Sign + fill out PSC cards
Do not get truck stuck

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

Sample wells

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

Border Patrol Illegal Immigrants

ATTENDEES (Print name and initial)

DanVanPelt	
Hector Diaz	

Daily Safety Meeting

Date	Meeting Facilitator	Project Name	Project Number
12/11/09	Damian Rile	Huntsman	0102010

AWARENESS ISSUES (special EHS concerns, pollution prevention, recent incidents)

Slips trips falls, mud, Gravel, burrows, Slopes, River bank
bee hornets UV rays, insects, Dogs
Use Proper PPE
Spill Kits, eye wash, fire extinguisher buckets w Lids
obey Speed limits, Park Parts
Safety technique buddy System

OTHER ISSUES (HASP changes, new JHAs, attendee comments)

Review HASP
Safety meeting
Fill out PSC cards
Don't Get Stuck

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

Sample wells

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

Border Patrol illegal immigrants

ATTENDEES (Print name and initial)

Damian Rile	
Hector Diaz	

LOW FLOW SAMPLING SHEET

Well: River upStream
Location: Huntsman Rio Grande

Date: 12/10/09
Samplers: Damian Ale

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/10/09	10:00	Initial	8.16	8.51	1.517	9.22	72.9	5.79	Just	below Surface
	Clear water no effluent odor									

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/10/09	10:00			River upStream				BTEX	HCl	Ice	

LOW FLOW SAMPLING SHEET

Well: Down Stream River
Location: Rio Grande Hontoya Bridge

Date: 12/10/09
Samplers: D Amitan Pile

Well Information

Low River Level

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
/										

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/10/09	10:45	Initial	8.33	9.93	1.554	9.14	68.0	6.85	Just	below Surface
		Clear water			no odor					

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/10/09	10:45			River	Down	Stream			BTEX	Ice	HCl

Revised:07/10/2007

LOW FLOW SAMPLING SHEET

Well: MW-035 Date: 12/10/09

Location: Huntsman Samplers: DAMIAN/Bile

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/10/09	11:40	7.40	16.50	4	unk	0.0	0.0	—	—	

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/10/09	11:40	Initial	7.24		7.613	0.07	23.4	-.73	7.41	0.3 mL 15/5 Cycle
	11:50	½ Gal	7.26		7.671	0.07	-5.7	-0.73	7.50	16 PSI
	11:55		7.26		7.723	0.07	-8.1	-2.35	7.51	
	12:00		7.25		7.853	0.06	-31.9	-1.80	7.53	
	12:05		7.25		7.862	0.06	-32.2	-1.78	7.53	
	12:10	2 Gal	7.25		7.866	0.06	-32.2	-1.80	7.53	
	~	2 Gal	Purged	Clear		No odor				

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/10/09	12:10							MW35	BTEX	HCl Ice	
12/10/09	12:15 + 16:00		FB-1		Distilled	water		FB-1	BTEX	HCl Ice	

Revised:07/10/2007

LOW FLOW SAMPLING SHEET

Well: MW-03D
Location: Huntsman

Date: 12/10/09
Samplers: D Amison R/E

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/10/09	13:30	6.80	37.50	4	n/A	0.0	0.0	—	—	

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/10/09	13:30	Initial	7.14	99.99?	13.48	0.05	-3.9	-2.63	6.89	20 PSI
	13:35		7.15		13.63	0.04	-2.5	-2.84	6.89	4 CPM 10/5
	13:40		7.15		13.72	0.04	-16.2	-2.80	6.89	
	13:45		7.15		13.80	0.04	-18.0	-2.84	6.89	12 L/M @ 20 PSI
	13:50		7.15		13.85	0.03	-18.1	-2.88	6.89	
	13:55		7.15		13.84	0.03	-18.6	-2.89	6.89	
		~ 2 Gal Purged			Clear with no Detectable odor					
										no apparent odor

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/10/09	13:55							MW3D	BTEX	HCl Ice	

Revised:07/10/2007

LOW FLOW SAMPLING SHEET

Well: mw 9S
Location: Huntsman
Date: 12/10/09
Samplers: Dominion R/e

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/10/09	14:30	6.83	15.50	4	unk	0.0	0.0	—	—	

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/10/09	14:35	Initial	7.11	99.99?	9.210	0.04	-27.2	1.88	15.58	0.15 m/L @ 10 PSI
	14:40		7.13		9,042	0.03	-58.9	1.22	15.57	
	14:45		7.13		8.957	0.03	-65.1	0.65	15.57	
	14:50		7.14		8.871	0.03	-70.2	0.83	15.58	
	14:55		7.14		8.841	0.03	-72.1	0.60	15.58	
		2 — 1.5 Gal	Purged			Clear water				

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/10/09	15:00							mw9S	BTEX	4C Ice	
12/10/09	15:10		Collect	EB-02	Distilled	through		Tubing			

LOW FLOW SAMPLING SHEET

Well: ~~MW-6S~~ MW-6D
Date: 12/11/09
Location: Huntsman Brickyard
Samplers: D. Amirault

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/9/09	13:16	7.67	31	4	UNK	0.0	0.0	—	—	

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/11/09	08:00	Initial	6.94	99.99	12.05	0.31	103.6	-2.40	7.64	4 LPM @ 25 PSI
	08:05		7.20		13.65	0.10	3.3	-2.65	7.71	
	08:10		7.24		13.89	0.07	-34.6	-3.10	7.75	
	08:20		7.25		14.02	0.05	-47.2	-3.10	7.75	
	08:25		7.24		14.09	0.06	-49.1	-3.02	7.75	
	08:30		7.23		14.12	0.05	-50.2	-3.18	7.75	
	08:35		7.24		14.20	0.05	-50.9	-3.11	7.75	
	08:40		7.24		14.40	0.05	-49.2	-3.10	7.25	
	8:05 Set out Field Blank									
	1000 Collect Field Blank @ MW-6S									
	~ 2 Gal Purged Clear water no odor									

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/11/09	8:40							MW-6D	BTEX	Ice	HCL
12/11/09	8:55							EB-3	BTEX	HCL Ice	

Revised:07/10/2007

LOW FLOW SAMPLING SHEET

Well: MW-6S

Location: Huntsman

Date: 12/11/09

Samplers: D. Anson R/G

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/9/09	13:05	7.66	[illegible]	4.	Unk	0.0	0.0	—	—	
			17.00							

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/11/09	9:05	Initial	7.29	99.99?	10.96	0.04	48.9	~180	7.68	Yellow Color
	9:10		7.42	99.99?	10.65	0.03	-10.0	-1.75	7.75	
	9:15		7.42		10.64	0.03	-19.7	-1.77	7.74	GCPm @ 10 PSI
	09:25		7.41		10.65	0.03	-33.2	-1.70	7.74	
	9:30		7.40		10.72	0.03	-43.1	-1.73	7.75	
	9:40		7.41		10.73	0.03	-50.4	-1.72	7.74	
	9:50		7.40		10.73	0.03	-54.1	-1.75	7.74	
	2	2 Cml Purge			Clear water			no odor		

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/11/09	09:50							MW6S	Btex	HCl ICE	
↑↓	↑↓							Dup-01	Btex	↑↓	
↓	↓							MW6S MS	BTEX	↓	
12/11/09	09:50							MW6S MSD	Btex	HCl ICE	

Revised:07/10/2007

Chem

Huntsman Wells Gauging Information (Monitor Wells)

Well ID	Date	Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	Comments
MW-1	12/9/09	12:50	0.0	n/A	6.37	n/A	N/S
MW-2	Plugged & abandoned						P&A 6/99
MW-3S	12/9/09	12:55	0.0	n/A	6.76	n/A	S
MW-3D	12/9/09	13:00	0.0	n/A	6.32	n/A	S
MW-4	12/9/09	9:55	0.0	n/A	5.34	n/A	S
MW-5	12/9/09	10:20	0.0	0 n/A	6.19	n/A	N/S
MW-6S	12/9/09	13:05	0.0	n/A	7.66	n/A	S
MW-6D	12/9/09	13:10	0.0	n/A	7.67	n/A	S
MW-7	12/9/09	10:10	0.0	n/A	5.54	0.0	S
MW-8	12/9/09	10:16	0.0	n/A	5.83	0.0	N/S
MW-9S	12/9/09	13:15	0.0	n/A	7.13	n/A	S
~~MW-9D~~	Plugged & Abandoned						P&A 7/05
MW-10	See other Sheets					n/A	Sheen recovery well w/pump
MW-11	12/9/09	10:25	0.0	n/A	8.10	n/A	N/S
MW-12	12/9/09	12:45	0.0	n/A	5.86	n/A	N/S

(1) Product Thickness = (depth to water) - (depth to product)
Notes: Water Equals Non Product Liquids; S-well sampled; N/S-well not sampled

Data Collector: DPle

Revised: 12/10/2008

Clean

Huntsman Wells Gauging Information (Monitor Wells)

Well ID	Date	Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	Comments
MW-13	Plugged & Abandoned						P&A 6/99
MW-14	12/9/09	10:00	0.0	n/A	7.01	nA	S
MW-15	12/9/09	13:25	0.0	n/A	15.36	n/A	S
MW-16	12/9/09	8:20	0.0	n/A	13.79	n/A	N/S
MW-17	12/9/09	10:14	0.0	n/A	8.70	n/A	N/S

(1) Product Thickness = (depth to water) - (depth to product)
Notes: Water Equals Non Product Liquids; S-well sampled; N/S-well not sampled

Data Collector: DPyle

Revised: 12/10/2008

Dirty

Huntsman Wells Gauging Information (Well Points)

Well ID	Date	Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	(2) Well Bailed Yes/No	Comments
WP-1	12/9/09	11:15	35.1	n/A	10.10	n/A		
WP-2	12/9/09	11:20	0.9	n/A	8.46	n/A		
WP-3	12/9/09	11:22	0.9	n/A	7.20 Dry	n/A		
WP-7	12/9/09	11:13	0.0	n/A	11.24	n/A		
WP-14	12/9/09	9:45	0.0	n/A	5.9	n/A		TAR at bottom of well
WP-25	12/9/09	11:10	9.1	n/A	10.32	n/A		
WP-26S	12/9/09	11:05	0.3	n/A	9.10	n/A		
WP-26D	12/9/09	11:08	0.9	n/A	10.04	n/A		
WP-27S	12/9/09	11:30	3.6	n/A	13.73	n/A		
WP-27D	12/9/09	11:32	0.3	n/A	13.75	n/A		
WP-30	12/9/09	1028	0.3	n/A	11.13	n/A		
WP-31								UNABLE TO Remove CAP
WP-32	12/9/09	11:34	0.0	n/A	Dry	n/A		DRY
WP-33	12/9/09	10:26	0.3	n/A	9.23	n/A		
MW-10	12/9/09	11:00	1.9	n/A	9.32	n/A		Recovery well w/pump

Dry 5.9

(1) Product Thickness = (depth to water) - (depth to product)
(2) See Well Bailing field form
Note: Water Equals Non Product Liquids

Data Collector: _____

Revised: 12/10/2008

(52) 2437 12/9/09 wed

0102010 Huntsmen Brackled Refinery

0630 arrive @ ERM Trailer Set up for Activities Sign Haz / Safety meeting

objective: Gauge + Sample wells @ Huntsmen

Personel: ERin Damian Rile
Viva Tech Hector DiAz

equipment: Cell Phone, interface probe clean + Dirty YSI 600, Turbidity meter, Pump Controler, Tool Kit

weather Cool, breezy clear Temp 35-50

H+S Review + Sign Haz, Daily Tailgate Safety meety, PSC Cards

08:30 on site to open all wells to be Gauged.

12:00 Lunch

12:45 Continue Gauging

13:30 Complete Gauging

14:00 to home depot + wal mart to Gather Supplies buckets + DI

15:30 arrive @ site trailer to unload equip. + Go over bottle order (Just arrived) + field inst. (Just arrived)

17:00 off Site.

12/9/09

(53) 12/10/09 thurs

0102010 Huntsmen Brackled Refinery

0700 arrive @ Onsite trailer to set up + Load equipment for Sampling

objective: Sample wells along River + Collect 2 River samples

Personel: Damian Rile (ERM)
Hector DiAz (Viva)

equipment: YSI 600, Conot turbidity, Cell Phone, interface Probe (clean) Pump Controller Tool kit bottles Ice, Ice chest.

weather: Cool, Clear 40's-60s

H+S: Review Haz, Collect Safety meety + PSC cards.

9:30 on site @ Huntsmen

9:30 all equipment set up @ mw35

9:45 move to River upstream location to Sample River water.

10:00 Collect Sample @ River upstream 3X40 ml vials

10:45 Collect Sample @ River Downstream 3X40 ml vials

10:55 Collect EB-1 @ Downstream River location

12:10 Collect Sample @ mw-35

12:15 begin FB-01 @ mw-35 location

12:30 Lunch

12/10/09

54

010 2010 Huntsman Brickland Refinery 12/10/09

13:55 Collect Sample mw 3D
14:30 Set up @ mw 9S
15:00 Collect Sample @ mw-9S
15:10 Collect EB-02 @ mw 9S on Tubing (new)
15:30 Son Going down over monitors
Pack Truck
16:00 Collect FB-1 From mw 3 location
Sample time on FB-1 12:15
16:30 offsite move to Glen tech to start chain of Custody + organize.

12/10/09

55

010 2010 Huntsman Brickland 12/11/09

0730 onsite @ Huntsman
Objective: Sample wells mw 6(S+D)
Personnel: Damian Pyle (Glen) Hector Diaz (VIVA)
Equipment: Equipment YSI 600, Lamott water level ind, Cell Phone, OVM Tool Kit, bottles, Ice,
weather: Cool 30's-50's
H+S: Review HASP, conduct Safety meeting
Fill out PSC Cards.
0800: Cal check on instruments ✓ ok
08:05 Setup EB-2 @ mw 6 Location
10:00: Collect FB-2 Sample
08:40 Collect Sample @ mw 6D
08:55 Collect EB-3 Sample @ mw-6S on water level probe.
9:50 Collect Sample @ mw 6S
9:50 Collect Dup-1 @ mw 6S
9:50 Collect mw 6S-MS
9:50 Collect mw 6S-MSD
mw 6S, mw 6S MS, mw 6S MSD and DUP-1 all effervescent and Could not Remove all bubbles from Samples, all Samples had pea size or smaller bubble Due to possible organics in Yellow water. Copy Field notes + Send to Brad.
10:30 Offsite to Pick Cooler + Inst.

12/11/09

ORIGINAL INVOICE

Airgas Southwest
4312 IH 35 S
New Braunfels, TX 78132

FOR ADDRESS CORRECTIONS PLEASE FAX NOTICE TO 830-625-0485

INVOICE DATE	CUST. NO.	INVOICE NO.	DUE DATE	PAY THIS AMOUNT
12/03/09	K2F34	107110286	01/02/10	$34.90

PLEASE MARK YOUR METHOD OF PAYMENT

AMOUNT ENCLOSED

☐ Check
☐ Credit Card

Please visit www.airgas.com/onlinebillpay or complete the information on the reverse side of this form.

PLEASE MAKE CHECKS PAYABLE AND REMIT TO:

Airgas Southwest, Inc.
PO Box 676031
Dallas, TX 75267-6031

SOLD BY AIRGAS-SOUTHWEST
1235 TOWER TRAIL
EL PASO TX 79907
915-859-8000

SOLD TO ERM-ENVIRONMENTAL RESOURCES
150 TEXACO RD
EL PASO TX 79905-3212

14140

GB

00K2F34001071102860000034908

TO ENSURE PROPER CREDIT, PLEASE RETURN THE UPPER PORTION WITH YOUR REMITTANCE. FOR QUESTIONS ON YOUR ACCOUNT PLEASE CALL: 915-859-8000

INVOICE NUMBER	ACCOUNT NUMBER	INVOICE DATE	ACCOUNT NAME
107110286	K2F34	12/03/09	ERM-ENVIRONMENTAL RESOURCES

CUSTOMER ORDER NUMBER	BRN	SLS	TERR	SHIP VIA	TERMS	PAGE
601365-00	046	744	46	WILL CALL	NET 30 DAYS	1

DELIVERY NUMBER	ORDER DATE	PART NUMBER	QTY SHIPPED	QTY B/O	CYLINDER SHPD	CYLINDER RETD	DESCRIPTION	U O M	UNIT PRICE	AMOUNT
		** LOCATION: G46 **								
60136512	03	NI 60	2	0			NITROGEN INDUSTRIAL SIZE CGA 580	CL	15.65	31.30 T
					2	0	VOL: 104			
		NO RETURNS ON THIS INV								
60136512	03	HAZHAZMAT CHG	1	0			HAZARD MATERIAL CHG	EA	.94	.94 T
								Subtotal		32.24

TOTAL CYLINDERS SHIPPED: 2 RETURNED: 0

TAX CD: 000000053 TAX DESCRP: EL PASO (E EXMPT CD: 0 EXMPT/CERT:

RECEIVED
DEC 11 2009
R46

OK TO PAY
12/11/09
R46
01/2010
Low flow
N2 or Bottles

Sponsor of Operation Homefront, assisting US troops & families.

State Tax	6.250%	2.02
City Tax	1.000%	.32
Other Tax	1.000%	.32

TAXABLE AMOUNT $32.24

AMOUNT THIS INVOICE $34.90

Airgas. www.airgas.com

Airgas Southwest
4312 IH 35 S
New Braunfels, TX 78132

SHIP TO:
ERM-ENVIRONMENTAL RESOURCES
150 TEXACO RD
EL PASO TX 79905-3212

FOR WIRE TRANSFER PAYMENTS

ACT. NAME AIRGAS SOUTHWEST
ACT. NO. 8606074772
PNC BANK - ABA NO. 031000053
REF. 107110286/K2F34

L-01000

ORIGINAL INVOICE

☐ ALS Laboratory Group
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

☐ ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman	A	BTEX (8021)
Work Order	0102010	Project Number	0102010	B	
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest Inc.	C	
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	
Address	442 Bermuda	Address	442 Bermuda	E	
City/State/Zip	Corpus Christi TX 78411	City/State/Zip	Corpus Christi TX 78411	F	
Phone	(361) 737 9203	Phone	(361) 737 (9203)	G	
Fax		Fax		H	
e-Mail Address		e-Mail Address		I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	River-UPStream	12/10/09	10:00	W	HCL	3	X										
2	River-Down Stream	12/10/09	10:45	W	HCL	3	X										
3	EB-1	12/10/09	10:55	W	HCL	3	X										
4	MW-35	12/10/09	12:10	W	HCL	3	X										
5	FB-01	12/10/09	12:15	W	HCL	3	X										
6	MW3D	12/10/09	13:55	W	HCL	3	X										
7	MW9S	12/10/09	15:00	W	HCL	3	X										
8	EB-02	12/10/09	15:10	W	HCL	3	X										
9	Trip Blank	12/10/09	—	W	HCL	2	X										
10																	

Sampler(s) Please Print & Sign: Dan An Pyle

Shipment Method: Fed ex 8697 9088 0090

Required Turnaround Time: (Check Box) ☐ STA ☐ 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☒ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes: Temp. Blank included
	12/11/09	13:00		
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID / Cooler Temp
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Date ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

☐ **ALS Laboratory Group**
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel: +1 281 530 5656
Fax: +1 281 530 5887

Chain of Custody Form

☐ **ALS Laboratory Group**
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order	0102010	Project Number	~~05439~~ 0102010	B	~~TPH (TX 1005)~~
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	~~Total Metals (6020/7000) Boron~~
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	~~Total Metals (6020/7000) Manganese~~
Address	442 Bermuda	Address	442 Bermuda	E	~~Total Metals (6020/7000) Iron~~
				F	
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-6D	12/11/09	8:40	W	HCL	3	X										
2	MW-6S	12/11/09	9:50	W	HCL	3	X										
3	FB-02	12/11/09	10:00	W	HCL	3	X										
4	MW-6S MS	12/11/09	9:50	W	HCL	3	X										
5	MW-6S MSD	12/11/09	9:50	W	HCL	3	X										
6	DUP-01	12/11/09	—	W	HCL	3	X										
7	~~FB-2~~																
8	EB-3	12/11/09	8:55	W	HCL	3	X										
9																	
10																	

Sampler(s) Please Print & Sign: Damian Pyle

Shipment Method: fedex 8047 9088 0090

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ Other ☐ 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date: 12/11/09	Time: 13:00	Received by:	Notes: Ten Work Days AT. Blank included.	
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):		

QC Package: (Check One Box Below)
☑ Level I Std QC
☐ Level II Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other _____
☐ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
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3. The Chain of Custody is a legal document. All information must be completed accurately.

DATE	6 / 30 / 09
SHEET	1 of 1

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
Huntsman Pregnana [illegible]	819 2210 [illegible]

FIELD ACTIVITY SUBJECT:
June Sampling Event

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

8:30 - onsite, conduct safety meeting, heavy rainstorms in area. Rainfall forces shutdown due to risk of rockfall along access road and poor conditions on site

12:00 - return to site, clearing weather, begin gauging wells, begin installing socks in wells

4:30 Depart site, sampling tomorrow

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
None	

WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:
rain in AM, partly cloudy breezy 5-10mph, 75-85°, poor road conditions at site	H&S calls to B. [illegible]

PERSONNEL ON SITE:
[illegible] - Randolph Ortlund [illegible] [illegible]

SIGNATURE:
Randolph Ortlund

DATE	7 / 1 / 09
SHEET	1 of 1

FIELD DAILY ACTIVITY LOG

PROJECT NAME: [illegible]

PROJECT NUMBER: [illegible]

FIELD ACTIVITY SUBJECT: [illegible]

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

7:00 ~~[illegible]~~ am – Arrive site, H&S meeting

Sampling – 3S, 3D, River upstream/downstream, 6D, 6S (vehicle stuck at MW-3 location), FB-1, EB-1

7:45 Depart Site

SOCKS IN WPS-25, 26S

VISITORS ON SITE:

None

CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:

WEATHER CONDITIONS:

Clear Sunny wind 5-10 [illegible]
Temp 75-95°

IMPORTANT TELEPHONE CALLS:

None

PERSONNEL ON SITE:

[illegible] Randolph Orthman [illegible]

SIGNATURE:

Randolph Orthman

DATE	7-12-09
SHEET	1 OF 1

FIELD DAILY ACTIVITY LOG

PROJECT NAME: Hyatt Arman - Buckland	PROJECT NUMBER: 0102810

FIELD ACTIVITY SUBJECT: June Sampling Event

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

7:35 Arrive site Conduct safety meeting
OBSF Review (new Viva Tech)
Sampling - 9, MW-12, FB-2, Replace Socks
WP-25, WP-265
11:45 Depart site
Pack and ship samples, equipment

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
None	
WEATHER CONDITIONS: Clear, Sunny, dark, wind 5-8 mph 75-85°	**IMPORTANT TELEPHONE CALLS:** None

PERSONNEL ON SITE:
ERM - Randy Bothast, Viva - Erica Workman

SIGNATURE: Randolph Bothast

Huntsman Wells Gauging Information (Monitor Wells)

River Level very high - top of bank

Well ID	Date	Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	Comments
MW-1	6.30.09	1235	0.0	N/A	3.63	N/A	N/S
MW-2	—	—	—	—	—	—	P&A 6/99
MW-3S	6.30.09	1009	0.0	N/A	4.02	N/A	S
MW-3D	6.30.09	1014	0.4	N/A	4.08	N/A	S
MW-4	6.30.09	1240	0.0	N/A	2.64	N/A	~~S~~ N/S
MW-5	6.30.09	1314	0.0	N/A	3.49	N/A	N/S
MW-6S	6.30.09	1226	0.0	N/A	4.97	N/A	S
MW-6D	6.30.09	1221	0.0	N/A	4.93	N/A	S
MW-7	6.30.09	1247	0.0	N/A	2.57	N/A	~~S~~ N/S
MW-8	6.30.09	1258	0.2	N/A	3.44	N/A	N/S
MW-9S	6.30.09	1022	0.4	N/A	4.60	N/A	S
MW-9D	—	—	—	—	—	—	P&A 7/05
MW-10	6.30.09	1303	~~130~~ 0.6				Sheen recovery well w/pump
MW-11	6.30.09	1300	0.0	N/A	5.64	N/A	N/S
MW-12	6.30.09	1003	0.0	N/A	3.07	N/A	~~N/S~~ S

(1) Product Thickness = (depth to water) - (depth to product)
Notes: Water Equals Non Product Liquids; S-well sampled; N/S-well not sampled

Data Collector: SAL MORALES

Revised: 12/10/2008

Huntsman Wells Gauging Information (Monitor Wells)

Well ID	Date	Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	Comments
MW-13	—	—	—				P&A 6/99
MW-14	6.30.09	1243	0.0	n/a	4.37	n/a	~~S~~ N/S
MW-15	6.30.09	1306	0.0	n/a	12.88	n/a	~~S~~ N/S
MW-16	6.30.09	1305	0.0	n/a	11.27	n/a	N/S
MW-17	6.30.09	1253	0.0	n/a	5.96	n/a	N/S

(1) Product Thickness = (depth to water) - (depth to product)
Notes: Water Equals Non Product Liquids; S-well sampled; N/S-well not sampled

Data Collector: SAL MORALES

Revised: 12/10/2008

Huntsman Wells Gauging Information (Well Points)

Well ID	Date	Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	(2) Well Bailed Yes/No	RIVER LEVEL VERY HIGH-TOP OF BANK Comments
WP-1	6·30·09	1325	27.6	N/A	7.73	N/A	NO	
WP-2	6·30·09	1326	0.0	N/A	5.90	N/A		
WP-3	6·30·09	1328	0.0	N/A	5.44	N/A		
WP-7	6·30·09	1337	0.2	N/A	9.33	N/A		
WP-14	6·30·09	1346	5.3	N/A	3.92	N/A		TAR at bottom of well
WP-25	6·30·09	1330	7.0	7.25	7.50	.25		SOCK IN WP
WP-26S	6·30·09	1334	26.7	6.75	6.82	.07		SOCK IN WP
WP-26D	6·30·09	1332	4.0	N/A	7.45	N/A .07		
WP-27S	6·30·09	1309	22.2	Ø	11.57	Ø		
WP-27D	6·30·09	1311	2.4	N/A	11.47	N/A		
WP-30	6·30·09	1323	0.0	N/A	10.68	N/A		
WP-31	—	—	—	—	—	—	—	UNABLE TO REMOVE CAP
WP-32	6·30·09	1307	1.5	—	—	—	—	DRY
WP-33	6·30·09	1321	0.0	N/A	7.28	N/A	NO	
MW-10	6·30·09	1303	0.6	N/A	6.72	N/A	NO	Recovery well w/pump

(1) Product Thickness = (depth to water) - (depth to product)
(2) See Well Bailing field form
Note: Water Equals Non Product Liquids

Data Collector: SAL MORALES

(30) 2437

0102010 HUNTSMAN SAMPLING 6/30/09 TUE

0600 ARRIVE ERM OFFICE.
- PREP FOR SEMI-ANNUAL GW SAMPLING
- LOAD UP TRUCKS

OBJECT: PERFORM SEMI-ANNUAL GW SAMPLING AND NAPL RECOVERY TASKS

PERSONNEL: ERM - RANDY ORTLUND
VIVA TECH - SAL MORALES

EQUIP: T-84, CELL, TOOLKIT, PID, INTERFACE PROBE, GW SAMPLE EQUIP, NAPL RECOVERY EQUIP

WEATHER: PTLY CLDY, SUNNY, HOT, HUMID, BREEZY, POT RAIN, 5-10 MPH, 75-95°F

H+S: REVIEW, FILL OUT, SIGN DAILY FORM
FILL OUT ERM PSC CARDS

0630 VIVA TECH SAL ON SITE
- PERFORM H+S REVIEW, BC CARDS
- LOAD UP TRUCKS

0800 SAL DEPART FOR VIVA OFFICE:
- PICK-UP 2×55 GAL DRUMS
- PICK-UP N_2 BOTTLE - DIP PRODUCTS

0805 DEPART FOR HUNTSMAN SITE

0830 ARRIVE ON SITE - HUNTSMAN
HEAVY RAINSTORMS IN AREA

Randolph Ortlund 6/30/09

(31) 2437

0102010 HUNTSMAN SAMPLING 6/30/09 TUE

- CANNOT ENTER SITE UNTIL VIVA ARRIVES
- FILL OUT SAMPLE FORMS

0845 BEGINNING TO RAIN - TOOK PICTURES

0900 VIVA ON SITE W/ DRUMS, N_2 BOTTLE.
- UNLOAD TRUCKS INTO CONTAINMENT
- SET UP TRUCKS FOR GAUGING AND SAMPLING TASKS

0930 H+S REVIEW: WET SITE CONDITIONS, RAIN, LIGHTNING, S/T/F ISSUES

0935 VIVA TECH SAL:
1) OPEN ALL WELLS - EQUILIBRATE
2) CK W/ PID
3) GAUGE CLEAN WELLS FIRST
MW[5] FROM CLEAN TO DIRTY (LAB ANAL)
4) GAUGE WAG WELL RINGS
5) PLACE "SOCKS" IN WAS THAT HAVE MEASURABLE PRODUCT

1000 CALLED BACK TO DISCUSS WEATHER ISSUES AND POTENTIAL SAFETY ISSUES ON SITE (I.E. DEBRIS, ROCK SLIDES FROM SLOPES ALONG ACCESS ROAD, WET, SLIPPERY CONDITIONS)

* IF HEAVY RAINS LEAVE SITE
- POTENTIAL FOR FLOOD FROM RIVER WILL LIKELY UNLESS TORRENTIAL RAINFALL IN MOUNTAINS.

Randolph Ortlund 6/30/09

(32) 2437

0102010 HUNTSMAN SAMPLING 6/30/09 TUE

1010 CALL FROM BRAD AFTER H+S DISCUSSION WITH DAVE DUNCAN:
- IF RAIN HAZARD STAY OFF ROAD - STAY ON SIDE OF COMPOUND. HUNKER DOWN OR LEAVE SITE BEFORE HEAVY RAINS BEGIN.

1030 RAINFALL INCREASING - BECOMING A "SOAKING" TYPE RAINFALL

1040 BREAK FOR LUNCH 1 hr THEN CHECK RAIN SITUATION AT SITE SOME CLEARING TO THE WEST - WAIT AND ASSESS
- ENTRANCE GATE - COMPOUND LOCKED OFFSITE - BACK TO OFFICE

1200 BACK ON SITE - HUNTSMAN:
- CLEAR SKIES OVER SITE AREA BUT CLOUDS IN DISTANCE
- CONTINUE GAUGING TASKS AND PREP FOR SAMPLING.

1245 I WILL HELP VIVA TECH W/ GAUGING TASKS (LOOKS LIKE IT MIGHT RAIN AGAIN) I WANT TO FINISH GAUGE TASKS TODAY - BEFORE SAMPLING - RAIN

Randolph Oetland 6/30/09

(33) 2437

0102010 HUNTSMAN SAMPLING 6/30/09 TUE

1400 DISCUSSED BAIL MW-12 W/BRAD. USE PERISTALTIC PUMP AND LOW FLOW SAMPLE MW-12.

1545 OIL SOCKS WILL NOT GO DOWN 2" DIA STEEL PIPE WP'S

DISCUSSED W/BRAD:
1) REMOVE ABSORBENT MATERIAL FROM SOCK
2) ADD WEIGHTS TO BOTTOM OF SOCK
3) USE ROD TO PULL SOCK DOWN PIPE FROM BOTTOM ~10 ft ROD

1615 FINISHED WELL GAUGING UNABLE TO GET "SOCK" DOWN WELL BY REMOVING MATERIAL - NEED WEIGHTS OR ROD TO "PULL" DOWN

1630 OFFSITE - END OF DAY
- SAMPLE WELLS/RIVER TOMORROW
- GATES LOCKED
- BACK TO OFFICE GET SUPPLIES FOR TOMORROW EVENT.
(PERISTALTIC PUMP, STEEL WEIGHTS, AIR REGULATOR CONNECTORS, ETC).

Randolph Oetland 6/30/09

(34) 2437

0102010 HUNTSMAN SAMPLING 7/1/09 WED

0600 ARRIVE ON SITE ERM OFFICE
- LOAD UP TRUCK - DEPART FOR SITE
- WRITE UP HEALTH & SAFETY FORMS

OBJECT: CONTINUE SAMPLING TASKS AND NAPL RECOVERY TASKS

PERSONNEL: ERM RANDY ORDLUND
VIVA TECH SAL MORALES

EQUIP: T-84, CELL, TOOL KIT, P-PUMP
INTERFACE PROBE, GW SAMPLING EQUIP, NAPL RECOVERY EQUIP

WEATHER: CLR, SUNNY, HOT, HUMID, BREEZY
5-10 MPH, 75-95°F

H&S: FILL OUT, REVIEW, SIGN DAILY FM
FILL OUT ERM ASC CARD

0630 VIVA ON SITE W/ ICE
LOAD UP TRUCKS - DEPART

0700 ARRIVE HUNTSMAN SITE
PREP FOR GW SAMPLING

0730 SET UP FIELD BLANKS:
FB-1 NEAR ENTRANCE GATE
VOC's 3x40ml VOA HCL
PAH's 2x1L AMBER GLASS -
1x500ml PLASTIC METALS Pb HNO3 UNFILTERED
USE DISTILLED WATER

0800 SET-UP AT MW-35 TO SAMPLE

Randolph Ordlund 7/1/09

(35) 2437

0102010 HUNTSMAN SAMPLING 7/1/09 W

0810 STUCK IN MUD AT MW-35
0900 BEGIN PURGE / SAMPLE MW-35
1000 SAMPLE TIME: MW-35:
3x40ml VOA HCL VOC's
2x1L AMBER BOTTLE PAH's
1x500ml CLR PLASTIC HNO3 Pb UNFILTERED Pb
SAMPLES ON ICE

1030 BEGIN PURGE / SAMPLE MW-3D
1117 SAMPLE TIME: MW-3D
3x40ml VOAs HCL VOC's
2x1L AMBER GLASS PAH's
1x500ml CLR PLASTIC HNO3
UNFILTERED Pb

1145 SET-UP TO RIVER SAMPLE
UPSTREAM + DOWNSTREAM
USE LIFE-JACKET FOR SAMPLER
VIVA TECH, HE CAN SWIM.

1200 SAMPLE TIME: RIVER-UPSTREAM
3x40ml VOAs HCL VOC's
2x1L AMBER GLASS PAH's
1x500ml CLR PLASTIC HNO3
UNFILTERED Pb

1235 SET-UP TO RIVER SAMPLE DOWNSTREAM
1250 SAMPLE TIME: RIVER-DOWNSTREAM
3x40ml VOAs HCL VOC's
2x1L AMBER GLASS PAH's
1x500ml CLR PLASTIC HNO3 UNFILTERED Pb

Randolph Ordlund 7/1/09

(36) 2437

010201O HUNTSMAN SAMPLING 7/1/09 WED

1315 WORK ON GETTING TRUCK UNSTUCK (MUD) AT MW-3

- UMBRELLA BROKE (~7 YRS OLD)

1330 GOOD LUCK - TRUCK UNSTUCK W/ VIVA'S HELP

- BREAK FOR LUNCH - GET SUPPLIES FOR NAPL RECOVERY, SAMPLING (ICE)

1510 BACK ON SITE: VIVA TECH WORK ON NAPL RECOVERY WELLS (2) SET SOCKS IN NAPL WELLS

1515 SET WATER LEVEL SAMPLE AT MW-6D AND MW-6S

1630 BEGIN PURGE/SAMPLE MW-6D

1725 SAMPLE TIME: MW-6D
3x40ml VOA HCl VOCs
2x1L AMBER GLASS PAHs
1x500ml PLASTIC HNO3 UNFILTERED Pb

1750 SET UP TO SAMPLE MW-6S

1755 BEGIN PURGE/SAMPLE MW-6S

1845 SAMPLE TIME: MW-6S
SAMPLE TIME: DUP-1 DUP OF MW-6S

Randolph Ortlund 7/1/09

(37) 2437

010201O HUNTSMAN SAMPLING 7/1/09 WED

1915 FINISHED SAMPLING MW-6S AND DUP-1 (MW-6S)
- CLEAN UP
- LOCK WELLS
- LOCK COMPOUND, SECURE SITE
- SAMPLES ON ICE
- TAKE SAMPLE COOLERS TO ERM OFFICE

1945 DEPARTS SITE BACK TO OFFICE
FB-1 CAPPED AT 1830

Randolph Ortlund 7/1/09

(38) 2437

010201O HUNTSMAN SAMPLING 7/2/09 [illegible]

0600 ARRIVE OFFICE - ERM
- PREP FOR GW SAMPLING, NAPL RECOVERY
- LOAD VEHICLES - DEPART FOR SITE

OBJECT: FINISH GW SAMPLE, NAPL RECOVERY TASKS
- PACK SHIP SAMPLE COOLERS
- RETURN SHIP RENTAL EQUIP

PERSONNEL: ERM RANDY OSTLUND
VIVATECH ROBERT WILKINSON

EQUIP: T-84, CELL, TOOL KIT, P-PUMP
GW SAMPLE EQUIP, NAPL RECOVERY EQUIP

WEATHER: CLR, SUNNY, HOT, MOD HUMID
BREEZY, E5-10 MPH, 75-95° F

H+S: FILL OUT, SIGN, REVIEW DAILY FM
FILL OUT ERM PSC CARDS

0645 VIVATECH ONSITE
REVIEW HASP, SIGN
REVIEW H+S ISSUES AT SITE

0705 DEPART FOR HUNTSMAN SITE

0735 ARRIVE ON SITE W/ VIVATECH
SET UP GW SAMPLING
PERFORM NAPL RECOVERY:
REMOVE/REPLACE SOCKS

Randolph Ostlund 7/2/09

(39) 2437

010201O HUNTSMAN SAMPLING 7/2/09 [illegible]

0800 SET UP ON FB-2 (0730 ON LOC)
3x40ml VOA VOC's HCl
2x1L AMBER GLASS PAH's
1x500ml PLASTIC HNO3 Pb
UNFILTERED (DISTILLED H2O)
MIDDLE SECTION OF SITE NEAR
MAIN ENTRANCE GATE ON SLAB
(SAME LOCATION FB-1)

0830 SET UP AT MW-9S
VERY MUDDY AREA

0900 BEGIN PURGE/SAMPLE MW-9S

0945 SAMPLE TIME MW-9S:
3x40ml VOA's VOC's HCl
2x1L AMBER GLASS PAH's
1x500ml PLASTIC HNO3 Pb
UNFILTERED

1015 FINISHED AT MW-9S
SET UP AT MW-12

1035 BEGIN PURGE/SAMPLE MW-12
USING PERISTALTIC PUMP
TUBING SET @ 15' BTOC

1110 SAMPLE TIME MW-12:
(2) 2x500 ml PLASTIC HNO3
UNFILTERED IRON, BORON
MANGANESE,

Randolph Ostlund 7/2/09

(40) 2437

010210 HUNTSMAN SAMPLING 7/2/09 THU

1115 FINISHED SAMPLING MW-12 CLEAN-UP AND PICK UP FB-2

1115 FB-2 PICKED UP - CAPPED

1140 SITE SECURED GATES LOCKED WELLS CAPPED LOCKS IN 2 WELLS W/ PVC PIPE STICKING OUT - NOT CAPPED: ~~MW-26S~~ WP-26S, 25 TOOK PICTURES OF THEM.

1145 BACK TO OFFICE PACK/SHIP SAMPLES AND RENTAL EQUIP.

1320 VIVA TECH OFFSITE [illegible]:

- SAMPLES PACKED IN COOLERS ON ICE READY FOR FEDEX PICK-UP, FRI AM DELIVERY ALS LAB CONTACTED EXPECT COOLERS FRI AM
- EQUIP PACKED FOR SHIPMENT TO AJAX VIA LONESTAR 2 DAY (SAVE #)
- CALLED AJAX TO CONFIRM TAKE OFF RENTAL DEL MON

1345 CALLED BRAD W/ UPDATE EOD

Randolph Outland 7/2/09

LOW FLOW SAMPLING SHEET

Well: MW-35
Location: HUNTSMAN
Date: 7/1/09
Samplers: RANDOLPH ORSLUND

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
6/30/09	1009	4.02	16.50	4	UNK	0	0	-	-	0.2-0.3 L/m
7/1/09	0900	3.89								DEDICATED PUMP

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L) x	Redox Potential (mV) x	Turbidity (NTU) x	DTW (ft-toc)	L/m Comments
7/1/09	9~~10~~4	Initial	7.07	20.83	10.17	1.28	194	-4.03	4.37	0.3 ~~L/m~~ 15/5
	923		7.07	21.48	10.27	0.91	176	-3.89	4.52	0.2 ~~L/m~~ 20/10
	929		7.06	21.39	10.23	0.84	173	-0.49	4.61	0.2 L/m
	933		7.06	21.46	10.27	0.78	161	+0.30	4.66	
	938		7.07	21.66	10.30	0.77	146	-1.50	4.66	TURBIDITY METER
	942		7.08	21.63	10.33	0.72	118	-2.01	4.70	CALIBRATED TO 0.00 OK
	949		7.08	21.63	10.32	0.68	99	-2.37	4.72	PURGE WATER IS CLEAR
	954		7.12	21.69	10.34	0.64	66	-2.82	4.71	
	957		7.13	21.65	10.32	0.62	~~+250~~	-2.25	4.71	
	1000		7.13	21.57	10.29	0.61	32	-2.30	4.73	
		23 GAL PURGED								
			PURGE WATER CLEAR - NO APPARENT ODOR							

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
7/1/09	1000							MW-35	BTEX PAHs	HCl	Ice
				(DISTILLED WATER)					LEAD	HNO_3	UNFILTERED
7/1/09	0830	REPLACEMENT		BLANK WATER LEVEL PROBE				EB-1			

LOW FLOW SAMPLING SHEET

Well: MW-3D
Location: HUNTSMAN
Date: 7/1/09
Samplers: RANDOLPH CROLLINS

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments 2d/10
6/30/09	1014	4.08	37.50	4	UNK	0.4	0	-	-	0.2 L/M ~~30~~ 5 CYCLE
7/1/09	1030	4.11								DEDICATED PUMP

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L) X	Redox Potential (mV) X	Turbidity (NTU) X	DTW (ft-toc)	Comments
7/1/09	1035	Initial	6.77	22.69	17.62	1.10	-16.6	2000	4.11	0.25 L/M 2d/10 CYCLE
	1047		6.99	22.07	17.40	0.68	0.2	7.86	4.12	20 PSI
	1052		7.01	22.15	17.50	0.64	-17.5	7.95	4.12	RECORD TURBIDITY METER
	1057		7.01	22.23	17.58	0.60	-29.3	3.93	4.12	
	1102		7.02	22.33	17.66	0.59	-32.9	~~5.40~~	4.12	
	1107		7.02	22.17	17.62	0.57	-37.3	4.40	4.12	
	1112		7.02	22.39	17.72	0.55	-41.5	1.20	4.12	
	1117		7.02	22.32	17.71	0.53	-44.5	1.49	4.12	
	~	2.5 GALS PURGED								
		PURGE WATER CLEAR WITH						SLIGHT ~~ORGANIC~~ ORGANIC ODOR		

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
7/1/09	1117							MW-3D	BTEX	HCl	ICE
									PAH's		
									LEAD	HNO_3	UNFILTERED
7/1/09	0730 - 1830		FB-1	(DISTILLED WATER)				FB-1			

LOW FLOW SAMPLING SHEET

Well: RIVER - UPSTREAM
Location: HUDSPETH - RIO GRANDE

Date: 7/1/09
Samplers: RAYMOND ORTEGA | SAL MORALES

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
7/1/09	1200	Initial	8.15	27.08	0.916	5.90	-28.7	53.9		JUST BELOW SURFACE
		WATER CLEAR - SLIGHTLY CLOUDY - NO ODOR								

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
7/1/09	1200				RIVER-UPSTREAM				BTEX	HCl	ICE
									PAHs		
									LEAD		UNFILTERED

LOW FLOW SAMPLING SHEET

Well: RIVER-DOWNSTREAM
Location: HUNTSMAN-RIO GRANDE

Date: 7/1/09
Samplers: RANDOLPH ORTLUND / SALMORALES

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
7/1/09	1250	Initial	7.95	27.65	0.853	7.15	146	68.8		JUST BELOW SURFACE

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
7/1/09	1250		RIVER - DOWNSTREAM						BTEX	HCl	ICE
									PAHS		
									LEAD		UNFILTERED

LOW FLOW SAMPLING SHEET

Well: MW-6D
Location: HUNTSMAN

Date: 7/1/09
Samplers: RANDOLPH ORDLUND

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
6-30-09	1221	4.93	38.0	4	UNK	0.0	0.0	-	-	0.25 L/M 15/10 CYCLE
7-1-09	1615	5.04								DEDICATED PUMP 20 PSI

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
						x	x	x		
~~1635~~	1635	0 Initial	6.77	25.47	20.15	1.27	41.0	-1.15	5.04	0.25 L/m 15/10 CYCLE
7/1/09	1645		6.80	25.17	19.93	0.82	34.6	-1.65	5.04	
	1650		6.91	26.94	20.66	0.73	29.0	-1.79	5.04	NOT CONSTANT FLOW 10/5 CYCLE
	1655		6.85	25.61	20.13	0.67	29.6	-2.31	5.04	BOOSTER FLOW 15/10 CYCLE
	1700		6.91	25.82	20.18	0.57	35.4	-1.78	5.04	
	1705		6.84	25.20	20.02	0.54	58.1	-2.56	5.08	
	1710		6.87	25.32	20.04	0.51	64.5	-2.48	5.08	
	1715		6.88	25.33	20.07	0.50	61.7	-2.36	5.09	
	1720		6.91	25.54	20.06	0.47	57.7	-3.07	5.09	
	1725		6.97	25.54	20.10	0.46	46.4	-3.38	5.09	
	~	2.5 GAL	PURGED							
			PURGE WATER CLEAR - NO APPARENT ODOR							

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
7/1/09	1725							MW-6D	BTEX	HCl	ICE
									PAHs		
									LEAD		UNFILTERED

LOW FLOW SAMPLING SHEET

Well: MW-65
Location: HUNTSMAN

Date: 7/1/09
Samplers: RANDOLPH CROLLINO

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
6/30/09	1226	4.97	17.0	4	UNK	0.0	0.0	—	—	0.1 L/m 25/5/5; 10 DEDICATED PUMP

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L) x	Redox Potential (mV) x	Turbidity (NTU) x	DTW (ft-toc)	Comments
7/1/09	1755	Initial	7.08	29.87	19.42	1.86	76.9	-1.72	4.99	0.1 L/m 25/5
	1802		7.04	30.00	18.31	2.16	-31.4	-1.64	5.25	
	1808		7.02	30.08	17.44	1.97	-92.6	-1.10	5.38	
	1815		6.96	29.51	16.86	1.68	-118.5	-1.63	5.46	
	1820		6.91	29.08	16.53	1.52	-115.1	-1.77	5.50	0.1 L/m 15/5
	1830		6.87	29.07	16.34	1.30	-114.0	-2.47	5.57	
	1838		6.79	27.24	15.73	1.12	-122.0	-2.77	5.69	
	1845		6.81	27.44	15.78	1.03	-122.8	-2.89	5.71	
			APPARENT GEARTHY (AIR) ODOR							
			PURGE WATER CLEAR W/ LIGHT ICE TEA COLOR							

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
7/1/09	1845							MW-65	BTEX	HCl	ICE
	1200	USED FOR TIME DUP-1						DUP-1	~~BTEX~~		
7/1/09	~~1845~~	DUP-1 DUPLICATE OF MW-65						MS/MSD	LEAD		UNFILTERED

LOW FLOW SAMPLING SHEET

Well: MW-95
Location: HUNTSMAN
Date: 7/2/09
Samplers: RAMON ARELLANO

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	L/M Comments
6/30/09	1022	04.60	15.50	4	UNK	0.4	0.0	-	-	0.2 L/M 20/10 10 psi
7/2/09	0850	4.91								DEDICATED PUMP

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
7/2/09	0850	Initial								
	0900		7.59	27.50	10.72	5.96	111.7	7.83	4.93	0.2 L/M 20/10 20 psi
	0908		7.27	26.66	10.13	4.59	-76.1	3.09	4.93	
	0915		7.16	26.80	10.04	4.21	-109.3	3.86	4.94	
	0921		7.12	26.60	10.09	3.94	-117.3	4.07	4.96	
	0925		7.12	26.34	10.04	3.70	-121.4	2.48	4.97	
	0930		7.13	26.44	10.10	3.41	-123.2	2.02	4.98	
	0935		7.13	26.68	10.19	3.24	-121.3	2.02	4.98	
	0940		7.12	23.17	10.34	2.98	-116.7	2.70	4.98	
	0945		7.12	27.48	10.42	2.83	-120.7	3.03	4.98	
		~2 GALS PURGED								

PURGE WATER CLEAR NO APPARENT ODOR (SLIGHT APPARENT ORGANIC ODOR)

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
0945	7/2/09							MW-95	BTEX	HCl	DUP
									PAHs		
	7/2/09								Lead		UNFILTERED
0800	FB-2 (DI SOURCE WATER)							FB-2			

LOW FLOW SAMPLING SHEET

Well: MW-12 Date: 7/2/09

Location: HUNTSMAN Samplers: RANDOLPH ORSLUND

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
6/30/09	1003	3.07	26.89	4	UNK	0.0	0.0	—	—	PERISTALTIC PUMP - INTAKE TUBING SET @ ~15' BTOC

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
7/2/09	1035	Initial	6.59	31.93	32.80	4.93	158.1	0.27	3.40	0.35 L/m
	1043		6.46	30.84	32.39	5.08	161.4	-0.53	3.50	0.45 L/m
	1050		6.45	30.92	32.48	5.28	170.9	-1.43	3.51	PUMP FAILED OPEN
	1055		6.46	30.71	32.41	4.84	178.4	-2.38	3.51	
	1100		6.47	31.20	32.65	4.54	182.9	-2.60	3.51	
	1105		6.48	~~33.07~~	33.02	4.10	189.3	-1.95	3.51	
	1100			31.81						PUMP BATTERY RUNNING LOW HAD TO SAMPLE @ 1110
		~ 2.75 GALS PURGED								
		PURGE WATER CLEAR - VERY SLIGHT ORGANIC ODOR						SHEEN		

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
7/2/09	1110							~~MW-12~~	BRUN		ICE
							MW-12	-1	IRON		
							MW-12	-2	MANGANESE		UNFILTERED
		2 Samples	COLLECTED				~~MW-12~~	~~-3~~			

ALS Laboratory Group
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

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Page 1 of 4

ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager:

ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	~~05436~~ 0102010	B	Total Metals (6020/7000) Boron
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	Total Metals (6020/7000) Lead
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	Total Metals (6020/7000) Manganese
Address	442 Bermuda	Address	442 Bermuda	E	Total Metals (6020/7000) Iron
				F	PAHs (8270) Low-Level
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-35	7/1/09	1000	WATER	HCl	3	X										
2					HNO_3	1			X								
3					~~8~~	2						X					
4	MW-3D	7/1/09	1117	WATER	HCl	3	X										
5					HNO_3	1			X								
6					8	2						X					
7	RIVER-UPSTREAM	7/1/09	1200	WATER	HCl	3	X										
8					HNO_3	1			X								
9					~~8~~	2						X					
10																	

Sampler(s) Please Print & Sign: RANDALL CROPPER

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) 24 hr | 48 hr | 5 WK DAYS | 3 WK DAYS | 2 WK DAYS | 1 WK DAY

Results Due Date:

Relinquished by: Randall Cropper Date: Time:

Received by:

Notes: 10 Work Days TAT

Relinquished by: Randall Cropper Date: 7/2/09 Time: 7300

Received by (Laboratory):

Cooler ID | Cooler Temp

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

QC Package: (Check One Box Below)

- [x] Level I Std QC
- [ ] Level II Std QC/Raw Data
- [ ] Level IV (DW)/CLP
- [ ] Other
- [ ] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

☐ **ALS Laboratory Group**
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

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Page 2 of 4

☐ **ALS Laboratory Group**
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | **ALS Work Order #:**

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	85439 0102010	B	Total Metals (6020/7000) Boron
Company Name	ERM Southwest, Inc.	Bill-to Company	ERM Southwest, Inc.	C	Total Metals (6020/7000) Lead
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	Total Metals (6020/7000) Manganese
Address	442 Bermuda	Address	442 Bermuda	E	Total Metals (6020/7000) Iron
				F	PAHs (8270) Low-Level
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	RIVER-DOWNSTREAM	7/1/09	1250	WATER	HCl	3	X										
2		↓	↓	↓	HNO_3	1			X								
3		↓	↓	↓	8	2						X					
4	MW-6D	7/1/09	1725	WATER	HCl	3	X										
5		↓	↓	↓	HNO_3	1			X								
6		↓	↓	↓	8	2						X					
7	MW-65 (MS/MSD)	7/1/09	1845	WATER	HCl	3	X										
8					HNO_3	1			X								
9					8	2						X					
10																	

Sampler(s) Please Print & Sign: [signature] | **Shipment Method:** FEDEX | **Required Turnaround Time: (Check Box)** ☑ 10 Work Days ☐ 5 WK Days ☐ 2 WK Days ☐ Other | **Results Due Date:**

Relinquished by:	Date:	Time:	Received by:	Notes: 10 Work Days TAT.
[signature]	7/2/09	1300		
Relinquished by:	Date:	Time:	Received by (Laboratory):	

Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)
						☑ Level II Std QC ☐ TRRP Checklist
						☐ Level III Std QC/Raw Data ☐ TRRP Level IV
						☐ Level IV SW846/CLP
						☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-NaHSO 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
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☐ **ALS Laboratory Group**
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

Page 3 of 4

☐ **ALS Laboratory Group**
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager:

ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	~~85439~~ 010 2510	B	Total Metals (6020/7000) Boron
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	Total Metals (6020/7000) Lead
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	Total Metals (6020/7000) Manganese
Address	442 Bermuda	Address	442 Bermuda	E	Total Metals (6020/7000) Iron
				F	PAHs (8270) Low-Level
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	DUP-1	7/1/09	1200	water	HCl	3	X										
2					HNO_3	1			X								
3					8	2						X					
4	FB-1	7/1/09	~~1530~~ 0730	water	HCl	3	X										
5					HNO_3	1			X								
6					8	2						X					
7	FB-1	7/1/09	~~0530~~ 0730	water	HCl	3	X										
8					HNO_3	1			X								
9					8	2						X					
10																	

Sampler(s) Please Print & Sign: Randall Crittenden

Shipment Method: Fedex

Required Turnaround Time: (Check Box) ☐ Next Day ☐ 2 Work Days ☐ 3 Days ☐ 4 Days ☐ 5 Days ☐ 10 Work Days ☐ Other ☐ 24 hours

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Randall Crittenden	7/2/09	1300		10 Work Days TAT.
Relinquished by:	Date:	Time:	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp.

GC Package (Check One Box Below)
- ☑ Level I Std QC
- ☐ Level II Std QC/Raw Data
- ☐ Level V SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-NaHSO4 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

☐ **ALS Laboratory Group**
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

☐ **ALS Laboratory Group**
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	~~35430~~ 0102010	B	Total Metals (6020/7000) Boron
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	Total Metals (6020/7000) Lead
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	Total Metals (6020/7000) Manganese
Address	442 Bermuda	Address	442 Bermuda	E	Total Metals (6020/7000) Iron
				F	PAHs (8270) Low-Level
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-95	7/2/09	0945	WATER	HCl	3	X										
2	↓	↓	↓	↓	HNO_3	1			X								
3	↓	↓	↓	↓	8	2						X					
4	MW-12-1	7/2/09	1110	WATER	HNO_3	2		X	epa	X	X						
5	MW-12-2	↓	↓	↓	HNO_3	2		X		X	X						
6	↓	↓	↓	↓	↓	↓											RHS
7	FB-2	7/2/09	~~1115~~ 0730	WATER	~~HCl~~ HCl	3	X										
8	↓	↓	↓	↓	HNO_3	1			X								
9	↓	↓	↓	↓	8	2						X					
10	TB	7/2/09			HCl	2	X										

Sampler(s) Please Print & Sign: [illegible]

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 4 Day ☐ 5 Day ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes: 10 Work Days TAT
[illegible]	7/2/09	1300		
Relinquished by:	Date:	Time:	Received by (Laboratory):	
			Checked by (Laboratory):	
Logged by (Laboratory):	Date:	Time:		

Cooler ID | Cooler Temp.

QC Package: (Check One Box Below)
- ☑ Level I Std QC
- ☐ Level II Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4°C 9-5085

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Laboratory Data Reports

Appendix B

February 23, 2010
Project No. 0102010

Environmental Resources Management Southwest, Inc.
206 E. 9th St., Suite 1700
Austin, Texas 78701
(512) 459-4700

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

30-Jun-2009

Brad Stokes
ERM Southwest, Inc.
442 Bermuda
Corpus Christi, TX 78411

Tel: (361) 737-9203
Fax:

Re: Huntsman Brickland Refinery

Work Order: **0901136**

Dear Brad,

ALS Laboratory Group received 14 samples on 10-Jan-2009 08:35 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Laboratory Group and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 30.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Lora Terrill

Electronically approved by: Glenda H. Ramos

Lora Terrill
VP Lab Operations

ACCREDITED IN ACCORDANCE WITH nelac

Certificate No: T104704231-08-TX

ALS Laboratory Group

Date: 30-Jun-09

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: **0901136**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0901136-01	MW-12	Water		1/7/2009 16:45	1/10/2009 08:35	☐
0901136-02	MW-3S	Water		1/8/2009 11:45	1/10/2009 08:35	☐
0901136-03	EB-1	Water		1/7/2009 16:00	1/10/2009 08:35	☐
0901136-04	FB-1	Water		1/7/2009 17:00	1/10/2009 08:35	☐
0901136-05	MW-3D	Water		1/8/2009 12:40	1/10/2009 08:35	☐
0901136-06	MW-9S	Water		1/8/2009 13:50	1/10/2009 08:35	☐
0901136-07	EB-2	Water		1/8/2009 14:20	1/10/2009 08:35	☐
0901136-08	River-Upstream	Water		1/8/2009 15:00	1/10/2009 08:35	☐
0901136-09	MW-6D	Water		1/8/2009 15:55	1/10/2009 08:35	☐
0901136-10	FB-2	Water		1/8/2009 15:35	1/10/2009 08:35	☐
0901136-11	MW-6S	Water		1/8/2009 16:55	1/10/2009 08:35	☐
0901136-12	Dup-1	Water		1/8/2009 15:00	1/10/2009 08:35	☐
0901136-13	River-Downstream	Water		1/8/2009 17:15	1/10/2009 08:35	☐
0901136-14	TB-1	Water		1/8/2009 17:15	1/10/2009 08:35	☐

ALS Laboratory Group

Date: 01-Jul-09

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0901136

Case Narrative

This report is reissued on July 1, 2009 to include Fe and Mn results at the request of the client.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0901136
Sample ID: MW-12
Lab ID: 0901136-01
Collection Date: 1/7/2009 04:45 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS			**SW6020**		Prep Date: **1/14/2009**	Analyst: **ALR**
Boron	**1.20**		**0.500**	**mg/L**	10	1/15/2009 06:01 PM
Iron	ND		0.200	mg/L	1	1/12/2009 10:35 PM
Manganese	**0.282**		**0.00500**	**mg/L**	1	1/12/2009 10:35 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-3S
Collection Date: 1/8/2009 11:45 AM

Work Order: 0901136
Lab ID: 0901136-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/12/2009 07:10 PM
Toluene	ND		0.0010	mg/L	1	1/12/2009 07:10 PM
Ethylbenzene	ND		0.0010	mg/L	1	1/12/2009 07:10 PM
Xylenes, Total	ND		0.0030	mg/L	1	1/12/2009 07:10 PM
Surr: 4-Bromofluorobenzene	*101*		*77-129*	*%REC*	1	1/12/2009 07:10 PM
Surr: Trifluorotoluene	*114*		*75-130*	*%REC*	1	1/12/2009 07:10 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0901136
Sample ID: EB-1
Lab ID: 0901136-03
Collection Date: 1/7/2009 04:00 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/12/2009 10:10 AM
Toluene	ND		0.0010	mg/L	1	1/12/2009 10:10 AM
Ethylbenzene	ND		0.0010	mg/L	1	1/12/2009 10:10 AM
Xylenes, Total	ND		0.0030	mg/L	1	1/12/2009 10:10 AM
Surr: 4-Bromofluorobenzene	*104*		*77-129*	*%REC*	1	1/12/2009 10:10 AM
Surr: Trifluorotoluene	*112*		*75-130*	*%REC*	1	1/12/2009 10:10 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: FB-1
Collection Date: 1/7/2009 05:00 PM

Work Order: 0901136
Lab ID: 0901136-04
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/12/2009 10:37 AM
Toluene	ND		0.0010	mg/L	1	1/12/2009 10:37 AM
Ethylbenzene	ND		0.0010	mg/L	1	1/12/2009 10:37 AM
Xylenes, Total	ND		0.0030	mg/L	1	1/12/2009 10:37 AM
Surr: 4-Bromofluorobenzene	*100*		*77-129*	*%REC*	1	1/12/2009 10:37 AM
Surr: Trifluorotoluene	*113*		*75-130*	*%REC*	1	1/12/2009 10:37 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0901136
Sample ID: MW-3D
Lab ID: 0901136-05
Collection Date: 1/8/2009 12:40 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/13/2009 09:37 AM
Toluene	ND		0.0010	mg/L	1	1/13/2009 09:37 AM
Ethylbenzene	ND		0.0010	mg/L	1	1/13/2009 09:37 AM
Xylenes, Total	ND		0.0030	mg/L	1	1/13/2009 09:37 AM
Surr: 4-Bromofluorobenzene	*91.0*		*77-129*	*%REC*	1	1/13/2009 09:37 AM
Surr: Trifluorotoluene	*105*		*75-130*	*%REC*	1	1/13/2009 09:37 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0901136
Sample ID: MW-9S
Lab ID: 0901136-06
Collection Date: 1/8/2009 01:50 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/12/2009 04:56 PM
Toluene	ND		0.0010	mg/L	1	1/12/2009 04:56 PM
Ethylbenzene	ND		0.0010	mg/L	1	1/12/2009 04:56 PM
Xylenes, Total	ND		0.0030	mg/L	1	1/12/2009 04:56 PM
Surr: 4-Bromofluorobenzene	*101*		*77-129*	*%REC*	1	1/12/2009 04:56 PM
Surr: Trifluorotoluene	*119*		*75-130*	*%REC*	1	1/12/2009 04:56 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0901136
Sample ID: EB-2
Lab ID: 0901136-07
Collection Date: 1/8/2009 02:20 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/12/2009 03:35 PM
Toluene	ND		0.0010	mg/L	1	1/12/2009 03:35 PM
Ethylbenzene	ND		0.0010	mg/L	1	1/12/2009 03:35 PM
Xylenes, Total	ND		0.0030	mg/L	1	1/12/2009 03:35 PM
Surr: 4-Bromofluorobenzene	*86.7*		*77-129*	*%REC*	1	1/12/2009 03:35 PM
Surr: Trifluorotoluene	*104*		*75-130*	*%REC*	1	1/12/2009 03:35 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: River-Upstream
Collection Date: 1/8/2009 03:00 PM

Work Order: 0901136
Lab ID: 0901136-08
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/12/2009 05:22 PM
Toluene	ND		0.0010	mg/L	1	1/12/2009 05:22 PM
Ethylbenzene	ND		0.0010	mg/L	1	1/12/2009 05:22 PM
Xylenes, Total	ND		0.0030	mg/L	1	1/12/2009 05:22 PM
Surr: 4-Bromofluorobenzene	*96.4*		*77-129*	*%REC*	1	1/12/2009 05:22 PM
Surr: Trifluorotoluene	*120*		*75-130*	*%REC*	1	1/12/2009 05:22 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0901136
Sample ID: MW-6D
Lab ID: 0901136-09
Collection Date: 1/8/2009 03:55 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/12/2009 05:49 PM
Toluene	ND		0.0010	mg/L	1	1/12/2009 05:49 PM
Ethylbenzene	ND		0.0010	mg/L	1	1/12/2009 05:49 PM
Xylenes, Total	ND		0.0030	mg/L	1	1/12/2009 05:49 PM
Surr: 4-Bromofluorobenzene	*99.4*		*77-129*	*%REC*	1	1/12/2009 05:49 PM
Surr: Trifluorotoluene	*114*		*75-130*	*%REC*	1	1/12/2009 05:49 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0901136
Sample ID: FB-2
Lab ID: 0901136-10
Collection Date: 1/8/2009 03:35 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/12/2009 11:04 AM
Toluene	ND		0.0010	mg/L	1	1/12/2009 11:04 AM
Ethylbenzene	ND		0.0010	mg/L	1	1/12/2009 11:04 AM
Xylenes, Total	ND		0.0030	mg/L	1	1/12/2009 11:04 AM
Surr: 4-Bromofluorobenzene	*99.8*		*77-129*	*%REC*	1	1/12/2009 11:04 AM
Surr: Trifluorotoluene	*114*		*75-130*	*%REC*	1	1/12/2009 11:04 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0901136
Sample ID: MW-6S
Lab ID: 0901136-11
Collection Date: 1/8/2009 04:55 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/12/2009 02:13 PM
Toluene	ND		0.0010	mg/L	1	1/12/2009 02:13 PM
Ethylbenzene	ND		0.0010	mg/L	1	1/12/2009 02:13 PM
Xylenes, Total	ND		0.0030	mg/L	1	1/12/2009 02:13 PM
Surr: 4-Bromofluorobenzene	*106*		*77-129*	*%REC*	1	1/12/2009 02:13 PM
Surr: Trifluorotoluene	*113*		*75-130*	*%REC*	1	1/12/2009 02:13 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0901136
Sample ID: Dup-1
Lab ID: 0901136-12
Collection Date: 1/8/2009 03:00 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/12/2009 08:04 PM
Toluene	ND		0.0010	mg/L	1	1/12/2009 08:04 PM
Ethylbenzene	ND		0.0010	mg/L	1	1/12/2009 08:04 PM
Xylenes, Total	ND		0.0030	mg/L	1	1/12/2009 08:04 PM
Surr: 4-Bromofluorobenzene	*98.3*		*77-129*	*%REC*	1	1/12/2009 08:04 PM
Surr: Trifluorotoluene	*113*		*75-130*	*%REC*	1	1/12/2009 08:04 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: River-Downstream
Collection Date: 1/8/2009 05:15 PM

Work Order: 0901136
Lab ID: 0901136-13
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/12/2009 07:37 PM
Toluene	ND		0.0010	mg/L	1	1/12/2009 07:37 PM
Ethylbenzene	ND		0.0010	mg/L	1	1/12/2009 07:37 PM
Xylenes, Total	ND		0.0030	mg/L	1	1/12/2009 07:37 PM
Surr: 4-Bromofluorobenzene	*102*		*77-129*	*%REC*	1	1/12/2009 07:37 PM
Surr: Trifluorotoluene	*119*		*75-130*	*%REC*	1	1/12/2009 07:37 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *30-Jun-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0901136
Sample ID: TB-1
Lab ID: 0901136-14
Collection Date: 1/8/2009 05:15 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	1/12/2009 09:44 AM
Toluene	ND		0.0010	mg/L	1	1/12/2009 09:44 AM
Ethylbenzene	ND		0.0010	mg/L	1	1/12/2009 09:44 AM
Xylenes, Total	ND		0.0030	mg/L	1	1/12/2009 09:44 AM
Surr: 4-Bromofluorobenzene	*101*		*77-129*	*%REC*	1	1/12/2009 09:44 AM
Surr: Trifluorotoluene	*111*		*75-130*	*%REC*	1	1/12/2009 09:44 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: 30-Jun-09

Client: ERM Southwest, Inc.

Work Order: 0901136

Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R72137** Instrument ID **BTEX1** Method: **SW8021B**

MBLK Sample ID: **MEOHW1-011209-R72137** Units: **µg/L** Analysis Date: **1/12/2009 08:50 AM**

Client ID: Run ID: **BTEX1_090112A** SeqNo: **1577076** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 4-Bromofluorobenzene	*31.43*	1.0	*30*	0	*105*	*77-129*	0			
Surr: Trifluorotoluene	*34.97*	1.0	*30*	0	*117*	*75-130*	0			

MBLK Sample ID: **BBLKW1-011209-R72137** Units: **µg/L** Analysis Date: **1/12/2009 09:17 AM**

Client ID: Run ID: **BTEX1_090112A** SeqNo: **1577077** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 4-Bromofluorobenzene	*30.11*	1.0	*30*	0	*100*	*77-129*	0			
Surr: Trifluorotoluene	*35.29*	1.0	*30*	0	*118*	*75-130*	0			

LCS Sample ID: **BLCSW1-011209-R72137** Units: **µg/L** Analysis Date: **1/12/2009 08:24 AM**

Client ID: Run ID: **BTEX1_090112A** SeqNo: **1577075** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.97	1.0	20	0	110	77-126	0			
Toluene	21.42	1.0	20	0	107	80-124	0			
Ethylbenzene	21.97	1.0	20	0	110	76-125	0			
Xylenes, Total	67.34	3.0	60	0	112	79-124	0			
Surr: 4-Bromofluorobenzene	*29.8*	1.0	*30*	0	*99.3*	*77-129*	0			
Surr: Trifluorotoluene	*33.72*	1.0	*30*	0	*112*	*75-130*	0			

MS Sample ID: **0901136-11AMS** Units: **µg/L** Analysis Date: **1/12/2009 02:40 PM**

Client ID: **MW-6S** Run ID: **BTEX1_090112A** SeqNo: **1577658** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.31	1.0	20	0	102	77-126	0			
Toluene	20.35	1.0	20	0	102	80-124	0			
Ethylbenzene	20.55	1.0	20	0	103	76-125	0			
Xylenes, Total	62.37	3.0	60	1.082	102	79-124	0			
Surr: 4-Bromofluorobenzene	*32.48*	1.0	*30*	0	*108*	*77-129*	0			
Surr: Trifluorotoluene	*34.73*	1.0	*30*	0	*116*	*75-130*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0901136
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R72137** Instrument ID **BTEX1** Method: **SW8021B**

MSD Sample ID: **0901136-11AMSD** Units: **µg/L** Analysis Date: **1/12/2009 04:02 PM**

Client ID: **MW-6S** Run ID: **BTEX1_090112A** SeqNo: **1577660** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.94	1.0	20	0	94.7	77-126	20.31	6.95	20	
Toluene	18.96	1.0	20	0	94.8	80-124	20.35	7.07	20	
Ethylbenzene	19.95	1.0	20	0	99.8	76-125	20.55	2.96	20	
Xylenes, Total	60.26	3.0	60	1.082	98.6	79-124	62.37	3.43	20	
Surr: 4-Bromofluorobenzene	*29.78*	1.0	*30*	0	*99.3*	*77-129*	32.48	*8.69*	*20*	
Surr: Trifluorotoluene	*32.14*	1.0	*30*	0	*107*	*75-130*	34.73	*7.74*	*20*	

The following samples were analyzed in this batch:

0901136-02A	0901136-03A	0901136-04A
0901136-06A	0901136-07A	0901136-08A
0901136-09A	0901136-10A	0901136-11A
0901136-12A	0901136-13A	0901136-14A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0901136
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R72168** Instrument ID **BTEX1** Method: **SW8021B**

MBLK Sample ID: **MEOHW1-011309-R72168** Units: **µg/L** Analysis Date: **1/13/2009 08:43 AM**
Client ID: Run ID: **BTEX1_090113A** SeqNo: **1577846** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 4-Bromofluorobenzene	*28.65*	1.0	*30*	0	*95.5*	*77-129*	0			
Surr: Trifluorotoluene	*32.28*	1.0	*30*	0	*108*	*75-130*	0			

MBLK Sample ID: **BBLKW1-011309-R72168** Units: **µg/L** Analysis Date: **1/13/2009 09:10 AM**
Client ID: Run ID: **BTEX1_090113A** SeqNo: **1577847** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 4-Bromofluorobenzene	*28.6*	1.0	*30*	0	*95.3*	*77-129*	0			
Surr: Trifluorotoluene	*32.06*	1.0	*30*	0	*107*	*75-130*	0			

LCS Sample ID: **BLCSW1-011309-R72168** Units: **µg/L** Analysis Date: **1/13/2009 07:50 AM**
Client ID: Run ID: **BTEX1_090113A** SeqNo: **1577845** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.64	1.0	20	0	103	77-126	0			
Toluene	20.65	1.0	20	0	103	80-124	0			
Ethylbenzene	20.82	1.0	20	0	104	76-125	0			
Xylenes, Total	60.88	3.0	60	0	101	79-124	0			
Surr: 4-Bromofluorobenzene	*27.73*	1.0	*30*	0	*92.4*	*77-129*	0			
Surr: Trifluorotoluene	*33.07*	1.0	*30*	0	*110*	*75-130*	0			

MS Sample ID: **0901136-05AMS** Units: **µg/L** Analysis Date: **1/13/2009 10:03 AM**
Client ID: **MW-3D** Run ID: **BTEX1_090113A** SeqNo: **1577902** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.08	1.0	20	0	100	77-126	0			
Toluene	20.65	1.0	20	0	103	80-124	0			
Ethylbenzene	20.41	1.0	20	0	102	76-125	0			
Xylenes, Total	59.96	3.0	60	0	99.9	79-124	0			
Surr: 4-Bromofluorobenzene	*27.06*	1.0	*30*	0	*90.2*	*77-129*	0			
Surr: Trifluorotoluene	*33.36*	1.0	*30*	0	*111*	*75-130*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0901136
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R72168** Instrument ID **BTEX1** Method: **SW8021B**

MSD Sample ID: **0901136-05AMSD** Units: **µg/L** Analysis Date: **1/13/2009 10:30 AM**

Client ID: **MW-3D** Run ID: **BTEX1_090113A** SeqNo: **1577903** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.96	1.0	20	0	99.8	77-126	20.08	0.569	20	
Toluene	20.48	1.0	20	0	102	80-124	20.65	0.83	20	
Ethylbenzene	20.41	1.0	20	0	102	76-125	20.41	0.0304	20	
Xylenes, Total	59.82	3.0	60	0	99.7	79-124	59.96	0.232	20	
Surr: 4-Bromofluorobenzene	*28*	1.0	*30*	0	*93.3*	*77-129*	27.06	*3.41*	*20*	
Surr: Trifluorotoluene	*32.54*	1.0	*30*	0	*108*	*75-130*	33.36	*2.5*	*20*	

The following samples were analyzed in this batch: 0901136-05A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0901136
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **33947** Instrument ID **ICPMS03** Method: **SW6020**

MBLK Sample ID: **MBLKW1-011409-33947** Units: **mg/L** Analysis Date: **1/15/2009 03:08 PM**
Client ID: Run ID: **ICPMS03_090115A** SeqNo: **1580265** Prep Date: **1/14/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	ND	0.050								
Iron	ND	0.20								
Manganese	ND	0.0050								

LCS Sample ID: **MLCSW1-011409-33947** Units: **mg/L** Analysis Date: **1/15/2009 03:14 PM**
Client ID: Run ID: **ICPMS03_090115A** SeqNo: **1580266** Prep Date: **1/14/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.4899	0.050	0.5	0	98	80-120	0			
Iron	4.72	0.20	5	0	94.4	80-120	0			
Manganese	0.04936	0.0050	0.05	0	98.7	80-120	0			

MS Sample ID: **0901120-12EMS** Units: **mg/L** Analysis Date: **1/15/2009 03:57 PM**
Client ID: Run ID: **ICPMS03_090115A** SeqNo: **1580328** Prep Date: **1/14/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.982	0.050	0.5	0.4745	102	80-120	0			
Iron	4.734	0.20	5	0.08565	93	80-120	0			
Manganese	0.1193	0.0050	0.05	0.06604	107	80-120	0			

MSD Sample ID: **0901120-12EMSD** Units: **mg/L** Analysis Date: **1/15/2009 04:03 PM**
Client ID: Run ID: **ICPMS03_090115A** SeqNo: **1580329** Prep Date: **1/14/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.986	0.050	0.5	0.4745	102	80-120	0.982	0.407	15	
Iron	4.763	0.20	5	0.08565	93.5	80-120	4.734	0.611	15	
Manganese	0.1161	0.0050	0.05	0.06604	100	80-120	0.1193	2.72	15	

DUP Sample ID: **0901120-12EDUP** Units: **mg/L** Analysis Date: **1/15/2009 03:38 PM**
Client ID: Run ID: **ICPMS03_090115A** SeqNo: **1580326** Prep Date: **1/14/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.5019	0.050	0	0	0	0-0	0.4745	5.61	25	
Iron	ND	0.20	0	0	0	0-0	0.08565	0	25	
Manganese	0.06911	0.0050	0	0	0	0-0	0.06604	4.54	25	

The following samples were analyzed in this batch: 0901136-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Laboratory Group

Date: 30-Jun-09

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
WorkOrder: 0901136

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/L	Milligrams per Liter

☐ ALS Laboratory Group
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

☐ ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 09012

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	85439	B	Total Metals (6020/7000) Boron
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	
Address	442 Bermuda	Address	442 Bermuda	E	
				F	
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-12	1/7/09	1645	WATER	2,8	1		X									
2	MW-35	1/8/09	1145	WATER	1,8	3	X										
3	FB-1	1/7/09	1600	WATER	1,8	2	X										
4	FB-1	1/7/09	1700	WATER	1,8	2	X										
5	MW-3D	1/8/09	1240	WATER	1,8	3	X										
6	MW-95	1/8/09	1350	WATER	1,8	3	X										
7	BB-2	1/8/09	1420	WATER	1,8	2	X										
8	RIVER-UPSTREAM	1/8/09	1500	WATER	1,8	3	X										
9	MW-6D	1/8/09	1555	WATER	1,8	3	X										
10	FB-2	1/8/09	1535	WATER	1,8	2	X										

Sampler(s) Please Print & Sign: RANDOLPH ORTIZ / Randolph Ortiz | Shipment Method: FEDEX

Required Turnaround Time: (Check Box) ☐ Other ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour | Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Randolph Ortiz	1/9/09	1500		10 Work Days TAT.
Relinquished by:	Date:	Time:	Received by (Laboratory): 1-10-09	0985
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
☑ Level II Std QC ☐ TRRP CheckList
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other _____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.

ALS Laboratory Group
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 0901536

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	85439	B	Total Metals (6020/7000) Boron
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	
Address	442 Bermuda	Address	442 Bermuda	E	
				F	
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-65	1/8/09	1655	WATER	1,8	2	X										
2	DUP-1	1/8/09	1500	WATER	1,8	2	X										
3	MW-65-MS	1/8/09	1655	WATER	1,8	2	X										
4	MW-65-MSD	1/8/09	1655	WATER	1,8	2	X										
5	RIVER-DOWNSTREAM	1/8/09	1715	WATER	1,8	2	X										
6	TB-1	1/8/09	—	WATER	1,8	2	X										
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: RANDOLPH ORTEGA

Shipment Method:

Required Turnaround Time: (Check Box) ☐ Other ☐ 2 WK Days ☐ 24 Hour ☑ Std 10 WK Days ☐ 5 WK Days

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes: 10 Work Days TAT.
Randolph Ortega	1/9/09	1500		
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID: / Cooler Temp:
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check One Box Below)
- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP CheckList
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS Laboratory Group

Sample Receipt Checklist

Client Name: ERMSW-CC

Date/Time Received: 1/10/2009 08:35

Work Order Number 0901130

Received by: RSZ

Checklist completed by [signature] 1.10.09
Signature Date

Reviewed by LT 1/12/09
Initials Date

Matrix: water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ✓	No	Not Present	
Custody seals intact on shipping container/cooler?	Yes ✓	No	Not Present	
Custody seals intact on sample bottles?	Yes	No	Not Present	✓
Chain of custody present?	Yes ✓	No		
Chain of custody signed when relinquished and received?	Yes ✓	No		
Chain of custody agrees with sample labels?	Yes ✓	No		
Samples in proper container/bottle?	Yes ✓	No		
Sample containers intact?	Yes ✓	No		
Sufficient sample volume for indicated test?	Yes ✓	No		
All samples received within holding time?	Yes ✓	No		
Container/Temp Blank temperature in compliance?	Yes ✓	No		
Temperature(s)/Thermometer(s):	3.2c	002		
Cooler(s)/Kit(s):	3258			
Water - VOA vials have zero headspace?	Yes ✓	No	No VOA vials submitted	
Water - pH acceptable upon receipt?	Yes ✓	No	N/A	

Adjusted? Checked by

Login Notes:

Client contacted: Date contacted: Person contacted

Contacted by: Regarding:

Comments:

Corrective Action

090136

From: Origin ID: ELPA (915) 497-9452
ERM
ERM
100 Texaco RD

El Paso, TX 79905

FedEx Express

JCLS111208/2023

Ship
Acti
CAD
Acc
De

SHIP TO: (281) 530-5656 BILL SENDER
Lora Terrill
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

Ref # 0085439
Invoice #
PO #
Dept #

TRK# 0201 7962 4337 3258

SATURDAY ### A2
PRIORITY OVERNIGHT

77099
TX-US
IAH

X0 JGQA

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aboratory Group
ancliff Rd., Suite 210
., Texas 77099
281 530 5656
+1 281 530 5887

CUSTODY SEA
Date: 1/9/09 Time: 15
Name: Randolph OR
Company: ERM

Seal Broken By: RB
Date: 1/9/09

Lora Terrill

From: Brad Stokes [Brad.Stokes@erm.com]
Sent: Tuesday, June 23, 2009 11:53 AM
To: Lora Terrill
Cc: Randy Ortlund
Subject: RE: Huntsman Brickland Refinery bottle set

OK.
Also, we're dropping all metals except lead, however, in one well MW-12, we'll be analyzing for boron, iron, manganese only. We'll be doing duplicates in MW-12 to build up a database for statistics, so please add 4 extra bottles for metals.

On that old sample that I told you about last week, go ahead and pull up the iron and manganese results.

Thanks

From: Lora Terrill [mailto:Lora.Terrill@ALSEnviro.com]
Sent: Tuesday, June 23, 2009 11:43 AM
To: Brad Stokes
Subject: RE: Huntsman Brickland Refinery bottle set

We'll have it there first overnight so should be there by 8:30, right?

Lora Terrill
Director of Operations - Houston
ALS Laboratory Group
10450 Stancliff Rd, Suite 210
Houston, TX 77099
Phone: 281-530-5656
Fax: 281-530-3053
www.alsglobal.com <http://www.alsglobal.com/>

From: Brad Stokes [mailto:Brad.Stokes@erm.com]
Sent: Tuesday, June 23, 2009 11:41 AM
To: Lora Terrill
Subject: RE: Huntsman Brickland Refinery bottle set

So it won't arrive till after 10am? Just in time for the hottest part of the day? Any chance we can get this sent earlier? Doesn't SW airlines have a cargo service?

From: Lora Terrill [mailto:Lora.Terrill@ALSEnviro.com]
Sent: Tuesday, June 23, 2009 11:37 AM
To: Brad Stokes
Subject: RE: Huntsman Brickland Refinery bottle set

I see where I placed the order but don't see it completed and sent. We'll send for tomorrow.

Sorry about that.

Lora Terrill
Director of Operations - Houston
ALS Laboratory Group
10450 Stancliff Rd, Suite 210
Houston, TX 77099
Phone: 281-530-5656
Fax: 281-530-3053
www.alsglobal.com <http://www.alsglobal.com/>

From: Brad Stokes [mailto:Brad.Stokes@erm.com]
Sent: Monday, June 22, 2009 11:14 PM
To: Lora Terrill
Subject: FW: Huntsman Brickland Refinery bottle set

Lora,
We don't have this bottle set yet , and the sampling is scheduled for Wednesday. Did you send it?

Brad

From: Brad Stokes
Sent: Monday, May 18, 2009 11:38 AM
To: 'Lora Terrill'
Subject: Huntsman Brickland Refinery bottle set

Lora,
We'll need the bottle set for Huntsman sampling by June 18th, delivered to our El Paso office

Water samples 8 (BTEX, PAH, Metals)
QAQC: 1 dup, 1 field blank, 1 trip blank, 1 equipment blank

Please let me know if you have any questions.

Regards,

Brad Stokes, P.G.
ERM Southwest
361-288-3137 (office)
361-737-9203 (cell)
http://www.erm.com

- ERM: No 1 all-environmental firm in the Top 20 All-Environmental Firms table (2004-2007) - Engineering News Record (ENR)
- ERM: No 2 all-environmental firm in the Top 20 All-Environmental Firms table 2008 - Engineering News Record (ENR)
- Environmental Adviser of the Year 2005, 2006, 2008 & 2009 - Acquisitions Monthly Magazine
- ERM: Bronze Award for Business Achievement: Consulting & Engineering Large Firms (>$100million) - 2008 EBJ Business Achievement Awards
- ERM: Best Consultancy for Environmental Due Diligence; Corporate Social Responsibility; Environmental Impact Assessments & Strategic Environmental Assessments; Contaminated Land; and Climate Change & Renewables, 2008 - EDIE.net
- Environmental Due Diligence Team of the Year Award, 2007 & 2008 - Private Equity News
- Contractor Safety Performance Award 2005 - ExxonMobil Global Remediation

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ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

17-Jul-2009

Brad Stokes
ERM Southwest, Inc.
442 Bermuda
Corpus Christi, TX 78411

Tel: (361) 737-9203
Fax:

Re: Huntsman Brickland Refinery - 0102010 Work Order: **0907093**

Dear Brad,

ALS Laboratory Group received 14 samples on 03-Jul-2009 09:15 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Laboratory Group and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 38.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Lora Terrill

Electronically approved by: Glenda H. Ramos

Lora Terrill
VP Lab Operations

ACCREDITED IN ACCORDANCE WITH nelac

Certificate No: T104704231-08-TX

ALS Laboratory Group

Date: 17-Jul-09

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0907093-01	MW-35S	Water		7/1/2009 10:00	7/3/2009 09:15	☐
0907093-02	MW-3D	Water		7/1/2009 11:17	7/3/2009 09:15	☐
0907093-03	River-Upstream	Water		7/1/2009 12:00	7/3/2009 09:15	☐
0907093-04	River-Downstream	Water		7/1/2009 12:50	7/3/2009 09:15	☐
0907093-05	MW-6D	Water		7/1/2009 17:25	7/3/2009 09:15	☐
0907093-06	MW-6S	Water		7/1/2009 18:45	7/3/2009 09:15	☐
0907093-07	Dup-1	Water		7/1/2009 12:00	7/3/2009 09:15	☐
0907093-08	FB-1	Water		7/1/2009 07:30	7/3/2009 09:15	☐
0907093-09	EB-1	Water		7/1/2009 08:30	7/3/2009 09:15	☐
0907093-10	MW-9S	Water		7/2/2009 09:45	7/3/2009 09:15	☐
0907093-11	MW-12-1	Water		7/2/2009 11:10	7/3/2009 09:15	☐
0907093-12	MW-12-2	Water		7/2/2009 11:10	7/3/2009 09:15	☐
0907093-13	FB-2	Water		7/2/2009 07:30	7/3/2009 09:15	☐
0907093-14	TB	Water		7/2/2009	7/3/2009 09:15	☐

ALS Laboratory Group

Date: 17-Jul-09

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093

Case Narrative

Some metals samples could not be analyzed at lower dilutions with acceptable internal standard recoveries.

Batch R78923 BTEX (sample MW-6S) MS/MSD recoveries below control limits for Benzene. MSD recoveries below control limits for Toluene and Ethylbenzene. MS/MSD RPD above control for Benzene, Toluene, and Ethylbenzene.

Batch 37067 Metals (sample MW-6S) MS/MSD recoveries below control limits for Boron and Mn but also O qualified.

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093
Sample ID: MW-35S
Lab ID: 0907093-01
Collection Date: 7/1/2009 10:00 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	7/9/2009 05:10 PM
Toluene	ND		0.0010	mg/L	1	7/9/2009 05:10 PM
Ethylbenzene	ND		0.0010	mg/L	1	7/9/2009 05:10 PM
Xylenes, Total	ND		0.0030	mg/L	1	7/9/2009 05:10 PM
Surr: 4-Bromofluorobenzene	*94.4*		*77-129*	*%REC*	1	7/9/2009 05:10 PM
Surr: Trifluorotoluene	*106*		*75-130*	*%REC*	1	7/9/2009 05:10 PM
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Lead	ND		0.00500	mg/L	1	7/14/2009 02:46 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/7/2009**	Analyst: **LG**
Acenaphthene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Acenaphthylene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Anthracene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Benz(a)anthracene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Benzo(a)pyrene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Benzo(b)fluoranthene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Benzo(g,h,i)perylene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Benzo(k)fluoranthene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Chrysene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Dibenz(a,h)anthracene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Fluoranthene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Fluorene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Indeno(1,2,3-cd)pyrene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Naphthalene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Phenanthrene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Pyrene	ND		0.00020	mg/L	1	7/8/2009 09:34 PM
Surr: 2-Fluorobiphenyl	*80.2*		*45-125*	*%REC*	1	7/8/2009 09:34 PM
Surr: 4-Terphenyl-d14	*80.4*		*40-135*	*%REC*	1	7/8/2009 09:34 PM
Surr: Nitrobenzene-d5	*59.7*		*41-120*	*%REC*	1	7/8/2009 09:34 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093
Sample ID: MW-3D
Lab ID: 0907093-02
Collection Date: 7/1/2009 11:17 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	7/9/2009 05:37 PM
Toluene	ND		0.0010	mg/L	1	7/9/2009 05:37 PM
Ethylbenzene	ND		0.0010	mg/L	1	7/9/2009 05:37 PM
Xylenes, Total	ND		0.0030	mg/L	1	7/9/2009 05:37 PM
Surr: 4-Bromofluorobenzene	*99.1*		*77-129*	*%REC*	1	7/9/2009 05:37 PM
Surr: Trifluorotoluene	*119*		*75-130*	*%REC*	1	7/9/2009 05:37 PM
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Lead	ND		0.0100	mg/L	2	7/15/2009 01:35 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/7/2009**	Analyst: **LG**
Acenaphthene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Acenaphthylene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Anthracene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Benz(a)anthracene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Benzo(a)pyrene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Benzo(b)fluoranthene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Benzo(g,h,i)perylene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Benzo(k)fluoranthene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Chrysene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Dibenz(a,h)anthracene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Fluoranthene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Fluorene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Indeno(1,2,3-cd)pyrene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Naphthalene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Phenanthrene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Pyrene	ND		0.00020	mg/L	1	7/8/2009 09:56 PM
Surr: 2-Fluorobiphenyl	*86.4*		*45-125*	*%REC*	1	7/8/2009 09:56 PM
Surr: 4-Terphenyl-d14	*90.5*		*40-135*	*%REC*	1	7/8/2009 09:56 PM
Surr: Nitrobenzene-d5	*68.6*		*41-120*	*%REC*	1	7/8/2009 09:56 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093
Sample ID: River-Upstream
Lab ID: 0907093-03
Collection Date: 7/1/2009 12:00 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	7/9/2009 10:59 AM
Toluene	ND		0.0010	mg/L	1	7/9/2009 10:59 AM
Ethylbenzene	ND		0.0010	mg/L	1	7/9/2009 10:59 AM
Xylenes, Total	ND		0.0030	mg/L	1	7/9/2009 10:59 AM
Surr: 4-Bromofluorobenzene	*101*		*77-129*	*%REC*	1	7/9/2009 10:59 AM
Surr: Trifluorotoluene	*108*		*75-130*	*%REC*	1	7/9/2009 10:59 AM
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Lead	ND		0.00500	mg/L	1	7/14/2009 02:59 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/7/2009**	Analyst: **LG**
Acenaphthene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Acenaphthylene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Anthracene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Benz(a)anthracene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Benzo(a)pyrene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Benzo(b)fluoranthene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Benzo(g,h,i)perylene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Benzo(k)fluoranthene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Chrysene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Dibenz(a,h)anthracene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Fluoranthene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Fluorene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Indeno(1,2,3-cd)pyrene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Naphthalene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Phenanthrene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Pyrene	ND		0.00020	mg/L	1	7/8/2009 10:17 PM
Surr: 2-Fluorobiphenyl	*80.9*		*45-125*	*%REC*	1	7/8/2009 10:17 PM
Surr: 4-Terphenyl-d14	*82.4*		*40-135*	*%REC*	1	7/8/2009 10:17 PM
Surr: Nitrobenzene-d5	*62.6*		*41-120*	*%REC*	1	7/8/2009 10:17 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093
Sample ID: River-Downstream
Lab ID: 0907093-04
Collection Date: 7/1/2009 12:50 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	7/9/2009 04:42 PM
Toluene	ND		0.0010	mg/L	1	7/9/2009 04:42 PM
Ethylbenzene	ND		0.0010	mg/L	1	7/9/2009 04:42 PM
Xylenes, Total	ND		0.0030	mg/L	1	7/9/2009 04:42 PM
Surr: 4-Bromofluorobenzene	*95.6*		*77-129*	*%REC*	1	7/9/2009 04:42 PM
Surr: Trifluorotoluene	*125*		*75-130*	*%REC*	1	7/9/2009 04:42 PM
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Lead	ND		0.00500	mg/L	1	7/14/2009 03:25 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/7/2009**	Analyst: **LG**
Acenaphthene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Acenaphthylene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Anthracene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Benz(a)anthracene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Benzo(a)pyrene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Benzo(b)fluoranthene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Benzo(g,h,i)perylene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Benzo(k)fluoranthene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Chrysene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Dibenz(a,h)anthracene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Fluoranthene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Fluorene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Indeno(1,2,3-cd)pyrene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Naphthalene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Phenanthrene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Pyrene	ND		0.00020	mg/L	1	7/8/2009 10:39 PM
Surr: 2-Fluorobiphenyl	*84.3*		*45-125*	*%REC*	1	7/8/2009 10:39 PM
Surr: 4-Terphenyl-d14	*81.0*		*40-135*	*%REC*	1	7/8/2009 10:39 PM
Surr: Nitrobenzene-d5	*63.8*		*41-120*	*%REC*	1	7/8/2009 10:39 PM

Note: *See Qualifiers Page for a list of qualifiers and their explanation.*

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093
Sample ID: MW-6D
Lab ID: 0907093-05
Collection Date: 7/1/2009 05:25 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	7/9/2009 06:58 PM
Toluene	ND		0.0010	mg/L	1	7/9/2009 06:58 PM
Ethylbenzene	ND		0.0010	mg/L	1	7/9/2009 06:58 PM
Xylenes, Total	ND		0.0030	mg/L	1	7/9/2009 06:58 PM
Surr: 4-Bromofluorobenzene	*93.7*		*77-129*	*%REC*	1	7/9/2009 06:58 PM
Surr: Trifluorotoluene	*113*		*75-130*	*%REC*	1	7/9/2009 06:58 PM
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Lead	ND		0.0100	mg/L	2	7/15/2009 01:42 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/7/2009**	Analyst: **LG**
Acenaphthene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Acenaphthylene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Anthracene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Benz(a)anthracene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Benzo(a)pyrene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Benzo(b)fluoranthene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Benzo(g,h,i)perylene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Benzo(k)fluoranthene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Chrysene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Dibenz(a,h)anthracene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Fluoranthene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Fluorene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Indeno(1,2,3-cd)pyrene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Naphthalene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Phenanthrene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Pyrene	ND		0.00020	mg/L	1	7/8/2009 11:00 PM
Surr: 2-Fluorobiphenyl	*83.8*		*45-125*	*%REC*	1	7/8/2009 11:00 PM
Surr: 4-Terphenyl-d14	*78.1*		*40-135*	*%REC*	1	7/8/2009 11:00 PM
Surr: Nitrobenzene-d5	*63.2*		*41-120*	*%REC*	1	7/8/2009 11:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093
Sample ID: MW-6S
Lab ID: 0907093-06
Collection Date: 7/1/2009 06:45 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	**0.0017**		**0.0010**	**mg/L**	1	7/9/2009 02:54 PM
Toluene	ND		0.0010	mg/L	1	7/9/2009 02:54 PM
Ethylbenzene	ND		0.0010	mg/L	1	7/9/2009 02:54 PM
Xylenes, Total	**0.0045**		**0.0030**	**mg/L**	1	7/9/2009 02:54 PM
Surr: 4-Bromofluorobenzene	*96.0*		*77-129*	*%REC*	1	7/9/2009 02:54 PM
Surr: Trifluorotoluene	*82.1*		*75-130*	*%REC*	1	7/9/2009 02:54 PM
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Lead	ND		0.0250	mg/L	5	7/15/2009 05:27 PM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/7/2009**	Analyst: **LG**
Acenaphthene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Acenaphthylene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Anthracene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Benz(a)anthracene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Benzo(a)pyrene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Benzo(b)fluoranthene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Benzo(g,h,i)perylene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Benzo(k)fluoranthene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Chrysene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Dibenz(a,h)anthracene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Fluoranthene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Fluorene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Indeno(1,2,3-cd)pyrene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Naphthalene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Phenanthrene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Pyrene	ND		0.00025	mg/L	1	7/8/2009 05:11 PM
Surr: 2-Fluorobiphenyl	*53.9*		*45-125*	*%REC*	1	7/8/2009 05:11 PM
Surr: 4-Terphenyl-d14	*95.1*		*40-135*	*%REC*	1	7/8/2009 05:11 PM
Surr: Nitrobenzene-d5	*76.6*		*41-120*	*%REC*	1	7/8/2009 05:11 PM

Note: *See Qualifiers Page for a list of qualifiers and their explanation.*

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010 **Work Order:** 0907093
Sample ID: Dup-1 **Lab ID:** 0907093-07
Collection Date: 7/1/2009 12:00 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	**0.0018**		**0.0010**	**mg/L**	1	7/9/2009 04:15 PM
Toluene	ND		0.0010	mg/L	1	7/9/2009 04:15 PM
Ethylbenzene	ND		0.0010	mg/L	1	7/9/2009 04:15 PM
Xylenes, Total	**0.0042**		**0.0030**	**mg/L**	1	7/9/2009 04:15 PM
Surr: 4-Bromofluorobenzene	*102*		*77-129*	*%REC*	1	7/9/2009 04:15 PM
Surr: Trifluorotoluene	*124*		*75-130*	*%REC*	1	7/9/2009 04:15 PM
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Lead	ND		0.0250	mg/L	5	7/15/2009 03:04 PM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/7/2009**	Analyst: **LG**
Acenaphthene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Acenaphthylene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Anthracene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Benz(a)anthracene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Benzo(a)pyrene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Benzo(b)fluoranthene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Benzo(g,h,i)perylene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Benzo(k)fluoranthene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Chrysene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Dibenz(a,h)anthracene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Fluoranthene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Fluorene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Indeno(1,2,3-cd)pyrene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Naphthalene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Phenanthrene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Pyrene	ND		0.00025	mg/L	1	7/10/2009 05:03 PM
Surr: 2-Fluorobiphenyl	*65.5*		*45-125*	*%REC*	1	7/10/2009 05:03 PM
Surr: 4-Terphenyl-d14	*102*		*40-135*	*%REC*	1	7/10/2009 05:03 PM
Surr: Nitrobenzene-d5	*78.3*		*41-120*	*%REC*	1	7/10/2009 05:03 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093
Sample ID: FB-1
Lab ID: 0907093-08
Collection Date: 7/1/2009 07:30 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	7/9/2009 05:07 PM
Toluene	ND		0.0010	mg/L	1	7/9/2009 05:07 PM
Ethylbenzene	ND		0.0010	mg/L	1	7/9/2009 05:07 PM
Xylenes, Total	ND		0.0030	mg/L	1	7/9/2009 05:07 PM
Surr: 4-Bromofluorobenzene	*103*		*77-129*	*%REC*	1	7/9/2009 05:07 PM
Surr: Trifluorotoluene	*111*		*75-130*	*%REC*	1	7/9/2009 05:07 PM
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Lead	ND		0.00500	mg/L	1	7/14/2009 02:33 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/7/2009**	Analyst: **LG**
Acenaphthene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Acenaphthylene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Anthracene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Benz(a)anthracene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Benzo(a)pyrene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Benzo(b)fluoranthene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Benzo(g,h,i)perylene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Benzo(k)fluoranthene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Chrysene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Dibenz(a,h)anthracene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Fluoranthene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Fluorene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Indeno(1,2,3-cd)pyrene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Naphthalene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Phenanthrene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Pyrene	ND		0.00020	mg/L	1	7/10/2009 05:24 PM
Surr: 2-Fluorobiphenyl	*78.3*		*45-125*	*%REC*	1	7/10/2009 05:24 PM
Surr: 4-Terphenyl-d14	*80.1*		*40-135*	*%REC*	1	7/10/2009 05:24 PM
Surr: Nitrobenzene-d5	*63.1*		*41-120*	*%REC*	1	7/10/2009 05:24 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093
Sample ID: EB-1
Lab ID: 0907093-09
Collection Date: 7/1/2009 08:30 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	7/9/2009 04:38 PM
Toluene	ND		0.0010	mg/L	1	7/9/2009 04:38 PM
Ethylbenzene	ND		0.0010	mg/L	1	7/9/2009 04:38 PM
Xylenes, Total	ND		0.0030	mg/L	1	7/9/2009 04:38 PM
Surr: 4-Bromofluorobenzene	*104*		*77-129*	*%REC*	1	7/9/2009 04:38 PM
Surr: Trifluorotoluene	*111*		*75-130*	*%REC*	1	7/9/2009 04:38 PM
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Lead	ND		0.00500	mg/L	1	7/14/2009 02:39 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/7/2009**	Analyst: **LG**
Acenaphthene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Acenaphthylene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Anthracene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Benz(a)anthracene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Benzo(a)pyrene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Benzo(b)fluoranthene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Benzo(g,h,i)perylene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Benzo(k)fluoranthene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Chrysene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Dibenz(a,h)anthracene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Fluoranthene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Fluorene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Indeno(1,2,3-cd)pyrene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Naphthalene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Phenanthrene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Pyrene	ND		0.00020	mg/L	1	7/9/2009 12:05 AM
Surr: 2-Fluorobiphenyl	*76.8*		*45-125*	*%REC*	1	7/9/2009 12:05 AM
Surr: 4-Terphenyl-d14	*82.0*		*40-135*	*%REC*	1	7/9/2009 12:05 AM
Surr: Nitrobenzene-d5	*61.7*		*41-120*	*%REC*	1	7/9/2009 12:05 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093
Sample ID: MW-9S
Lab ID: 0907093-10
Collection Date: 7/2/2009 09:45 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	7/9/2009 07:26 PM
Toluene	ND		0.0010	mg/L	1	7/9/2009 07:26 PM
Ethylbenzene	ND		0.0010	mg/L	1	7/9/2009 07:26 PM
Xylenes, Total	ND		0.0030	mg/L	1	7/9/2009 07:26 PM
Surr: 4-Bromofluorobenzene	*90.8*		*77-129*	*%REC*	1	7/9/2009 07:26 PM
Surr: Trifluorotoluene	*108*		*75-130*	*%REC*	1	7/9/2009 07:26 PM
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Lead	ND		0.0100	mg/L	2	7/15/2009 01:55 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/7/2009**	Analyst: **LG**
Acenaphthene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Acenaphthylene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Anthracene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Benz(a)anthracene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Benzo(a)pyrene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Benzo(b)fluoranthene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Benzo(g,h,i)perylene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Benzo(k)fluoranthene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Chrysene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Dibenz(a,h)anthracene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Fluoranthene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Fluorene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Indeno(1,2,3-cd)pyrene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Naphthalene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Phenanthrene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Pyrene	ND		0.00020	mg/L	1	7/9/2009 12:26 AM
Surr: 2-Fluorobiphenyl	*77.3*		*45-125*	*%REC*	1	7/9/2009 12:26 AM
Surr: 4-Terphenyl-d14	*79.2*		*40-135*	*%REC*	1	7/9/2009 12:26 AM
Surr: Nitrobenzene-d5	*64.0*		*41-120*	*%REC*	1	7/9/2009 12:26 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093
Sample ID: MW-12-1
Lab ID: 0907093-11
Collection Date: 7/2/2009 11:10 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Boron	**0.574**		**0.0500**	**mg/L**	1	7/14/2009 03:44 AM
Iron	ND		0.400	mg/L	2	7/15/2009 12:45 PM
Manganese	**9.11**		**0.500**	**mg/L**	100	7/15/2009 02:59 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093
Sample ID: MW-12-2
Lab ID: 0907093-12
Collection Date: 7/2/2009 11:10 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Boron	**0.594**		**0.0500**	**mg/L**	1	7/14/2009 03:51 AM
Iron	ND		0.400	mg/L	2	7/15/2009 02:14 AM
Manganese	**9.51**		**0.500**	***mg/L***	100	7/15/2009 03:06 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Work Order: 0907093
Sample ID: FB-2
Lab ID: 0907093-13
Collection Date: 7/2/2009 07:30 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	7/7/2009 09:51 AM
Toluene	ND		0.0010	mg/L	1	7/7/2009 09:51 AM
Ethylbenzene	ND		0.0010	mg/L	1	7/7/2009 09:51 AM
Xylenes, Total	ND		0.0030	mg/L	1	7/7/2009 09:51 AM
Surr: 4-Bromofluorobenzene	*103*		*77-129*	*%REC*	1	7/7/2009 09:51 AM
Surr: Trifluorotoluene	*111*		*75-130*	*%REC*	1	7/7/2009 09:51 AM
METALS			**SW6020**		Prep Date: **7/13/2009**	Analyst: **ALR**
Lead	ND		0.00500	mg/L	1	7/14/2009 06:06 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/7/2009**	Analyst: **LG**
Acenaphthene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Acenaphthylene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Anthracene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Benz(a)anthracene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Benzo(a)pyrene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Benzo(b)fluoranthene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Benzo(g,h,i)perylene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Benzo(k)fluoranthene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Chrysene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Dibenz(a,h)anthracene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Fluoranthene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Fluorene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Indeno(1,2,3-cd)pyrene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Naphthalene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Phenanthrene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Pyrene	ND		0.00020	mg/L	1	7/9/2009 12:48 AM
Surr: 2-Fluorobiphenyl	*78.3*		*45-125*	*%REC*	1	7/9/2009 12:48 AM
Surr: 4-Terphenyl-d14	*77.5*		*40-135*	*%REC*	1	7/9/2009 12:48 AM
Surr: Nitrobenzene-d5	*66.3*		*41-120*	*%REC*	1	7/9/2009 12:48 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *17-Jul-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
Sample ID: TB
Collection Date: 7/2/2009

Work Order: 0907093
Lab ID: 0907093-14
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **WLR**
Benzene	ND		0.0010	mg/L	1	7/7/2009 10:20 AM
Toluene	ND		0.0010	mg/L	1	7/7/2009 10:20 AM
Ethylbenzene	ND		0.0010	mg/L	1	7/7/2009 10:20 AM
Xylenes, Total	ND		0.0030	mg/L	1	7/7/2009 10:20 AM
Surr: 4-Bromofluorobenzene	*103*		*77-129*	*%REC*	1	7/7/2009 10:20 AM
Surr: Trifluorotoluene	*111*		*75-130*	*%REC*	1	7/7/2009 10:20 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Batch ID: **R78815** Instrument ID **BTEX3** Method: **SW8021B**

MBLK Sample ID: **MEOHW1-070709-R78815** Units: **µg/L** Analysis Date: **7/7/2009 08:52 AM**

Client ID: Run ID: **BTEX3_090707A** SeqNo: **1711991** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 4-Bromofluorobenzene	*29.75*	1.0	*30*	0	*99.2*	*77-129*	0			
Surr: Trifluorotoluene	*32.2*	1.0	*30*	0	*107*	*75-130*	0			

MBLK Sample ID: **BBLKW1-070709-R78815** Units: **µg/L** Analysis Date: **7/7/2009 09:21 AM**

Client ID: Run ID: **BTEX3_090707A** SeqNo: **1711992** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 4-Bromofluorobenzene	*30.7*	1.0	*30*	0	*102*	*77-129*	0			
Surr: Trifluorotoluene	*33.61*	1.0	*30*	0	*112*	*75-130*	0			

LCS Sample ID: **BLCSW1-070709-R78815** Units: **µg/L** Analysis Date: **7/7/2009 08:23 AM**

Client ID: Run ID: **BTEX3_090707A** SeqNo: **1711990** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.81	1.0	20	0	94.1	77-126	0			
Toluene	18.82	1.0	20	0	94.1	80-124	0			
Ethylbenzene	18.85	1.0	20	0	94.2	76-125	0			
Xylenes, Total	57.07	3.0	60	0	95.1	79-124	0			
Surr: 4-Bromofluorobenzene	*31.67*	1.0	*30*	0	*106*	*77-129*	0			
Surr: Trifluorotoluene	*33.94*	1.0	*30*	0	*113*	*75-130*	0			

MS Sample ID: **0907063-01AMS** Units: **µg/L** Analysis Date: **7/7/2009 11:18 AM**

Client ID: Run ID: **BTEX3_090707A** SeqNo: **1711996** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	2565	100	2000	911.9	82.7	77-126	0			
Toluene	1895	100	2000	47.67	92.4	80-124	0			
Ethylbenzene	2152	100	2000	370.5	89.1	76-125	0			
Xylenes, Total	5786	300	6000	214.4	92.9	79-124	0			
Surr: 4-Bromofluorobenzene	*3100*	100	*3000*	0	*103*	*77-129*	0			
Surr: Trifluorotoluene	*3328*	100	*3000*	0	*111*	*75-130*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0907093
Project: Huntsman Brickland Refinery - 0102010

QC BATCH REPORT

Batch ID: **R78815** Instrument ID **BTEX3** Method: **SW8021B**

MSD Sample ID: **0907063-01AMSD** Units: **µg/L** Analysis Date: **7/7/2009 11:48 AM**

Client ID: Run ID: **BTEX3_090707A** SeqNo: **1711997** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	2491	100	2000	911.9	78.9	77-126	2565	2.96	20	
Toluene	1845	100	2000	47.67	89.8	80-124	1895	2.69	20	
Ethylbenzene	2090	100	2000	370.5	86	76-125	2152	2.95	20	
Xylenes, Total	5672	300	6000	214.4	91	79-124	5786	1.97	20	
Surr: 4-Bromofluorobenzene	*3192*	100	*3000*	0	*106*	*77-129*	3100	*2.92*	*20*	
Surr: Trifluorotoluene	*3338*	100	*3000*	0	*111*	*75-130*	3328	*0.302*	*20*	

The following samples were analyzed in this batch: 0907093-13A 0907093-14A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0907093
Project: Huntsman Brickland Refinery - 0102010

QC BATCH REPORT

Batch ID: **R78900** Instrument ID **BTEX3** Method: **SW8021B**

MBLK Sample ID: **MEOHW1-070909-R78900** Units: **µg/L** Analysis Date: **7/9/2009 10:01 AM**
Client ID: Run ID: **BTEX3_090709A** SeqNo: **1714089** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 4-Bromofluorobenzene	*30.62*	1.0	*30*	0	*102*	*77-129*	0			
Surr: Trifluorotoluene	*32.99*	1.0	*30*	0	*110*	*75-130*	0			

MBLK Sample ID: **BBLKW1-070909-R78900** Units: **µg/L** Analysis Date: **7/9/2009 10:30 AM**
Client ID: Run ID: **BTEX3_090709A** SeqNo: **1714091** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 4-Bromofluorobenzene	*29.92*	1.0	*30*	0	*99.7*	*77-129*	0			
Surr: Trifluorotoluene	*32.06*	1.0	*30*	0	*107*	*75-130*	0			

LCS Sample ID: **BLCSW1-070909-R78900** Units: **µg/L** Analysis Date: **7/9/2009 09:31 AM**
Client ID: Run ID: **BTEX3_090709A** SeqNo: **1714087** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.21	1.0	20	0	96.1	77-126	0			
Toluene	19.45	1.0	20	0	97.2	80-124	0			
Ethylbenzene	19.65	1.0	20	0	98.2	76-125	0			
Xylenes, Total	59.04	3.0	60	0	98.4	79-124	0			
Surr: 4-Bromofluorobenzene	*31*	1.0	*30*	0	*103*	*77-129*	0			
Surr: Trifluorotoluene	*33.06*	1.0	*30*	0	*110*	*75-130*	0			

MS Sample ID: **0907093-03AMS** Units: **µg/L** Analysis Date: **7/9/2009 11:29 AM**
Client ID: **River-Upstream** Run ID: **BTEX3_090709A** SeqNo: **1714095** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.63	1.0	20	0	103	77-126	0			
Toluene	20.92	1.0	20	0	105	80-124	0			
Ethylbenzene	21.21	1.0	20	0	106	76-125	0			
Xylenes, Total	63.26	3.0	60	0	105	79-124	0			
Surr: 4-Bromofluorobenzene	*30.46*	1.0	*30*	0	*102*	*77-129*	0			
Surr: Trifluorotoluene	*32.62*	1.0	*30*	0	*109*	*75-130*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0907093
Project: Huntsman Brickland Refinery - 0102010

QC BATCH REPORT

Batch ID: **R78900** Instrument ID **BTEX3** Method: **SW8021B**

MSD Sample ID: **0907093-03AMSD** Units: **µg/L** Analysis Date: **7/9/2009 11:58 AM**

Client ID: **River-Upstream** Run ID: **BTEX3_090709A** SeqNo: **1714098** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.37	1.0	20	0	102	77-126	20.63	1.27	20	
Toluene	20.72	1.0	20	0	104	80-124	20.92	0.955	20	
Ethylbenzene	21.04	1.0	20	0	105	76-125	21.21	0.778	20	
Xylenes, Total	62.75	3.0	60	0	105	79-124	63.26	0.798	20	
Surr: 4-Bromofluorobenzene	*31.04*	1.0	*30*	0	*103*	*77-129*	30.46	*1.89*	*20*	
Surr: Trifluorotoluene	*33.05*	1.0	*30*	0	*110*	*75-130*	32.62	*1.32*	*20*	

The following samples were analyzed in this batch: 0907093-03A 0907093-08A 0907093-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0907093
Project: Huntsman Brickland Refinery - 0102010

QC BATCH REPORT

Batch ID: **R78923** Instrument ID **BTEX1** Method: **SW8021B**

MBLK Sample ID: **BBLKW1-070909-R78923** Units: **µg/L** Analysis Date: **7/9/2009 02:26 PM**
Client ID: Run ID: **BTEX1_090709A** SeqNo: **1714656** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 4-Bromofluorobenzene	*27.68*	1.0	*30*	0	*92.3*	*77-129*	0			
Surr: Trifluorotoluene	*28.15*	1.0	*30*	0	*93.8*	*75-130*	0			

LCS Sample ID: **BLCSW1-070909-R78923** Units: **µg/L** Analysis Date: **7/9/2009 01:32 PM**
Client ID: Run ID: **BTEX1_090709A** SeqNo: **1714655** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	17.84	1.0	20	0	89.2	77-126	0			
Toluene	20.12	1.0	20	0	101	80-124	0			
Ethylbenzene	19.84	1.0	20	0	99.2	76-125	0			
Xylenes, Total	59.99	3.0	60	0	100	79-124	0			
Surr: 4-Bromofluorobenzene	*29.7*	1.0	*30*	0	*99*	*77-129*	0			
Surr: Trifluorotoluene	*28.73*	1.0	*30*	0	*95.8*	*75-130*	0			

LCSD Sample ID: **BLCSDW1-070909-R78923** Units: **µg/L** Analysis Date: **7/9/2009 06:31 PM**
Client ID: Run ID: **BTEX1_090709A** SeqNo: **1714668** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.31	1.0	20	0	91.6	77-126	17.84	2.6	20	
Toluene	20.19	1.0	20	0	101	80-124	20.12	0.315	20	
Ethylbenzene	18.93	1.0	20	0	94.7	76-125	19.84	4.7	20	
Xylenes, Total	54.65	3.0	60	0	91.1	79-124	59.99	9.31	20	
Surr: 4-Bromofluorobenzene	*28.45*	1.0	*30*	0	*94.8*	*77-129*	29.7	*4.29*	*20*	
Surr: Trifluorotoluene	*31.84*	1.0	*30*	0	*106*	*75-130*	28.73	*10.3*	*20*	

MS Sample ID: **0907093-06AMS** Units: **µg/L** Analysis Date: **7/9/2009 03:21 PM**
Client ID: **MW-6S** Run ID: **BTEX1_090709A** SeqNo: **1714658** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	16.41	1.0	20	1.711	73.5	77-126	0			S
Toluene	17.08	1.0	20	0	85.4	80-124	0			
Ethylbenzene	23.17	1.0	20	0.5541	113	76-125	0			
Xylenes, Total	61.49	3.0	60	4.548	94.9	79-124	0			
Surr: 4-Bromofluorobenzene	*30.2*	1.0	*30*	0	*101*	*77-129*	0			
Surr: Trifluorotoluene	*35.73*	1.0	*30*	0	*119*	*75-130*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0907093
Project: Huntsman Brickland Refinery - 0102010

QC BATCH REPORT

Batch ID: **R78923** Instrument ID **BTEX1** Method: **SW8021B**

MSD Sample ID: **0907093-06AMSD** Units: **µg/L** Analysis Date: **7/9/2009 03:48 PM**

Client ID: **MW-6S** Run ID: **BTEX1_090709A** SeqNo: **1714659** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	12.67	1.0	20	1.711	54.8	77-126	16.41	25.8	20	SR
Toluene	12.75	1.0	20	0	63.8	80-124	17.08	29	20	SR
Ethylbenzene	14.78	1.0	20	0.5541	71.1	76-125	23.17	44.2	20	SR
Xylenes, Total	55.64	3.0	60	4.548	85.2	79-124	61.49	9.99	20	
Surr: 4-Bromofluorobenzene	*24.63*	1.0	*30*	0	*82.1*	*77-129*	30.2	*20.3*	*20*	*R*
Surr: Trifluorotoluene	*23*	1.0	*30*	0	*76.7*	*75-130*	35.73	*43.4*	*20*	*R*

The following samples were analyzed in this batch:

0907093-01A	0907093-02A	0907093-04A
0907093-05A	0907093-06A	0907093-07A
0907093-10A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0907093
Project: Huntsman Brickland Refinery - 0102010

QC BATCH REPORT

Batch ID: **37067** Instrument ID **ICPMS02** Method: **SW6020**

MBLK Sample ID: **MBLKW1-071309-37067** Units: **mg/L** Analysis Date: **7/14/2009 02:20 AM**
Client ID: Run ID: **ICPMS02_090713A** SeqNo: **1717561** Prep Date: **7/13/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.004078	0.050								J
Iron	ND	0.20								
Lead	ND	0.0050								
Manganese	ND	0.0050								

LCS Sample ID: **MLCSW1-071309-37067** Units: **mg/L** Analysis Date: **7/14/2009 02:26 AM**
Client ID: Run ID: **ICPMS02_090713A** SeqNo: **1717562** Prep Date: **7/13/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.496	0.050	0.5	0	99.2	80-120	0			
Iron	4.92	0.20	5	0	98.4	80-120	0			
Lead	0.05059	0.0050	0.05	0	101	80-120	0			
Manganese	0.05106	0.0050	0.05	0	102	80-120	0			

MS Sample ID: **0907093-06BMS** Units: **mg/L** Analysis Date: **7/15/2009 06:12 PM**
Client ID: **MW-6S** Run ID: **ICPMS02_090714A** SeqNo: **1720152** Prep Date: **7/13/2009** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	3.834	0.25	0.5	3.57	52.8	80-120	0			SO
Iron	12.46	1.0	5	7.885	91.6	80-120	0			
Lead	0.0605	0.025	0.05	0.0052	111	80-120	0			
Manganese	0.6955	0.025	0.05	0.6935	4	80-120	0			SO

MSD Sample ID: **0907093-06BMSD** Units: **mg/L** Analysis Date: **7/15/2009 06:19 PM**
Client ID: **MW-6S** Run ID: **ICPMS02_090714A** SeqNo: **1720153** Prep Date: **7/13/2009** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	3.984	0.25	0.5	3.57	82.6	80-120	3.834	3.81	15	O
Iron	13	1.0	5	7.885	102	80-120	12.46	4.2	15	
Lead	0.0599	0.025	0.05	0.0052	109	80-120	0.0605	0.997	15	
Manganese	0.7155	0.025	0.05	0.6935	44	80-120	0.6955	2.83	15	SO

DUP Sample ID: **0907093-06BDUP** Units: **mg/L** Analysis Date: **7/15/2009 05:34 PM**
Client ID: **MW-6S** Run ID: **ICPMS02_090714A** SeqNo: **1720148** Prep Date: **7/13/2009** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	3.561	0.25	0	0	0	0-0	3.57	0.266	25	
Iron	8.06	1.0	0	0	0	0-0	7.885	2.2	25	
Lead	0.005345	0.025	0	0	0	0-0	0.0052	0	25	J
Manganese	0.6855	0.025	0	0	0	0-0	0.6935	1.16	25	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0907093
Project: Huntsman Brickland Refinery - 0102010

QC BATCH REPORT

Batch ID: **37067** Instrument ID **ICPMS02** Method: **SW6020**

The following samples were analyzed in this batch:

0907093-01B	0907093-02B	0907093-03B
0907093-04B	0907093-05B	0907093-06B
0907093-07B	0907093-08B	0907093-09B
0907093-10B	0907093-11A	0907093-12A
0907093-13B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0907093
Project: Huntsman Brickland Refinery - 0102010

QC BATCH REPORT

Batch ID: **36954** Instrument ID **SV-2** Method: **SW8270**

MBLK Sample ID: **SBLKW1-090707-36954** Units: **µg/L** Analysis Date: **7/8/2009 04:05 PM**

Client ID: Run ID: **SV-2_090708A** SeqNo: **1717188** Prep Date: **7/7/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Anthracene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Chrysene	ND	0.20								
Dibenz(a,h)anthracene	ND	0.20								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Naphthalene	ND	0.20								
Phenanthrene	ND	0.20								
Pyrene	ND	0.20								
Surr: 2-Fluorobiphenyl	*4.197*	0.20	*5*	0	*83.9*	*40-125*	0			
Surr: 4-Terphenyl-d14	*4.125*	0.20	*5*	0	*82.5*	*40-135*	0			
Surr: Nitrobenzene-d5	*3.41*	0.20	*5*	0	*68.2*	*41-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0907093
Project: Huntsman Brickland Refinery - 0102010

QC BATCH REPORT

Batch ID: **36954** Instrument ID **SV-2** Method: **SW8270**

LCS Sample ID: **SLCSW1-090707-36954** Units: **µg/L** Analysis Date: **7/8/2009 04:26 PM**

Client ID: Run ID: **SV-2_090708A** SeqNo: **1717190** Prep Date: **7/7/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	4.202	0.20	5	0	84	45-120	0			
Acenaphthylene	4.519	0.20	5	0	90.4	47-120	0			
Anthracene	4.751	0.20	5	0	95	45-120	0			
Benz(a)anthracene	5.547	0.20	5	0	111	40-120	0			
Benzo(a)pyrene	4.945	0.20	5	0	98.9	45-120	0			
Benzo(b)fluoranthene	5.696	0.20	5	0	114	50-120	0			
Benzo(g,h,i)perylene	4.967	0.20	5	0	99.3	42-127	0			
Benzo(k)fluoranthene	3.716	0.20	5	0	74.3	45-127	0			
Chrysene	4.902	0.20	5	0	98	43-120	0			
Dibenz(a,h)anthracene	4.986	0.20	5	0	99.7	45-125	0			
Fluoranthene	4.802	0.20	5	0	96	45-125	0			
Fluorene	4.653	0.20	5	0	93.1	49-120	0			
Indeno(1,2,3-cd)pyrene	5.531	0.20	5	0	111	41-128	0			
Naphthalene	4.586	0.20	5	0	91.7	45-120	0			
Phenanthrene	4.851	0.20	5	0	97	45-121	0			
Pyrene	4.896	0.20	5	0	97.9	40-130	0			
Surr: 2-Fluorobiphenyl	*4.475*	0.20	*5*	0	*89.5*	*40-125*	0			
Surr: 4-Terphenyl-d14	*4.091*	0.20	*5*	0	*81.8*	*40-135*	0			
Surr: Nitrobenzene-d5	*3.597*	0.20	*5*	0	*71.9*	*41-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0907093
Project: Huntsman Brickland Refinery - 0102010

QC BATCH REPORT

Batch ID: **36954** Instrument ID **SV-2** Method: **SW8270**

MS Sample ID: **0907093-06CMS** Units: **µg/L** Analysis Date: **7/8/2009 05:33 PM**

Client ID: **MW-6S** Run ID: **SV-2_090708A** SeqNo: **1717192** Prep Date: **7/7/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	4.866	0.33	8.334	0	58.4	45-120	0			
Acenaphthylene	5.103	0.33	8.334	0	61.2	47-120	0			
Anthracene	7.382	0.33	8.334	0	88.6	45-120	0			
Benz(a)anthracene	8.393	0.33	8.334	0	101	40-120	0			
Benzo(a)pyrene	8.012	0.33	8.334	0	96.1	45-120	0			
Benzo(b)fluoranthene	7.7	0.33	8.334	0	92.4	50-120	0			
Benzo(g,h,i)perylene	8.597	0.33	8.334	0	103	42-127	0			
Benzo(k)fluoranthene	8.854	0.33	8.334	0	106	45-127	0			
Chrysene	7.951	0.33	8.334	0	95.4	43-120	0			
Dibenz(a,h)anthracene	8.676	0.33	8.334	0	104	45-125	0			
Fluoranthene	7.051	0.33	8.334	0	84.6	45-125	0			
Fluorene	5.389	0.33	8.334	0	64.7	49-120	0			
Indeno(1,2,3-cd)pyrene	7.995	0.33	8.334	0	95.9	41-128	0			
Naphthalene	7.604	0.33	8.334	0	91.3	45-120	0			
Phenanthrene	7.844	0.33	8.334	0	94.1	45-121	0			
Pyrene	9.089	0.33	8.334	0	109	40-130	0			
Surr: 2-Fluorobiphenyl	*4.556*	0.33	*8.334*	0	*54.7*	*40-125*	0			
Surr: 4-Terphenyl-d14	*8.045*	0.33	*8.334*	0	*96.5*	*40-135*	0			
Surr: Nitrobenzene-d5	*6.282*	0.33	*8.334*	0	*75.4*	*41-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0907093
Project: Huntsman Brickland Refinery - 0102010

QC BATCH REPORT

Batch ID: **36954** Instrument ID **SV-2** Method: **SW8270**

MSD Sample ID: **0907093-06CMSD** Units: **µg/L** Analysis Date: **7/8/2009 05:54 PM**
Client ID: **MW-6S** Run ID: **SV-2_090708A** SeqNo: **1717193** Prep Date: **7/7/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	5.439	0.33	8.334	0	65.3	45-120	4.866	11.1	20	
Acenaphthylene	5.674	0.33	8.334	0	68.1	47-120	5.103	10.6	20	
Anthracene	7.542	0.33	8.334	0	90.5	45-120	7.382	2.15	20	
Benz(a)anthracene	7.854	0.33	8.334	0	94.2	40-120	8.393	6.63	20	
Benzo(a)pyrene	7.875	0.33	8.334	0	94.5	45-120	8.012	1.73	20	
Benzo(b)fluoranthene	8.187	0.33	8.334	0	98.2	50-120	7.7	6.14	20	
Benzo(g,h,i)perylene	7.62	0.33	8.334	0	91.4	42-127	8.597	12	20	
Benzo(k)fluoranthene	8.273	0.33	8.334	0	99.3	45-127	8.854	6.78	20	
Chrysene	7.704	0.33	8.334	0	92.4	43-120	7.951	3.16	20	
Dibenz(a,h)anthracene	8.268	0.33	8.334	0	99.2	45-125	8.676	4.82	20	
Fluoranthene	6.894	0.33	8.334	0	82.7	45-125	7.051	2.26	20	
Fluorene	5.945	0.33	8.334	0	71.3	49-120	5.389	9.81	20	
Indeno(1,2,3-cd)pyrene	7.694	0.33	8.334	0	92.3	41-128	7.995	3.84	20	
Naphthalene	7.343	0.33	8.334	0	88.1	45-120	7.604	3.49	20	
Phenanthrene	7.514	0.33	8.334	0	90.2	45-121	7.844	4.3	20	
Pyrene	9.126	0.33	8.334	0	110	40-130	9.089	0.407	20	
Surr: 2-Fluorobiphenyl	*5.299*	0.33	*8.334*	0	*63.6*	*40-125*	4.556	*15.1*	*20*	
Surr: 4-Terphenyl-d14	*8.292*	0.33	*8.334*	0	*99.5*	*40-135*	8.045	*3.01*	*20*	
Surr: Nitrobenzene-d5	*6.002*	0.33	*8.334*	0	*72*	*41-120*	6.282	*4.57*	*20*	

The following samples were analyzed in this batch:

0907093-01C	0907093-02C	0907093-03C
0907093-04C	0907093-05C	0907093-06C
0907093-07C	0907093-08C	0907093-09C
0907093-10C	0907093-13C	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Laboratory Group

Date: 17-Jul-09

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery - 0102010
WorkOrder: 0907093

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/L	Milligrams per Liter

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Chain of Custody Form

Page 1 of 4

3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager:

ALS Work Order #: 0901093

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	~~85435~~ 010 2010	B	Total Metals (6020/7000) Boron
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	Total Metals (6020/7000) Lead
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	Total Metals (6020/7000) Manganese
Address	442 Bermuda	Address	442 Bermuda	E	Total Metals (6020/7000) Iron
				F	PAHs (8270) Low-Level
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax			
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-35	7/1/09	1000	WATER	HCl	3	X										
2					HNO_3	1			X								
3					~~8~~	2						X					
4	MW-3D	7/1/09	1117	WATER	HCl	3	X										
5					HNO_3	1			X								
6					8	2						X					
7	RIVER-UPSTREAM	7/1/09	1200	WATER	HCl	3	X										
8					HNO_3	1			X								
9					~~8 Hcl~~	2						X					
10																	

Sampler(s) Please Print & Sign: RANDALL CRUMP

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by: Randall Crump Date: 7/2/09 Time: 1300

Received by:

Notes: 10 Work Days TAT.

Relinquished by: Date: Time:

Received by (Laboratory): DF 7/3/09 09:15

Cooler ID | Cooler Temp.

QC Package: (Check One Box Below)
☑ Level II Std QC ☐ TRRP CheckList
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.

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Chain of Custody Form

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Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 090703

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	~~65439~~ 0102010	B	Total Metals (6020/7000) Boron
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	Total Metals (6020/7000) Lead
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	Total Metals (6020/7000) Manganese
Address	442 Bermuda	Address	442 Bermuda	E	Total Metals (6020/7000) Iron
				F	PAHs (8270) Low-Level
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	River-Downstream	7/1/09	1250	Water	HCl	3	X										
2					HNO_3	1			X								
3					8	2						X					
4	MW-6D	7/1/09	1725	Water	HCl	3	X										
5					HNO_3	1			X								
6					8	2						X					
7	MW-65 (MS/MSD)	7/1/09	1845	Water	HCl	3	X										
8					HNO_3	1			X								
9					8	2						X					
10																	

Sampler(s) Please Print & Sign: RANDY HORTON / Randy Horton

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) ☑ Std 10 W/K Days ☐ 5 W/K Days ☐ 2 W/K Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by: Randy Horton — Date: 7/2/09 — Time: 1300

Received by:

Relinquished by: — Date: — Time:

Received by (Laboratory): DSF 7/3/09 09:15

Notes: 10 Work Days TAT.

Cooler ID | Cooler Temp.

QC Package: (Check One Box Below)
☑ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other _____
☐ TRRP CheckList
☐ TRRP Level IV

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-NaHSO 7-Other 8-4°C 9-5035

ote: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.

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Chain of Custody Form

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Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 0907093

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	~~85439~~ 010 2010	B	Total Metals (6020/7000) Boron
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	Total Metals (6020/7000) Lead
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	Total Metals (6020/7000) Manganese
Address	442 Bermuda	Address	442 Bermuda	E	Total Metals (6020/7000) Iron
				F	PAHs (8270) Low-Level
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax			
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	#Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	DUP-1	7/1/09	1200	WATER	HCl	3	X										
2					HNO_3	1			X								
3			0730		8	2						X					
4	FB-1	7/1/09	~~1830~~	WATER	HCl	3	X										
5					HNO_3	1			X								
6					8	2						X					
7	FB-1	7/1/09	0830	WATER	HCl	3	X										
8					HNO_3	1			X								
9					8	2						X					
10																	

Sampler(s) Please Print & Sign: Ronald Rollins Ronald Rollins | Shipment Method: Fedex

Required Turnaround Time: (Check Box) ☐ Other ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by: Ronald Rollins | Date: 7/2/09 | Time: 1300 | Received by: | Notes: 10 Work Days TAT.

Relinquished by: | Date: | Time: | Received by (Laboratory): DAT 7/3/09 09:15 | Cooler ID | Cooler Temp

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

QC Package: (Check One Box Below)
- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP CheckList
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-NaHSO 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.

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Page 4 of 4

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ALS Project Manager: | ALS Work Order #: 0907092

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	~~85439~~ 0102010	B	Total Metals (6020/7000) Boron
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	Total Metals (6020/7000) Lead
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	Total Metals (6020/7000) Manganese
Address	442 Bermuda	Address	442 Bermuda	E	Total Metals (6020/7000) Iron
				F	PAHs (8270) Low-Level
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-95	7/2/09	0945	WATER	HCl	3	X										
2	↓	↓	↓	↓	HNO_3	1			X								
3	↓	↓	↓	↓	8	2						X					
4	MW-12-1	7/2/09	1110	WATER	HNO_3	2		X	~~X~~	X	X						
5	MW-12-2	↓	↓	↓	HNO_3	2		X	~~X~~	X	X						
6		↓	↓	↓													
7	FB-2	7/2/09	~~HS~~ KHO 0730	WATER	~~HCl~~ HCl	3	X										
8	↓	↓	↓	↓	HNO_3	1			X								
9	↓	↓	↓	↓	8	2						X					
10	TB	7/2/09			HCl	3	X										

Sampler(s) Please Print & Sign: Randall Crowell / Randall Crowell | Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ Other ☐ 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by: Randall Crowell | Date: ~~7-30~~ 7/2/09 | Time: 1300 | Received by:

Relinquished by: | Date: | Time: | Received by (Laboratory): DSH 7/3/09 09:15

Notes: 10 Work Days TAT.

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Cooler ID: | Cooler Temp:

QC Package: (Check One Box Below)
☑ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other
☐ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
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ALS Laboratory Group

Sample Receipt Checklist

Client Name: **ERMSW-CC** Date/Time Received: **03-Jul-09 09:15**

Work Order: **0907093** Received by: **RDH**

Checklist completed by Richard Sanchez (eSignature) 07-Jul-09 (Date) Reviewed by: Hector Caranada (eSignature) 07-Jul-09 (Date)

Matrices: water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.8c, 2.4c, 3.6c	002	
Cooler(s)/Kit(s):			
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

0407043

From: Origin ID: ELPA (915) 775-3202
ERM SW
ERM-SW
150 Texaco RD

El Paso, TX 79905

FedEx Express

J0920908157023

Ship Date: 02JUL09
ActWgt
CAD:
Accou
Deliv

SHIP TO: (281) 530-5656 BILL SENDER

Lora Terrill
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

Ref # 0102010
Invoice #
PO #
Dept #

2 of 5

MPS# 0263 7977 3170 5402

Mstr# 7977 3170 5398 0201

FRI - 03JUL A2
PRIORITY OVERNIGHT

77099
TX-US
IAH

XH JGQA

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7/3/09

040043

From: Origin ID: ELPA (915) 775-3202
ERM SW
ERM-SW
150 Texaco RD

El Paso, TX 79905

FedEx Express

Ship Dr
ActWgt
CAD: 5
Accour
Deliv

SHIP TO: (281) 530-5656 BILL SENDER
Lora Terrill
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

Ref # 0102010
Invoice #
PO #
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TRK# 0201 7977 3170 5398

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XH JGQA

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Date:
Nam
Com

CUSTODY SEAL

Time:
Signature:
pany:

Seal Broken By:
Date: 7/3/08

0907093

From: Origin ID: ELPA (915) 775-3202
ERM SW
ERM-SW
150 Texaco RD

El Paso, TX 79905

FedEx Express

Ship D
ActWg
CAD:
Accou
Deli

SHIP TO: (281) 530-5656 BILL SENDER
Lora Terrill
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

Ref # 0102010
Invoice #
PO #
Dept #

3 of 5

MPS# 0263 7967 4467 3290

Mstr# 7977 3170 5398 0201

FRI - 03JUL
A2
PRIORITY OVERNIGHT

77099
TX-US
IAH

XH JGQA

LARGE BLW

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Date:
Name:
Comp

CUSTODY SEAL 234

Time: 1300

any:

Seal Broken By:

Date: 7/3/09

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

10-Aug-2009

Brad Stokes
ERM Southwest, Inc.
442 Bermuda
Corpus Christi, TX 78411

Tel: (361) 737-9203
Fax:

Re: Huntsman Brickland Refinery

Work Order: **0907643**

Dear Brad,

ALS Laboratory Group received 2 samples on 25-Jul-2009 08:50 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Laboratory Group and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 9.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Lora Terrill

Electronically approved by: Glenda H. Ramos

Lora Terrill
VP Lab Operations

ACCREDITED IN ACCORDANCE WITH nelac

Certificate No: T104704231-08-TX

ALS Laboratory Group

Date: 10-Aug-09

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: **0907643**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0907643-01	MW-12-1	Water		7/24/2009 10:50	7/25/2009 08:50	☐
0907643-02	MW-12-2	Water		7/24/2009 10:50	7/25/2009 08:50	☐

ALS Laboratory Group

Date: *10-Aug-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0907643
Sample ID: MW-12-1
Lab ID: 0907643-01
Collection Date: 7/24/2009 10:50 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS			**SW6020**		Prep Date: **7/30/2009**	Analyst: **ALR**
Boron	**0.546**		**0.0500**	**mg/L**	1	7/30/2009 09:51 PM
Iron	**9.16**		**0.200**	**mg/L**	1	7/30/2009 09:51 PM
Manganese	**11.8**		**0.500**	**mg/L**	100	7/31/2009 06:33 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *10-Aug-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0907643
Sample ID: MW-12-2
Lab ID: 0907643-02
Collection Date: 7/24/2009 10:50 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS			**SW6020**		Prep Date: **7/30/2009**	Analyst: **ALR**
Boron	**0.545**		**0.0500**	**mg/L**	1	7/30/2009 09:58 PM
Iron	**9.67**		**2.00**	**mg/L**	10	7/31/2009 07:56 PM
Manganese	**12.2**		**0.0500**	**mg/L**	10	7/31/2009 07:56 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: 10-Aug-09

Client: ERM Southwest, Inc.

Work Order: 0907643

Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **37440** Instrument ID **ICPMS02** Method: **SW6020**

MBLK Sample ID: **MBLKW4-073009-37440** Units: **mg/L** Analysis Date: **7/30/2009 06:54 PM**

Client ID: Run ID: **ICPMS02_090730A** SeqNo: **1732956** Prep Date: **7/30/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.008157	0.050								J
Iron	ND	0.20								
Manganese	ND	0.0050								

LCS Sample ID: **MLCSW4-073009-37440** Units: **mg/L** Analysis Date: **7/30/2009 07:00 PM**

Client ID: Run ID: **ICPMS02_090730A** SeqNo: **1732957** Prep Date: **7/30/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.5139	0.050	0.5	0	103	80-120	0			
Iron	5.064	0.20	5	0	101	80-120	0			
Manganese	0.05208	0.0050	0.05	0	104	80-120	0			

MS Sample ID: **0907575-14AMS** Units: **mg/L** Analysis Date: **7/30/2009 07:57 PM**

Client ID: Run ID: **ICPMS02_090730A** SeqNo: **1732966** Prep Date: **7/30/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.6966	0.050	0.5	0.2455	90.2	80-120	0			
Iron	5.013	0.20	5	0.1593	97.1	80-120	0			
Manganese	0.1964	0.0050	0.05	0.1527	87.4	80-120	0			

MSD Sample ID: **0907575-14AMSD** Units: **mg/L** Analysis Date: **7/30/2009 08:04 PM**

Client ID: Run ID: **ICPMS02_090730A** SeqNo: **1732967** Prep Date: **7/30/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.7254	0.050	0.5	0.2455	96	80-120	0.6966	4.05	15	
Iron	5.01	0.20	5	0.1593	97	80-120	5.013	0.0599	15	
Manganese	0.197	0.0050	0.05	0.1527	88.6	80-120	0.1964	0.305	15	

DUP Sample ID: **0907575-14ADUP** Units: **mg/L** Analysis Date: **7/30/2009 07:38 PM**

Client ID: Run ID: **ICPMS02_090730A** SeqNo: **1732964** Prep Date: **7/30/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.2514	0.050	0	0	0	0-0	0.2455	2.37	25	
Iron	0.1394	0.20	0	0	0	0-0	0.1593	0	25	J
Manganese	0.1543	0.0050	0	0	0	0-0	0.1527	1.04	25	

The following samples were analyzed in this batch: 0907643-01A 0907643-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Laboratory Group

Date: 10-Aug-09

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
WorkOrder: 0907643

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/L	Milligrams per Liter

ALS Laboratory Group
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

Page 1 of 1

ALS Project Manager: | ALS Work Order #: 0907043

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	Huntsman Brickland Refinery	A BTEX (8021)
Work Order		Project Number	~~85438~~ 0102070	B Total Metals (6020/7000) Boron
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C ~~Total Metals (6020/7000) Lead~~
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D Total Metals (6020/7000) Manganese
Address	442 Bermuda	Address	442 Bermuda	E Total Metals (6020/7000) Iron
				F PAHs (8270) Low Level
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G
Phone	(361) 737-9203	Phone	(361) 737-9203	H
Fax		Fax		I
e-Mail Address		e-Mail Address		J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-12-1	7/24/09	1050	WATER	2,8	1		X		X	X						
2	MW-12-2	7/24/09	1050	WATER	2,8	1		X		X	X						
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Jason Paul

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) ☐ Other ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by: | Date: 7/24/09 | Time: 1400 | Received by:

Notes: 10 Work Days TAT.

Relinquished by: | Date: 7/25/09 | Time: 08:50 | Received by (Laboratory):

Cooler ID | Cooler Temp.

QC Package: (Check One Box Below)
☑ Level II Std QC ☐ TRRP CheckList
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other _____

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.

ALS Laboratory Group

Sample Receipt Checklist

Client Name: **ERMSW-CC** Date/Time Received: **25-Jul-09 08:50**

Work Order: **0907643** Received by: **RDH**

Checklist completed by Richard Sanchez (eSignature) 27-Jul-09 (Date) Reviewed by: Hector Coronado (eSignature) 27-Jul-09 (Date)

Matrices: water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.3c	002	
Cooler(s)/Kit(s):	1976		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Cient did not specify which sample is "1" or "2"--assigned "2" as Dup sample per HC.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

0907043

...this portion can be removed for recipient's records.

Date 7/24/09 FedEx Tracking Number 8697908799 46

Sender's Name RANDY CATLUNA Phone 9154979452

Company ERM

Address 100 TEXAS RD Dept/Floor/Suite/Room

City EL PASO State TX ZIP 7990 5

Your Internal Billing Reference

8697 9087 994

Recipient's Address

Address

City HOUSTON

...oratory Gr... ...USTO...
...Rd., Suite 210
...77099
...5656
...5887

Date: 7/24/09
Name:
Company: ER

...DY SEAL
Time: 1405

Seal Broken By:
Date: 7/25/09

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

31-Aug-2009

Brad Stokes
ERM Southwest, Inc.
442 Bermuda
Corpus Christi, TX 78411

Tel: (361) 737-9203
Fax:

Re: Huntsman Brickland Refinery

Work Order: **0908580**

Dear Brad,

ALS Laboratory Group received 2 samples on 26-Aug-2009 09:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Laboratory Group and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 9.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Lora Terrill

Electronically approved by: Lora Terrill

Lora Terrill
VP Lab Operations

Certificate No: T104704231-08-TX

ALS Group USA, Corp.
Part of the **ALS Laboratory Group**
10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338
Phone: (281) 530-5656 Fax: (281) 530-5887
www.alsglobal.com www.elabi.com
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ALS Laboratory Group

Date: 31-Aug-09

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: **0908580**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0908580-01	MW-12-1	Water		8/25/2009 10:00	8/26/2009 09:00	☐
0908580-02	MW-12-2	Water		8/25/2009 10:00	8/26/2009 09:00	☐

ALS Laboratory Group

Date: *31-Aug-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0908580
Sample ID: MW-12-1
Lab ID: 0908580-01
Collection Date: 8/25/2009 10:00 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS			**SW6020**		Prep Date: **8/27/2009**	Analyst: **ALR**
Boron	**0.616**		**0.0500**	**mg/L**	1	8/28/2009 12:02 AM
Iron	**3.25**		**1.00**	**mg/L**	5	8/28/2009 06:39 PM
Manganese	**13.8**		**0.500**	**mg/L**	100	8/28/2009 01:59 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *31-Aug-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0908580
Sample ID: MW-12-2
Lab ID: 0908580-02
Collection Date: 8/25/2009 10:00 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS			**SW6020**		Prep Date: **8/27/2009**	Analyst: **ALR**
Boron	**0.617**		**0.0500**	**mg/L**	1	8/28/2009 12:08 AM
Iron	**2.79**		**1.00**	**mg/L**	5	8/28/2009 06:45 PM
Manganese	**16.0**		**0.500**	**mg/L**	100	8/28/2009 02:05 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: 31-Aug-09

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
WorkOrder: 0908580

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/L	Milligrams per Liter

ALS Laboratory Group

Date: 31-Aug-09

Client: ERM Southwest, Inc.

Work Order: 0908580

Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **37943** Instrument ID **ICPMS02** Method: **SW6020**

MBLK Sample ID: **MBLKW3-082709-37943** Units: **mg/L** Analysis Date: **8/27/2009 09:21 PM**

Client ID: Run ID: **ICPMS02_090827A** SeqNo: **1754377** Prep Date: **8/27/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.008058	0.050								J
Iron	ND	0.20								
Manganese	ND	0.0050								

LCS Sample ID: **MLCSW3-082709-37943** Units: **mg/L** Analysis Date: **8/27/2009 09:27 PM**

Client ID: Run ID: **ICPMS02_090827A** SeqNo: **1754378** Prep Date: **8/27/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.497	0.050	0.5	0	99.4	80-120	0			
Iron	4.85	0.20	5	0	97	80-120	0			
Manganese	0.04951	0.0050	0.05	0	99	80-120	0			

MS Sample ID: **0908573-02AMS** Units: **mg/L** Analysis Date: **8/27/2009 09:58 PM**

Client ID: Run ID: **ICPMS02_090827A** SeqNo: **1754383** Prep Date: **8/27/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.5989	0.050	0.5	0.09305	101	80-120	0			
Iron	4.72	0.20	5	0.007498	94.3	80-120	0			
Manganese	0.05136	0.0050	0.05	0.003228	96.3	80-120	0			

MSD Sample ID: **0908573-02AMSD** Units: **mg/L** Analysis Date: **8/27/2009 10:04 PM**

Client ID: Run ID: **ICPMS02_090827A** SeqNo: **1754384** Prep Date: **8/27/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.6121	0.050	0.5	0.09305	104	80-120	0.5989	2.18	15	
Iron	4.757	0.20	5	0	95.1	80-120	4.72	0.781	15	
Manganese	0.05202	0.0050	0.05	0.003228	97.6	80-120	0.05136	1.28	15	

DUP Sample ID: **0908573-02ADUP** Units: **mg/L** Analysis Date: **8/27/2009 09:45 PM**

Client ID: Run ID: **ICPMS02_090827A** SeqNo: **1754381** Prep Date: **8/27/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.08812	0.050	0	0	0	0-0	0.09305	5.44	25	
Iron	ND	0.20	0	0	0	0-0	0.007498	0	25	
Manganese	0.003412	0.0050	0	0	0	0-0	0.003228	0	25	J

The following samples were analyzed in this batch: 0908580-01A 0908580-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Laboratory Group
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

Page 1 of 1

3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 0988565

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	HUNTSMAN BRICKLAND	A	TOTAL METALS (6020/7000) BORON
Work Order		Project Number	REFINERY 0102010	B	TOTAL METALS (6020/7000) MANGANESE
Company Name	ERM SOUTHWEST, INC	Bill To Company	ERM SOUTHWEST, INC	C	TOTAL METALS (6020/7000) IRON
Send Report To	BRAD SOKES	Invoice Attn	BRAD SOKES	D	
Address	442 BERMUDA	Address	442 BERMUDA	E	
				F	
City/State/Zip	CORPUS CHRISTI, TX 78411	City/State/Zip	CORPUS CHRISTI, TX 78411	G	
Phone	361-737-9203	Phone	3617379203	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-12-1	8/25/09	1000	WATER	2,8	2	X	X	X								
2	MW-12-2	8/25/09	1000	WATER	2,8	2	X	X	X								
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: RANDOLPH R. DUNN

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
RANDOLPH R. DUNN	8/25/09	1600	
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
☒ Level II Std QC
☐ Level III Std QC/Raw Date
☐ Level IV SW846/CLP
☐ Other
☐ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS Laboratory Group

Sample Receipt Checklist

Client Name: **ERMSW-CC** Date/Time Received: **26-Aug-09 09:00**

Work Order: **0908580** Received by: **RDH**

Checklist completed by Robert D. Harris (eSignature) 26-Aug-09 (Date) Reviewed by: Lora Terrill (eSignature) 27-Aug-09 (Date)

Matrices: waters
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.7c	002	
Cooler(s)/Kit(s):	2067		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

From: Origin ID: ELPA (915) 775-3202
ERM SW
ERM-SW
150 Texaco RD

El Paso, TX 79905

FedEx Express

J0820090152023

Ship Date: 25AUG09
ActWgt:
CAD: 5
Account
Delive

SHIP TO: (281) 530-5656 BILL SENDER

Lora Terrill
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

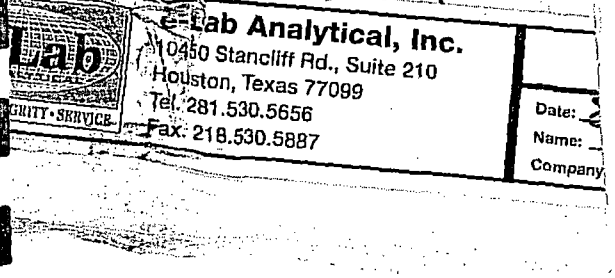
Ref # 0102010
Invoice #
PO #
Dept #

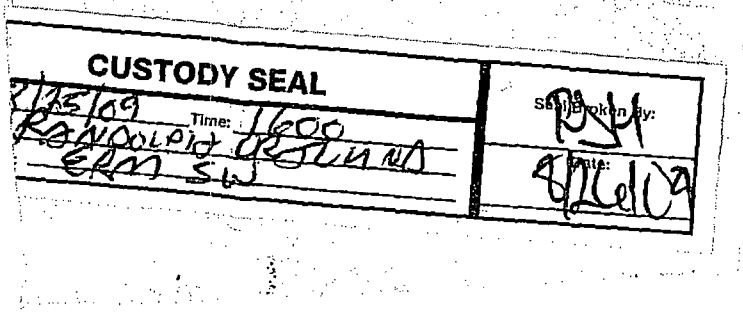
TRK# 0201 7978 7805 8522

WED - 26AUG A2
PRIORITY OVERNIGHT

77099
TX-US
IAH

XH JGQA





ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

02-Oct-2009

Brad Stokes
ERM Southwest, Inc.
442 Bermuda
Corpus Christi, TX 78411

Tel: (361) 737-9203
Fax:

Re: Huntsman Brickland Refinery

Work Order: **0909654**

Dear Brad,

ALS Laboratory Group received 2 samples on 30-Sep-2009 09:05 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Laboratory Group and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 8.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Lora Terrill

Electronically approved by: Lora Terrill

Lora Terrill
VP Lab Operations

Certificate No: T104704231-09A-TX

ALS Group USA, Corp.
Part of the **ALS Laboratory Group**
10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338
Phone: (281) 530-5656 Fax: (281) 530-5887
www.alsglobal.com www.elabi.com
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ALS Laboratory Group

Date: 02-Oct-09

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: **0909654**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0909654-01	MW-12-1	Water		9/29/2009 11:45	9/30/2009 09:05	☐
0909654-02	MW-12-2	Water		9/29/2009 11:45	9/30/2009 09:05	☐

ALS Laboratory Group

Date: *02-Oct-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0909654
Sample ID: MW-12-1
Lab ID: 0909654-01
Collection Date: 9/29/2009 11:45 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS			**SW6020**		Prep Date: **9/30/2009**	Analyst: **ALR**
Boron	**0.580**		**0.0500**	**mg/L**	1	9/30/2009 11:15 PM
Iron	**1.42**		**1.00**	**mg/L**	5	10/1/2009 04:13 PM
Manganese	**15.0**		**1.00**	**mg/L**	200	10/1/2009 03:14 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *02-Oct-09*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 0909654
Sample ID: MW-12-2
Lab ID: 0909654-02
Collection Date: 9/29/2009 11:45 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS			**SW6020**		Prep Date: **9/30/2009**	Analyst: **ALR**
Boron	**0.578**		**0.0500**	**mg/L**	1	9/30/2009 11:21 PM
Iron	**1.24**		**1.00**	**mg/L**	5	10/1/2009 04:25 PM
Manganese	**15.6**		**1.00**	**mg/L**	200	10/1/2009 03:20 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: 02-Oct-09

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
WorkOrder: 0909654

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/L	Milligrams per Liter

ALS Laboratory Group

Date: 02-Oct-09

Client: ERM Southwest, Inc.

Work Order: 0909654

Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **38565** Instrument ID **ICPMS02** Method: **SW6020**

MBLK Sample ID: **MBLKW2-093009-38565** Units: **mg/L** Analysis Date: **9/30/2009 09:36 PM**

Client ID: Run ID: **ICPMS02_090929A** SeqNo: **1778210** Prep Date: **9/30/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.008756	0.050								J
Iron	ND	0.20								
Manganese	ND	0.0050								

LCS Sample ID: **MLCSW2-093009-38565** Units: **mg/L** Analysis Date: **9/30/2009 09:42 PM**

Client ID: Run ID: **ICPMS02_090929A** SeqNo: **1778211** Prep Date: **9/30/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.4952	0.050	0.5	0	99	80-120	0			
Iron	5.062	0.20	5	0	101	80-120	0			
Manganese	0.05208	0.0050	0.05	0	104	80-120	0			

MS Sample ID: **0909636-02DMS** Units: **mg/L** Analysis Date: **9/30/2009 10:07 PM**

Client ID: Run ID: **ICPMS02_090929A** SeqNo: **1778215** Prep Date: **9/30/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.7444	0.050	0.5	0.2687	95.1	80-120	0			
Iron	5.154	0.20	5	0.5957	91.2	80-120	0			
Manganese	0.05829	0.0050	0.05	0.01094	94.7	80-120	0			

MSD Sample ID: **0909636-02DMSD** Units: **mg/L** Analysis Date: **10/1/2009 04:41 PM**

Client ID: Run ID: **ICPMS02_091001A** SeqNo: **1778605** Prep Date: **9/30/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.7209	0.050	0.5	0.2687	90.4	80-120	0.7444	3.21	15	
Iron	4.994	0.20	5	0.5957	88	80-120	5.154	3.15	15	
Manganese	0.05678	0.0050	0.05	0.01094	91.7	80-120	0.05829	2.62	15	

DUP Sample ID: **0909636-02DDUP** Units: **mg/L** Analysis Date: **9/30/2009 09:54 PM**

Client ID: Run ID: **ICPMS02_090929A** SeqNo: **1778213** Prep Date: **9/30/2009** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.2754	0.050	0	0	0	0-0	0.2687	2.46	25	
Iron	0.5469	0.20	0	0	0	0-0	0.5957	8.54	25	
Manganese	0.01117	0.0050	0	0	0	0-0	0.01094	2.08	25	

The following samples were analyzed in this batch: 0909654-01A 0909654-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

☒ ALS Laboratory Group
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

Page 1 of 1

☐ ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 0909691

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	~~BTEX (8021)~~
Work Order	0102910	Project Number	85439	B	Total Metals (6020/7000) Boron
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	~~Total Metals (6020/7000) Lead~~
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	Total Metals (6020/7000) Manganese
Address	442 Bermuda	Address	442 Bermuda	E	Total Metals (6020/7000) Iron
				F	~~PAHs (8270) Low-Level~~
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-12-1	9/29/09	1145	WATER	2,5	2		X		X	X						
2	MW-12-2	9/29/09	1145	WATER	2,8	2		X		X	X						
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: RAYDOCH ORTEGA Raydoch Ortega

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) ☐ Other ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by: Raydoch Ortega | Date: 9/29/09 | Time: 1700 | Received by:

Relinquished by: | Date: | Time: | Received by (Laboratory):

Notes: 10 Work Days TAT.

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Cooler ID | Cooler Temp

QC Package: (Check One Box Below)
- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP CheckList
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.

ALS Laboratory Group

Sample Receipt Checklist

Client Name: **ERMSW-CC** Date/Time Received: **30-Sep-09 09:05**

Work Order: **0909654** Received by: **RDH**

Checklist completed by Richard Sanchez (eSignature) 30-Sep-09 (Date) Reviewed by: Lora Terrill (eSignature) 30-Sep-09 (Date)

Matrices: water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.8c	002	
Cooler(s)/Kit(s):	1856		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

22-Dec-2009

Brad Stokes
ERM Southwest, Inc.
442 Bermuda
Corpus Christi, TX 78411

Tel: (361) 737-9203
Fax:

Re: Huntsman - 0102010 Work Order: **0912343**

Dear Brad,

ALS Laboratory Group received 14 samples on 12-Dec-2009 09:20 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Laboratory Group and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 24.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Lora Terrill

Electronically approved by: Lora Terrill

Lora Terrill
VP Lab Operations

ACCREDITED IN ACCORDANCE WITH nelac

Certificate No: TX: T104704231-08B-TX

ALS Laboratory Group

Date: 22-Dec-09

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Work Order: **0912343**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0912343-01	River-Upstream	Water		12/10/2009 10:00	12/12/2009 09:20	☐
0912343-02	River-Downstream	Water		12/10/2009 10:45	12/12/2009 09:20	☐
0912343-03	EB-1	Water		12/10/2009 10:55	12/12/2009 09:20	☐
0912343-04	MW-3S	Water		12/10/2009 12:10	12/12/2009 09:20	☐
0912343-05	FB-01	Water		12/10/2009 12:15	12/12/2009 09:20	☐
0912343-06	MW-3D	Water		12/10/2009 13:55	12/12/2009 09:20	☐
0912343-07	MW-9S	Water		12/10/2009 15:00	12/12/2009 09:20	☐
0912343-08	EB-02	Water		12/10/2009 15:10	12/12/2009 09:20	☐
0912343-09	Trip Blank	Trip Blank		12/10/2009	12/12/2009 09:20	☐
0912343-10	MW-6D	Water		12/11/2009 08:40	12/12/2009 09:20	☐
0912343-11	MW-6S	Water		12/11/2009 09:50	12/12/2009 09:20	☐
0912343-12	FB-02	Water		12/11/2009 10:00	12/12/2009 09:20	☐
0912343-13	Dup-01	Water		12/11/2009	12/12/2009 09:20	☐
0912343-14	EB-3	Water		12/11/2009 08:55	12/12/2009 09:20	☐

ALS Laboratory Group

Date: 22-Dec-09

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Work Order: 0912343

Case Narrative

BTEX samples MW-6S and Dup-01 could not be analyzed at lower dilutions. The initial analyses destroyed the chromatography column

Batch R85210 BTEX (sample MW-6S @ DF 10000) MS/MSD recoveries above control limits for Benzene. RPD in control. LCS recovery above control limit where the associated samples are ND.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: River-Upstream
Collection Date: 12/10/2009 10:00 AM

Work Order: 0912343
Lab ID: 0912343-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		0.0010	mg/L	1	12/21/2009 11:53 PM
Toluene	ND		0.0010	mg/L	1	12/21/2009 11:53 PM
Ethylbenzene	ND		0.0010	mg/L	1	12/21/2009 11:53 PM
Xylenes, Total	ND		0.0030	mg/L	1	12/21/2009 11:53 PM
Surr: 4-Bromofluorobenzene	*88.3*		*77-129*	*%REC*	1	12/21/2009 11:53 PM
Surr: Trifluorotoluene	*104*		*75-130*	*%REC*	1	12/21/2009 11:53 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: River-Downstream
Collection Date: 12/10/2009 10:45 AM

Work Order: 0912343
Lab ID: 0912343-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		0.0010	mg/L	1	12/22/2009 12:20 AM
Toluene	ND		0.0010	mg/L	1	12/22/2009 12:20 AM
Ethylbenzene	ND		0.0010	mg/L	1	12/22/2009 12:20 AM
Xylenes, Total	ND		0.0030	mg/L	1	12/22/2009 12:20 AM
Surr: 4-Bromofluorobenzene	*91.7*		*77-129*	*%REC*	1	12/22/2009 12:20 AM
Surr: Trifluorotoluene	*106*		*75-130*	*%REC*	1	12/22/2009 12:20 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: EB-1
Collection Date: 12/10/2009 10:55 AM

Work Order: 0912343
Lab ID: 0912343-03
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		0.0010	mg/L	1	12/21/2009 10:33 PM
Toluene	ND		0.0010	mg/L	1	12/21/2009 10:33 PM
Ethylbenzene	ND		0.0010	mg/L	1	12/21/2009 10:33 PM
Xylenes, Total	ND		0.0030	mg/L	1	12/21/2009 10:33 PM
Surr: 4-Bromofluorobenzene	*85.7*		*77-129*	*%REC*	1	12/21/2009 10:33 PM
Surr: Trifluorotoluene	*110*		*75-130*	*%REC*	1	12/21/2009 10:33 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: MW-3S
Collection Date: 12/10/2009 12:10 PM

Work Order: 0912343
Lab ID: 0912343-04
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		0.0010	mg/L	1	12/22/2009 01:40 AM
Toluene	ND		0.0010	mg/L	1	12/22/2009 01:40 AM
Ethylbenzene	ND		0.0010	mg/L	1	12/22/2009 01:40 AM
Xylenes, Total	ND		0.0030	mg/L	1	12/22/2009 01:40 AM
Surr: 4-Bromofluorobenzene	*90.5*		*77-129*	*%REC*	1	12/22/2009 01:40 AM
Surr: Trifluorotoluene	*104*		*75-130*	*%REC*	1	12/22/2009 01:40 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: FB-01
Collection Date: 12/10/2009 12:15 PM

Work Order: 0912343
Lab ID: 0912343-05
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		0.0010	mg/L	1	12/21/2009 10:06 PM
Toluene	ND		0.0010	mg/L	1	12/21/2009 10:06 PM
Ethylbenzene	ND		0.0010	mg/L	1	12/21/2009 10:06 PM
Xylenes, Total	ND		0.0030	mg/L	1	12/21/2009 10:06 PM
Surr: 4-Bromofluorobenzene	*91.6*		*77-129*	*%REC*	1	12/21/2009 10:06 PM
Surr: Trifluorotoluene	*106*		*75-130*	*%REC*	1	12/21/2009 10:06 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: MW-3D
Collection Date: 12/10/2009 01:55 PM

Work Order: 0912343
Lab ID: 0912343-06
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		0.0010	mg/L	1	12/22/2009 03:00 AM
Toluene	ND		0.0010	mg/L	1	12/22/2009 03:00 AM
Ethylbenzene	ND		0.0010	mg/L	1	12/22/2009 03:00 AM
Xylenes, Total	ND		0.0030	mg/L	1	12/22/2009 03:00 AM
Surr: 4-Bromofluorobenzene	*90.5*		*77-129*	*%REC*	1	12/22/2009 03:00 AM
Surr: Trifluorotoluene	*100*		*75-130*	*%REC*	1	12/22/2009 03:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: MW-9S
Collection Date: 12/10/2009 03:00 PM

Work Order: 0912343
Lab ID: 0912343-07
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		0.0010	mg/L	1	12/22/2009 02:07 AM
Toluene	ND		0.0010	mg/L	1	12/22/2009 02:07 AM
Ethylbenzene	ND		0.0010	mg/L	1	12/22/2009 02:07 AM
Xylenes, Total	ND		0.0030	mg/L	1	12/22/2009 02:07 AM
Surr: 4-Bromofluorobenzene	*87.5*		*77-129*	*%REC*	1	12/22/2009 02:07 AM
Surr: Trifluorotoluene	*102*		*75-130*	*%REC*	1	12/22/2009 02:07 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: EB-02
Collection Date: 12/10/2009 03:10 PM

Work Order: 0912343
Lab ID: 0912343-08
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		0.0010	mg/L	1	12/21/2009 09:39 PM
Toluene	ND		0.0010	mg/L	1	12/21/2009 09:39 PM
Ethylbenzene	ND		0.0010	mg/L	1	12/21/2009 09:39 PM
Xylenes, Total	ND		0.0030	mg/L	1	12/21/2009 09:39 PM
Surr: 4-Bromofluorobenzene	*88.3*		*77-129*	*%REC*	1	12/21/2009 09:39 PM
Surr: Trifluorotoluene	*109*		*75-130*	*%REC*	1	12/21/2009 09:39 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: Trip Blank
Collection Date: 12/10/2009

Work Order: 0912343
Lab ID: 0912343-09
Matrix: TRIP BLANK

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		0.0010	mg/L	1	12/21/2009 09:12 PM
Toluene	ND		0.0010	mg/L	1	12/21/2009 09:12 PM
Ethylbenzene	ND		0.0010	mg/L	1	12/21/2009 09:12 PM
Xylenes, Total	ND		0.0030	mg/L	1	12/21/2009 09:12 PM
Surr: 4-Bromofluorobenzene	*89.2*		*77-129*	*%REC*	1	12/21/2009 09:12 PM
Surr: Trifluorotoluene	*107*		*75-130*	*%REC*	1	12/21/2009 09:12 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: MW-6D
Collection Date: 12/11/2009 08:40 AM

Work Order: 0912343
Lab ID: 0912343-10
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		0.0010	mg/L	1	12/22/2009 02:33 AM
Toluene	ND		0.0010	mg/L	1	12/22/2009 02:33 AM
Ethylbenzene	ND		0.0010	mg/L	1	12/22/2009 02:33 AM
Xylenes, Total	ND		0.0030	mg/L	1	12/22/2009 02:33 AM
Surr: 4-Bromofluorobenzene	*88.6*		*77-129*	*%REC*	1	12/22/2009 02:33 AM
Surr: Trifluorotoluene	*100*		*75-130*	*%REC*	1	12/22/2009 02:33 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: MW-6S
Collection Date: 12/11/2009 09:50 AM

Work Order: 0912343
Lab ID: 0912343-11
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		10	mg/L	10000	12/22/2009 03:54 AM
Toluene	ND		10	mg/L	10000	12/22/2009 03:54 AM
Ethylbenzene	ND		10	mg/L	10000	12/22/2009 03:54 AM
Xylenes, Total	ND		30	mg/L	10000	12/22/2009 03:54 AM
Surr: 4-Bromofluorobenzene	*88.1*		*77-129*	*%REC*	10000	12/22/2009 03:54 AM
Surr: Trifluorotoluene	*101*		*75-130*	*%REC*	10000	12/22/2009 03:54 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: FB-02
Collection Date: 12/11/2009 10:00 AM

Work Order: 0912343
Lab ID: 0912343-12
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		0.0010	mg/L	1	12/21/2009 10:59 PM
Toluene	ND		0.0010	mg/L	1	12/21/2009 10:59 PM
Ethylbenzene	ND		0.0010	mg/L	1	12/21/2009 10:59 PM
Xylenes, Total	ND		0.0030	mg/L	1	12/21/2009 10:59 PM
Surr: 4-Bromofluorobenzene	*87.0*		*77-129*	*%REC*	1	12/21/2009 10:59 PM
Surr: Trifluorotoluene	*106*		*75-130*	*%REC*	1	12/21/2009 10:59 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Sample ID: Dup-01
Collection Date: 12/11/2009

Work Order: 0912343
Lab ID: 0912343-13
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		10	mg/L	10000	12/22/2009 03:27 AM
Toluene	ND		10	mg/L	10000	12/22/2009 03:27 AM
Ethylbenzene	ND		10	mg/L	10000	12/22/2009 03:27 AM
Xylenes, Total	ND		30	mg/L	10000	12/22/2009 03:27 AM
Surr: 4-Bromofluorobenzene	*89.4*		*77-129*	*%REC*	10000	12/22/2009 03:27 AM
Surr: Trifluorotoluene	*99.6*		*75-130*	*%REC*	10000	12/22/2009 03:27 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *22-Dec-09*

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
Work Order: 0912343
Sample ID: EB-3
Lab ID: 0912343-14
Collection Date: 12/11/2009 08:55 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **KKP**
Benzene	ND		0.0010	mg/L	1	12/21/2009 11:26 PM
Toluene	ND		0.0010	mg/L	1	12/21/2009 11:26 PM
Ethylbenzene	ND		0.0010	mg/L	1	12/21/2009 11:26 PM
Xylenes, Total	ND		0.0030	mg/L	1	12/21/2009 11:26 PM
Surr: 4-Bromofluorobenzene	*90.9*		*77-129*	*%REC*	1	12/21/2009 11:26 PM
Surr: Trifluorotoluene	*107*		*75-130*	*%REC*	1	12/21/2009 11:26 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: 22-Dec-09

Client: ERM Southwest, Inc.
Project: Huntsman - 0102010
WorkOrder: 0912343

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/L	Milligrams per Liter

Batch ID: **R85210** Instrument ID **BTEX1** Method: **SW8021B**

MBLK Sample ID: **BBLKW2-122109-R85210** Units: **µg/L** Analysis Date: **12/21/2009 08:45 PM**

Client ID: Run ID: **BTEX1_091221A** SeqNo: **1841796** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 4-Bromofluorobenzene	*26.89*	1.0	*30*	0	*89.6*	*77-129*	0			
Surr: Trifluorotoluene	*32.42*	1.0	*30*	0	*108*	*75-130*	0			

LCS Sample ID: **BLCSW2-122109-R85210** Units: **µg/L** Analysis Date: **12/21/2009 08:19 PM**

Client ID: Run ID: **BTEX1_091221A** SeqNo: **1841795** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	31.32	1.0	20	0	157	77-126	0			S
Toluene	23.69	1.0	20	0	118	80-124	0			
Ethylbenzene	20.96	1.0	20	0	105	76-125	0			
Xylenes, Total	60.23	3.0	60	0	100	79-124	0			
Surr: 4-Bromofluorobenzene	*28.31*	1.0	*30*	0	*94.4*	*77-129*	0			
Surr: Trifluorotoluene	*37.83*	1.0	*30*	0	*126*	*75-130*	0			

MS Sample ID: **0912343-11AMS** Units: **µg/L** Analysis Date: **12/22/2009 04:21 AM**

Client ID: **MW-6S** Run ID: **BTEX1_091221A** SeqNo: **1841824** Prep Date: DF: **10000**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	270200	10,000	200000	0	135	77-126	0			S
Toluene	231700	10,000	200000	0	116	80-124	0			
Ethylbenzene	203300	10,000	200000	0	102	76-125	0			
Xylenes, Total	578100	30,000	600000	0	96.4	79-124	0			
Surr: 4-Bromofluorobenzene	*282700*	10,000	*300000*	0	*94.2*	*77-129*	0			
Surr: Trifluorotoluene	*318600*	10,000	*300000*	0	*106*	*75-130*	0			

MSD Sample ID: **0912343-11AMSD** Units: **µg/L** Analysis Date: **12/22/2009 04:47 AM**

Client ID: **MW-6S** Run ID: **BTEX1_091221A** SeqNo: **1841825** Prep Date: DF: **10000**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	266900	10,000	200000	0	133	77-126	270200	1.22	20	S
Toluene	230500	10,000	200000	0	115	80-124	231700	0.526	20	
Ethylbenzene	205200	10,000	200000	0	103	76-125	203300	0.901	20	
Xylenes, Total	583000	30,000	600000	0	97.2	79-124	578100	0.831	20	
Surr: 4-Bromofluorobenzene	*289200*	10,000	*300000*	0	*96.4*	*77-129*	282700	*2.28*	*20*	
Surr: Trifluorotoluene	*326600*	10,000	*300000*	0	*109*	*75-130*	318600	*2.46*	*20*	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ERM Southwest, Inc.
Work Order: 0912343
Project: Huntsman - 0102010

QC BATCH REPORT

Batch ID: **R85210** Instrument ID **BTEX1** Method: **SW8021B**

The following samples were analyzed in this batch:

0912343-01A	0912343-02A	0912343-03A
0912343-04A	0912343-05A	0912343-06A
0912343-07A	0912343-08A	0912343-09A
0912343-10A	0912343-11A	0912343-12A
0912343-13A	0912343-14A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Laboratory Group
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 09 2343

Customer Information

Purchase Order	
Work Order	0102010
Company Name	ERM Southwest, Inc.
Send Report To	Brad Stokes
Address	442 Bermuda
City/State/Zip	Corpus Christi TX 78411
Phone	(361) 737 9203
Fax	
e-Mail Address	

Project Information

Project Name	Huntsman
Project Number	0102010
Bill To Company	ERM Southwest Inc.
Invoice Attn	Brad Stokes
Address	442 Bermuda
City/State/Zip	Corpus Christi TX 78411
Phone	(361) 737 (9203)
Fax	
e-Mail Address	

Parameter/Method Request for Analysis

A: BTEX (8021)
B:
C:
D:
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	River-UPstream	12/10/09	10:00	W	HCL	3	X										
2	River - Down Stream	12/10/09	10:45	W	HCL	3	X										
3	EB-1	12/10/09	10:55	W	HCL	3	X										
4	MW-35	12/10/09	12:10	W	HCL	3	X										
5	FB-01	12/10/09	12:15	W	HCL	3	X										
6	MW-3D	12/10/09	13:55	W	HCL	3	X										
7	MW-45	12/10/09	15:00	W	HCL	3	X										
8	EB-02	12/10/09	15:10	W	HCL	3	X										
9	Trip Blank	12/10/09	—	W	HCL	2	X										
10																	

Sampler(s) Please Print & Sign: Damian Pyle

Shipment Method: Fed ex 8697 7088 0090

Required Turnaround Time: (Check Box) ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date: 12/11/09	Time: 13:00	Received by:
Relinquished by:	Date:	Time:	Received by (Laboratory): 12/12/09 09:20
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: Temp Blank included

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
☐ Level II Std QC
☐ Level III Std QC/Raw Date
☐ Level IV SW846/CLP
☐ Other
☐ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

☐ ALS Laboratory Group
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

☐ ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 09125543

Customer Information

Purchase Order	
Work Order	010 2010
Company Name	ERM Southwest, Inc.
Send Report To	Brad Stokes
Address	442 Bermuda
City/State/Zip	Corpus Christi, TX 78411
Phone	(361) 737-9203
Fax	
e-Mail Address	

Project Information

Project Name	Huntsman Brickland Refinery
Project Number	~~[illegible]~~ 010 2010
Bill To Company	ERM Southwest, Inc.
Invoice Attn	Brad Stokes
Address	442 Bermuda
City/State/Zip	Corpus Christi, TX 78411
Phone	(361) 737-9203
Fax	
e-Mail Address	

Parameter/Method Request for Analysis

A	BTEX (8021)
B	~~[illegible]~~
C	~~[illegible]~~
D	~~[illegible]~~
E	~~[illegible]~~
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-6D	12/11/09	8:40	W	HCL	3	X										
2	MW-6S	12/11/09	9:50	W	HCL	3	X										
3	FB-02	12/11/09	10:00	W	HCL	3	X										
4	MW-6S MS	12/11/09	9:50	W	HCL	3	X										
5	MW-6S MSD	12/11/09	9:50	W	HCL	3	X										
6	DUP-01	12/4/09	—	W	HCL	3	X										
7	~~FB-2~~																
8	EB-3	12/11/09	8:55	W	HCL	3	X										
9																	
10																	

Sampler(s) Please Print & Sign: L Damian P/C

Shipment Method: Fedex 8647 9080 0090

Required Turnaround Time: (Check Box) ☐ Other ☐ 4 Std. Day(s) ☐ 2 Day ☐ 1 Day ☐ 5 WK Days ☐ 3 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date: 12/11/09	Time: 13:00	Received by:	Notes: Temp Blank received.
Relinquished by:	Date:	Time:	Received by (Laboratory): 12/12/09 9:20	Cooler ID: Cooler Temp:
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	QC Package: (Check One Box Below) ☑ Level II Std QC ☐ Level III Std QC/Raw Data ☐ Level IV SW846/CLP ☐ Other ☐ TRRP Checklist ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS Laboratory Group

Sample Receipt Checklist

Client Name: **ERMSW-CC** Date/Time Received: **12-Dec-09 09:20**

Work Order: **0912343** Received by: **RNG**

Checklist completed by Raymond N Gamboa (eSignature) 12-Dec-09 (Date) Reviewed by: Hector Coronado (eSignature) 14-Dec-09 (Date)

Matrices: Water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.3c	002	
Cooler(s)/Kit(s):	2041		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

0912343

This portion can be removed for Recipient's records.

Date 12/11/09 FedEx Tracking Number 867790880090

Sender's Name RANDY GROUND Phone 9154979452

Company ERM

Address 100 TEXACO RD

Dept/Room/Suite/Room

City EL PASO State TX ZIP 79905

Your Internal Billing Reference

ALS Laboratory Grou
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

ip

CUSTODY SEAL

Date: 12/11/09 Time: 13:30

Name: DRIVER

Company: ERM

Seal Broken By: RNG

Date: 12/12/09

Waste Disposal

Appendix C

February 23, 2010
Project No. 0102010

Environmental Resources Management Southwest, Inc.
206 E. 9th St., Suite 1700
Austin, Texas 78701
(512) 459-4700

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: [illegible]

2. Page 1 of [illegible]

3. Emergency Response Phone: [illegible]

4. Manifest Tracking Number: **001358855 SKS**

5. Generator's Name and Mailing Address:
ENVIRONMENTAL RESOURCES
[illegible] ROAD
[illegible]
C/O KARDOLAN OUTLUD
TX 7[illegible]

Generator's Site Address (if different than mailing address):
[illegible] LAKE REFINERY SITE
INTERSTATE 10 & [illegible]
[illegible] EAST
TX [illegible]

Generator's Phone: [illegible]

6. Transporter 1 Company Name: SAFETY-KLEEN SYSTEMS, INC. — U.S. EPA ID Number: [illegible]

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: SAFETY-KLEEN SYSTEMS, INC. [illegible]
1722 COOPER CREEK ROAD
DENTON, TX 76204
U.S. EPA ID Number: [illegible]

Facility's Phone: [illegible]

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. NON REGULATED SOLID	1	DM	5000	P	[illegible]
	2. NON-REGULATED LIQUID	1	DM	5000	P	[illegible]
	3.					
	4.					

14. Special Handling Instructions and Additional Information: [illegible]

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: [signature] — Signature: [signature] — Month 2 Day [illegible] Year 09

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. — Port of entry/exit: — Date leaving U.S.:

Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [illegible] — Signature: [signature] — Month 2 Day 6 Year 09

Transporter 2 Printed/Typed Name: Mike White — Signature: [signature] — Month 2 Day 11 Year 09

18. Discrepancy

18a. Discrepancy Indication Space: ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

2 Dm = 400 pounds

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number:

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H141	H141		

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: [illegible] — Signature: [signature] — Month 2 Day 13 Year 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)