AP - 001

2011 AGWMR

03/30/2012

HUNTSMAN

Enriching lives through innovation

30 March 2012

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

RE: **Submission of the 2011 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 2011 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 281-719-3007 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,

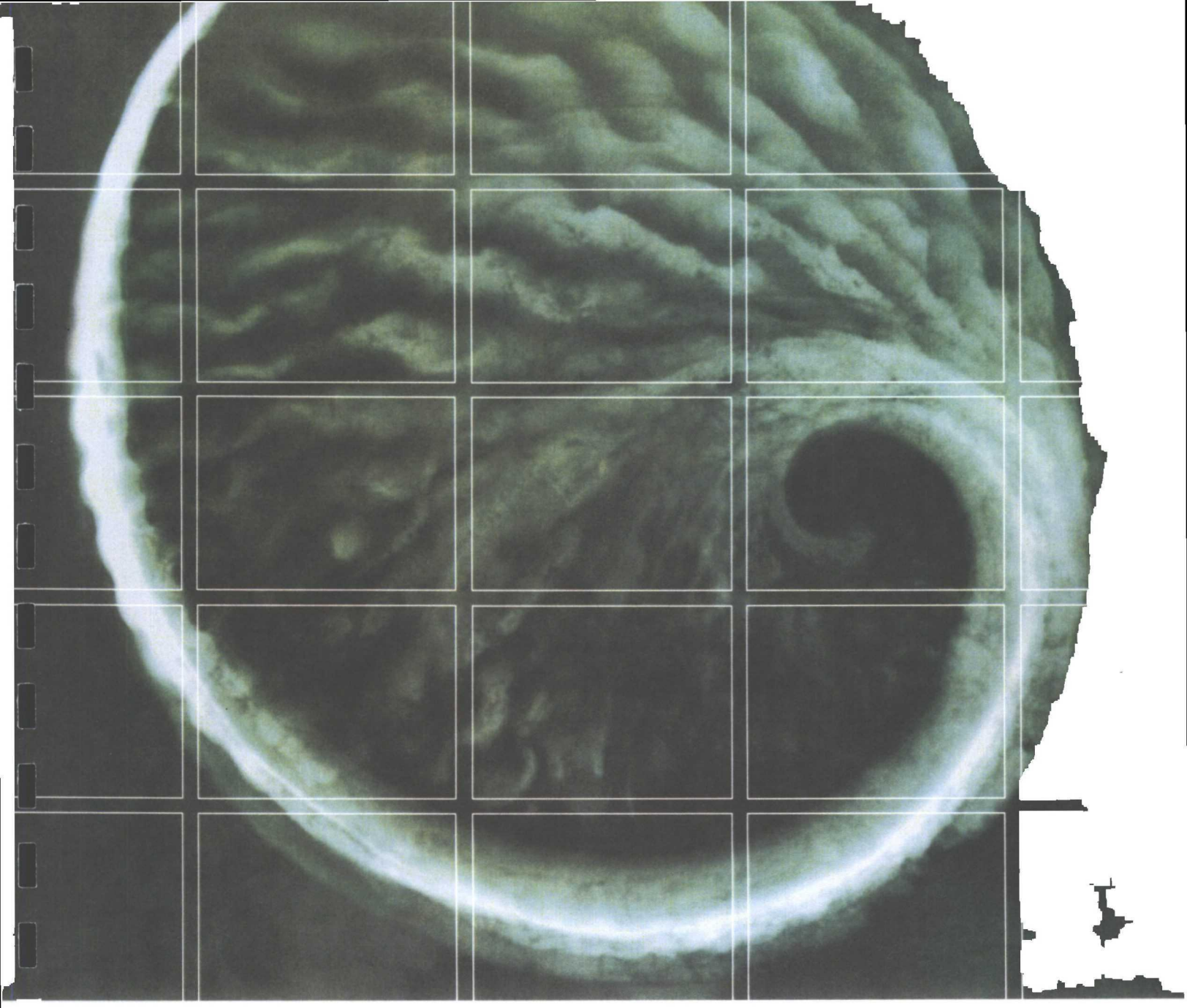
Ronald Wm. Keichline
Global Sustainability Coordinator
Huntsman International

cc: NMOCD District 2 – Artesia
Ed Gunderson – Huntsman
Lon Tullos – Huntsman EHS Library

cc w/o enclosures:
Jennifer Warfield – ERM

RECEIVED OCD
2012 APR -2 A 10: 13

HUNTSMAN INTERNATIONAL LLC
8600 Gosling Road, The Woodlands, Texas 77381, USA
Tel.: +1-281-719-7400 • Fax.: +1-281-719-3050 • www.huntsman.com



2011 Annual Groundwater Monitoring Report

Huntsman International, LLC
Former Brickland Refinery

March 30, 2012

www.erm.com

Delivering sustainable solutions in a more competitve world

ERM

Huntsman International, LLC

2011 Annual Groundwater Monitoring Report: *Former Brickland Refinery*

March 30, 2012

Project No. 0137452
Sunland Park, New Mexico

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Partner-in-Charge

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Texas Registered Engineering Firm F-2393

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EXECUTIVE SUMMARY

This 2011 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 28 thru June 30) and December (December 13 thru December 16) 2011. This report contains summaries of groundwater elevation and analytical data from the 2011 groundwater monitoring events as well as historical records.

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. In accordance with the Abatement Plan, June and December sampling events include water level and product thickness measurements in all monitor wells and well points, as well as analysis of benzene, toluene, ethylbenzene, and xylene (BTEX) for all sampled wells. In addition, the June sampling events also include analyses for polynuclear aromatic hydrocarbons (PAHs) and lead.

In accordance with the Abatement Plan, the following wells are sampled biennially during even numbered years and were not sampled in 2011: MW-4, MW-7, MW-14, and MW-15. During the 2011 sampling events samples were collected from:

- the five off-site wells (MW-3S, MW-3D, MW-6S, MW-6D, and MW-9S),
- the five on-site wells (MW-5, MW-8, MW-10, MW-11, and MW-17), and
- the two surface water river samples (one upstream from the site, north of MW-1, (River Upstream) and one immediately downstream, south of MW-9S (River Downstream)).

In accordance with the Abatement Plan, upon the completion of free-phase product removal, on-site monitoring wells MW-5, MW-8, MW-10, MW-11, and MW-17 were added to the monitoring plan as of June 2010. MW-5, MW-8, and MW-10 are sampled at both semi-annual events (June and December); MW-11 and MW-17 are sampled annually during June events.

Oxygen-releasing compound socks (O-Sox) were used during 2011 to enhance natural attenuation. The EHC-O O-Sox™ use a patented calcium peroxide (45-70% composition) and calcium hydroxide (10-20% composition) solid granular material to react with water to release oxygen slowly which stimulates aerobic biodegradation of groundwater contaminants. An initial set of O-Sox were placed in wells MW-5, MW-8, and MW-10 on March 10, 2011. On a quarterly basis the O-Sox sleeve is removed and replaced.

The laboratory reported benzene concentrations above the New Mexico Water Quality Control Commission (NMWQCC) standard for samples collected from

MW-5 and MW-8 during the June and December 2011 monitoring events, and MW-10 during the December 2011 monitoring event. No other BTEX constituents were reported above the standards, and no BTEX constituents were reported in River Upstream or Downstream samples for either June or December.

The laboratory reported Total PAHs below the NMWQCC standard for all samples collected during the June 2011 monitoring event. PAH analysis was not required for the December event.

The laboratory reported lead concentrations below the NMWQCC standard for all samples collected during the June 2011 monitoring event. Lead analysis was not required for the December event.

Light non-aqueous phase liquid (LNAPL) was measured in MW-10 during December 2011 (thickness of 0.20 feet). LNAPL was also measured in WP-14 in June 2011 (thickness of 0.02 feet). LNAPL was not found in any other wells during the 2011 monitoring events.

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

- Sampling should continue in accordance with the Abatement Plan.
- LNAPL removal should recommence in 2012 at MW-10 by bailing at quarterly intervals.
- Residual benzene in MW-5, MW-8, and MW-10 should continue to be address by bioremediation amendments or stimulants. Huntsman will continue to evaluate the effectiveness of using oxygen-releasing compound sleeves/socks (O-Sox) in these wells to enhance natural attenuation.

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 since the sampling program was initiated in December 1993. The distribution of petroleum hydrocarbons was investigated and these investigations provided the basis for the December 1998 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 (at MW-10) on the site as part of the Stage 2 Abatement Plan. The system was installed in December 1998 and was shut down in June 2008 since no free-phase product was removed from MW-10 in 2006, 2007 or 2008. 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 2011. 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 ten on-site monitoring wells, twelve on-site well points, and seven off-site monitoring wells. Historical groundwater elevations for the monitoring wells are provided in Table 2 and groundwater elevation contour maps for the 2011 monitoring events are depicted in Figures 3 and 4.

- Seventeen monitoring wells and twelve well points were monitored for the presence of LNAPL, and a summary of the LNAPL thicknesses is graphed in Figure 5 and also included in Table 6.
- 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. In addition, sampling was conducted at five on-site wells during 2011; MW-5, MW-8, and MW-10 were sampled during the June and December 2011 events, while MW-11 and MW-17 were sampled in June 2011.
- Surface water grab samples were collected from the Rio Grande during each semi-annual monitoring event for laboratory analytical testing. One sample (River Upstream) was collected from the upstream end of the site, north of MW-1, and the other sample (River Downstream) 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.
- Extraction system O&M reports were not prepared because the extraction system was shut down in June 2008, due to an absence of LNAPL in the recovery well MW-10.

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 2011 the gradient was approximately 0.0007 foot/foot. The groundwater flow direction is generally to the southeast, parallel to the river. The hydraulic gradient in December 2011 was calculated to be approximately 0.0006 foot/foot. The groundwater flow direction in December is generally to the southeast paralleling the river. A slight groundwater mound, defined by well MW-16 (and associated well point WP-31), is present at the southern end of the site. Elevated water levels at MW-16 may be due a plugged or poorly developed well screen as this well does not appear to respond to seasonal fluctuations similar to other on-site wells.

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 2011 monitoring events are depicted in Figures 3 and 4, respectively.

Groundwater levels in the monitoring wells are influenced by the flood stage of the Rio Grande River 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 of groundwater elevation since June of 2003 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*

The occurrence of LNAPL in each monitoring well and well point was tested with an oil/water interface meter. Measureable thickness of LNAPL was reported in June 2011 at WP-14 (0.02 ft) and in December 2011 LNAPL was measured at MW-10 (0.20 ft). Recent and historical measurements, dating back to June 2003, are graphed in Figure 5 and listed in Table 6.

LNAPL Hydrocarbon Thickness maps were not prepared for this report because only two wells contained LNAPL; too few locations to prepare a useful contour map.

3.2 *REMOVAL AND DISPOSAL OF LNAPL PRODUCT*

A total of approximately 235 gallons of LNAPL has been removed from MW-10 since December 1998, when the product recovery system was installed. When free-phase product yields were no longer recovered in measurable amounts during 2006 and 2007, the recovery system was shut down/disconnected in June 2008. No product was removed from MW-10 in 2008, 2009, 2010 or 2011.

4.0 SAMPLE COLLECTION AND LABORATORY ANALYTICAL TESTING PROCEDURES

4.1 FLUID LEVEL MEASUREMENTS

Ten on-site monitoring wells, twelve on-site well points, and seven off-site monitoring wells were probed for the presence of LNAPL using an oil/water interface probe. LNAPL was detected at WP-14 in June 2011 and at MW-10 in December 2011. Recent and historical measurements, dating back to June 2003, are graphed in Figure 5 and listed in Table 6.

The fluid elevations in each well and monitoring point were measured and recorded. Recent and historical groundwater elevations for the monitoring wells are provided in Table 2. Groundwater elevation contour maps for the 2011 monitoring events are depicted in Figures 3 and 4.

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 have 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 were 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 to 5 gallons were removed from each well with pumping rates of approximately 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).

Nine wells are instrumented with dedicated pumps (Micropurge Bladder Pumps). Wells not equipped with dedicated pumps were purged with a peristaltic pump. All tubing used with the peristaltic pump was dedicated and/or replaced at each well. The other wells are equipped with dedicated pumps, therefore no decontamination was required. Approximately 29.5 gallons of water were purged from the sampled monitoring wells during the June 2011 monitoring event. Approximately 22.5 gallons were purged from the sampled wells during the December 2011 monitoring event. The purged water collected during these monitoring events will be collected by Safety-Kleen for subsequent non-hazardous disposal at an approved facility.

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 labeled with the sampling location, date, time, and testing requirements on self-adhering labels provided by the laboratory.

4.5.1 *Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX)*

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 pre-measured 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 via tubing directly 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 (PAHs)*

Wells sampled in the June 2011 monitoring event were analyzed by US EPA Method 8270C for the presence of PAHs. Sample containers for PAHs were 1-liter amber glass bottles with no preservative. Water was collected from the well via tubing directly into the sample container until filled to the neck.

4.5.3 *Metals*

Wells sampled in the June 2011 monitoring event were analyzed by US EPA Method 6020 for lead. 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 during each semi-annual monitoring event for laboratory analytical testing. One sample (River Upstream) was collected from the upstream end of the site, north of MW-1, and the other sample (River Downstream) was collected from the downstream end of the site, south of MW-9S. 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 and evaluation of QA/QC results for 2011 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. The field blanks did not detect any BTEX constituents.

4.7.2. *Equipment Blanks*

Equipment blanks were collected on non-dedicated or new sampling equipment. During both the June and December sampling events, equipment blanks were collected on the Teflon® dipper, 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.

Analytical results from the trip blanks did not indicate any BTEX constituents.

4.7.4. *Duplicate Samples*

One duplicate sample was collected during each of the semi-annual 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.

6.0 *REMEDIATION PERFORMANCE*

Oxygen-releasing compound socks (O-Sox) were used during 2011 to enhance natural attenuation. The EHC-O O-Sox™ use a patented calcium peroxide (45-70% composition) and calcium hydroxide (10-20% composition) solid granular material to react with water to release oxygen slowly which stimulates aerobic biodegradation of groundwater contaminants. On a quarterly basis the O-Sox sleeve is removed and replaced.

An initial set of O-Sox were placed in wells MW-5, MW-8, and MW-10 on March 10, 2011. O-Sox replacement occurred in June 2011, in conjunction with the monitoring event. O-Sox replacement again occurred in September 2011 and in December 2011 (in conjunction with the monitoring events). Due to measurement of 0.20 feet of LNAPL in MW-10 in December 2011, the O-Sox sleeve at this well was removed and not replaced. Another O-Sox replacement is scheduled for April 2012; continuation of O-Sox use in MW-10 will be reconsidered at this time.

The LNAPL product recovery system was shut down and disconnected in 2008. No measureable LNAPL was found in MW-10 during 2009 and 2010. Due to the new measurement of LNAPL in MW-10 (0.20 ft thickness) from December 2011, LNAPL removal will be re-initiated during 2012 with quarterly bailing activities.

5.0 GROUNDWATER ANALYTICAL RESULTS

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

In accordance with the Abatement Plan, benzene concentrations are measured biannually during the sampling events. Benzene was reported in concentrations above the NMWQCC standard of 10 µg/L in samples from wells MW-5 and MW-8 in June and December 2011, and from well MW-10 in December 2011. No other BTEX constituents were reported above the standards, and no BTEX constituents were reported in River Upstream or Downstream samples for either June or December. Laboratory results for BTEX analyses are shown in Table 3.

5.2 POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)

Samples were analyzed for PAHs in June 2011 concentrations were reported below the NMWQCC standard of 30 µg/L for Total PAHs. Laboratory results for PAH analyses are shown in Table 4.

5.3 METALS

On June 19, 2009, NMOCD approved a change to the sampling program for metals, removing all metals, except lead, from the list of analytes. Samples were analyzed for lead in June 2011 and concentrations were reported below the NMWQCC standard of 0.05 mg/L. Laboratory results for lead analyses are shown in Table 5.

7.0 *CONCLUSIONS*

Overall, the reported concentrations in groundwater appear to be attenuating. During the 2011 reporting period, only benzene concentrations exceed NMWQCC standards; PAHs and lead continue to be analyzed and are reported below NMWQCC standards. Benzene concentrations exceed NMWQCC standards at MW-5, MW-8, and MW-10; a bioremediation stimulant (O-Sox) has been utilized in 2011 to enhance degradation of dissolved phase benzene at these three wells.

This year's sampling showed that residual LNAPL is still present on the site. LNAPL was measured in the MW-10 monitoring well and in the WP-14 well point during the 2011 monitoring events, indicating residual free product is present in the vadose zone. The recurrence of measureable free product may be attributed to the smear zone caused by seasonal groundwater fluctuations at the site. The smear zone refers to the area where free product occurred and was then smeared across the soil when the water table fluctuated between historic high and low water table elevations.

8.0 *RECOMMENDATIONS*

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

- Sampling should continue in accordance with the Abatement Plan.
- LNAPL removal should recommence in 2012 at MW-10 by bailing at quarterly intervals.
- Residual benzene in MW-5, MW-8, and MW-10 should continue to be address by bioremediation amendments or stimulants. Huntsman will continue to evaluate the effectiveness of using oxygen-releasing compound sleeves/socks (O-Sox) in these wells to enhance natural attenuation.

Field Data

Appendix A

March 2012
Huntsman
Project No. 0137452

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, Texas 78701
(512) 459-4700

DATE	12/13/11
SHEET	1 of 2

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN-FORMER BRICKYARD	0137452

FIELD ACTIVITY SUBJECT:
SEMI-ANNUAL GW GAUGING AND SAMPLING; O-SOX REPLACEMENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 ARRIVE ERM OFFICE - PREP FOR GW EVENT, CALIBRATE PID
0730 VIVA TECH ONSITE - REVIEW HASP THA, WAIVER, REVIEW AND SIGN DAILY SAFETY FORM WITH VIVA HECTOR DIAZ LOAD UP TRUCK - DEPART FOR SITE
0915 ARRIVE ON SITE - HUNTSMAN (GATES LOCKED, SITE SECURE) SET-UP FOR GAUGING AND SAMPLING GROUND WATER WELLS
0940 VIVA WANTS TO REPLACE HECTOR WITH NEW TECH I CALLED BRAD TO DISCUSS, BRAD CALLED VIVA
1015 HECTOR STAYING ON SITE, BUT VIVA WANTS ME TO TRAIN NEW TECH TO WORK ON HUNTSMAN SITE TODAY
1020 OPEN ALL WELLS AND CHECK WITH PID:
- GAUGE SAMPLE WELLS FIRST IN ORDER OF INCREASING CONTAMINATION LEVELS WITH CLEAN WATER LEVEL
- GAUGE REST OF GROUNDWATER MONITOR WELLS (MWS) DECON WATER LEVEL PROBE AFTER EACH WELL GAUGING
- GAUGE ALL WELL POINTS (WPs) AND MW-10 (RECOVERY WELL WITH OIL WATER INTERFACE PROBE. DECON PROBE AFTER EACH WELL GAUGING
- CLOSED ALL WELLS; O-SOX REMOVED AFTER GAUGING WELLS MW-5, 8, 10

1030 SET OUT FB-1 (FIELD BLANK)
1040 NEW VIVA TECH ON SITE CARLOS CABILLA, SENT BY VIVA AM PETE FELIX SO HE WILL BE READY FOR

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
WEATHER CONDITIONS: CLOUDY, COOL, HUMID, BREEZY NE 5-10 MPH, 50-60° F POTENTIAL RAIN	IMPORTANT TELEPHONE CALLS: BRAD STOKES - VIVA TECH ISSUES

PERSONNEL ON SITE:
ERM - RANDY ORTLUND; VIVA TECHS: HECTOR DIAZ, CARLOS CABILLA

SIGNATURE
Randolph Ortlund

DATE	12/13/11
SHEET	2 of 2

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN-FORMER BRICKYARD	0137452

FIELD ACTIVITY SUBJECT:
SEMI-ANNUAL GW GAUGING AND SAMPLING; O-SOX REPLACEMENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

FUTURE SITE TECH ASSISTANCE. FULL HASP, JHA, AND DAILY BRIEFING REVIEW WITH NEW TECH. HE WILL BRING ME COPY OF HIS HAZWOPER 40 HR OSHA TRAINING CERT.

1100 SET UP YSI AND TURBIDITY METER CALIBRATED BY PINE ENVIRONMENTAL BEFORE SHIPPING. THEY DID NOT INCLUDE CALIBRATION STDS FOR YSI 650. I ORDERED THEM FOR DELIVERY ON 12/14/11. CALIBRATION CERTIFICATE INCLUDED IN YSI

1245 EB-1 (EQUIPMENT BLANK RIVER SAMPLER)

1300 SAMPLE TIME: RIVER-UPSTREAM

1400 SAMPLE TIME: RIVER-DOWNSTREAM

1405 BREAK FOR LUNCH

1435 BACK ON SITE

1630 FINISHED GAUGING ALL WELLS, ALL WELLS LOCKED.
- SAMPLE TIME: MW-5 (O-SOX WELL)
(LOTS OF ORANGE COLORED SEDIMENT IN PURGE WATER-IRON BACTERIA?)

1725 END OF DAY OFFSITE: COMPOUND GATE LOCKED MAIN GATE LOCKED, BACK TO OFFICE SAMPLES IN COOLER, ON ICE

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:

PERSONNEL ON SITE:

SIGNATURE: Randolph Scotland

DATE	12/14/11
SHEET	1 of 2

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN - FORMER BRICKYARD	0137452

FIELD ACTIVITY SUBJECT:
SEMI-ANNUAL GW GAUGING AND SAMPLING; O-SOX REPLACEMENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0715 ARRIVE ON SITE HUNTSMAN

0735 VIVA TECHS ON SITE: HECTOR AND CARLOS; FILL OUT AND REVIEW AND SIGN DAILY BRIEFING H&S FORM.
- CARLOS HAS 40 HR HAZWOPER TRAINING CERTIFICATE

0750 HECTOR OFFSITE FOR MEETINGS, CARLOS ON SITE ALL DAY, SET-UP FOR GW SAMPLING

0830 EB-2 EQUIPMENT BLANK FOR WATER LEVEL PROBE

1020 BLADDER PUMP AIR CONTROLLER HAS AIR LEAK IN CONTROL VALVE, UNABLE TO PUMP WATER FROM SAMPLE WELLS - LEFT MESSAGE WITH QED TECH MANUFACTURER OF CONTROLLER.

1245 TROUBLESHOOT PUMP WITH QED, WILL NEED A REPLACEMENT PART. ORDERED REPLACEMENT AIR CONTROLLER FROM RENTAL COMPANY FOR TOMORROW AM DELIVERY.
- CALLED BRAD W/UPDATE ON CONTROLLER ISSUES
- SAMPLE MW-10 BELOW NAPL LAYER
- CANCEL SAFETY KLEEN WASTE PICK-UP
- HECTOR ON SITE - HE WILL NOT BE BACK ON SITE REST OF WEEK, CARLOS WILL COVER FOR HIM

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:

WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:
CLEAR SKY, FEW CLOUDS, SUNNY, COLD TO MILD, DRY, BREEZY WEST 5-10 MPH 45 TO 65°F	BRAD STOKES - EQUIPMENT SAFETY KLEEN - CANCEL WASTE PICK-UP

PERSONNEL ON SITE:
ERM - RANDY ORTLUND; VIVA TECHS - CARLOS CABILLA -HECTOR DIAZ

SIGNATURE
Randolph Ortlund

DATE	12/14/11
SHEET	2 of 2

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN-FORMER BACKYARD	0137452

FIELD ACTIVITY SUBJECT:
SEMI-ANNUAL GW GAUGING AND SAMPLING; O-SOX REPLACEMENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1250 BREAK FOR LUNCH - LOCK MAIN GATE
1345 BACK ON SITE
SET-UP AND SAMPLE MW-8
1400 SET OUT FB-2 AT MW-8
1456 SAMPLE TIME MW-8
1650 SAMPLE TIME MW-10 (SAMPLED BELOW NAPL LAYER)
REPLACED O-SOX WITH NEW IN MW-5 AND MW-8
NO O-SOX IN MW-10 DUE TO NAPL IN WELL
1700 OFFSITE BACK TO OFFICE; COMPOUND LOCKED, MAIN GATE LOCKED SAMPLES IN COOLER ON ICE

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:

PERSONNEL ON SITE:

SIGNATURE
Randolph Ortland

DATE	12/15/11
SHEET	1 of 1

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN-FORMER BRICKYARD	0137452

FIELD ACTIVITY SUBJECT:
SEMI-ANNUAL GW GAUGING AND SAMPLING; O-SOX REPLACEMENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0750 ARRIVE ON SITE-HUNTSMAN
WRITE UP DAILY H&S BRIEFING, LOG BOOK
0815 BRAD STOKES WITH ERM AND RONALD KEICHLINE WITH HUNTSMAN ON SITE FOR SITE VISIT
- REVIEW H&S DAILY BRIEFING AND SIGN FORM
1000 BRAD AND RONALD OFFSITE TO SAFETY KLEEN TO SIGN WASTE MANIFEST
I'M OFFSITE - BACK TO OFFICE TO PICK-UP RENTAL REPLACEMENT AIR CONTROLLER AND CALIBRATION STANDARDS
1150 BACK ON SITE HUNTSMAN
HECTOR (NOT CARLOS) ON SITE
SET UP AND SAMPLE GROUNDWATER MONITOR WELLS
1330 FB-3 SET OUT AT MW-35
1405 SAMPLE TIME: MW-35
1505 SAMPLE TIME: MW-30
1610 SAMPLE TIME: MW-95
1645 OFFSITE: COMPOUND AND MAIN GATE LOCKED
SAMPLES IN COOLER ON ICE, BACK TO OFFICE

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
WEATHER CONDITIONS: CLEAR SKY, FEW CLOUDS, COLD-MILD, DRY, WEST BREEZE 5-10 MPH 40-60°F	IMPORTANT TELEPHONE CALLS:

PERSONNEL ON SITE:
- RANDY OSTLUND, HUNTSMAN - RONALD KEICHLINE
ERM - BRAD STOKES & VIVA TECH - HECTOR DIAZ

SIGNATURE
Randolph Ostlund

DATE	12/16/11
SHEET	1 of 2

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN-FORMER BRICKYARD	0137452

FIELD ACTIVITY SUBJECT:
SEMI-ANNUAL GW GAUGING AND SAMPLING; O-SOX REPLACEMENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0800 ARRIVE ON SITE - HUNTSMAN
- VIVATECH CARLOS CADILLA ON SITE FOR HECTOR DIAZ
- FINISH GW SAMPLING TASKS
- WROTE HA, REVIEW, AND SIGN HIS DAILY BRIEFING FORM

0820 SET UP FOR GROUNDWATER SAMPLING TASKS
CALIBRATION CHECK YSI 650 AND LAMOTTE TURBIDITY METER.

1000 FB-4 SET OUT

1100 SAMPLE TIME: MW-60

1140 SAMPLE TIME: MW-65 MS/MSD, DUP-1

1220 COMPLETED GW SAMPLING TASKS:
- CLEAN UP SITE, SECURE PURGEWATER, O-SOX, AND PPE IN DRUMS (2)

* FRANK COPPLER STOP BY AND REQUESTED A HUNTSMAN CONTACT TO DISCUSS SITE AVAILABILITY FOR REGIONAL WASTEWATER TREATMENT PLANT. I TOOK DOWN HIS PHONE NUMBER AND STATED THAT I WOULD GIVE THIS TO MY PROJECT MANAGER BRAD STOKES WITH HIS REQUEST.

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
FRANK COPPLER 505-577-7138	
WEATHER CONDITIONS:	**IMPORTANT TELEPHONE CALLS:**
CLEAR, SUNNY, COLD - MILD, DRY, WINDY SE 10-15MPH 35 TO 55°F	

PERSONNEL ON SITE:
ERM: RANDY ORTLUND; VIVA TECH - CARLOS CADILLA

SIGNATURE
Randolph Ortlund

DATE	12/16/11
SHEET	2 of 2

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN-FORMER BRICKYARD	0137452

FIELD ACTIVITY SUBJECT:
SEMI-ANNUAL GW GAUGING AND SAMPLING & O-RX REPLACEMENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

I CALLED BRAD AND EMAILED THE NAME AND PHONE NUMBER PER HIS REQUEST

1250 SITE CLEANED UP, WASTE IN DRUMS AND SECURED, COMPOUND GATE LOCKED, MAIN GATE LOCKED BACK TO OFFICE, PACK AND SHIP SAMPLES AND RENTAL EQUIPMENT

1500 RENTAL EQUIPMENT CLEANED AND PACKED SAMPLES PACKED, CHECKED, ON ICE IN COOLER VIVA CARLOS OFFSITE EOD NOTIFIED ALS LAB OF SAT AM DELIVERY

1615 RENTAL EQUIPMENT AND SAMPLE COOLER PICKED UP BY LONESTAR FOR DELIVERY

- ALL GW SAMPLES 3x40ml VOAs W/HCl FOR BTEX
- SEND COC TO BRAD

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:

PERSONNEL ON SITE:

SIGNATURE Randolph Rutland

(90) 2437 6/20/11 TUE

013745 HUNTSMAN 1114 SOCK REPLACEMENT

1020 MW-10 CHANGE OUT O-SOX
- PID = 0 ppmv - WELL CASING
- DTW = 6.40 BTOC
- DTP = 0 NO PRODUCT

1030 OLD SOX PLACED INSIDE DRUM IN COMPOUND

1045 DEPART SITE:
- COMPOUND GATE LOCKED
- MAIN GATE LOCKED
- SITE SECURED
- BACK TO OFFICE

Randolph Ostlund 6/20/11

(91) 2437

013745 2 HUNTSMAN GW SAMPLING 12/13/11 TUE

0700 ARRIVE OFFICE ERM TRAILER

OBJECT: HUNTSMAN SEMI-ANNUAL GROUNDWATER SAMPLING EVENT
- O-SOX REPLACEMENT

PERSONNEL: ERM - RANDY OSTLUND
VIVA TECH - HECTOR DIAZ

EQUIPMENT: T-84, CELL, TOOLKIT, PID
OWIP, P-PUMP

WEATHER: CLDY, COOL, HUMID, BREEZY
NE 5-10 MPH, 50-60°F NO RAIN

HS: WRITE UP, REVIEW AND SIGN DAILY FORM
REVIEW THA GAUGING/SAMPLING

0715 CALIBRATED TE-580b PID (100 ppmv ISOBUTYLENE) READ 100.6 ppm

0730 VIVA TECH HECTOR DIAZ ON SITE
REVIEW HS DAILY FORM, THA

0745 LOAD UP TRUCKS - DEPART FOR SITE

0915 ARRIVE ON SITE - HUNTSMAN
- BOUGHT ICE - GATES LOCKED & SECURED
- SET-UP FOR WELL GAUGING AND GW SAMPLING

0940 VIVA WANTS TO TAKE HECTOR OFFSITE (ANOTHER JOB) AND REPLACE W/NEW TECH - NEVER BEEN ON SITE

Randolph Ostlund 12/13/11

I CALLED BRAD TO DISCUSS
BRAD CALLED VIVA TO DISCUSS
1015 HECTOR STAYING ON SITE FOR NOW
FOR NOW - BUT VIVA WANTS ME
TO TRAIN NEW TECH H&S
AND SITE FAMILIARITY
1020 GAUGE WELLS:
1) OPEN ALL WELLS AND CHECK WITH PID
2) GAUGE SAMPLE WELLS IN ORDER OF INCREASING CONTAMINATION LEVELS
3) GAUGE REST OF MONITOR WELLS EXCEPT MW-10
4) GAUGE ALL WPS AND MW-10
5) CLOSE ALL MW^S AND WP^S
1030 FB-1 SET OUT BY MW-08
DISTILLED WATER 3 VOAS HCL
1040 PETE FELIX W/VIVA SENT
CARLOS CABILLA FOR HASP
AND H+S REVIEW AND SITE
BRIEFING, SO HE WILL BE
AVAILABLE FOR FUTURE WORK
1045 H+S BRIEFING AND REVIEW
FOR CARLOS CABILLA

Randolph Rotthund 12/13/11

1) REVIEW SITE HASP AND SIGN
2) REVIEW GAUGING/SAMPLING SOPS AND SIGN
3) SEND COPY OF HYDROGRAMME
4) REVIEW AND SIGN DAILY BRIEFING
1100 SET-UP YSI AND TAKE RIVER
SAMPLES: YSI 600 W/FLOW THRU
- YSI CALIBRATED BY MSR
RENTAL BEFORE SHIPPING:
- PH 4.0 STD USED
- PH 7.0 STD USED
- CONDUCTIVITY STD USED 1,413 uS/cm
- DO CALIBRATED IN SATURATED
AIR @ 760 mm Hg
- ORP CALIBRATED IN ZOBELL
SOLUTION @ 229 mV @ 25 C
* I DO NOT HAVE CALIBRATION STD^S
TO CHECK, NOT SENT W/ YSI
(UNLESS ORDERED) WILL HAVE
STD^S TOMORROW.
- CAL CK TURB 4 METER
LAMOTTE:
- 0.00 STD READS - 0.09 NTU OK
- 10.00 STD READS - 9.88 NTU OK

Randolph Rotthund 12/13/11

(94) 2437

0137452 HUNTSMAN GW SAMPLING 12/13/11 TUE

1225 COMPLETED HASP, JHA, DAILY BRIEFING REVIEW W/ CARLOS

1245 FB-1 RIVER SAMPLER POLY CUP:

- 3x40ml VOA's HCl + ICE BTEX

1300 RIVER-UPSTREAM 3x40ml VOA's HCl + ICE BTEX

1400 RIVER-DOWNSTREAM 3x40ml VOA's HCl + ICE BTEX

1405 BREAK FOR LUNCH

1435 BACK ON SITE:

- CARLOS BACK ON SITE

- SET UP SAMPLE MW-05

1630 FINISHED GAUGING ALL MW's, WP's

ALL WELLS CAPPED, LOCKED

1630 SAMPLE MW-5 3x40ml VOA's HCl, ICE, BTEX

1700 CLOSED UP FB-1 VOA's ~~CLEAN~~ 3x40ml VOA's HCl, ICE, BTEX

CLEAN UP AREA AND LOCK UP

* PROBLEMS PURGING / SAMPLING MW-05 O-SOX WELL DUE TO BIOLOGICAL SEDIMENT IN WATER - SEE SAMPLE / PURGE FORM

1725 OFFSITE: COMPANY GATE LOCKED

Randolph Ostlund 12/13/11

(95) 2437

0137452 HUNTSMAN GW SAMPLING 12/14/11 WED

0640 LOAD UP TRUCK - DEPART FOR SITE

0715 ARRIVE ON SITE - HUNTSMAN MEET VIVA HERE ~ 7:30 BEFORE ENTERING COMPOUND MAIN GATE

OBJECT: CONTINUE GW SAMPLING TASKS SEMI-ANNUAL EVENT

PERSONNEL: ERM - RANDY OSTLUND VIVA TECH - HECTOR DIAZ

EQUIP: T-84, CELL, TOOL KIT, PID, OWIP, P-PUMP

WEATHER: CLR, FEW CLDS, SUNNY, COLD TO MILD, DRY, BREEZY 0-5-10 MPH, 45-60°F

H&S: FILL OUT, REVIEW AND SIGN DAILY BRIEFING FORM

0735 VIVA HECTOR AND CARLOS ON SITE

CARLOS HAS COPY OF 40 HR TRAINING AND 8 HOUR CERTIFICATE

- HECTOR HAS A MORNING MEETING CARLOS WILL BE ON SITE ALL DAY PERFORMING - TIME COVERED BY VIVA NOT ERM PER HECTOR

0745 REVIEW H&S DAILY FORM, SIGN

0750 HECTOR OFF SITE

0755 SET UP FOR GW SAMPLING

Randolph Ostlund 12/14/11

(96) 2437

0137452 Hunneman GW Sampling 12/14/11 WC

* I do not have calibration stds to ck/cal YSI and

- They will be delivered to ERM office later this am
Then I will cal/ck YSI

0830 FB-2 WL Probe:
3x40ml VOA HCl, BTEX, Ice

0845 Set-up MW-3 and P/S

1020 Problems w/ air controller set-up and air leaks
Discussed w/ Andy - will try to make it work.

1100 Called QED Tech Support
Left msg - cannot get controller to work
Air leak in exhaust valve

- Andy send another QED controller for tomorrow am delivery

1230 Called Brad w/ update

- Sample MW-10 below NAPL layer
- Get sample of NAPL layer in jar

Randolph Ottland 12/14/11

(97) 2437

0137452 Hunneman GW Sampling 12/14/11 W

Cancelled Safety Kleen pick up - will reschedule

- Client can sign manifest

1245 QED called: bad solenoid or Humphries valve - cannot be repaired in field needs part

- He is on site brief visit
He will not be back on this job rest of week after this pm.

1250 Break/lunch - offsite locked

1325 Back on site:

- Waiting for Viva Carlos to return
- Prep to sample MW-8 and 10 with P-pump

1345 Carlos back on site

- Set-up and sample MW-8

1400 FB-2 set out MW-8

1410 Cal ck turb meter:
0.40 ~~NTU~~ NTU read 0.22 ok
10.00 NTU read 10.10 ok

1412 Purge and sample MW-8

1450 Sample time MW-8
3x40ml VOAs HCl, Ice, BTEX

1500 Set up purge and sample MW-10

1645 Closed up ~~FB~~ FB-2 @ MW-8
3x40ml VOA HCl, Ice, BTEX

Randolph L. Ottland 12/14/11

1650 Replaced O-Sox MW-5,8
Set one water MW-10
- Sample time MW-10 1550
3x40ml VOAs HCl, Ice, BTEX

1700 Offsite Viva Carlos
and me:
- Compound cleaned up
and locked
- Main gate locked
- Back to office
- Meet Carlos (Viva) at
site @ noon tomorrow
to continue sampling
- Meet w/ Brad (ERM) and
Ronald (Huntsman) at
site tomorrow 8am

Randolph Ostlund 12/14/11

0730 Depart ERM office
0750 Arrive on site Huntsman
Object: - Site visit walkaround with
Brad (ERM PM) and client
Ronald (Huntsman)
- Continue GW sampling activities
Personnel: ERM - Randy Ostlund
ERM - PM Brad Stokes
Vivatech - Carlos Cadilla
Huntsman - Ronald
Equip: T-84, cell, toolkit, PID
GW sampling equip rental
Weather: Clear few clds, cold-mild, dry
W breeze 5-10 mph, 40-60°F
H&S: Fill out, review, sign daily
Briefing, HASP, JHA
0815 Brad and Ronald on site:
- H&S briefing - sign daily form
Do site visit w/ client
1000 Brad and Ronald offsite
- Go to Safety Kleen sign manifest
- I'm offsite back to office
Pick-up equipment
1150 Back on site - Huntsman
Hector (not Carlos) on site

Randolph Ostlund 12/15/11

0137452 HUNTSMAN GW SAMPLING 12/15/11 THUR

- GOT NEW CONTROLLER AND CAL STDS DELIVERED TO OFFICE
- SET-UP AT MW-3S

1300 CAL CK TURBIDITY METER
STD 0.00 NTU READS -0.08 OK
STD 10.00 NTU READS 14.00 ?
- UNABLE TO RE-CAL METER - ERR

1320 BEGIN PURGE MW-3S:
1330 FB-3 @ MW-3S
* TURBIDITY METER SEEMS TO BE WORKING CORRECTLY
- WHEN I TRIED TO CAL IT WOULD GIVE ME AN ERROR

1405 SAMPLE TIME MW-3S
3x40ml VOAs HCL, ICE, BTEX
1425 PURGE MW-3D
1505 SAMPLE TIME MW-3D
3x40ml VOAs HCL, ICE, BTEX
1520 ARRIVE MW-9S:
- SET-UP, PURGE AND SAMPLE

1610 SAMPLE TIME MW-9S
3x40ml VOAs HCL, ICE, BTEX
1615 SAMPLES ON ICE
1625 FB-3 CLOSED UP
3x40ml VOAs HCL, ICE, BTEX
1630 CLEAN UP AND SECURE SITE
1645 OFF-SITE COMPLETING MANAGEMENT WORK

Randolph Ortland 12/15/11

0137452 HUNTSMAN GW SAMPLING 12/16/11 FRI

0730 LOAD UP TRUCK - DEPART FOR SITE
0800 ARRIVE ON SITE - HUNTSMAN
VIVATECH CARLOS CADILLA ON SITE
OBJECT: FINISH GW SAMPLING TASKS
PERSONNEL: ERM - RANDY ORTLAND
VIVATECH - CARLOS CADILLA
EQUIP: T-84, CELL, TOOL KIT, AID, OUTFIT, GW SAMPLING EQUIP
WEATHER: CLR, SUNNY, COLD-MILD, WIND SE 10-15 MPH, 35-55°F
H&S REVIEW, WRITE UP, SIGN DAILY FORM
0815 H&S REVIEW WITH CARLOS
WRITE UP, REVIEW, SIGN DAILY BRIEFING SAFETY FORM
0820 SET-UP FOR GW SAMPLING
0900 CAL CK YSI ~~600~~ 650 MDS
- DO CK IN MOIST BOTTLE
83% 9.30 mg/L SHOULD BE ~100%
TEMP 10.8°C
- PH STD 7.00 READS 7.11 OK
- PH STD 4.00 READS 4.11 OK
- PH STD 10.01 READS 10.11 OK
- COND STD 1,413 uS/cm READS 1,141 mS/cm
COND STD 1,413 uS/cm READS 1,0[illegible] mS/cm
- DO IN MOIST AIR 100% READS 98.0%
10.40 mg/L

Randolph Ortland 12/16/11

- LAMOTTE 2020E TURBIDIMETER
STD 0.00 NTU READS - 0.15 OK
STD 10.00 NTU READS - 14.4
UNABLE TO CALIBRATE
GET PRE 2 MSG

0956 SET-UP AT MW-6
1000 FB-4 @ MW-6 SET OUT
1025 PURGE AND SAMPLE MW-6D
1100 SAMPLE TIME MW-6D
1115 BEGIN PURGE MW-6S
MW-6D 3×40 ml VOAs HCL, ICE, BTEX
1140 SAMPLE TIME MW-6S
SAMPLE TIME MW-6S DUP-1
3×40 ml VOAs HCL, ICE, BTEX
SAMPLE TIME MW-6S-MS
SAMPLE TIME MW-6S-MSD
3×40 ml VOAs HCL, ICE, BTEX
1215 FB-4 SPAL TIME
2×40 ml VOAs ICE, HCL, BTEX
1220 END OF GW SAMPLE WELLS
CLEAN-UP EQUIP, SITE
* FRANK COPPLER STOPPED BY SITE ASKING FOR HUNTSMAN CONTACT NUMBER. I DID NOT HAVE, SO HE GAVE

Randolph Ottmer 12/16/11

ME HIS NUMBER 505-577-7138 AND REQUESTED SOMEONE CONTACT HIM.
1250 ALL PPE IN DRUMS + PURGE WATER
- DRUMS (2) SECURED
- COMPOUND GATE LOCKED
- MAIN GATE LOCKED
- BACK TO OFFICE
- PACK AND SHIP SAMPLES AND GW SAMPLE EQUIP
1330 BACK IN OFFICE
COC, PACK AND SHIP
1500 EQUIP CLEANED AND PACKED
SAMPLES PACKED AND CKD
- CARLOS (VIVA) OFFSITE FOOD
- SAMPLES COOLER AND RENTAL EQUIP TO BE PICKED UP AND DELIVERED BY LONESTAR
- NOTIFIED ALS LAB OF SAMPLE COOLER DELIVERY AND COC CHG FOR BTEX ANALYSIS FOR FB-2 (NOT CHECKED ON COC)
- CLEAN UP OFFICE AND PUT SAMPLING EQUIP BACK IN WAREHOUSE
1615 SHIPMENTS PICKED UP BY LONESTAR

Randolph Ottmer 12/16/11

ERM

Daily Safety Meeting

Date	Meeting Facilitator	Project Name	Project Number
12-13-11	Randal Ortland	Huntsman	0137452

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

S/T/F - Uneven ground, soft sand, wet ground from potential rainfall, burrow holes, ground debris, rocks, small bushes
VOC's - Upwind, PID, respirator w/ organic cartridges
Driving - Seat belts, obey traffic laws & signs, clean windows & mirrors
NAPL - Nitrile gloves, PPE, bucket with lids, spill kits, poly sheeting, eye wash station

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

Pinch points - Leather gloves, use right tools for the job
Rainfall - keep dry, watch out for muddy slopes or areas
stay away from trees in case of lightening
Lifting - proper bending techniques, buddy system

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

Gauge and sample groundwater wells

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

Stay upwind of wells and product

ATTENDEES (Print name and initial)

Hector Diaz [initials]	
RANDOLPH ORTLUND [initials]	
C Castillo Carlos Castillo	

Daily Safety Meeting

Date	Meeting Facilitator	Project Name	Project Number
12/14/11	RANDOLPH ORTLUND	HUNTSMAN	0137452

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

S/T/F - UNEVEN, SOFT GRND, BURROW HOLES, ROCKS, GRND DEBRIS PPE, SHRUBS, ROOTS, SLOPES, GRAVEL

VOCs - UPWIND, PID, PPE, RESPIRATOR W/ ORGANIC CARTRIDGE

DRIVING - OBEY TRAFFIC LAWS, SPD LIMIT, SEATBELTS, EMERGENCY BRAKE, PULL OVER FOR CELL PHONE USE, CLEAN WINDOWS, MIRRORS

NAPL - NITRILE GLOVES, PPE, BUCKETS W/ LIDS, SPILL KIT, EYE WASH

PINCH POINTS - LEATHER GLOVES, RIGHT TOOL FOR JOB

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

LIFTING - PROPER TECHNIQUE, HELP, SMALLER/LIGHTER LOADS

COOL WEATHER - LAYERS, WARM CLOTHING

BORDER PATROL - TRANSIENTS, ILLEGALS

BIOLOGICALS - WILD CATS, DOGS

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

GAUGE AND SAMPLE MONITOR WELLS

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

ATTENDEES (Print name and initial)

RANDOLPH ORTLUND RO	
Hector Diaz HD	
CARLOS CADILLO C.C.	

Daily Safety Meeting

ERM

Date	Meeting Facilitator	Project Name	Project Number
12/15/11	RANDOLPH ARTLUND	HUNTSMAN	0137452

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

STFF - UNPVEN SOFT GRND, BURROW HOLES, ROCKS, GRND DEBRIS, BUSHES, SHRUBS, ROOTS, GRAVEL, SLOPES, PPE

VOCS - UPWIND, PID, PPE, RESPIRATOR W/ORGANIC CARTRIDGE

DRIVING - TRAFFIC LAWS, SPD LMTS, SEAT BELTS, EMERGENCY BRAKE, ALL OVER FOR CELL PHONE USE, CLEAN WINDOWS, MIRRORS

NAPL - NITRILE GLOVES, PPE, BUCKETS W/LIDS, SPILL KIT, PLASTIC EYE WASH

PINCH POINTS - LEATHER GLOVES, RIGHT TOOL FOR JOB

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

LIFTING - POSTION, LIFTING TECHNIQUE, HELP, SMALLER LOADS

COLD WEATHER/SUN - UV SUNSCREEN, FLUIDS, WARM CLOTHING

BORDER PATROL - TRANSIENTS, ILLEGALS AVOID

BIOHAZARDS - WILD DOGS, BEES

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

SAMPLE GW MONITOR WELLS

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

ATTENDEES (Print name and initial)

RANDOLPH ARTLUND	
RONALD KEECHLINE	
BRAD STOKES	

Daily Safety Meeting

Date	Meeting Facilitator	Project Name	Project Number
12/16/11	RANDOLPH ORTLUND	HUNTSMAN	013 7452

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

S/T/F UNEVEN SOFT GRND., BURROW HOLES, ROCKS, GRND DEBRIS, BUSHES, SHRUBS, ROOTS, GRAVEL, SLOPES, PPE

VOC'S - UPWIND, PID, PPE, RESPIRATOR W/ ORGANIC CARTRIDGES

DRIVING - TRAFFIC LAWS SPD LIMITS, SEATBELTS, EMERGENCY BRAKE PULL OVER FOR CELL PHONE USE CLEAN WINDOWS & MIRRORS

NAIP - NITRILE GLOVES, PPE, BUCKETS W/LIDS, SPILL KIT, PLASTIC EYEWASH.

PINCH POINT - LEATHER GLOVES, RIGHT TOOLS FOR JOB.

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

LIFTING - PERSON, LIFTING TECHNIQUE, HELP, SMALL LOADS

COLD WEATHER/BUGS - UV SUNSCREEN, WINDS, WARM CLOTHING

BORDER PATROL - TRANSIENTS, ILLEGALS, AVOID.

BIOHAZARDS - WILD and -

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

SAMPLE GW MONITOR WELLS

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

ATTENDEES (Print name and initial)

RANDALL ORTLUND RO	
CARLOS CADILLO CC	

Huntsman Wells Gauging Information (Monitor Wells) River - Low

Well ID	Date	Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	Comments
MW-1	12/13/11	4:14	~~0.0~~	—	6.64	—	N/S
MW-2	12/13/11	PLUGGED					P&A 6/99
MW-3S	12/13/11	12:46	1.0	—	6.95	—	S
MW-3D	12/13/11	12:48	~~0.0~~	—	7.07	—	S
MW-4	12/13/11	2:47	~~0.0~~	—	5.60	—	S
MW-5	12/13/11	1:48	27.0	—	7.57	—	ORANGE SEDIMENT BACTERIA? N/S REPLACED O-SOX IN PURGE WATER
MW-6S	12/13/11	1:17	~~0.0~~	—	7.96	—	S
MW-6D	12/13/11	1:15	~~0.0~~	—	7.86	—	S
MW-7	12/13/11	3:10	~~0.0~~	—	5.92	—	S
MW-8	12/13/11	1:52	75.0	—	7.33	—	N/S REPLACED O-SOX
MW-9S	~~12/13/11~~ 12/13/11	~~1:04~~ 1:04	~~0.0~~	—	~~6.86RW~~ 7.69	—	S 7.69 MEASURED 12/15/11 @ 1530
MW-9D	12/13/11	— PLUGGED					P&A 7/05
MW-10	12/13/11	4:02	39.0	10.13	10.33	0.20	DID NOT REPLACE O-SOX Sheen recovery well w/pump PRODUCT
MW-11	12/13/11	3:21	~~0.0~~	—	8.46	—	N/S
MW-12	12/13/11	400	~~0.0~~	—	5.56	—	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: VICTOR DIAZ

Revised: 12/10/2008

Huntsman Wells Gauging Information (Monitor Wells) RIVER LOW

Well ID	Date	Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	Comments
MW-13	12/13/11	—	PLUGGED		—		P&A 6/99
MW-14	12/13/11	3:00	1.0	—	7.02	—	S
MW-15	12/13/11	3:37	0.0	—	15.47	—	S
MW-16	12/13/11	3:40	0.0	—	12.02	—	N/S
MW-17	12/13/11	3:15	0.0	—	8.96	—	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: _____

Revised: 12/10/2008

Huntsman Wells Gauging Information (Well Points)

River Low

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	12/13/11	4:21	17.0	—	10.97	—		
WP-2	12/13/11	4:34	1.0	—	8.97	—		
WP-3	12/13/11	4:32	0.0	—	—	Dry	—	7.16 TD
WP-7	12/13/11	4:27	0.0	—	11.69	—		
WP-14	12/13/11	4:39	0.4	—	5.62	—		12/16/11 DTW = 5.63 TAR at bottom of well NO PROD
WP-25	12/13/11	4:20	0.4	—	8.92	—		
WP-26S	12/13/11	4:19	0.4	—	9.67	—		
WP-26D	12/13/11	4:17	4.0	—	10.55	—		
WP-27S	12/13/11	4:24	57.0	—	14.35	—		
WP-27D	12/13/11	4:23	3.0	—	14.33	—		
WP-30	12/13/11	4:30	0.0	—	11.23	—		
WP-31	12/13/11	-	—	-	-	-		Cant open well COP
WP-32	12/13/11	-	—	-	-	-		DRY
WP-33	12/13/11	4:29	0.0	—	9.92	—		
MW-10	12/13/11	4:02	39.0	10.13	10.33	.20		PRODUCT IN WELL DIDNT RELEASED SIX 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: HECTOR DIAZ

Revised: 12/10/2008

LOW FLOW SAMPLING SHEET

Well: RIVER-UPSTREAM
Location: HUNTSMAN
Date: 12/13/11 RIVER LOW
Samplers: RANDOLPH ORTEGA

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
1300	12/13/11	—	—	—	—	—	—	—	—	POLY-CUP RIVER SAMPLER

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
12/13/11	1315	Initial	8.06	~~27.2~~	3.954	14.00	80.5	27.2	—	JUST BELOW SURFACE
				13.96	3.121	142.6%				CUP FACING DOWNSTREAM
										UPSTREAM OF MW-01
				NO	ODOR					
			CLEAR	TO ~~CLEAR~~	T	SLIGHTLY CLOUDY (SILTY)		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
1300	12/13/11				RIVER-UPSTREAM				BTEX	HCl	ICE
		~~BB-1~~						~~BB-1~~			
1245		~~BB-2~~ POLY CUP SAMPLER						~~BB-2~~	BTEX	HCl	ICE
		~~BB-2~~ DISTILLED WATER						~~BB-2~~ Rob			

LOW FLOW SAMPLING SHEET

Well: RIVER-DOWNSTREAM
Location: DUNNIGAN

Date: 12/13/11
Samplers: RANDOLPH ORTLUND

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
12/13/11	1400	—	—	—	—	—	—	—	—	POLY CUP
										RIVER SAMPLER

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
12/13/11	1415	Initial	8.24	13.48	4.004	14.49	89.7	23.8	—	JUST BELOW SURFACE
					3.122					CUP FACING
					ms/cm					DOWNSTREAM
					ms/cm					
										DOWN STREAM OF
										MW-9
				NO ODOR						
				CLEAR TO SLIGHTLY CLOUDY (SILT)						

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
12/13/11	1400			RIVER-	DOWNSTREAM				BTEX	HCl	ICE

LOW FLOW SAMPLING SHEET

Well: MW-5 **Date:** 12/13/11
Location: HUNTSMAN **Samplers:** RANDOLPH 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)	Comments
12/13/11	1348	7.57	15.00	4	UNK	27	0	–	–	SAMPLE DEPTH @ 10' BTOC PERISTALTIC 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
12/13/11	1521	Initial			PURGE	WELL			7.57	0.6 L/m
	1545		7.60	22.63	19.31	5.00	-110	352		0.35
	1550		7.20	21.87	19.04	4.51	-133	306		0.3
	1555		7.03	21.41	18.88	4.35	-138	249		0.2
	1600		6.87	21.13	18.74	3.97	-138	188		O-SOX WELL
	1606		6.73	21.04	18.69	3.51	-136	141	8.79	REPLACED O-SOX
	1612		6.61	20.85	18.59	3.12	-133	135	8.93	
	1618		6.85	20.98	18.74	2.21	-198	188	9.05	SAMPLE DEPTH @ 13'
	1625		7.60	21.22	18.82	1.57	-360	77.4		
	1630		6.60						11.0	
	*	HARD TO PURGE WELL TO CONSISTENT				PARAMETERS - WOULD PURGE ~~CLEAR~~				
		TO START, THEN ORANGE SEDIMENT				RE-OCCURS PUMPED WELL TO DRY				
		TO CLEAR THEN				SAMPLE - BUT LARGE DRAW DOWN				
INITIAL PURGE		WATER LIGHT				ORANGE COLOR SUSPENDED				SEDIMENTS/SOLIDS/ORGANICS FROM
	5	SETTLES				OUT QUICKLY THEN RECURS				O-SOX)
~2.5 GALS		PURGED WELL TO				CLEAR THEN LOW FLOW PURGE/SAMPLE				

Sampling Record ~5 GALS PURGED

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/13/11	1630	6.60	21.80	18.86	1.86	-155	77.4	MW-5	BTEX	HCl	ICE
		WL PROBE DISCARDED H2O						TB-2	BTEX	HCl	ICE

LOW FLOW SAMPLING SHEET

Well: MW-8 Date: 12/14/11

Location: HUNTSMAN Samplers: RANDOLPH ORQUINO

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
12/13/11	1352	7.37	14.65	4	UNK	75	0	—	—	SAMPLE DEPTH @ 9' TOOC
12/14/11	1400	6.31								PERISTALTIC 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
12/14/11	1412	Initial	7.77	22.30	7,096	7.15	57	26.7	6.89	~~0.25~~ 0.30 L/M
	1420		7.79	22.36	7,129	7.48	66	26.4	7.13	0.25 L/M
	1426		7.68	21.52	7,026	7.40	62	22.0	7.39	0.2 L/M
	1430		7.63	21.40	6.998	7.26	62	21.0	7.52	
	1435		7.59	21.21	6.971	6.24	17	16.8	7.69	
	1440		7.47	21.15	6.902	6.27	-11	16.0	7.85	
	1445		7.44	21.30	6.839	6.30	-21	16.6	7.93	
	1450		7.41	21.46	6.815	6.18	-30	14.2	8.08	
	~ 2 GALS									
				SLIGHT ORGANIC (DIET) ODOR						
	MOSTLY CLEAR		SLIGHTLY CLOUDY				~~GRAYISH~~ TINT YELLOWISH			
										O-SOX WELL
										REPLACED O-SOX

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
12/14/11	1450							MW-8	VOC	BTEX	ICE
12/14/11	1400-1645	FB-2	DISTILLED	WATER				~~FB-2~~	VOC	BTEX	ICE
12/13/11	1030-1700	FB-1	DISTILLED	WATER				FB-1	VOC	BTEX	ICE

LOW FLOW SAMPLING SHEET

Well: MW-10
Location: HUNTSMAN

Date: 12/14/11
Samplers: RANDOLPH CRUMP

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
12/3/11	4:02	10.33	19.89	4	UNK					SAMPLE DEPTH ~14' bgs
12/14/11	1525	10.23								PERISTALTIC 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
12/14/11	1525	Initial	8.50	18.51	0.063	7.86	-5	9.28	10.23	0.3L/m
	1531		8.50	18.51	0.063	7.86	-5	10.13	10.22	0.2L
	1540		8.50	18.51	0.063	7.88	-5	13.0	10.68	0.25L/m
	1545		8.50	18.51	0.063	7.86	-5	11.1	10.55	
	1550		8.50	18.51	0.063	7.86	-5	10.56	10.65	
		PURGE WATER	CLEAR	PURGE WATER						
			SLIGHT	ORGANIC (ODOR)	ODOR					0-SOX well
		~2.0L GALS PURGED		SLIGHT SHEEN	NO HC	ODOR				~~REPLACED 0-SOX~~ Removed 0-SOX DID NOT REPLACE-NAPL

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
12/14/11	1550							MW-10	BTEX	HCl	ICE

LOW FLOW SAMPLING SHEET

Well: MW-35
Location: HUNTSMAN

Date: 12/14/11 (15)
Samplers: RANDOLPH DERUND

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
12/13/11	12:46	6.95	6.50	4	UNK	1.0	-	-	-	0.35L/M 15/50 @ 20psi
12/14/11	09:05	7.03								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
12/15/11	1320	Initial	7.16	18.93	8,930	4.48	-121	5.78	7.03	CLR PURGE
	1333		7.14	19.13	8,863	4.03	-136	6.15	7.30	
	1339		7.15	19.19	8,612	3.98	-126	5.73	7.40	~200 ml/min 0.20 L/M
	1344		7.16	18.85	8,409	3.91	-122	2.07	7.58	
	1353		7.17	18.49	8,459	3.91	-132	1.14	7.95	
	1400		7.19	18.41	8,603	4.07	-139	0.38	8.01	
	1405		7.20	18.60	8,704	3.88	-142	0.85	-	
			PURGE WATER VERY CLEAR NO APPARENT ODOR							
			~2 GALS PURGED							

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
12/15/11	1405							MW-35	BTEX	HCl	ICE
12/15/11	1330 - 1625		FB-3	DISTILLED WATER				FB-3	BTEX	HCl	ICE
12/14/11	0830		EB-2	DISTILLED WATER				~~FB-1~~ EB-2	~~BTEX~~ BTEX	~~HCl~~ HCl	~~ICE~~ ICE
				WL PROBE							

LOW FLOW SAMPLING SHEET

Well: MW-3D
Location: HANOSMAN

Date: 12/15/11
Samplers: RANDALL ORTELLI

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
12/13/11	1248	7.07	37.50	4	UNK	0	0	-	-	0.3 L/M 20/100 @ 20psi
12/15/11	1430	7.14								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
12/15/11	1430	Initial	7.11	18.57	11.79	4.18	-111	3.45	7.14	
	1438		7.07	17.24	16.17	3.41	-103	0.86	7.10	0.15 L/M 20/100 @ 20psi
	1446		7.08	18.02	16.57	2.91	-112	0.65	7.15	0.3 L/M 10/15 @ 20psi
	1453		7.09	17.44	16.45	2.84	-116	0.10	7.13	0.25 L/M 15/100 @ 20psi
	1500		7.10	17.57	16.35	2.74	-119	0.55	7.13	
	1505		7.11	17.57	16.45	2.55	-120	1.95	-	
			PURGE WATER VERY CLEAR							
				SLIGHT	ORGANIC (DIET)	ODOR				
		~2	GALS	PURGED						

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
12/15/11	1505							MW-3A	BTEX	HCl	DUP

LOW FLOW SAMPLING SHEET

Well: MW-95
Location: HUNTSMAN

Date: 12/15/11
Samplers: RANDOLPH ORONA

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
12/13/11	1304	6.88	15.50	4	UNK	0	0	-	-	0.45 L/M 10/5 @ 20 psi
12/15/11	1530	7.69								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
12/15/11	1530	Initial	7.06	20.20	13.13	3.22	33	8.69	7.69	0.4 L/M 10/5 @ 20
	1538		7.03	20.69	13.00	2.86	-30	7.75	7.75	
	1545		7.04	20.89	13.02	2.81	-72	4.82	7.65	
	1552		7.04	20.70	12.90	3.06	-92	3.75	7.80	
	1557		7.05	20.68	12.87	3.41	-100	2.83	—	
	1603		7.05	20.92	12.85	3.31	-110	2.67	7.75	
	1608		7.06	20.79	12.81	3.44	-117	2.22	7.79	

PURGE WATER CLEAR SLIGHT ORGANIC (DIRT) 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
12/15/11	1610							MW-95	BTEX	HCL	ICE
	~~FB 1~~	~~DISTILLED~~	~~H2O~~	~~WL PROBE~~				~~FB-1~~	~~BTEX~~	~~HCL~~	~~ICE~~ RO
	~~FB 2~~	~~DISTILLED H2O~~						~~FB-2~~	~~BTEX~~	~~HCL~~	~~ICE~~ RO

Revised:07/10/2007

ERM-El Paso

LOW FLOW SAMPLING SHEET

Well: MW-6D
Location: HUNTSMAN
Date: 12/16/11
Samplers: RANDOLPH ORDUNO

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
12/13/11	1315	7.86	38.0	4	UNK	0	0	—	—	0.3 L/M 10/5 @ 20psi
12/16/11	1000	8.01								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
12/16/11	~~8.01~~ 1025	Initial	7.01	12.75	14.36	5.45	159	2.04	8.01	.1 L/M 10/5 @ 20
	1030		7.22	15.66	16.56	2.08	-95	0.50	8.02	.2 L/M 15/5 @ 30
	1045		7.26	17.85	17.48	1.63	-122	0.37	8.05	.35 L/M @ 30psi
	1050		7.27	18.20	17.65	1.58	-128	0.61	8.05	
	1055		7.28	17.15	17.31	1.58	-126	0.71	8.05	
	1100		7.27	17.40	17.21	1.61	-123	0.50	8.05	
				PURGE WATER CLEAR						
				APPARENT ORGANIC (DIRT) CAKE						
	~ 2.5 GALS PURGED									

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
12/16/11	1100							MW-6D	BTEX	HCl	ICE
12/16/11	1000-1215	FB-4	DISTILLED		WATER			FB-4	BTEX	HCl	ICE

LOW FLOW SAMPLING SHEET

Well: MW-65 Date: 12/16/11

Location: HANSMAN Samplers: RANDOLPH GROUND

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
12/13/11	1317	7.96	17.00	4	UNK	0	0	-	-	0.25 L/m 20/10@20,45
12/16/11	1105	7.84								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
12/16/11	1115	Initial	7.20	16.88	13.53	2.49	-83	2.67	7.84	0.2 L/m 20/10@30
	1121		7.27	17.07	10.54	2.75	-2	3.66	8.13	
	1126		7.28	17.24	10.24	2.87	11	3.32	8.37	
	1131		7.27	17.42	10.16	2.93	14	3.07	8.65	
	1136		7.26	17.31	10.15	2.98	24	2.63	8.96	
	1140		7.38	17.40	10.13	3.02	-24	2.77	9.21	
			PURGE WATER CLEAR-LIGHT BROWN/YELLOWISH SLIGHT ORGANIC (DIRT) 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
~~12/16/11~~	1140							MW-65	BTEX	HCl	ICE
12/16/11	1140					12/16/11	0800	DUP-1	↓	↓	↓
	1140							MS			
	1140							MSD	↓	↓	↓

ALS Environmental

Chain of Custody Form

Page 1 of 2

COC ID: 48674

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- [ ] Spring City, PA +1 610 948 4903
- [ ] York, PA +1 717 505 5280

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information	
Purchase Order		Project Name	Huntsman Brickland Refinery
Work Order		Project Number	137452
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.
Send Report To	Brad Stokes	Invoice Attn	Brad Stokes
Address	442 Bermuda	Address	442 Bermuda
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411
Phone	(361) 737-9203	Phone	(361) 737-9203
Fax		Fax	
e-Mail Address	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com

Parameter/Method Request for Analysis

A. BTEX (8021)

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A
1	mw-5	12/13/11	1630	WATER	1,8	3	X
2	mw-8	12/14/11	1450	WATER	1,8	3	X
3	mw-10	12/14/11	1550	WATER	1,8	3	X
4	mw-3S	12/15/11	1405	WATER	1,8	3	X
5	mw-3D	12/15/11	1565	WATER	1,8	3	X
6	mw-9S	12/15/11	1610	WATER	1,8	3	X
7	mw-6D	12/16/11	1100	WATER	1,8	3	X
8	mw-6S	12/16/11	1140	WATER	1,8	3	X
9	mw-6S MS	12/16/11	1140	WATER	1,8	32	X
10	mw-6S MSD	12/16/11	1140	WATER	1,8	2	X

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

Shipment Method: LONESTAR

Required Turnaround Time: [x] Std 10 WK Days

Results Due Date:

Relinquished by:	Date: 12/16/11	Time: 1500	Received by:
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: 10 Day TAT

Cooler ID | Cooler Temp. | QC Package:

- [x] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other / EDD
- [ ] 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 Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental 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 Environmental

Chain of Custody Form

Page 2 of 2

COC ID: 49091

☐ Cincinnati, OH +1 513 733 5336
☐ Everett, WA +1 425 356 2600
☐ Fort Collins, CO +1 970 490 1511
☐ Holland, MI +1 513 733 5336
☒ Houston, TX +1 281 530 5656
☐ Middletown, PA +1 717 944 5541
☐ Salt Lake City, UT +1 801 266 7700
☐ Spring City, PA +1 610 948 4903
☐ York, PA +1 717 505 5280

ALS Project Manager:

ALS Work Order #:

Customer Information	
Purchase Order	
Work Order	
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	brad.stokes@erm.com

Project Information	
Project Name	Huntsman Brickland Refinery
Project Number	137452
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	brad.stokes@erm.com

Parameter/Method Request for Analysis

A: BTEX (8021)

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	DUP-1	12/16/11	0800	WATER	1,8	3	X										
2	RIVER-UPSTREAM	12/13/11	1300	WATER	1,8	3	X										
3	RIVER-DOWNSTREAM	12/13/11	1400	WATER	1,8	3	X										
4	EB-1	12/13/11	1245	WATER	1,8	3	X										
5	EB-2	12/14/11	0830	WATER	1,8	3	X										
6	FB-1	12/13/11	1030	WATER	1,8	3	X										
7	FB-2	12/14/11	1400	WATER	1,8	3	X										
8	FB-3	12/15/11	1330	WATER	1,8	3	X										
9	FB-4	12/16/11	1000	WATER	1,8	3	X										
10	TRIP BLANK			WATER	1,8	2	X										

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

Shipment Method:

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

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
[signature]	12/16/11	1500	
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: 10 Day 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 / EDD
☐ 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 Environmental.
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3. The Chain of Custody is a legal document. All information must be completed accurately.

Daily Safety Meeting

ERM

Date	Meeting Facilitator	Project Name	Project Number
6/28/11	RANDOLPH ORTUNO	HUNTSMAN	0137452

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

STF - UNEVEN GROUND, SOFT SPOTS, BURIED LINES, DEBRIS, ROCKS LOOSE SOIL, PPE, EYES ON PATH

DRIVING - BIG PICKUPS, SEAT BELT, TRAFFIC LAWS, SPEED LIMIT, CLEAN MIRRORS AND WINDOWS, 25 RULE,

VOCS - UPWIND, PID, RESPIRATOR W/ ORGANIC CARTRIDGES

NAPL - NITRILE GLOVES, PPE, SPILL KIT, BUCKETS W/ LIDS, PLASTIC, EXTRA TYVEX IF NEEDED

O-SOX - NITRILE GLOVES, PPE, UPWIND, SAFETY GLASSES

HEAT/UV - SUNSCREEN, WATER, SHADE, BREAKS, ICE, UMBRELLA

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

INSECTS, SPIDERS, WILD DOGS, BURROWS, SNAKES - AWARENESS, PRETOP KIT

PINCH POINTS - LEATHER GLOVES, RIGHT TOOL FOR JOB

LIFTING - PROPER TECHNIQUE, LIGHTER LOADS, HELP

HASP

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

GAUGE WELLS

RECORD O-SOX'S

SAMPLE WELLS

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

ATTENDEES (Print name and initial)

RANDOLPH ORTUNO RO	
Hector Diaz HD	

ERM

Daily Safety Meeting

Date	Meeting Facilitator	Project Name	Project Number
6/29/11	RANDOLPH OSTLUND	HUNTSMAN	0137452

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

S/T/F - UNEVEN GROUND, SOFT SANDS, BURROW HOLES, GROUND DEBRIS, ROCKS, LOOSE SOIL, EYES ON PATH, THORNY BRUSH, PPE

DRIVING - BIG PICTURE, SEAT BELT, TRAFFIC LAWS, SPD LIMIT, CLEAN MIRRORS + WINDOWS, 2 SEC RULE

VOC'S - UPWIND, PID, RESPIRATOR W/ ORGANIC CARTRIDGES

NAPL - NITRILE GLOVES, PPE, SPILL KIT, BUCKETS W/ LIDS, PLASTIC, EYEWASH + TYVEK IF NEEDED

O-SOX - NITRILE GLOVES, PPE, UPWIND, SAFETY GLASSES

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

HEAT/UV - SUNSCREEN, WATER, SHADE (UMBRELLA), BREAKS, A/C

INSECTS, SPIDERS, WILD DOGS, BURROWS, SNAKES, FIRST AID, GLOVES

PINCH POINTS - LEATHER GLOVES, RIGHT TOOL

LIFTING - PROPER TECHNIQUE, LIGHTER LOADS, HELP

HASP

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

REPLACE O-SOX IN WELLS

SAMPLE WELLS

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

ATTENDEES (Print name and initial)

RANDOLPH OSTLUND RHO	
Hector Diaz [initials]	

Daily Safety Meeting

Date	Meeting Facilitator	Project Name	Project Number
6-30-11	Randolph Ortland	Huntsman	0137452

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

S/T/E - Uneven ground, soft sand, burrow holes, ground debris, rocks, loose soil, small bushes

VOC's - Upwind, PID, respirator w/ organic cartridges

Driving - See the Big Picture, seat belts, obey traffic laws & signs, obey speed limit, Clean mirrors + windows

NAPL - Nitrile gloves, PPE, Bucket w/ lids, Spill Kits, poly sheeting, eyewash

O-SOX - Nitrile gloves, PPE, Upwind, safety glasses, poly sheeting

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

Insects - spiders, snakes, wild dogs, Be aware you stand/walk

Pinch Points - Leather gloves, use the right tool for the job

Heat/UV - sunscreen, frequent water breaks, take breaks in shade

Lifting - proper bending technique, buddy system

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

Replace O-SOX in wells 5, 8, & 10

Sample monitoring wells

Collect river water samples

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

ATTENDEES (Print name and initial)

Hector Diaz HD	
RANDOLPH ORTLAND RBO	

Huntsman Wells Gauging Information (Monitor Wells) RIVER FULL

	Well ID	Date	Opened Well PID CK Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	Time Gauged	Comments
	MW-1	6/28/11	11:02 ~~10:08~~	0.0 ~~44.0~~		4.30		N/S 12:26	
	MW-2		PLUGGED ~~10:13~~	~~0.0~~				P&A 6/99	
7	MW-3S		11:08	0.0		4.65		S 12:10	
6	MW-3D		11:08	0.0		4.63		S 12:10	
	MW-4		10:42	0.0		3.35 ~~4.97~~		S 1354 ~~13:44~~	
1	MW-5		10:48	9.0		4.20		N/S 11:31	Removed/Re-installed new 0-50x
9	MW-6S	6/28/11	11:14	0.0		5.54		S 12:13	
8	MW-6D		11:13	0.0		5.56		S 12:12	
	MW-7		10:30	0.0		3.53		S 1340	
2	MW-8		10:25	3.0		3.97		N/S 11:55	Removed/Re-installed new 0-50x
5	MW-9S		11:18	0.0		4.95		S 12:08	
	MW-9D		PLUGGED					P&A 7/05	
PROD	WELL MW-10		10:11	4.0				See WELL POINT Form Sheen recovery well w/pump	Removed/Re-installed new 0-50x
3	MW-11		10:21	0.0		6.45		N/S 12:00	
	MW-12	6/28/11	10:58	0.0		3.65		N/S 12:30	

(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: _____

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)	Time Gauge / Comments
MW-13	6/28/11	PLUGGED					P&A 6/99
MW-14		10:37	2.0		4.97		S 1344
MW-15			0.0		13.63		S 1406
MW-16			0.0		11.91		N/S 1412
MW-17	6/28/11	11:40	0.0		6.58		N/S 1140

(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: _____

Revised: 12/10/2008

Huntsman Wells Gauging Information (Well Points) River Bull

Well ID	Date	OPEN'D Well PID CK Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	(2) Well Bailed Yes/No	Time Gauged Comments
WP-1	6/28/11	10:08	41.0	N/A	8.69	N/A	No	1520
WP-2		10:13	0.0	N/A	6.78	N/A	No	1527
WP-3		10:16	0.0	N/A	6.30	N/A	No	1529
WP-7		10:04	0.0	N/A ~~4.69~~ ND	11.19 ~~4.71~~ ND	N/A	No	1532
WP-14		10:46	2.0	4.69	4.71	0.02	No	TAR at bottom of well 1500
WP-25		10:06	0.0	N/A	9.35	N/A	No	1524
WP-26S		10:10	0.0	N/A	7.86	N/A	No	1512
WP-26D		10:09	5.0	11.28	8.40		No	DNAPL Same readings from Dec
WP-27S			23.0	N/A	12.57	N/A	No	1535
WP-27D			0.0	1530 ~~N/A~~	12.47	~~N/A~~	No	?DNAPL? TD 1536 16.90
WP-30		10:20	0.0	N/A	10.89	N/A	No	1544
WP-31	6/28/11	Can not open cap!						
WP-32			0.0					DRY
WP-33		10:22	0.0	11.25	8.37	~~8.97~~ N/A	No	DNAPL? 1551
LAST MW-10	6/28/11	10:11	4.0	10.62	7.67		No	DNAPL? Recovery well w/pump 1555

(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

LOW FLOW SAMPLING SHEET

① Well: MW-17 Date: 6/28/11

Location: HUNTSMAN Samplers: RANDOLPH BERGLUND

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
6/28/11	11:40	6.58	24.75	4	UNK	0	0	-	-	SAMPLE COLLECTED @ 12' BTOC PERISTALTIC PUMP

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm) mS/cm	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
6/28/11	1238	Initial	6.83	26.94	10.54	3.81	-48.5	2.98	6.58	0.4 L/m
	1244		6.83	26.68	10.67	3.90	-57	1.43	6.73	
	1249		6.88	26.83	10.85	3.72	-54	1.10	6.75	
	1254		6.91	26.91	11.15	3.07	-68	1.11	6.76	
	1259		6.94	26.85	11.37	2.85 6.94	-77	1.34	6.70	
	1304		6.94	26.64	11.52	1.99	-75	1.13	6.70	
	1309		6.95	26.85	11.69	1.81	-73	1.27	6.70	
		3.5	GALS PURGED							
			CLR/SLIGHTLY YELLOW TINGED PURGE WATER APPARENT ORGANIC, DIRT ODOR W/ SAND							

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
6/28/11	1310							MW-17	BTEX	HCl	ICE
									PAHs	-	
									RAD	HNO_3	UNFILTERED
6/28/11	1200	OUT	1600	IN	DISTILLED H_2O			FB-1	BTEX	HCl	ICE

(2)

LOW FLOW SAMPLING SHEET

Well: MW-11 **Date:** 6/28/11

Location: HUNTSMAN **Samplers:** RANDOLPH ROTLAND

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
6/28/11	1200	6.45	~~H~~	~~UNK~~	UNK			-	-	SAMPLE DEPTH 13' BTOC
			20.29							PERISTALTIC 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
6/28/11	1415	Initial	7.03	26.35	7.541	1.84	-101	3.26	6.95	
	1421		6.98	26.08	7.495	1.74	-107	2.66	7.63	0.4 L/m
	1426		6.98	26.94	7.520	2.27	-119	2.31	8.30	0.3 L/m
	1431		7.01	27.56	7.602	1.06	-132	2.15	8.70	0.2 L/m
	1437		7.02	26.62	7.534	1.09	-122	1.67	8.95	0.2 L/m
	1444		7.01	26.55	7.469	1.08	-113	2.41	9.30	0.2 L/m
	1450		7.02	27.85	7.582	1.02	-134	2.57	9.36	0.15 L/m
	1456		7.01	27.99	7.584	0.83	-142	2.00	9.45	
	1501		6.98	28.14	7.564	1.10	-134	1.95	9.48	
	1506		6.96	28.09	7.562	0.89	-144	2.08	9.55	
	1512		6.92	28.06	7.527	0.86	-137	2.14	9.60	
			PURGED ~4 GALS							
			PURGE WATER CLEAR, SLIGHT YELLOW TINT							
			ODOR OF ORGANIC, DIESEL ODOR							

Sampling Record *OILY TYPE MATERIAL FOUND ON WL/PROBE SLIGHT H COOR ??

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
6/28/11	1515							MW-11	BTEX	HCl	ICE
									PAHs		
									LEAD	HNO_3	UNFILTERED
6/28/11		DUP		NS	DISTILLED H_2O			FB-1	BTEX	HCl	ICE

(3)

LOW FLOW SAMPLING SHEET

Well: MW-9S
Location: Huntsman
Date: 6/29/11
Samplers: [illegible]

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
6/28/11	[illegible]:08	4.95	15.50	4	UNK	0	0	—	—	
6/29/11	0852	5.21								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
6/29/11	0906	Initial	7.05	22.66	14.30	5.39	-73	3.07	5.25	0.45L/m 10/5
	0913		7.04	22.11	14.36	4.55	-82	1.93	5.25	
	0919		7.06	22.09	14.38	2.61	-88	1.67	5.25	
	0924		7.06	22.11	14.34	1.60	-90	1.38	5.25	
	0930		7.07	22.16	14.34	1.16	-90	1.60	5.25	
	0935		7.07	22.15	14.30	1.08	-90	1.48	5.26	
	0940		7.07	22.20	14.30	1.19	-90	1.65	5.26	

~3.5 GALS PURGED

CLR PURGE WATER W/ YELLOW TINT

APPARENT DIRT/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
6/29/11	0945							MW-9S	BTEX	HCl	ICE
									PAHS	—	
									LEAD	HNO_3	UNFILTERED

LOW FLOW SAMPLING SHEET

Well: MW-30 Date: 6/29/11

Location: HUNTSMAN Samplers: RANDOLPH 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)	Comments
6/28/11	12:10	4.63	37.50	4	INK	0	0	-	-	
6/29/11	10:30	4.65								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
6/29/11	1040	Initial	6.96	23.93	19.42	4.14	-46	3.13	4.66	0.3L/m 20/10 2psi
	1046		6.93	23.48	19.16	3.17	-46	1.56	4.66	0.3L/m 5/10
	1051		6.93	23.49	19.17	2.80	-42	1.97	4.66	0.35 L/m 5/10 30 psi
	1057		6.93	22.96	18.99	2.34	-38	1.91	4.66	
	1102		6.92	22.69	18.91	2.04	-35	1.39	4.66	
	1107		6.91	23.10	19.07	1.93	-35	1.89	4.66	
	1112		6.90	23.01	19.02	1.69	-35	1.89	4.66	
	1116		6.91	23.03	18.97	1.68	-35	1.83	4.66	
				~ 3 GALS PURGED						
				PURGE WATER CLEAR						
		SLIGHT		NO APPARENT			ODOR OBSERVED			

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
6/29/11	1120							MW-30	BTEX	HCl	ICE
									PAHs	-	
6/29/11									PB	HNO_3	
FB-2	1050	6.00	1640	IN	DISTILLED H2O			FB-2	BTEX	HCl	ICE ~~LAB PRESERVED~~

(5)

LOW FLOW SAMPLING SHEET

Well: MW-3S **Date:** 6/29/11

Location: [illegible] **Samplers:** [illegible]

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
6/28/11	12:10	4.65	16.56	4	UNK	0	0	—	—	
6/29/11	11:50	4.60								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
6/29/11	1153	Initial	7.20	26.32	14.12	3.68	-77	1.91	4.60	0.35 L/m 05/15 @ 20psi
	1159		7.14	24.52	12.44	1.66	-82	1.03	4.96	0.30 L/m 5/15 @ 20psi
	1204		7.14	24.39	12.25	1.49	-84	0.82	5.27	0.30 L/m 5/15 @ 20
	1210		7.15	24.61	12.20	1.37	-84	0.77	5.50	0.24 L/m 20/10
	1215		7.16	25.43	12.36	1.54	-86	0.97	5.50	
	1220		7.17	25.99	12.41	1.20	-87	1.06	5.48	
	1225		7.17	26.10	12.41	1.34	-87	0.90	5.45	5/15
									5.43	

CLEAR PURGE WATER

APPARENT SLIGHT ORGANIC/DIRT 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
6/29/11	1230							MW-3S	BTEX	HCl	Ice
									PAHs	—	
									Pb	HNO3	UNFILTERED

6

LOW FLOW SAMPLING SHEET

Well: MW-6D
Location: Hunsman[illegible]
Date: 6/29/11
Samplers: [illegible]

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
6/28/11	12:12	5.56	38.0	4	UNK	0	0	—	—	
6/29/11	13:50	5.50								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
6/29/11	14:00	Initial	7.12	28.87	22.66	8.66	-51	9.64	5.51	0.3L/m 10/5 @ 20
	1405		7.06	27.15	21.91	2.73	-41	2.00	5.52	0.3L/m 10/5 @ 35
	1410		7.05	26.66	21.76	2.09	-37	1.44	5.52	0.4L/m
	1417		7.06	26.38	21.56	2.54	-27	1.59	—	
	1422		7.06	26.18	21.45	2.67	-26	1.82	5.52	
	1428		7.06	26.35	21.41	2.79	-26	1.40	—	

~3 GALS PURGED

CLEAR PURGE WATER
VERY SLIGHT APPARENT ORGANIC/DIRT 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
6/29/11	1430							MW-6D	BTEX	HCl	ICE
									PAHs	—	
									Pb	HNO3	ICE UNFILTERED

Revised:07/10/2007

ERM-El Paso

LOW FLOW SAMPLING SHEET

(7)

Well: MW-65 **Date:** 6/29/11

Location: HANOSMAN **Samplers:** RANDOLPH

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
6/28/11	12:13	5.54	17.00	4	UNK	0	0	—	—	
6/29/11	1450	5.48								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
6/29/11	1455	Initial	7.02	31.88	15.68	4.12	-51	3.67	5.75	0.25 L/m 20/10 20 psi
	1500		6.94	30.58	14.72	3.81	-90	2.21	6.00	0.3 L/m
	1505		6.93	30.20	14.40	3.57	-102	2.09	6.33	
	1510		6.92	30.17	14.36	3.02	-109	2.06	6.65	
	1515		6.93	31.21	14.32	3.13	-111	2.02	6.83	
	1615								8.21	END OF SAMPLING
			PURGE WATER LOOKS LIKE LIGHT ICE TEA SOMEWHAT ORGANIC/DIRT 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
6/29/11	1520							MW-65	BTEX	HCl	Ice
	1200	DUP-1	OF MW-65					DUP-1	BTEX	—	
							MS		PD	HNO_3	UNFILTERED
							MSD				

(8) Well: MW-5

LOW FLOW SAMPLING SHEET

Date: 6/~~28~~ 30/11

Location: HUNTSMAN

Samplers: RANDOLPH ORTLUND

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
6/28/11	11:31	4.20	15.00	4"	UNK	9.0	0.0	—	—	Sample depth ~10' btoc
6/30/11	0840	4.19								PERISTALTIC 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
6/30/11	0853	Initial	10.72	25.82	19.50	1.67	-96	4.87	4.62	0.24 L/m
	0858		8.82	26.53	19.31	1.81	-148	12.8	4.79	0.25 L/m
	0903		8.51	27.11	20.07	1.51	-210	8.17	4.94	0.20 L/m
	~~0905~~		7.63	27.79	20.66	1.80	-224	5.61	5.05	
	0915		7.13	27.83	20.75	2.93	-224	3.67	5.14	
	0920		6.96	28.30	20.86	6.65	-326	4.66	5.19	0.175 L/m
	0925		6.86	28.16	20.78	6.76	-376	2.86	5.22	
	0930		6.88	27.68	21.59	5.80	-475	3.23	5.34	
	0938		8.95	28.34	20.73	3.62	-351	148	5.43	← ANOMALY
										* VARIANCE DO AND PH DUE TO O-SOX CHEM REACTIONS??
	1000		6.31	29.37	20.72	14.48	-370	5.52	5	
		~3 GALS PURGED								
		PURGE WATER CLEAR W/ CHARCOAL GREY TINT								WELL HAD O-SOX IN IT
										REMOVED BEFORE SAMPLING
	SLIGHT ORGANIC ODOR - HYDROCARBON LIKE ODOR - LIGHT									

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
6/30/11	0945							MW-5	BTEX	HCl	ICE
									PAH	—	
									Pb	HNO3	
6/30/11	0830		DISTILLED WATER					EB-1	~~EB-1~~ BTEX	HCl	ICE UNFILTERED
			WATER LEVEL PROBE								

(9) Well: RIVER UPSTREAM

Location: [illegible]

LOW FLOW SAMPLING SHEET

Date: 6/30/11

Samplers: [illegible]

Well Information

RIVER FALL - HIGH

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
										POLY RIVER SAMPLER

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
6/30/11	1115	Initial	7.94	27.44	1.138	6.06	-134	25	-	JUST BELOW SURFACE
										[illegible]

NO ODOR

RIVER WATER SLIGHTLY CLOUDY SUSPENDED SEDIMENT (SILT)

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
6/30/11	1100				RIVER-UPSTREAM				BTEX	HCl	ICE
									PAHs	-	
									Pb	HNO3	UNFILTERED
6/30/11	1030		RIVER SAMPLER					EB-2	BTEX	HCl	ICE

[illegible] DISTILLED WATER

(10)

LOW FLOW SAMPLING SHEET

Well: RIVER DOWNSTREAM
Location: [illegible]

Date: 6/30/11
Samplers: [illegible]
RIVER [illegible]

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
6/30/11										POLY RIVER SAMPLER

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
6/28/11	1150	Initial	7.95	28.23	1.026	5.53	-64	26.1	—	JUST BELOW SURFACE
										[illegible] DOWNSTREAM
				NO ODOR						
			RIVER WATER SURFACE CLOUDY SUSPENDED SEDIMENT SILT							

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
6/30/11	1130		RIVER-DOWNSTREAM						BTEX	HCL	ICE
									PAHs	—	
									Pb	HNO_3	ICE UNFILTERED

(11)

LOW FLOW SAMPLING SHEET

Well: MW-8
Location: [illegible]

Date: 6/30/11
Samplers: [illegible]

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
6/28/11	11:55	3.97	14.65	4	UNK	3.0	0.0	—	—	Sample depth ~ 9' btoc
6/30/11	12:15	4.01								Peristaltic 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
6/30/11	1220	Initial	8.58	27.99	8.135	10.94	-64	17.7	4.46	~~2.0L/m~~ 0.2L/m
	1225		8.57	29.05	8.339	9.70	-64	17.4	4.60	0.25 L/m
	1230		8.59	30.05	8.579	9.14	-60	15.2	4.84	0.2L/m
	1237		8.56	30.31	8.649	8.94	-56	16.0	5.09	
	1243		8.53	30.88	8.779	7.73	-55	15.1	5.25	
	1248		8.50	30.43	8.748	7.36	-51	13.9	5.40	
	1253		8.48	30.58	8.752	7.16	-50	14.8	5.52	
										Well H2O 0-50X in 10
										Removed before sampling

Purged ~ 2 gals
Mostly
Purge water clear with slight yellowing
Some suspended sediment silts milky
Slight 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
6/30/11	12:55							MW-8	BTEX	HCl	Ice
									PAHs	—	
									Pb	HNO3	Unfiltered
6/30/11	0800	OUT	1515	IN		Distilled	H2O		FB-3	BTEX	HCl Ice

Revised:07/10/2007 ERM-El Paso

(12)

LOW FLOW SAMPLING SHEET

Well: MW-10
Location: Huntsman

Date: 6/30/11
Samplers: Randolph Arzuna

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
6/28/11	15:55	7.67	19.89	4	UNK	4.0	0.0	—	10.62?	Sample depth ~ 14' btoc
6/30/11	1350	7.67								Peristaltic 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
6/30/11	1418	Initial	11.05	31.16	9,996	11.79	-77	9.82	7.84	0.3 L/m
	1422		11.11	30.07	9,842	13.55	-67	7.05	7.84	
	1427		11.09	30.72	9,995	12.88	-67	6.68	7.84	
	1432		11.13	31.44	10.22	13.73	-67	5.37	—	
	1437		11.14	31.04	10.21	14.56	-66	4.70	7.84	
	1442		10.26	31.53	10.13	12.30	-59	4.33	—	
										Very hi pH and DO due to O-Sox??
			~3 Gals purged							Well had O-Sox in it removed before sampling
			Purge water clear - slight yellow tint slight HC 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
6/30/11	1445							MW-10	BTEX	HCl	ICE
									PAHs	—	
									Pb	HNO3	unfiltered

(78) 2437

0119078 Huntsman O-Sox Install 3/10/11 Thur

1300 Viva Tech (Hector) on site at ERM trailer
- Review H&S protocol for O-Sox install
- Fill out and sign H&S daily form

1320 Load up truck - depart for site

Object: Install O-Sox MWs 5, 8, 10

Personnel: ERM - Randy Ostlund
Viva Tech - Hector Diaz

Equip: T-84, cell, tool kit, O-Sox kit

Weather: Ptly cldy, sunny, warm, dry, breezy < 5-10 mph 65-75°F

H&S: Review and sign daily form

1345 Arrive Huntsman site:
- Install O-Sox in 4" MWs - 5, 8, and 10; 3 ft off of bottom of well:
- TD MW-10 ~ 20 ft bTOC
- TD MW-5 ~ 15 ft bTOC
- TD MW-8 ~ 15 ft bTOC

1600 Depart site; Sox's installed
- Trimmed some brush blocking site roads - back to office. End

Randolph Ostlund 3/10/11

(79) 2437

0874452 Huntsman June sample event 6/25/11 [illegible]

0730 Arrive ERM office
- Viva Tech Hector Diaz at office
- Calibrate PID (see cal form)
- 100 ppm isobutylene read 98.0
- Load up truck w/ sampling equipment

Object: June semi-annual GW gauging/sampling event
- Replace O-Sox

Personnel: ERM - Randy Ostlund
- Viva Tech - Hector Diaz

Equip: T-84, cell, tool kit, PID, OWIP, P-pump, sample equip

Weather: Clr, sunny, very hot, dry, windy W 5-20 mph, 85-105°F

H&S: Review and sign daily form

0750 Depart for Huntsman site
Hector pick-up 2 drums from Viva

0820 Arrive at main gate Huntsman
waiting for Hector to enter
- Fill out forms gauge/sample

0900 Viva Tech Hector on site

0905 H&S review daily safety briefing form, JHSP, and sign daily
- GW - water gauging, sampling

Randolph Ostlund 6/25/11

(80) 2437

0137452 HINDSMAN JUNE EVENT 6/27/11 MON

0935 OPEN ALL WELLS AND CK W/PID

1115 BEGIN GAUGING MW'S SAMPLE WELLS FIRST

1130 PULL UP CABLE FOR O-SOX MW-5 ~~18~~: MW-5
- NOT CONNECTED, CABLE EATEN UP BY CHEMICAL REACTION, CABLE NOT PLASTIC COATED FROM O-SOX MANUAL AS ORDERED
- DISCUSSED WITH BRAD USE ROPE NOT CABLE TRY TO FISH OUT O-SOX WITH TREBLE HOOKS

1200 FB-1 SET OUT BY MW-17

1205 SET UP AND SAMPLE MW-17 CALCK:
- TURBIDITY METER 10 NTU STD READ 10.25 NTU OK
- YSI CAL AT SHOP SEE ATTACHED CAL SHEET 6/24/11

1230 PURGE AND SAMPLE MW-17

1310 SAMPLE TIME MW-17:
- 3x40ml VOA HCL BTEX ICE

Randolph Ortland 6/27/11

(81) 2437

0137452 HINDSMAN JUNE EVENT 6/28/11 TUE
- 2x 1L AMBER POLYS ICE
- 1x 500ml PLASTIC LEAD HNO3 ICE

1355 SET UP MW-11

1415 PURGE AND SAMPLE MW-11

1515 SAMPLE TIME MW-11
- 3x40ml VOAs HCL BTEX ICE
- 2x1L AMBER POLYS ICE
- 1x500ml POLY LEAD HNO_3 ICE

* WELL MAY HAVE OIL SHEEN: OILY TYPE SUBSTANCE ON WL PROBE - ONLY FAINT HC ODOR

1545 FINISHED SAMPLING TODAY
- MW-08 SAME O-SOX ISSUE AS MW-05 DISSOLVED SS CABLE

1600 FINISHED GAUGING UP WELLS
- LOCK UP ALL MW'S
- CLEAN UP AREA
- SAMPLES ON ICE

1600 PICKED UP FB-1 (1200-1600)
3x40ml VOA'S BTEX HCL ICE

1625 COMPOUND LOCK
- WELLS LOCKED
- MAIN GATE LOCKED
- SAMPLES ON ICE
- DEPART SITE BACK TO OFFICE

Randolph Ortland 6/28/11

(82) 2437

013745 2 HUNTSMAN JUNE EVENT 6/29/11 WED

0615 LOAD UP TRUCK - DEPART FOR SITE
0700 ARRIVE HUNTSMAN SITE:
- WAIT ON FOR UNIV TECH
- SCHEDULE TO MEET 7am
OBJECT: CONTINUE GW SAMPLING TASKS
- REMOVE OLD O-SOX AND REPLACE W/NEW AFTER WELL SAMPLING
PERSONNEL: ERM - RANDY ORTLUND
UNIV TECH - HECTOR DIAZ
EQUIP: T-84, CELL, TOOL KIT, PID P-PUMP, OWSP, GW SAMPLE EQUIP
WEATHER: CLR, HOT, SUNNY, DRY, WINDY WS-20MPH, 80-105°F
H&S: REVIEW AND SIGN DAILY FORM
0805 UNIV TECH HECTOR ON SITE ARRIVED 1 hr LATE
- SET UP OR MOVE FOR SAMPLING
- REVIEW AND SIGN H&S DAILY FORM
0830 ARRIVE MW-9S
- SET UP TO SAMPLE
- CALCK EQUIP
- LAMOTTE 2020 WE TURBIDITY METER
- STD 10 NTU - READ 10.15 NTU

Randolph Ortlund 6/29/11

(83) 2437

013745 2 HUNTSMAN JUNE EVENT 6/29/11 WED

- YSI 650 MDS 600XL
- PH STD 7.00 READ 6.96 OK
- PH STD 10.00 READ 9.91 OK
- COND STD 1.0 READ 1.099 mS/cm
0905 PURGE AND SAMPLE MW-9S
0945 SAMPLE TIME MW-9S
- 3x40ml VOAS HCL BTEX ICE
- 2x1L AMBER PAHS ICE
- 1x500ml POLY Pb HNO3 ICE
CLEAN UP DEPART FOR MW-3D
1010 ARRIVE MW-3D
1040 PURGE AND SAMPLE MW-3D
1110 SAMPLE TIME MW-3D:
- 3x40ml VOAS HCL BTEX ICE
- 2x1L AMBER PAHS ICE
- 1x500ml POLY Pb HNO3 ICE
1130 SET UP AND SAMPLE MW-3S
1200 SAMPLE TIME MW-3S:
- 3x40ml VOAS HCL BTEX ICE
- 2x1L AMBER PAHS ICE
- 1x500ml POLY Pb HNO3 ICE
CLEAN UP / DECON W/L
1300 BREAK FOR LUNCH
1335 BACK ON SITE
- SET UP TO SAMPLE MW-6D

Randolph Ortlund 6/29/11

013745.2 HINDSMAN JUNE EVENT 6/29/11 WED

1355 PURGE AND SAMPLE MW-6D

1430 SAMPLE TIME MW-6D
- 3x40ml VOAs BTEX HCl ICE
- 2x1L AMBER POLYS ICE
- 1x500ml POLY Pb HNO3 ICE

1445 SAMPLES ON ICE, DECON WL
SETUP SAMPLE MW-6S

1455 PURGE AND SAMPLE MW-6S

1520 SAMPLE TIME FOR:
- MW-6S
- MW-6S/MS
- MW-6S/MSD
DUP-1 TIME AT 1200
ALL 4 SAMPLES ANALYSIS
- 3x40ml VOAs BTEX HCl ICE
2x1L AMBER POLYS ICE
1x500ml POLY Pb HNO3 ICE

1615 FINISHED SAMPLING
MW-6S CLEAN UP
SAMPLES ON ICE

1640 FB-2 CAPPED SET OUT
BY MW-3D @ 1050
DISTILLED H2O

1650 COMPOUND + GATE LOCKED
DEPART SITE FOR BUY ICE

Randolph Ostland 6/29/11

013745.2 HINDSMAN JUNE EVENT 6/30/11 THUR

0600 ARRIVE ERM OFFICE
- LOAD UP TRUCK DEPART FOR SITE

0650 ARRIVE ON SITE - HINDSMAN
- MEET VIVA TECH AT 7 AM
- SET UP LOG BOOK, H&S

0710 VIVA TECH ON SITE

0735 SCOPE: FINISH GW SAMPLING
- INSTALL GO-SOX MW-5, 8, 10
- PACK AND SHIP SAMPLES
- PACK AND SHIP RENTAL EQ

PERSONNEL: ERM - RANDY OSTLAND
VIVA TECH - VICTOR DIAZ

EQUIP: J-54, CELL TOOL KIT, PID
EQUIP, GW SAMPLE EQUIP,

WEATHER: CLR, SUNNY, VERY HOT, SLT
HUMID, WINDY SW 5-20 MPH, 80-105F

H&S: REVIEW AND SIGN DAILY FORM

0715 REVIEW AND SIGN DAILY
BRIEFING FORM W/ DH

0720 SET-UP FOR GW SAMPLING

0800 FB-3 SET OUT AT BY MW-08
DISTILLED WATER

0800 SET-UP AND SAMPLE MW-5

0810 CHECK YSI 600
- pH STD 7 READ 6.98 OK

Randolph Ostland 6/30/11

(86) 2437

0137452 HANDSMAN JUNE EVENT 6/30/11 THU

- PH STD 10 READ 9.93 OK
- COND STD 1.0 READ 1.093 OK
- TURBIDITY METER:
  STD 10NTU READ 9.99NTU OK

0830 SAMPLE TIME FOR EB-1 OF WATER LEVEL PROBE USING DISTILLED WATER BTEX ONLY

0840 PURGE AND SAMPLE MW-5

0940 SAMPLE TIME MW-5:
- 3x40ml VOAS BTEX, HCL ICE
- 2x1L AMBER PAHS ICE
- 1x500ml POLY Pb HNO3 ICE

* THIS WELL HAD O-SOX INSTALLED 3/10/11

- HI O2 AND PH READINGS HARD TO STABILIZE PARAMETERS BEFORE SAMPLING

1025 INSTALLED NEW O-SOX IN MW-5 3' ABOVE TD (TD ~ 15' BTOC)

1100 SAMPLE TIME RIVER-UPSTREAM

1130 SAMPLE TIME RIVER-DOWNSTREAM
- 3x40ml VOAS BTEX HCL ICE
- 2x1L AMBER PAHS ICE

Randolph Oellund 6/30/11

(87) 2437

0137452 HANDSMAN JUNE EVENT 6/30/11 THUR

- 1x500ml POLY Pb HNO3 ICE

1030 EB-2 TEFLON RINSE SAMPLER CUP USING DISTILLED WATER BTEX AND PAHS ONLY
3x40ml VOAS BTEX HCL ICE

1210 ARRIVE MW-08 SET UP TO SAMPLE

1220 PURGE AND SAMPLE MW-8

1255 SAMPLE TIME MW-8
3x40ml VOAS BTEX HCL ICE
2x1L AMBER PAHS ICE
1x500ml POLY Pb HNO3 ICE

- CLEAN UP DECON, MOVE TO MW-10

1330 PLACED NEW O-SOX IN MW-8 3' ABOVE TD (TD ~ 14.5 FT BTOC)

1340 ARRIVE MW 10 SET UP FOR PURGE AND SAMPLE

1415 PURGE AND SAMPLE MW-10

1445 SAMPLE TIME MW-10
- 3x40ml VOAS BTEX HCL ICE
- 2x1L AMBER PAHS ICE
- 1x500ml POLY Pb HNO3 ICE

* ALL METALS (Pb) UNFILTERED IN FIELD

- DECON, CLEAN UP AND LOAD UP TRUCK

Randolph Oellund 6/30/11

(88) 2437

013748 [illegible] JANE EVANS 6/30/11 [illegible]

FINISHED GW SAMPLING

1505 PLACED NEW O-SOX IN MW-10 3' ABOVE TD (TD ~ 19.89' BTOC)

1515 FB-3 CAPPED SET OUT BY MW-8 0800 BTEX ONLY 3x40ml VOAs [illegible] HCl ICE

1530 COMPOUND CLEANUP AND LOCKED:

- PPE HEAVY DUTY GARBAGE BAG (1) IN COMPOUND
- 2 DRUMS IN COMPOUND
- 1 PURGE WATER
- 1 O-SOXS (3)
- ALL WELLS LOCKED
- MAIN GATE LOCKED

1535 BACK TO OFFICE:

- CLEAN, PACK, SHIP RENTAL EQUIP
- PACK AND SHIP GW SAMPLES

1930 COOLERS AND RENTAL EQUIPMENT DROPPED OFF AT FEDEX.

END

Randolph [illegible] 6/30/11

Laboratory Data Reports

Appendix B

March 2012
Huntsman
Project No. 0137452

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, Texas 78701
(512) 459-4700

ALS Environmental

29-Dec-2011

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

Tel: (361) 737-9203
Fax:

Re: Huntsman Brickland Refinery Work Order: **1112547**

Dear Brad,

ALS Environmental received 18 samples on 19-Dec-2011 09:05 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental 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 Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 31.

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

Sincerely,

Patricia L. Lynch

Electronically approved by: Yvan K. Ty

Patricia L. Lynch
Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Certificate No: TX: T104704231-11-5

ALS Environmental

Date: 29-Dec-11

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1112547-01	MW-5	Water		12/13/2011 16:30	12/19/2011 09:05	☐
1112547-02	MW-8	Water		12/14/2011 14:50	12/19/2011 09:05	☐
1112547-03	MW-10	Water		12/14/2011 15:50	12/19/2011 09:05	☐
1112547-04	MW-3S	Water		12/14/2011 14:05	12/19/2011 09:05	☐
1112547-05	MW-3D	Water		12/14/2011 15:05	12/19/2011 09:05	☐
1112547-06	MW-9S	Water		12/15/2011 16:10	12/19/2011 09:05	☐
1112547-07	MW-6D	Water		12/16/2011 11:00	12/19/2011 09:05	☐
1112547-08	MW-6S	Water		12/16/2011 11:40	12/19/2011 09:05	☐
1112547-09	Dup-1	Water		12/16/2011 08:00	12/19/2011 09:05	☐
1112547-10	River-Upstream	Water		12/13/2011 13:00	12/19/2011 09:05	☐
1112547-11	River-Downstream	Water		12/13/2011 14:00	12/19/2011 09:05	☐
1112547-12	EB-1	Water		12/13/2011 12:45	12/19/2011 09:05	☐
1112547-13	EB-2	Water		12/14/2011 08:30	12/19/2011 09:05	☐
1112547-14	FB-1	Water		12/13/2011 10:30	12/19/2011 09:05	☐
1112547-15	FB-2	Water		12/14/2011 14:00	12/19/2011 09:05	☐
1112547-16	FB-3	Water		12/15/2011 13:30	12/19/2011 09:05	☐
1112547-17	FB-4	Water		12/16/2011 10:00	12/19/2011 09:05	☐
1112547-18	Trip Blank	Water		12/16/2011	12/19/2011 09:05	☐

Client:	ERM Southwest, Inc.
Project:	Huntsman Brickland Refinery
Work Order:	1112547

Case Narrative

The results for xylenes in samples MW-5 and MW-8 are flagged with P. This indicates co-elution or possible matrix interference on the identification or confirmation columns. The lower of the two results is reported.

Batch R120952, BTEX, Sample 1112547-08AMS: The RPD between the MS and MSD was outside of the control limit for the surrogate trifluorotoluene

Batch R121029,BTEX, Sample 1112654-03AMS/MSD: The MS/MSD RPD is for an unrelated sample.

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: MW-5
Lab ID: 1112547-01
Collection Date: 12/13/2011 04:30 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	**2,000**		**100**	**µg/L**	100	12/22/2011 07:33 PM
Toluene	**4.4**		**1.0**	**µg/L**	1	12/27/2011 02:56 PM
Ethylbenzene	**1.4**		**1.0**	**µg/L**	1	12/27/2011 02:56 PM
Xylenes, Total	**14**	P	**3.0**	**µg/L**	1	12/27/2011 02:56 PM
Surr: 4-Bromofluorobenzene	*122*		*77-129*	*%REC*	1	12/27/2011 02:56 PM
Surr: 4-Bromofluorobenzene	*102*		*77-129*	*%REC*	100	12/22/2011 07:33 PM
Surr: Trifluorotoluene	*119*		*75-130*	*%REC*	1	12/27/2011 02:56 PM
Surr: Trifluorotoluene	*94.0*		*75-130*	*%REC*	100	12/22/2011 07:33 PM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: MW-8
Lab ID: 1112547-02
Collection Date: 12/14/2011 02:50 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	**9,900**		**100**	**µg/L**	100	12/22/2011 07:50 PM
Toluene	**7.7**		**1.0**	**µg/L**	1	12/27/2011 03:13 PM
Ethylbenzene	**15**		**1.0**	**µg/L**	1	12/27/2011 03:13 PM
Xylenes, Total	**12**	P	**3.0**	**µg/L**	1	12/27/2011 03:13 PM
Surr: 4-Bromofluorobenzene	*115*		*77-129*	*%REC*	1	12/27/2011 03:13 PM
Surr: 4-Bromofluorobenzene	*107*		*77-129*	*%REC*	100	12/22/2011 07:50 PM
Surr: Trifluorotoluene	*120*		*75-130*	*%REC*	1	12/27/2011 03:13 PM
Surr: Trifluorotoluene	*107*		*75-130*	*%REC*	100	12/22/2011 07:50 PM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: MW-10
Lab ID: 1112547-03
Collection Date: 12/14/2011 03:50 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	**30**		**1.0**	**µg/L**	1	12/22/2011 05:49 PM
Toluene	**2.1**		**1.0**	**µg/L**	1	12/22/2011 04:08 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 04:08 AM
Xylenes, Total	**50**		**3.0**	**µg/L**	1	12/22/2011 04:08 AM
Surr: 4-Bromofluorobenzene	*126*		*77-129*	*%REC*	1	12/22/2011 05:49 PM
Surr: 4-Bromofluorobenzene	*125*		*77-129*	*%REC*	1	12/22/2011 04:08 AM
Surr: Trifluorotoluene	*103*		*75-130*	*%REC*	1	12/22/2011 05:49 PM
Surr: Trifluorotoluene	*110*		*75-130*	*%REC*	1	12/22/2011 04:08 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: MW-3S
Lab ID: 1112547-04
Collection Date: 12/14/2011 02:05 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 04:25 AM
Toluene	U		1.0	µg/L	1	12/22/2011 04:25 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 04:25 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 04:25 AM
Surr: 4-Bromofluorobenzene	*106*		*77-129*	*%REC*	1	12/22/2011 04:25 AM
Surr: Trifluorotoluene	*96.9*		*75-130*	*%REC*	1	12/22/2011 04:25 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: MW-3D
Lab ID: 1112547-05
Collection Date: 12/14/2011 03:05 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 04:42 AM
Toluene	U		1.0	µg/L	1	12/22/2011 04:42 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 04:42 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 04:42 AM
Surr: 4-Bromofluorobenzene	*103*		*77-129*	*%REC*	1	12/22/2011 04:42 AM
Surr: Trifluorotoluene	*94.4*		*75-130*	*%REC*	1	12/22/2011 04:42 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: MW-9S
Lab ID: 1112547-06
Collection Date: 12/15/2011 04:10 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 05:00 AM
Toluene	U		1.0	µg/L	1	12/22/2011 05:00 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 05:00 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 05:00 AM
Surr: 4-Bromofluorobenzene	*107*		*77-129*	*%REC*	1	12/22/2011 05:00 AM
Surr: Trifluorotoluene	*97.4*		*75-130*	*%REC*	1	12/22/2011 05:00 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: MW-6D
Lab ID: 1112547-07
Collection Date: 12/16/2011 11:00 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 05:52 AM
Toluene	U		1.0	µg/L	1	12/22/2011 05:52 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 05:52 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 05:52 AM
Surr: 4-Bromofluorobenzene	*103*		*77-129*	*%REC*	1	12/22/2011 05:52 AM
Surr: Trifluorotoluene	*94.7*		*75-130*	*%REC*	1	12/22/2011 05:52 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: MW-6S
Lab ID: 1112547-08
Collection Date: 12/16/2011 11:40 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 06:09 AM
Toluene	U		1.0	µg/L	1	12/22/2011 06:09 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 06:09 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 06:09 AM
Surr: 4-Bromofluorobenzene	*110*		*77-129*	*%REC*	1	12/22/2011 06:09 AM
Surr: Trifluorotoluene	*103*		*75-130*	*%REC*	1	12/22/2011 06:09 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: Dup-1
Lab ID: 1112547-09
Collection Date: 12/16/2011 08:00 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 07:02 AM
Toluene	U		1.0	µg/L	1	12/22/2011 07:02 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 07:02 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 07:02 AM
Surr: 4-Bromofluorobenzene	*110*		*77-129*	*%REC*	1	12/22/2011 07:02 AM
Surr: Trifluorotoluene	*129*		*75-130*	*%REC*	1	12/22/2011 07:02 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: River-Upstream
Lab ID: 1112547-10
Collection Date: 12/13/2011 01:00 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 07:19 AM
Toluene	U		1.0	µg/L	1	12/22/2011 07:19 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 07:19 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 07:19 AM
Surr: 4-Bromofluorobenzene	*104*		*77-129*	*%REC*	1	12/22/2011 07:19 AM
Surr: Trifluorotoluene	*93.9*		*75-130*	*%REC*	1	12/22/2011 07:19 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: River-Downstream
Lab ID: 1112547-11
Collection Date: 12/13/2011 02:00 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 07:36 AM
Toluene	U		1.0	µg/L	1	12/22/2011 07:36 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 07:36 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 07:36 AM
Surr: 4-Bromofluorobenzene	*103*		*77-129*	*%REC*	1	12/22/2011 07:36 AM
Surr: Trifluorotoluene	*95.5*		*75-130*	*%REC*	1	12/22/2011 07:36 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: EB-1
Lab ID: 1112547-12
Collection Date: 12/13/2011 12:45 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 07:54 AM
Toluene	U		1.0	µg/L	1	12/22/2011 07:54 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 07:54 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 07:54 AM
Surr: 4-Bromofluorobenzene	*104*		*77-129*	*%REC*	1	12/22/2011 07:54 AM
Surr: Trifluorotoluene	*108*		*75-130*	*%REC*	1	12/22/2011 07:54 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: EB-2
Lab ID: 1112547-13
Collection Date: 12/14/2011 08:30 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 08:11 AM
Toluene	U		1.0	µg/L	1	12/22/2011 08:11 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 08:11 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 08:11 AM
Surr: 4-Bromofluorobenzene	*101*		*77-129*	*%REC*	1	12/22/2011 08:11 AM
Surr: Trifluorotoluene	*98.0*		*75-130*	*%REC*	1	12/22/2011 08:11 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: FB-1
Lab ID: 1112547-14
Collection Date: 12/13/2011 10:30 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 08:28 AM
Toluene	U		1.0	µg/L	1	12/22/2011 08:28 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 08:28 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 08:28 AM
Surr: 4-Bromofluorobenzene	*103*		*77-129*	*%REC*	1	12/22/2011 08:28 AM
Surr: Trifluorotoluene	*98.9*		*75-130*	*%REC*	1	12/22/2011 08:28 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: FB-2
Lab ID: 1112547-15
Collection Date: 12/14/2011 02:00 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 09:20 AM
Toluene	U		1.0	µg/L	1	12/22/2011 09:20 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 09:20 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 09:20 AM
Surr: 4-Bromofluorobenzene	*104*		*77-129*	*%REC*	1	12/22/2011 09:20 AM
Surr: Trifluorotoluene	*98.5*		*75-130*	*%REC*	1	12/22/2011 09:20 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: FB-3
Lab ID: 1112547-16
Collection Date: 12/15/2011 01:30 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 09:38 AM
Toluene	U		1.0	µg/L	1	12/22/2011 09:38 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 09:38 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 09:38 AM
Surr: 4-Bromofluorobenzene	*103*		*77-129*	*%REC*	1	12/22/2011 09:38 AM
Surr: Trifluorotoluene	*98.0*		*75-130*	*%REC*	1	12/22/2011 09:38 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: FB-4
Lab ID: 1112547-17
Collection Date: 12/16/2011 10:00 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 09:55 AM
Toluene	U		1.0	µg/L	1	12/22/2011 09:55 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 09:55 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 09:55 AM
Surr: 4-Bromofluorobenzene	*103*		*77-129*	*%REC*	1	12/22/2011 09:55 AM
Surr: Trifluorotoluene	*106*		*75-130*	*%REC*	1	12/22/2011 09:55 AM

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

ALS Environmental

Date: *29-Dec-11*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 1112547
Sample ID: Trip Blank
Lab ID: 1112547-18
Collection Date: 12/16/2011
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **SMA**
Benzene	U		1.0	µg/L	1	12/22/2011 10:35 AM
Toluene	U		1.0	µg/L	1	12/22/2011 10:35 AM
Ethylbenzene	U		1.0	µg/L	1	12/22/2011 10:35 AM
Xylenes, Total	U		3.0	µg/L	1	12/22/2011 10:35 AM
Surr: 4-Bromofluorobenzene	*105*		*77-129*	*%REC*	1	12/22/2011 10:35 AM
Surr: Trifluorotoluene	*96.5*		*75-130*	*%REC*	1	12/22/2011 10:35 AM

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

ALS Environmental

Date: 29-Dec-11

Client: ERM Southwest, Inc.

Work Order: 1112547

Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R120952** Instrument ID **BTEX1** Method: **SW8021B**

MBLK Sample ID: **BBLKW2-111221-R120952** Units: **µg/L** Analysis Date: **12/22/2011 02:58 AM**

Client ID: Run ID: **BTEX1_111221C** SeqNo: **2636858** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Toluene	U	1.0								
Ethylbenzene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 4-Bromofluorobenzene	*30.21*	1.0	*30*	0	*101*	*77-129*	0			
Surr: Trifluorotoluene	*28.53*	1.0	*30*	0	*95.1*	*75-130*	0			

LCS Sample ID: **BLCSW2-111221-R120952** Units: **µg/L** Analysis Date: **12/22/2011 02:24 AM**

Client ID: Run ID: **BTEX1_111221C** SeqNo: **2636856** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	22.9	1.0	20	0	114	77-126	0			
Toluene	23.35	1.0	20	0	117	80-124	0			
Ethylbenzene	22.82	1.0	20	0	114	76-125	0			
Xylenes, Total	68.74	3.0	60	0	115	79-124	0			
Surr: 4-Bromofluorobenzene	*31.06*	1.0	*30*	0	*104*	*77-129*	0			
Surr: Trifluorotoluene	*29.17*	1.0	*30*	0	*97.2*	*75-130*	0			

LCSD Sample ID: **BLCSDW2-111221-R120952** Units: **µg/L** Analysis Date: **12/22/2011 02:41 AM**

Client ID: Run ID: **BTEX1_111221C** SeqNo: **2636857** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.98	1.0	20	0	105	77-126	22.9	8.74	20	
Toluene	21.45	1.0	20	0	107	80-124	23.35	8.49	20	
Ethylbenzene	21.06	1.0	20	0	105	76-125	22.82	8.02	20	
Xylenes, Total	63.73	3.0	60	0	106	79-124	68.74	7.57	20	
Surr: 4-Bromofluorobenzene	*31.63*	1.0	*30*	0	*105*	*77-129*	31.06	*1.82*	*20*	
Surr: Trifluorotoluene	*29.09*	1.0	*30*	0	*97*	*75-130*	29.17	*0.3*	*20*	

MS Sample ID: **1112547-08AMS** Units: **µg/L** Analysis Date: **12/22/2011 06:27 AM**

Client ID: **MW-6S** Run ID: **BTEX1_111221C** SeqNo: **2636891** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	24.41	1.0	20	0	122	77-126	0			
Toluene	23.7	1.0	20	0	118	80-124	0			
Ethylbenzene	23.94	1.0	20	0	120	76-125	0			
Xylenes, Total	72.13	3.0	60	0	120	79-124	0			
Surr: 4-Bromofluorobenzene	*33.02*	1.0	*30*	0	*110*	*77-129*	0			
Surr: Trifluorotoluene	*30.57*	1.0	*30*	0	*102*	*75-130*	0			

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

Client: ERM Southwest, Inc.
Work Order: 1112547
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R120952** Instrument ID **BTEX1** Method: **SW8021B**

MSD Sample ID: **1112547-08AMSD** Units: **µg/L** Analysis Date: **12/22/2011 06:44 AM**

Client ID: **MW-6S** Run ID: **BTEX1_111221C** SeqNo: **2636892** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.71	1.0	20	0	109	77-126	24.41	11.7	20	
Toluene	21.08	1.0	20	0	105	80-124	23.7	11.7	20	
Ethylbenzene	21.38	1.0	20	0	107	76-125	23.94	11.3	20	
Xylenes, Total	67.44	3.0	60	0	112	79-124	72.13	6.72	20	
Surr: 4-Bromofluorobenzene	*33.29*	1.0	*30*	0	*111*	*77-129*	33.02	*0.805*	*20*	
Surr: Trifluorotoluene	*38.29*	1.0	*30*	0	*128*	*75-130*	30.57	*22.4*	*20*	*R*

The following samples were analyzed in this batch:

1112547-01A	1112547-02A	1112547-03A
1112547-04A	1112547-05A	1112547-06A
1112547-07A	1112547-08A	1112547-09A
1112547-10A	1112547-11A	1112547-12A
1112547-13A	1112547-14A	1112547-15A
1112547-16A	1112547-17A	1112547-18A

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

Client: ERM Southwest, Inc.
Work Order: 1112547
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R121029** Instrument ID **BTEX1** Method: **SW8021B**

MBLK Sample ID: **BBLKW1-111222-R121029** Units: **µg/L** Analysis Date: **12/22/2011 01:14 PM**
Client ID: Run ID: **BTEX1_111222A** SeqNo: **2638237** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Surr: 4-Bromofluorobenzene	*31.07*	1.0	*30*	0	*104*	*77-129*	0			
Surr: Trifluorotoluene	*28.72*	1.0	*30*	0	*95.7*	*75-130*	0			

LCS Sample ID: **BLCSW1-111222-R121029** Units: **µg/L** Analysis Date: **12/22/2011 12:57 PM**
Client ID: Run ID: **BTEX1_111222A** SeqNo: **2638236** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	24.53	1.0	20	0	123	77-126	0			
Surr: 4-Bromofluorobenzene	*31.04*	1.0	*30*	0	*103*	*77-129*	0			
Surr: Trifluorotoluene	*28.46*	1.0	*30*	0	*94.9*	*75-130*	0			

MS Sample ID: **1112654-03AMS** Units: **µg/L** Analysis Date: **12/22/2011 09:00 PM**
Client ID: Run ID: **BTEX1_111222A** SeqNo: **2638256** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	17.8	1.0	20	0	89	77-126	0			
Surr: 4-Bromofluorobenzene	*33.22*	1.0	*30*	0	*111*	*77-129*	0			
Surr: Trifluorotoluene	*29.08*	1.0	*30*	0	*96.9*	*75-130*	0			

MSD Sample ID: **1112654-03AMSD** Units: **µg/L** Analysis Date: **12/22/2011 09:52 PM**
Client ID: Run ID: **BTEX1_111222A** SeqNo: **2638278** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	25.09	1.0	20	0	125	77-126	17.8	34	20	R
Surr: 4-Bromofluorobenzene	*32.43*	1.0	*30*	0	*108*	*77-129*	33.22	*2.41*	*20*	
Surr: Trifluorotoluene	*29.41*	1.0	*30*	0	*98*	*75-130*	29.08	*1.12*	*20*	

The following samples were analyzed in this batch: 1112547-01A 1112547-02A 1112547-03A

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

Client: ERM Southwest, Inc.
Work Order: 1112547
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R121058** Instrument ID **BTEX1** Method: **SW8021B**

MBLK Sample ID: **BBLKW1-111227-R121058** Units: **µg/L** Analysis Date: **12/27/2011 01:51 PM**
Client ID: Run ID: **BTEX1_111227A** SeqNo: **2638913** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Toluene	U	1.0								
Ethylbenzene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 4-Bromofluorobenzene	*34.42*	1.0	*30*	0	*115*	*77-129*	0			
Surr: Trifluorotoluene	*26.36*	1.0	*30*	0	*87.9*	*75-130*	0			

LCS Sample ID: **BLCSW1-111227-R121058** Units: **µg/L** Analysis Date: **12/27/2011 01:17 PM**
Client ID: Run ID: **BTEX1_111227A** SeqNo: **2638911** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Toluene	20.03	1.0	20	0	100	80-124	0			
Ethylbenzene	20.8	1.0	20	0	104	76-125	0			
Xylenes, Total	64.96	3.0	60	0	108	79-124	0			
Surr: 4-Bromofluorobenzene	*34.97*	1.0	*30*	0	*117*	*77-129*	0			
Surr: Trifluorotoluene	*26.42*	1.0	*30*	0	*88.1*	*75-130*	0			

LCSD Sample ID: **BLCSDW1-111227-R121058** Units: **µg/L** Analysis Date: **12/27/2011 01:34 PM**
Client ID: Run ID: **BTEX1_111227A** SeqNo: **2638912** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Toluene	20.16	1.0	20	0	101	80-124	20.03	0.624	20	
Ethylbenzene	20.58	1.0	20	0	103	76-125	20.8	1.07	20	
Xylenes, Total	64.2	3.0	60	0	107	79-124	64.96	1.19	20	
Surr: 4-Bromofluorobenzene	*35.73*	1.0	*30*	0	*119*	*77-129*	34.97	*2.16*	*20*	
Surr: Trifluorotoluene	*26.7*	1.0	*30*	0	*89*	*75-130*	26.42	*1.07*	*20*	

MS Sample ID: **1112709-04AMS** Units: **µg/L** Analysis Date: **12/27/2011 04:57 PM**
Client ID: Run ID: **BTEX1_111227A** SeqNo: **2638917** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Toluene	24.1	1.0	20	0	120	80-124	0			
Ethylbenzene	24.41	1.0	20	0	122	76-125	0			
Xylenes, Total	70.24	3.0	60	0	117	79-124	0			
Surr: 4-Bromofluorobenzene	*35.69*	1.0	*30*	0	*119*	*77-129*	0			
Surr: Trifluorotoluene	*26.42*	1.0	*30*	0	*88.1*	*75-130*	0			

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

Client: ERM Southwest, Inc.
Work Order: 1112547
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R121058** Instrument ID **BTEX1** Method: **SW8021B**

MSD Sample ID: **1112709-04AMSD** Units: **µg/L** Analysis Date: **12/27/2011 05:15 PM**

Client ID: Run ID: **BTEX1_111227A** SeqNo: **2638918** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Toluene	23.76	1.0	20	0	119	80-124	24.1	1.42	20	
Ethylbenzene	24.11	1.0	20	0	121	76-125	24.41	1.24	20	
Xylenes, Total	69.19	3.0	60	0	115	79-124	70.24	1.51	20	
Surr: 4-Bromofluorobenzene	*35.19*	1.0	*30*	0	*117*	*77-129*	35.69	*1.42*	*20*	
Surr: Trifluorotoluene	*26.53*	1.0	*30*	0	*88.4*	*75-130*	26.42	*0.4*	*20*	

The following samples were analyzed in this batch: 1112547-01A 1112547-02A

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

ALS Environmental

Date: 29-Dec-11

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
WorkOrder: 1112547

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
DCS	Detectability Check Study
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 Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
µg/L	Micrograms per Liter

ALS Environmental

Chain of Custody Form

Page 1 of 2

COC ID: 48674

1112547

ERMSW-CC: ERM Southwest, Inc.

Project: Huntsman Brickland Refinery

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX
Work Order		Project Number	137452	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	
				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	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-5	12/13/11	1630	WATER	1,8	3	X										
2	MW-8	12/14/11	1450	WATER	1,8	3	X										
3	MW-10	12/14/11	1550	WATER	1,8	3	X										
4	MW-35	12/15/11	1405	WATER	1,8	3	X										
5	MW-30	12/15/11	1505	WATER	1,8	3	X										
6	MW-9S	12/15/11	1610	WATER	1,8	3	X										
7	MW-60	12/16/11	1100	WATER	1,8	3	X										
8	MW-60S	12/16/11	1140	WATER	1,8	3	X										
9	MW-60S MS	12/16/11	1140	WATER	1,8	3Z	X										
10	MW-60S MSD	12/16/11	1140	WATER	1,8	2	X										

Sampler(s) Please Print & Sign: Randolph Ortland / RANDOLPH ORTLAND

Shipment Method: COURIER

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: Randolph Ortland Date: 12/16/11 Time: 1500

Received by:

Relinquished by: Date: Time:

Received by (Laboratory): 12/17/11 09:05

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: 10 Day TAT.

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 / EDD

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 Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental 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.

Chain of Custody Form

Page 2 of 2

COC ID: 49091

ALS Environmental

☐ Cincinnati, OH +1 513 733 5336 ☐ Holland, MI +1 513 733 5336 ☐ Salt Lake City, UT +1 801 266 7700
☐ Everett, WA +1 425 356 2600 ☒ Houston, TX +1 281 530 5656 ☐ Spring City, PA +1 610 948 4903
☐ Fort Collins, CO +1 970 490 1511 ☐ Middletown, PA +1 717 944 5541 ☐ York, PA +1 717 505 5280

ALS Project Manager: | ALS Work Order #: 1125471

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	137452	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	
				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	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	DUP-1	12/16/11	0800	WATER	1,8	3	X										
2	RIVER-UPSTREAM	12/13/11	1300	WATER	1,8	3	X										
3	RIVER-DOWNSTREAM	12/13/11	1400	WATER	1,8	3	X										
4	EB-1	12/13/11	1245	WATER	1,8	3	X										
5	EB-2	12/14/11	0830	WATER	1,8	3	X										
6	FB-1	12/13/11	1030	WATER	1,8	3	X										
7	FB-2	12/14/11	1400	WATER	1,8	3											
8	FB-3	12/15/11	1330	WATER	1,8	3	X										
9	FB-4	12/16/11	1000	WATER	1,8	3	X										
10	TRIP BLANK					2											

Sampler(s) Please Print & Sign: Randolph Ostrem / RANDOLPH OSTREM

Shipment Method:

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

Results Due Date:

Relinquished by: Randolph Ostrem Date: 12/16/11 Time: 1500

Received by:

Relinquished by: Date: Time:

Received by (Laboratory): 12/17/11 09:05

Notes: 10 Day TAT.

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 / EDD

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

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

Sample Receipt Checklist

Client Name: **ERMSW-CC** Date/Time Received: **19-Dec-11 09:05**

Work Order: **1112547** Received by: **RNG**

Checklist completed by Raymond N Gamboa (eSignature) 19-Dec-11 (Date) Reviewed by: Patricia L. Lynch (eSignature) 30-Dec-11 (Date)

Matrices: Water
Carrier name: Courier

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):	2.8c	002	
Cooler(s)/Kit(s):	1198		
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:

WO# 1112547

Lone Star Overnight
800.800.8984
www.lso.com

Airbill No. Z8173071

To: **HECTOR CORONADO**
ALS LAB GROUP
10450 STANCLIFF ROAD
STE 210
HOUSTON, TX 77099
(281) 530 - 5656

From: RANDY ORTLUND
ERM-EL PASO
100 TEXACO ROAD
EL PASO, TX 79905
(915) 497 - 9452

Service Type: Saturday
1D00V

HBY

Saturday

QuickCode: **ALS**
Date Printed: 12/16/2011
Billing Ref 1: 0137452

Fold on above line and place shipping label in pouch on package. Please be sure the barcodes and addresses can be read and scanned.

Shipping Instructions

1. Fold this page along the horizontal line above.
2. Place this Airbill in the shipping label pouch on the package you are shipping. Please be sure the barcodes and addresses can be read and scanned.
3. To locate a drop box near you, click on **Find Drop Box** from the home page main menu.
4. To schedule a pickup, click on **Request Pickup**

WARNING: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your Lone Star Overnight account number.
LIMIT OF LIABILITY: We are not responsible for claims in excess of $100 for any reason unless you: 1) declare a greater value (not to exceed $25,000); 2) pay an additional fee; 3) and document your actual loss in a timely manner. We will not pay any claim in excess of the actual loss. We are not liable for any special or consequential damages. Additional limitations of liability are contained in our current Service Guide. If you ask us to deliver a package without obtaining a delivery signature, you release us of all liability for claims resulting from such service. NO DELIVERY SIGNATURE WILL BE OBTAINED FOR 8:30 AM DELIVERIES OR RESIDENTIAL DELIVERIES.

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

Date: 12/16/11
Name: [illegible]
Company: ERM

CUSTODY SEAL
Time: 1500
Signature [illegible]

Seal Broken By: RNL
Date: 12/19/11

ALS Environmental

14-Jul-2011

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

Tel: (361) 737-9203
Fax:

Re: ERM - Huntsman Brickland Refinery   Work Order: **1107020**

Dear Brad,

ALS Environmental received 19 samples on 01-Jul-2011 08:45 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental 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 Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 39.

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

Sincerely,

Patricia L. Lynch

Electronically approved by: Makenzie L. Henderson

Patricia L. Lynch
Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Certificate No: T104704231-09A-TX

ALS Environmental

Date: 14-Jul-11

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: **1107020**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1107020-01	MW-17	Water		6/28/2011 13:10	7/1/2011 08:45	☐
1107020-02	MW-11	Water		6/28/2011 15:15	7/1/2011 08:45	☐
1107020-03	MW-9S	Water		6/29/2011 09:45	7/1/2011 08:45	☐
1107020-04	MW-3D	Water		6/29/2011 11:20	7/1/2011 08:45	☐
1107020-05	MW-3S	Water		6/29/2011 12:30	7/1/2011 08:45	☐
1107020-06	MW-6D	Water		6/29/2011 14:30	7/1/2011 08:45	☐
1107020-07	MW-6S	Water		6/29/2011 15:20	7/1/2011 08:45	☐
1107020-08	MW-5	Water		6/30/2011 09:45	7/1/2011 08:45	☐
1107020-09	River-Upstream	Water		6/30/2011 11:00	7/1/2011 08:45	☐
1107020-10	River-Downstream	Water		6/30/2011 11:30	7/1/2011 08:45	☐
1107020-11	MW-8	Water		6/30/2011 12:55	7/1/2011 08:45	☐
1107020-12	MW-10	Water		6/30/2011 14:45	7/1/2011 08:45	☐
1107020-13	FB-1	Water		6/28/2011 16:00	7/1/2011 08:45	☐
1107020-14	FB-2	Water		6/29/2011 16:40	7/1/2011 08:45	☐
1107020-15	FB-3	Water		6/29/2011 15:15	7/1/2011 08:45	☐
1107020-16	Dup-1	Water		6/29/2011 12:00	7/1/2011 08:45	☐
1107020-17	EB-1	Water		6/30/2011 08:30	7/1/2011 08:45	☐
1107020-18	EB-2	Water		6/30/2011 10:30	7/1/2011 08:45	☐
1107020-19	Trip Blank	Water		6/30/2011	7/1/2011 08:45	☐

ALS Environmental *Date: 14-Jul-11*

Client:	ERM Southwest, Inc.
Project:	ERM - Huntsman Brickland Refinery
Work Order:	1107020

Case Narrative

Low Level PAH surrogate recovery was below the control limits for surrogate Acenaphthebe-d10, for sample MW-11. The surrogate recovery was confirmed by a re-analysis.

Low Level PAH surrogate recovery was above the control limits for surrogate Nitrobenzene-d5, for sample MW-6S. The results were ND.

Batch 53652, Low Level PAH, Sample MW-6S: MS/MSD RPD was above the control limits for Acenaphthylene. The individual recoveries were with in control.

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: MW-17
Lab ID: 1107020-01
Collection Date: 6/28/2011 01:10 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/8/2011 10:00 AM
Toluene	U		1.0	µg/L	1	7/8/2011 10:00 AM
Ethylbenzene	U		1.0	µg/L	1	7/8/2011 10:00 AM
Xylenes, Total	U		3.0	µg/L	1	7/8/2011 10:00 AM
Surr: 4-Bromofluorobenzene	*112*		*77-129*	*%REC*	1	7/8/2011 10:00 AM
Surr: Trifluorotoluene	*103*		*75-130*	*%REC*	1	7/8/2011 10:00 AM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **ALR**
Lead	U		0.00500	mg/L	1	7/7/2011 11:29 PM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	**0.27**		**0.20**	**µg/L**	1	7/5/2011 06:48 PM
Acenaphthylene	U		0.20	µg/L	1	7/5/2011 06:48 PM
Anthracene	U		0.20	µg/L	1	7/5/2011 06:48 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/5/2011 06:48 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/5/2011 06:48 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/5/2011 06:48 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/5/2011 06:48 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/5/2011 06:48 PM
Chrysene	U		0.20	µg/L	1	7/5/2011 06:48 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/5/2011 06:48 PM
Fluoranthene	U		0.20	µg/L	1	7/5/2011 06:48 PM
Fluorene	**0.28**		**0.20**	**µg/L**	1	7/5/2011 06:48 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/5/2011 06:48 PM
Naphthalene	**0.083**	J	**0.20**	**µg/L**	1	7/5/2011 06:48 PM
Phenanthrene	**0.19**	J	**0.20**	**µg/L**	1	7/5/2011 06:48 PM
Pyrene	**0.21**		**0.20**	**µg/L**	1	7/5/2011 06:48 PM
Surr: 2-Fluorobiphenyl	*51.5*		*40-125*	*%REC*	1	7/5/2011 06:48 PM
Surr: 4-Terphenyl-d14	*64.6*		*40-135*	*%REC*	1	7/5/2011 06:48 PM
Surr: Nitrobenzene-d5	*59.9*		*41-120*	*%REC*	1	7/5/2011 06:48 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: MW-11
Lab ID: 1107020-02
Collection Date: 6/28/2011 03:15 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	**4.7**		**1.0**	**µg/L**	1	7/8/2011 10:18 AM
Toluene	U		1.0	µg/L	1	7/8/2011 10:18 AM
Ethylbenzene	U		1.0	µg/L	1	7/8/2011 10:18 AM
Xylenes, Total	U		3.0	µg/L	1	7/8/2011 10:18 AM
Surr: 4-Bromofluorobenzene	*111*		*77-129*	*%REC*	1	7/8/2011 10:18 AM
Surr: Trifluorotoluene	*125*		*75-130*	*%REC*	1	7/8/2011 10:18 AM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **SKS**
Lead	U		0.0100	mg/L	2	7/8/2011 01:24 PM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Acenaphthylene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Anthracene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Chrysene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Fluoranthene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Fluorene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Naphthalene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Phenanthrene	**0.056**	J	**0.20**	**µg/L**	1	7/5/2011 07:08 PM
Pyrene	U		0.20	µg/L	1	7/5/2011 07:08 PM
Surr: 2-Fluorobiphenyl	*30.5*	S	*40-125*	*%REC*	1	7/5/2011 07:08 PM
Surr: 4-Terphenyl-d14	*60.6*		*40-135*	*%REC*	1	7/5/2011 07:08 PM
Surr: Nitrobenzene-d5	*43.3*		*41-120*	*%REC*	1	7/5/2011 07:08 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: MW-9S
Lab ID: 1107020-03
Collection Date: 6/29/2011 09:45 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/7/2011 10:27 PM
Toluene	U		1.0	µg/L	1	7/7/2011 10:27 PM
Ethylbenzene	U		1.0	µg/L	1	7/7/2011 10:27 PM
Xylenes, Total	U		3.0	µg/L	1	7/7/2011 10:27 PM
Surr: 4-Bromofluorobenzene	*108*		*77-129*	*%REC*	1	7/7/2011 10:27 PM
Surr: Trifluorotoluene	*103*		*75-130*	*%REC*	1	7/7/2011 10:27 PM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **ALR**
Lead	U		0.00500	mg/L	1	7/7/2011 11:40 PM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Acenaphthylene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Anthracene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Chrysene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Fluoranthene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Fluorene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Naphthalene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Phenanthrene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Pyrene	U		0.20	µg/L	1	7/5/2011 07:28 PM
Surr: 2-Fluorobiphenyl	*55.7*		*40-125*	*%REC*	1	7/5/2011 07:28 PM
Surr: 4-Terphenyl-d14	*71.3*		*40-135*	*%REC*	1	7/5/2011 07:28 PM
Surr: Nitrobenzene-d5	*58.1*		*41-120*	*%REC*	1	7/5/2011 07:28 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: MW-3D
Lab ID: 1107020-04
Collection Date: 6/29/2011 11:20 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/7/2011 09:33 PM
Toluene	U		1.0	µg/L	1	7/7/2011 09:33 PM
Ethylbenzene	U		1.0	µg/L	1	7/7/2011 09:33 PM
Xylenes, Total	U		3.0	µg/L	1	7/7/2011 09:33 PM
Surr: 4-Bromofluorobenzene	*108*		*77-129*	*%REC*	1	7/7/2011 09:33 PM
Surr: Trifluorotoluene	*98.0*		*75-130*	*%REC*	1	7/7/2011 09:33 PM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **SKS**
Lead	U		0.0250	mg/L	5	7/8/2011 01:26 PM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Acenaphthylene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Anthracene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Chrysene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Fluoranthene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Fluorene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Naphthalene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Phenanthrene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Pyrene	U		0.20	µg/L	1	7/5/2011 07:48 PM
Surr: 2-Fluorobiphenyl	*77.5*		*40-125*	*%REC*	1	7/5/2011 07:48 PM
Surr: 4-Terphenyl-d14	*121*		*40-135*	*%REC*	1	7/5/2011 07:48 PM
Surr: Nitrobenzene-d5	*84.5*		*41-120*	*%REC*	1	7/5/2011 07:48 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: MW-3S
Lab ID: 1107020-05
Collection Date: 6/29/2011 12:30 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/7/2011 08:21 PM
Toluene	U		1.0	µg/L	1	7/7/2011 08:21 PM
Ethylbenzene	U		1.0	µg/L	1	7/7/2011 08:21 PM
Xylenes, Total	U		3.0	µg/L	1	7/7/2011 08:21 PM
Surr: 4-Bromofluorobenzene	*105*		*77-129*	*%REC*	1	7/7/2011 08:21 PM
Surr: Trifluorotoluene	*94.7*		*75-130*	*%REC*	1	7/7/2011 08:21 PM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **ALR**
Lead	U		0.00500	mg/L	1	7/7/2011 11:52 PM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Acenaphthylene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Anthracene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Chrysene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Fluoranthene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Fluorene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Naphthalene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Phenanthrene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Pyrene	U		0.20	µg/L	1	7/5/2011 08:08 PM
Surr: 2-Fluorobiphenyl	*103*		*40-125*	*%REC*	1	7/5/2011 08:08 PM
Surr: 4-Terphenyl-d14	*119*		*40-135*	*%REC*	1	7/5/2011 08:08 PM
Surr: Nitrobenzene-d5	*114*		*41-120*	*%REC*	1	7/5/2011 08:08 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: MW-6D
Lab ID: 1107020-06
Collection Date: 6/29/2011 02:30 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/7/2011 09:15 PM
Toluene	U		1.0	µg/L	1	7/7/2011 09:15 PM
Ethylbenzene	U		1.0	µg/L	1	7/7/2011 09:15 PM
Xylenes, Total	U		3.0	µg/L	1	7/7/2011 09:15 PM
Surr: 4-Bromofluorobenzene	*108*		*77-129*	*%REC*	1	7/7/2011 09:15 PM
Surr: Trifluorotoluene	*98.4*		*75-130*	*%REC*	1	7/7/2011 09:15 PM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **SKS**
Lead	U		0.0250	mg/L	5	7/8/2011 01:29 PM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Acenaphthylene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Anthracene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Chrysene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Fluoranthene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Fluorene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Naphthalene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Phenanthrene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Pyrene	U		0.20	µg/L	1	7/5/2011 08:28 PM
Surr: 2-Fluorobiphenyl	*94.2*		*40-125*	*%REC*	1	7/5/2011 08:28 PM
Surr: 4-Terphenyl-d14	*112*		*40-135*	*%REC*	1	7/5/2011 08:28 PM
Surr: Nitrobenzene-d5	*109*		*41-120*	*%REC*	1	7/5/2011 08:28 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: MW-6S
Lab ID: 1107020-07
Collection Date: 6/29/2011 03:20 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	**0.61**	J	**1.0**	**µg/L**	1	7/8/2011 01:26 AM
Toluene	U		1.0	µg/L	1	7/8/2011 01:26 AM
Ethylbenzene	U		1.0	µg/L	1	7/8/2011 01:26 AM
Xylenes, Total	U		3.0	µg/L	1	7/8/2011 01:26 AM
Surr: 4-Bromofluorobenzene	*126*		*77-129*	*%REC*	1	7/8/2011 01:26 AM
Surr: Trifluorotoluene	*127*		*75-130*	*%REC*	1	7/8/2011 01:26 AM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **ALR**
Lead	U		0.0250	mg/L	5	7/7/2011 10:43 PM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Acenaphthylene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Anthracene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Chrysene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Fluoranthene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Fluorene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Naphthalene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Phenanthrene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Pyrene	U		0.20	µg/L	1	7/5/2011 05:47 PM
Surr: 2-Fluorobiphenyl	*91.5*		*40-125*	*%REC*	1	7/5/2011 05:47 PM
Surr: 4-Terphenyl-d14	*108*		*40-135*	*%REC*	1	7/5/2011 05:47 PM
Surr: Nitrobenzene-d5	*126*	S	*41-120*	*%REC*	1	7/5/2011 05:47 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: MW-5
Lab ID: 1107020-08
Collection Date: 6/30/2011 09:45 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	**870**		**5.0**	**µg/L**	5	7/8/2011 10:54 AM
Toluene	**2.6**	J	**5.0**	**µg/L**	5	7/8/2011 10:54 AM
Ethylbenzene	U		5.0	µg/L	5	7/8/2011 10:54 AM
Xylenes, Total	**8.5**	J	**15**	**µg/L**	5	7/8/2011 10:54 AM
Surr: 4-Bromofluorobenzene	*103*		*77-129*	*%REC*	5	7/8/2011 10:54 AM
Surr: Trifluorotoluene	*96.3*		*75-130*	*%REC*	5	7/8/2011 10:54 AM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **ALR**
Lead	**0.00117**	J	**0.00500**	**mg/L**	1	7/8/2011 12:15 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Acenaphthylene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Anthracene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Chrysene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Fluoranthene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Fluorene	**0.085**	J	**0.20**	**µg/L**	1	7/5/2011 08:48 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Naphthalene	**0.27**		**0.20**	**µg/L**	1	7/5/2011 08:48 PM
Phenanthrene	**0.061**	J	**0.20**	**µg/L**	1	7/5/2011 08:48 PM
Pyrene	U		0.20	µg/L	1	7/5/2011 08:48 PM
Surr: 2-Fluorobiphenyl	*58.8*		*40-125*	*%REC*	1	7/5/2011 08:48 PM
Surr: 4-Terphenyl-d14	*120*		*40-135*	*%REC*	1	7/5/2011 08:48 PM
Surr: Nitrobenzene-d5	*97.4*		*41-120*	*%REC*	1	7/5/2011 08:48 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: River-Upstream
Lab ID: 1107020-09
Collection Date: 6/30/2011 11:00 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/7/2011 09:51 PM
Toluene	U		1.0	µg/L	1	7/7/2011 09:51 PM
Ethylbenzene	U		1.0	µg/L	1	7/7/2011 09:51 PM
Xylenes, Total	U		3.0	µg/L	1	7/7/2011 09:51 PM
Surr: 4-Bromofluorobenzene	*106*		*77-129*	*%REC*	1	7/7/2011 09:51 PM
Surr: Trifluorotoluene	*99.5*		*75-130*	*%REC*	1	7/7/2011 09:51 PM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **ALR**
Lead	**0.00214**	J	**0.00500**	**mg/L**	1	7/8/2011 12:20 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Acenaphthylene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Anthracene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Chrysene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Fluoranthene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Fluorene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Naphthalene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Phenanthrene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Pyrene	U		0.20	µg/L	1	7/5/2011 09:08 PM
Surr: 2-Fluorobiphenyl	*77.6*		*40-125*	*%REC*	1	7/5/2011 09:08 PM
Surr: 4-Terphenyl-d14	*120*		*40-135*	*%REC*	1	7/5/2011 09:08 PM
Surr: Nitrobenzene-d5	*101*		*41-120*	*%REC*	1	7/5/2011 09:08 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: River-Downstream
Lab ID: 1107020-10
Collection Date: 6/30/2011 11:30 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/7/2011 10:09 PM
Toluene	U		1.0	µg/L	1	7/7/2011 10:09 PM
Ethylbenzene	U		1.0	µg/L	1	7/7/2011 10:09 PM
Xylenes, Total	U		3.0	µg/L	1	7/7/2011 10:09 PM
Surr: 4-Bromofluorobenzene	*106*		*77-129*	*%REC*	1	7/7/2011 10:09 PM
Surr: Trifluorotoluene	*98.5*		*75-130*	*%REC*	1	7/7/2011 10:09 PM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **ALR**
Lead	**0.00216**	J	**0.00500**	**mg/L**	1	7/8/2011 12:26 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Acenaphthylene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Anthracene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Chrysene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Fluoranthene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Fluorene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Naphthalene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Phenanthrene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Pyrene	U		0.20	µg/L	1	7/5/2011 09:28 PM
Surr: 2-Fluorobiphenyl	*52.1*		*40-125*	*%REC*	1	7/5/2011 09:28 PM
Surr: 4-Terphenyl-d14	*63.3*		*40-135*	*%REC*	1	7/5/2011 09:28 PM
Surr: Nitrobenzene-d5	*59.0*		*41-120*	*%REC*	1	7/5/2011 09:28 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: MW-8
Lab ID: 1107020-11
Collection Date: 6/30/2011 12:55 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	**460**		**5.0**	**µg/L**	5	7/8/2011 11:12 AM
Toluene	U		5.0	µg/L	5	7/8/2011 11:12 AM
Ethylbenzene	U		5.0	µg/L	5	7/8/2011 11:12 AM
Xylenes, Total	U		15	µg/L	5	7/8/2011 11:12 AM
Surr: 4-Bromofluorobenzene	*107*		*77-129*	*%REC*	5	7/8/2011 11:12 AM
Surr: Trifluorotoluene	*107*		*75-130*	*%REC*	5	7/8/2011 11:12 AM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **ALR**
Lead	**0.00841**		**0.00500**	**mg/L**	1	7/8/2011 12:32 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Acenaphthylene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Anthracene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Chrysene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Fluoranthene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Fluorene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Naphthalene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Phenanthrene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Pyrene	U		0.20	µg/L	1	7/6/2011 11:18 PM
Surr: 2-Fluorobiphenyl	*54.0*		*40-125*	*%REC*	1	7/6/2011 11:18 PM
Surr: 4-Terphenyl-d14	*61.7*		*40-135*	*%REC*	1	7/6/2011 11:18 PM
Surr: Nitrobenzene-d5	*61.7*		*41-120*	*%REC*	1	7/6/2011 11:18 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: MW-10
Lab ID: 1107020-12
Collection Date: 6/30/2011 02:45 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/8/2011 09:42 AM
Toluene	U		1.0	µg/L	1	7/8/2011 09:42 AM
Ethylbenzene	U		1.0	µg/L	1	7/8/2011 09:42 AM
Xylenes, Total	**3.2**		**3.0**	**µg/L**	1	7/8/2011 09:42 AM
Surr: 4-Bromofluorobenzene	*115*		*77-129*	*%REC*	1	7/8/2011 09:42 AM
Surr: Trifluorotoluene	*110*		*75-130*	*%REC*	1	7/8/2011 09:42 AM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **ALR**
Lead	U		0.00500	mg/L	1	7/8/2011 01:00 AM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	**0.29**		**0.20**	**µg/L**	1	7/5/2011 10:09 PM
Acenaphthylene	**0.11**	J	**0.20**	**µg/L**	1	7/5/2011 10:09 PM
Anthracene	**0.15**	J	**0.20**	**µg/L**	1	7/5/2011 10:09 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/5/2011 10:09 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/5/2011 10:09 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/5/2011 10:09 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/5/2011 10:09 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/5/2011 10:09 PM
Chrysene	U		0.20	µg/L	1	7/5/2011 10:09 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/5/2011 10:09 PM
Fluoranthene	U		0.20	µg/L	1	7/5/2011 10:09 PM
Fluorene	**0.55**		**0.20**	**µg/L**	1	7/5/2011 10:09 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/5/2011 10:09 PM
Naphthalene	**0.14**	J	**0.20**	**µg/L**	1	7/5/2011 10:09 PM
Phenanthrene	**0.26**		**0.20**	**µg/L**	1	7/5/2011 10:09 PM
Pyrene	**0.16**	J	**0.20**	**µg/L**	1	7/5/2011 10:09 PM
Surr: 2-Fluorobiphenyl	*40.8*		*40-125*	*%REC*	1	7/5/2011 10:09 PM
Surr: 4-Terphenyl-d14	*54.8*		*40-135*	*%REC*	1	7/5/2011 10:09 PM
Surr: Nitrobenzene-d5	*62.0*		*41-120*	*%REC*	1	7/5/2011 10:09 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: FB-1
Lab ID: 1107020-13
Collection Date: 6/28/2011 04:00 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/7/2011 06:51 PM
Toluene	U		1.0	µg/L	1	7/7/2011 06:51 PM
Ethylbenzene	U		1.0	µg/L	1	7/7/2011 06:51 PM
Xylenes, Total	U		3.0	µg/L	1	7/7/2011 06:51 PM
Surr: 4-Bromofluorobenzene	*107*		*77-129*	*%REC*	1	7/7/2011 06:51 PM
Surr: Trifluorotoluene	*97.1*		*75-130*	*%REC*	1	7/7/2011 06:51 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: FB-2
Lab ID: 1107020-14
Collection Date: 6/29/2011 04:40 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/7/2011 07:09 PM
Toluene	U		1.0	µg/L	1	7/7/2011 07:09 PM
Ethylbenzene	U		1.0	µg/L	1	7/7/2011 07:09 PM
Xylenes, Total	U		3.0	µg/L	1	7/7/2011 07:09 PM
Surr: 4-Bromofluorobenzene	*105*		*77-129*	*%REC*	1	7/7/2011 07:09 PM
Surr: Trifluorotoluene	*94.3*		*75-130*	*%REC*	1	7/7/2011 07:09 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: FB-3
Lab ID: 1107020-15
Collection Date: 6/29/2011 03:15 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/7/2011 07:27 PM
Toluene	U		1.0	µg/L	1	7/7/2011 07:27 PM
Ethylbenzene	U		1.0	µg/L	1	7/7/2011 07:27 PM
Xylenes, Total	U		3.0	µg/L	1	7/7/2011 07:27 PM
Surr: 4-Bromofluorobenzene	*104*		*77-129*	*%REC*	1	7/7/2011 07:27 PM
Surr: Trifluorotoluene	*95.2*		*75-130*	*%REC*	1	7/7/2011 07:27 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: Dup-1
Lab ID: 1107020-16
Collection Date: 6/29/2011 12:00 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/8/2011 10:36 AM
Toluene	U		1.0	µg/L	1	7/8/2011 10:36 AM
Ethylbenzene	U		1.0	µg/L	1	7/8/2011 10:36 AM
Xylenes, Total	U		3.0	µg/L	1	7/8/2011 10:36 AM
Surr: 4-Bromofluorobenzene	*124*		*77-129*	*%REC*	1	7/8/2011 10:36 AM
Surr: Trifluorotoluene	*115*		*75-130*	*%REC*	1	7/8/2011 10:36 AM
METALS			**SW6020**		Prep Date: **7/7/2011**	Analyst: **SKS**
Lead	**0.00274**	J	**0.0100**	**mg/L**	2	7/8/2011 01:31 PM
LOW-LEVEL PAHS			**SW8270**		Prep Date: **7/2/2011**	Analyst: **ACN**
Acenaphthene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Acenaphthylene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Anthracene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Benz(a)anthracene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Benzo(a)pyrene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Benzo(b)fluoranthene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Benzo(g,h,i)perylene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Benzo(k)fluoranthene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Chrysene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Dibenz(a,h)anthracene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Fluoranthene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Fluorene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Indeno(1,2,3-cd)pyrene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Naphthalene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Phenanthrene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Pyrene	U		0.20	µg/L	1	7/5/2011 10:29 PM
Surr: 2-Fluorobiphenyl	*53.5*		*40-125*	*%REC*	1	7/5/2011 10:29 PM
Surr: 4-Terphenyl-d14	*57.7*		*40-135*	*%REC*	1	7/5/2011 10:29 PM
Surr: Nitrobenzene-d5	*52.6*		*41-120*	*%REC*	1	7/5/2011 10:29 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: EB-1
Lab ID: 1107020-17
Collection Date: 6/30/2011 08:30 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/7/2011 07:45 PM
Toluene	U		1.0	µg/L	1	7/7/2011 07:45 PM
Ethylbenzene	U		1.0	µg/L	1	7/7/2011 07:45 PM
Xylenes, Total	U		3.0	µg/L	1	7/7/2011 07:45 PM
Surr: 4-Bromofluorobenzene	*106*		*77-129*	*%REC*	1	7/7/2011 07:45 PM
Surr: Trifluorotoluene	*97.9*		*75-130*	*%REC*	1	7/7/2011 07:45 PM

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

ALS Environmental

Date: *14-Jul-11*

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
Work Order: 1107020
Sample ID: EB-2
Lab ID: 1107020-18
Collection Date: 6/30/2011 10:30 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**SW8021B**			Analyst: **RPM**
Benzene	U		1.0	µg/L	1	7/7/2011 08:03 PM
Toluene	U		1.0	µg/L	1	7/7/2011 08:03 PM
Ethylbenzene	U		1.0	µg/L	1	7/7/2011 08:03 PM
Xylenes, Total	U		3.0	µg/L	1	7/7/2011 08:03 PM
Surr: 4-Bromofluorobenzene	*108*		*77-129*	*%REC*	1	7/7/2011 08:03 PM
Surr: Trifluorotoluene	*99.8*		*75-130*	*%REC*	1	7/7/2011 08:03 PM

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

ALS Environmental

Date: 14-Jul-11

Client: ERM Southwest, Inc.

Work Order: 1107020

Project: ERM - Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R112669** Instrument ID **BTEX1** Method: **SW8021B**

MBLK Sample ID: **BBLKW1-070711-R112669** Units: **µg/L** Analysis Date: **7/7/2011 05:57 PM**

Client ID: Run ID: **BTEX1_110707B** SeqNo: **2450333** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Toluene	U	1.0								
Ethylbenzene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 4-Bromofluorobenzene	*32.91*	1.0	*30*	0	*110*	*77-129*	0			
Surr: Trifluorotoluene	*29.51*	1.0	*30*	0	*98.4*	*75-130*	0			

LCS Sample ID: **BLCSW1-070711-R112669** Units: **µg/L** Analysis Date: **7/7/2011 05:39 PM**

Client ID: Run ID: **BTEX1_110707B** SeqNo: **2450332** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.32	1.0	20	0	107	77-126	0			
Toluene	21.24	1.0	20	0	106	80-124	0			
Ethylbenzene	21.75	1.0	20	0	109	76-125	0			
Xylenes, Total	66.37	3.0	60	0	111	79-124	0			
Surr: 4-Bromofluorobenzene	*35.26*	1.0	*30*	0	*118*	*77-129*	0			
Surr: Trifluorotoluene	*29.42*	1.0	*30*	0	*98.1*	*75-130*	0			

MS Sample ID: **1107020-07AMS** Units: **µg/L** Analysis Date: **7/8/2011 01:44 AM**

Client ID: **MW-6S** Run ID: **BTEX1_110707B** SeqNo: **2450354** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	22.52	1.0	20	0.6126	110	77-126	0			
Toluene	22.31	1.0	20	0	112	80-124	0			
Ethylbenzene	21.79	1.0	20	0	109	76-125	0			
Xylenes, Total	69.36	3.0	60	0	116	79-124	0			
Surr: 4-Bromofluorobenzene	*37.56*	1.0	*30*	0	*125*	*77-129*	0			
Surr: Trifluorotoluene	*37.17*	1.0	*30*	0	*124*	*75-130*	0			

MSD Sample ID: **1107020-07AMSD** Units: **µg/L** Analysis Date: **7/8/2011 02:02 AM**

Client ID: **MW-6S** Run ID: **BTEX1_110707B** SeqNo: **2450355** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	22.21	1.0	20	0.6126	108	77-126	22.52	1.42	20	
Toluene	22.38	1.0	20	0	112	80-124	22.31	0.321	20	
Ethylbenzene	21.47	1.0	20	0	107	76-125	21.79	1.48	20	
Xylenes, Total	68.57	3.0	60	0	114	79-124	69.36	1.14	20	
Surr: 4-Bromofluorobenzene	*38.54*	1.0	*30*	0	*128*	*77-129*	37.56	*2.59*	*20*	
Surr: Trifluorotoluene	*34.47*	1.0	*30*	0	*115*	*75-130*	37.17	*7.53*	*20*	

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

Client: ERM Southwest, Inc.
Work Order: 1107020
Project: ERM - Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R112669** Instrument ID **BTEX1** Method: **SW8021B**

The following samples were analyzed in this batch:

1107020-01A	1107020-02A	1107020-03A
1107020-04A	1107020-05A	1107020-06A
1107020-07A	1107020-08A	1107020-09A
1107020-10A	1107020-11A	1107020-12A
1107020-13A	1107020-14A	1107020-15A
1107020-16A	1107020-17A	1107020-18A

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

Client: ERM Southwest, Inc.
Work Order: 1107020
Project: ERM - Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **53736** Instrument ID **ICPMS03** Method: **SW6020**

MBLK Sample ID: **MBLKW5-070711-53736** Units: **mg/L** Analysis Date: **7/7/2011 10:32 PM**
Client ID: Run ID: **ICPMS03_110707A** SeqNo: **2449470** Prep Date: **7/7/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	U	0.0050								

LCS Sample ID: **MLCSW5-070711-53736** Units: **mg/L** Analysis Date: **7/7/2011 10:38 PM**
Client ID: Run ID: **ICPMS03_110707A** SeqNo: **2449471** Prep Date: **7/7/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04997	0.0050	0.05	0	99.9	80-120	0			

MS Sample ID: **1107020-07BMS** Units: **mg/L** Analysis Date: **7/7/2011 11:01 PM**
Client ID: **MW-6S** Run ID: **ICPMS03_110707A** SeqNo: **2449475** Prep Date: **7/7/2011** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.05075	0.025	0.05	0.002416	96.7	80-120	0			

MSD Sample ID: **1107020-07BMSD** Units: **mg/L** Analysis Date: **7/7/2011 11:06 PM**
Client ID: **MW-6S** Run ID: **ICPMS03_110707A** SeqNo: **2449476** Prep Date: **7/7/2011** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04794	0.025	0.05	0.002416	91	80-120	0.05075	5.71	15	

DUP Sample ID: **1107020-07BDUP** Units: **mg/L** Analysis Date: **7/7/2011 10:49 PM**
Client ID: **MW-6S** Run ID: **ICPMS03_110707A** SeqNo: **2449473** Prep Date: **7/7/2011** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	U	0.025	0	0	0	0-0	0.002416	0	25	

The following samples were analyzed in this batch:

1107020-01B	1107020-02B	1107020-03B
1107020-04B	1107020-05B	1107020-06B
1107020-07B	1107020-08B	1107020-09B
1107020-10B	1107020-11B	1107020-12B
1107020-16B		

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

Client: ERM Southwest, Inc.
Work Order: 1107020
Project: ERM - Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **53652** Instrument ID **SV-2** Method: **SW8270**

MBLK Sample ID: **SBLKW2-110702-53652** Units: **µg/L** Analysis Date: **7/5/2011 05:07 PM**

Client ID: Run ID: **SV-2_110705A** SeqNo: **2448775** Prep Date: **7/2/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	0.20								
Acenaphthylene	U	0.20								
Anthracene	U	0.20								
Benz(a)anthracene	U	0.20								
Benzo(a)pyrene	U	0.20								
Benzo(b)fluoranthene	U	0.20								
Benzo(g,h,i)perylene	U	0.20								
Benzo(k)fluoranthene	U	0.20								
Chrysene	U	0.20								
Dibenz(a,h)anthracene	U	0.20								
Fluoranthene	U	0.20								
Fluorene	U	0.20								
Indeno(1,2,3-cd)pyrene	U	0.20								
Naphthalene	U	0.20								
Phenanthrene	U	0.20								
Pyrene	U	0.20								
Surr: 2-Fluorobiphenyl	*3.237*	0.20	*5*	0	*64.7*	*40-125*		0		
Surr: 4-Terphenyl-d14	*3.493*	0.20	*5*	0	*69.9*	*40-135*		0		
Surr: Nitrobenzene-d5	*3.373*	0.20	*5*	0	*67.5*	*41-120*		0		

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

Client: ERM Southwest, Inc.
Work Order: 1107020
Project: ERM - Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **53652** Instrument ID **SV-2** Method: **SW8270**

LCS Sample ID: **SLCSW3-110702-53652** Units: **µg/L** Analysis Date: **7/5/2011 05:27 PM**

Client ID: Run ID: **SV-2_110705A** SeqNo: **2448804** Prep Date: **7/2/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.384	0.20	5	0	67.7	45-120	0			
Acenaphthylene	3.488	0.20	5	0	69.8	47-120	0			
Anthracene	3.697	0.20	5	0	73.9	45-120	0			
Benz(a)anthracene	3.891	0.20	5	0	77.8	40-120	0			
Benzo(a)pyrene	3.932	0.20	5	0	78.6	45-120	0			
Benzo(b)fluoranthene	4.078	0.20	5	0	81.6	50-120	0			
Benzo(g,h,i)perylene	3.751	0.20	5	0	75	42-127	0			
Benzo(k)fluoranthene	3.457	0.20	5	0	69.1	45-127	0			
Chrysene	3.933	0.20	5	0	78.7	43-120	0			
Dibenz(a,h)anthracene	4.01	0.20	5	0	80.2	45-125	0			
Fluoranthene	3.984	0.20	5	0	79.7	45-125	0			
Fluorene	3.619	0.20	5	0	72.4	49-120	0			
Indeno(1,2,3-cd)pyrene	4.267	0.20	5	0	85.3	41-128	0			
Naphthalene	3.557	0.20	5	0	71.1	45-120	0			
Phenanthrene	3.738	0.20	5	0	74.8	45-121	0			
Pyrene	4.176	0.20	5	0	83.5	40-130	0			
Surr: 2-Fluorobiphenyl	*3.305*	0.20	*5*	0	*66.1*	*40-125*	0			
Surr: 4-Terphenyl-d14	*3.512*	0.20	*5*	0	*70.2*	*40-135*	0			
Surr: Nitrobenzene-d5	*3.325*	0.20	*5*	0	*66.5*	*41-120*	0			

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

Client: ERM Southwest, Inc.
Work Order: 1107020
Project: ERM - Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **53652** Instrument ID **SV-2** Method: **SW8270**

MS Sample ID: **1107020-07CMS** Units: **µg/L** Analysis Date: **7/5/2011 06:08 PM**
Client ID: **MW-6S** Run ID: **SV-2_110705A** SeqNo: **2448777** Prep Date: **7/2/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.473	0.20	5	0	69.5	45-120	0			
Acenaphthylene	3.529	0.20	5	0	70.6	47-120	0			
Anthracene	3.141	0.20	5	0	62.8	45-120	0			
Benz(a)anthracene	3.153	0.20	5	0	63.1	40-120	0			
Benzo(a)pyrene	3.396	0.20	5	0	67.9	45-120	0			
Benzo(b)fluoranthene	4.062	0.20	5	0	81.2	50-120	0			
Benzo(g,h,i)perylene	2.931	0.20	5	0	58.6	42-127	0			
Benzo(k)fluoranthene	2.903	0.20	5	0	58.1	45-127	0			
Chrysene	2.988	0.20	5	0	59.8	43-120	0			
Dibenz(a,h)anthracene	3.145	0.20	5	0	62.9	45-125	0			
Fluoranthene	3.36	0.20	5	0	67.2	45-125	0			
Fluorene	3.4	0.20	5	0	68	49-120	0			
Indeno(1,2,3-cd)pyrene	2.905	0.20	5	0	58.1	41-128	0			
Naphthalene	3.145	0.20	5	0	62.9	45-120	0			
Phenanthrene	3.333	0.20	5	0	66.7	45-121	0			
Pyrene	2.927	0.20	5	0	58.5	40-130	0			
Surr: 2-Fluorobiphenyl	*5.72*	0.20	*5*	0	*114*	*40-125*	0			
Surr: 4-Terphenyl-d14	*5.438*	0.20	*5*	0	*109*	*40-135*	0			
Surr: Nitrobenzene-d5	*5.839*	0.20	*5*	0	*117*	*41-120*	0			

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

Client: ERM Southwest, Inc.
Work Order: 1107020
Project: ERM - Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **53652** Instrument ID **SV-2** Method: **SW8270**

MSD Sample ID: **1107020-07CMSD** Units: **µg/L** Analysis Date: **7/5/2011 06:28 PM**
Client ID: **MW-6S** Run ID: **SV-2_110705A** SeqNo: **2448778** Prep Date: **7/2/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	2.879	0.20	5	0	57.6	45-120	3.473	18.7	20	
Acenaphthylene	2.843	0.20	5	0	56.9	47-120	3.529	21.5	20	R
Anthracene	3.17	0.20	5	0	63.4	45-120	3.141	0.931	20	
Benz(a)anthracene	3.091	0.20	5	0	61.8	40-120	3.153	1.98	20	
Benzo(a)pyrene	3.209	0.20	5	0	64.2	45-120	3.396	5.67	20	
Benzo(b)fluoranthene	3.396	0.20	5	0	67.9	50-120	4.062	17.9	20	
Benzo(g,h,i)perylene	2.811	0.20	5	0	56.2	42-127	2.931	4.19	20	
Benzo(k)fluoranthene	3.12	0.20	5	0	62.4	45-127	2.903	7.21	20	
Chrysene	3.095	0.20	5	0	61.9	43-120	2.988	3.54	20	
Dibenz(a,h)anthracene	2.998	0.20	5	0	60	45-125	3.145	4.78	20	
Fluoranthene	3.43	0.20	5	0	68.6	45-125	3.36	2.06	20	
Fluorene	3.068	0.20	5	0	61.4	49-120	3.4	10.3	20	
Indeno(1,2,3-cd)pyrene	2.574	0.20	5	0	51.5	41-128	2.905	12.1	20	
Naphthalene	3.03	0.20	5	0	60.6	45-120	3.145	3.7	20	
Phenanthrene	3.346	0.20	5	0	66.9	45-121	3.333	0.377	20	
Pyrene	2.954	0.20	5	0	59.1	40-130	2.927	0.946	20	
Surr: 2-Fluorobiphenyl	*5.096*	0.20	*5*	0	*102*	*40-125*	5.72	*11.5*	*0*	
Surr: 4-Terphenyl-d14	*5.166*	0.20	*5*	0	*103*	*40-135*	5.438	*5.14*	*0*	
Surr: Nitrobenzene-d5	*5.768*	0.20	*5*	0	*115*	*41-120*	5.839	*1.23*	*0*	

The following samples were analyzed in this batch:

1107020-01C	1107020-02C	1107020-03C
1107020-04C	1107020-05C	1107020-06C
1107020-07C	1107020-08C	1107020-09C
1107020-10C	1107020-11C	1107020-12C
1107020-16C		

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

Client: ERM Southwest, Inc.
Project: ERM - Huntsman Brickland Refinery
WorkOrder: 1107020

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
DCS	Detectability Check Study
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 Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Environmental
10450 Stancliff Rd., Suite 210
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Chain of Custody Form

Page 1 of 6

COC ID: 31366

1107020

ERMSW-CC: ERM Southwest, Inc.

Project: ERM - Huntsman Brickland Refinery

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	~~413078~~ 0137452	B	Total Metals (6020/7000) Select Pb
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	PAHs (8270) Low-Level
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	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com	J	

Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
MW-17	6/28/11	1310	WATER	1,8	3	X										
				5	2			X								
				2,8	1		X									
MW-11	6/28/11	1515	WATER	1,8	3	X										
				8	2			X								
				2,8	1		X									
MW-9S	6/29/11	0945	WATER	1,8	3	X										
				8	2			X								
				2,8	1		X									

Sampler(s) Please Print & Sign: RANDOLPH CRITCHFIELD

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ 3 WK Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date: 6/30/11	Time: 1730	Received by:	Notes: 10 Day T.A.T.
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
- ☐ Level II Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other / EDD
- ☐ 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

1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental 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.

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Chain of Custody Form

Page 2 of 6

COC ID: 31365

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

ALS Project Manager:

ALS Work Order #: 1107020

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	~~113678~~ 013745 2	B	Total Metals (6020/7000) Select Pb
Company Name	ERM Southwest Inc.	Bill To Company	ERM Southwest, Inc.	C	PAHs (8270) Low-Level
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) 737-0203	Phone	(361) 737-0203	H	
Fax		Fax		I	
e-Mail Address	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com	J	

Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
MW-3D	6/29/11	1120	WATER	1,8	3	X										
				8	2			X								
				2,8	1		X									
MW-3S	6/29/11	1230	WATER	1,8	3	X										
				8	2			X								
				2,8	1		X									
MW-6D	6/29/11	1430	WATER	1,8	3	X										
				8	2			X								
				2,8	1		X									

Sampler(s) Please Print & Sign: Randolph Ortland / RANDOLPH ORTLAND

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: Randolph Ortland — Date: 6/30/11 — Time: 1730 — Received by:

Relinquished by: — Date: — Time: — Received by (Laboratory):

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

Notes: 10 Day TAT.

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 V SW846/CLP
☐ Other / EDD

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

1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental 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.

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Chain of Custody Form

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COC ID: 31362

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Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 1107820

Customer Information		Project Information		Parameter/Method Request for Analysis	
urchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	~~[illegible]~~ 0137452	B	Total Metals (6020/7000) Select Pb
ompany Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	PAHs (8270) Low-Level
end 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	
-Mail Address	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com	J	

Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
MW-65	6/29/11	1520	WATER	1,8	3	X										
↓	↓	↓	↓	8	2			X								
↓	↓	↓	↓	2,8	1		X									
MW-5	6/30/11	0945	WATER	1,8	3	X										
↓	↓	↓	↓	8	2			X								
↓	↓	↓	↓	2,8	1		X									
RIVER-UPSTREAM	6/30/11	1100	WATER	1,8	3	X										
↓	↓	↓	↓	8	2			X								
↓	↓	↓	↓	2,8	1		X									

mpler(s) Please Print & Sign: RANDOLPH CROSLAND

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ Other ☐ 3 WK Days ☐ 24 Hour

Results Due Date:

inquished by: | Date: 6/30/11 | Time: 1730 | Received by:

Notes: 10 Day TAT.

inquished by: | Date: | Time: | Received by (Laboratory): 7/1/11 0845

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

Cooler ID	Cooler Temp.

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

servative 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

1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental 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.

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

Chain of Custody Form

Page 4 of 6

COC ID: 31364

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

ALS Project Manager: | ALS Work Order #: 1107026

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinary	A	BTEX (8021)
Work Order		Project Number	~~410020~~ 0137452	B	Total Metals (6020/7000) Select
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	PAHs (8270) Low-Level
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	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com	J	

Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
River-Downstream	6/30/11	1130	WATER	1,8	3	X										
				5	2			X								
				2,8	1		X									
MW-8	6/30/11	1255	WATER	1,8	3	X										
				8	2			X								
				2,8	1		X									
MW-10	6/30/11	1445	WATER	1,8	3	X										
				5	2			X								
				2,8	1		X									

Sampler(s) Please Print & Sign: Ronald Osborne / Brad Stokes

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: Brad Stokes | Date: 6/30/11 | Time: 1730 | Received by:

Notes: 10 Day TAT.

Relinquished by: | Date: | Time: | Received by (Laboratory): 7/1/11 1515

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/EDD

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 Environmental.
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3. The Chain of Custody is a legal document. All information must be completed accurately.

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Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

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COC ID: 31278

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

ALS Project Manager:
ALS Work Order #: 1107026

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	~~110079~~ 0137452	B	Total Metals (6020/7000) Select Pb
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	PAHs (8270) Low-Level
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	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com	J	

Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
MW-65/MS	6/29/11	1520	Water	1,8	3	X										
↓	↓	↓	↓	8	2			X								
↓	↓	↓	↓	2,8	1		X									
MW-65/MSD	6/29/11	1520	Water	1,8	3	X										
↓	↓	↓	↓	8	2			X								
↓	↓	↓	↓	2,8	1		X									

Sampler(s) Please Print & Sign: Randolph Ostlund [signature]

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: [signature] Date: 6/30/11 Time: 1430 Received by:

Notes: 10 Day TAT.

Relinquished by: Date: Time: Received by (Laboratory): [signature] 7/1/11 0845

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

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 / EDD
☐ 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 Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental 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.

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

Chain of Custody Form

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COC ID: 31277

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

ALS Project Manager: | ALS Work Order #: 1107025

Customer Information		Project Information		Parameter/Method Request for Analysis	
urchase Order		Project Name	Huntsman Brickland Refinery	A	BTEX (8021)
Work Order		Project Number	~~HH976~~ 0137452	B	Total Metals (6020/7000) Select Pb
ompany Name	ERM Southwest Inc.	Bill To Company	ERM Southwest, Inc.	C	PAHs (8270) Low-Level
end 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	
Mail Address	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com	J	

Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
FB-1	6/28/11	1600	WATER	1,8	3	X										
FB-2	6/29/11	1640	WATER	1,8	3	X										
FB-3	6/30/11	1515	WATER	1,8	3	X										
DUP-1	6/29/11	1200	WATER	1,8	3	X										
↓	↓	↓	↓	8	2			X								
↓	↓	↓	↓	2,8	1		X									
FB-1	6/30/11	0830	WATER	1,8	3	X										
FB-2	6/30/11	1030	WATER	1,8	3	X										

Sampler(s) Please Print & Sign: RANDY PITCHFORD | 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:	Date: 6/30/11	Time: 1730	Received by:	Notes: 10 Day TAT.
Relinquished by:	Date:	Time:	Received by (Laboratory): 7/1/11 0845	
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 / EDD

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

1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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ALS Environmental

Sample Receipt Checklist

Client Name: **ERMSW-CC** Date/Time Received: **01-Jul-11 08:45**

Work Order: **1107020** Received by: **RDH**

Checklist completed by Raymond N Gamboa (eSignature) **01-Jul-11** (Date) Reviewed by: Patricia L. Lynch (eSignature) **06-Jul-11** (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):	3.1c, 2.7c, 3.4c, 4.2c, 3.6c	002	
Cooler(s)/Kit(s):	3575, 3940, 4042, 2379, 3411		
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: Trip blank not on COC--logged in without analysis.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

W.O.# 110702

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

El Paso, TX 79905

J112011042902225

Ship Date: 30JUN11
ActWgt: 45.0 LB
CAD: 5919001/INET3180

Delivery Address Bar Code

Ref # 0102010
Invoice #
PO #
Dept #

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

1 of 5

FRI - 01 JUL A2
PRIORITY OVERNIGHT

TRK# 7949 3143 9236
0201

MASTER

NB SGRA

77099
TX-US
IAH

50FG1/0CB0/F5F4

4042

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

El Paso, TX 79905

J112011042902225

Ship Date: 30JUN11
ActWgt: 45.0 LB
CAD: 5919001/INET3180

Delivery Address Bar Code

Ref # 0102010
Invoice #
PO #
Dept #

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

4 of 5

FRI - 01 JUL A2
PRIORITY OVERNIGHT

MPS# 7949 3143 9291
0263

Mstr# 7949 3143 9236 0201

NB SGRA

77099
TX-US
IAH

50FG1/0CB0/F5F4

2579

WO# 1107020

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

El Paso, TX 79905

Origin ID: ELPA

FedEx Express

J1120110429022S

Ship Date: 30JUN11
ActWgt: 45.0 LB
CAD: 5919001/INET3180

Delivery Address Bar Code

Ref # 0102010
Invoice #
PO #
Dept #

SHIP TO: (281) 530-5656
Hector Coronado
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

BILL SENDER

5 of 5

MPS# 7949 3143 9269
0263

Mstr# 7949 3143 9236 0201

FRI - 01 JUL A2
PRIORITY OVERNIGHT

77099
TX-US
IAH

NB SGRA

3575

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

El Paso, TX 79905

Origin ID: ELPA

FedEx Express

J1120110429022S

Ship Date: 30JUN11
ActWgt: 45.0 LB
CAD: 5919001/INET3180

Delivery Address Bar Code

Ref # 0102010
Invoice #
PO #
Dept #

SHIP TO: (281) 530-5656
Hector Coronado
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

BILL SENDER

2 of 5

MPS# 7949 3143 9247
0263

Mstr# 7949 3143 9236 0201

FRI - 01 JUL A2
PRIORITY OVERNIGHT

77099
TX-US
IAH

NB SGRA

3940

WO # 115732

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

El Paso, TX 79905

J112011042902225

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

Ship Date: 30JUN11
ActWgt: 45.0 LB
CAD: 5919001/INET3180

Delivery Address Bar Code

Ref # 0102010
Invoice #
PO #
Dept #

3 of 5

MPS# 7949 3143 9258
0263

Mstr# 7949 3143 9236 0201

FRI - 01 JUL A2
PRIORITY OVERNIGHT

NB SGRA

77099
TX-US
IAH

90FG140CBD/F5F4

3411

Tables

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, Texas 78701
(512) 459-4700

Table 1
Brickland Refinery
Well Sampling and Purging Methods

Well No.	Sample Date	Purge Method	Sampling Method	Purge Volume	Laboratory Analytes
MW-3S	6/29/2011	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX, PAHs, and Lead
	12/15/2011	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX only
MW-3D	6/29/2011	Micropurge	Micropurge Bladder Pump	Approximately 3 gallons	BTEX, PAHs, and Lead
	12/15/2011	Micropurge	Micropurge Bladder Pump	Approximately 2 gallons	BTEX only
MW-4	--*	--*	--*	--*	--*
MW-5	6/30/2011	Micropurge	Micropurge Peristaltic Pump	Approximately 3 gallons	BTEX, PAHs, and Lead
	12/13/2011	Micropurge	Micropurge Peristaltic Pump	Approximately 5 gallons	BTEX only
MW-6S	6/29/2011	Micropurge	Micropurge Bladder Pump	Approximately 2.5 gallons	BTEX, PAHs, and Lead
	12/16/2011	Micropurge	Micropurge Bladder Pump	Approximately 1.5 gallons	BTEX only
MW-6D	6/29/2011	Micropurge	Micropurge Bladder Pump	Approximately 3 gallons	BTEX, PAHs, and Lead
	12/16/2011	Micropurge	Micropurge Bladder Pump	Approximately 2.5 gallons	BTEX only
MW-7	--*	--*	--*	--*	--*
MW-8	6/30/2011	Micropurge	Micropurge Peristaltic Pump	Approximately 2 gallons	BTEX, PAHs, and Lead
	12/14/2011	Micropurge	Micropurge Peristaltic Pump	Approximately 2 gallons	BTEX only
MW-9S	6/29/2011	Micropurge	Micropurge Bladder Pump	Approximately 3.5 gallons	BTEX, PAHs, and Lead
	12/15/2011	Micropurge	Micropurge Bladder Pump	Approximately 4 gallons	BTEX only
MW-10	6/30/2011	Micropurge	Micropurge Peristaltic Pump	Approximately 3 gallons	BTEX, PAHs, and Lead
	12/14/2011	Micropurge	Micropurge Peristaltic Pump	Approximately 2 gallons	BTEX only
MW-11	6/28/2011	Micropurge	Micropurge Peristaltic Pump	Approximately 4 gallons	BTEX, PAHs, and Lead
MW-14	--*	--*	--*	--*	--*
MW-15	--*	--*	--*	--*	--*
MW-17	6/28/2011	Micropurge	Micropurge Peristaltic Pump	Approximately 3.5 gallons	BTEX, PAHs, and Lead
River Upstream	6/30/2011	NA	Teflon Dipper	NA	BTEX, PAHs, and Lead
	12/13/2011	NA	Teflon Dipper	NA	BTEX only
River Downstream	6/30/2011	NA	Teflon Dipper	NA	BTEX, PAHs, and Lead
	12/13/2011	NA	Teflon Dipper	NA	BTEX only
Total volume purged during semi-annual monitoring event in June 2011:					29.5 gallons
Total volume purged during annual monitoring event in December 2011:					22.5 gallons
Total volume purged during semi-annual and annual monitoring events:					52 gallons

Notes:

--* = Not sampled during an odd-numbered year.
NA = Not applicable

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

Well ID	TOC	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	6/21/2010	12/7/2010	6/28/2011	12/13/2011
MW-1	3730.57	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	3726.79	3724.08	3726.27	3723.93
MW-2	Plugged	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	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99
MW-3S	3730.00	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	3725.88	3723.15	3725.35	3723.05
MW-3D	3730.00	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	3725.83	3723.07	3725.37	3722.93
MW-4	3728.86	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	3726.41	3723.41	3725.51	3723.26
MW-5	3729.70	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	3726.13	3723.54	3725.50*	3722.13*
MW-6S	3730.65	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	3725.70	3722.83	3725.11	3722.69
MW-6D	3730.62	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	3725.62	3722.85	3725.06	3722.76
MW-7	3728.96	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	3725.99	3723.26	3725.43	3723.04
MW-8	3729.22	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	3725.53	3723.22	3725.25*	3721.89*
MW-9S	3730.01	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	3725.35	3723.23	3725.16	3722.32
MW-9D	3730.08	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	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05
MW-10	3732.54	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	3725.73	3722.91	3724.87	3722.21
MW-11	3731.40	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	3725.69	3723.17	3724.95*	3722.94*
MW-12	3730.35	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	3727.08	3724.52	3726.70	3724.79
MW-13	3732.36	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	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99
MW-14	3730.46	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	3726.06	3723.58	3725.49	3723.44
MW-15	3738.62	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	3725.62	3723.26	3724.99	3723.15
MW-16	3736.78	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	3725.43	3722.78	3724.87	3724.76
MW-17	3731.98	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	3726.02	3723.17	3725.40*	3723.02*

Notes:

TOC = top of casing

* = Oxygen-releasing compound sleeves/socks (O-Sox) were utilized at these wells to enhance natural attenuation; water elevations may be artificially lowered due to displacement caused by the O-Sox sleeve.

Table 3
Brickland Refinery
BTEX Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples
June 2002 through December 2011

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
	71/2009	ND	ND	ND	ND
	12/10/2009	ND	ND	ND	ND
	6/23/2010	ND	ND	ND	ND
	12/7/2010	ND	ND	ND	ND
	6/29/2011	ND	ND	ND	ND
	12/14/2011	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
	6/23/2010	ND	ND	ND	ND
	12/7/2010	ND	ND	ND	ND
	6/29/2011	ND	ND	ND	ND
	12/14/2011	ND	ND	ND	ND
MW-4	6/28/2002	**100, 87**	ND, ND	ND, ND	ND, ND
	12/6/2002	--	--	--	--
	6/19/2003	--*	--*	--*	--*
	12/17/2003	--*	--*	--*	--*
	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	--*	--*	--*	--*
	12/17/2007	--*	--*	--*	--*
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	--*	--*	--*	--*
	12/10/2009	--*	--*	--*	--*
	6/22/2010	ND	ND	ND	ND
	6/28/2011	--*	--*	--*	--*
	12/15/2011	--*	--*	--*	--*

Table 3
Brickland Refinery
BTEX Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples
June 2002 through December 2011

Well	Date	Benzene	Toluene	Ethylbenzene	Xylenes
MW-5	6/21/2010	**2200**	6.7	3	21
	6/30/2011	**870**	2.6J	ND	8.5J
	12/13/2011	**2000**	4.4	1.4	14 P
MW-6S[(a)]	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
	6/24/2010	ND, ND	ND, ND	ND, ND	ND, ND
	6/29/2011	0.61J, ND	ND, ND	ND, ND	ND, ND
	12/16/2011	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
	6/24/2010	ND	ND	ND	ND
	12/8/2010	ND	ND	ND	ND
	6/29/2011	ND	ND	ND	ND
	12/16/2011	ND	ND	ND	ND
MW-7	6/28/2002	ND	ND	ND	ND
	12/6/2002	--	--	--	--
	6/19/2003	--*	--*	--*	--*
	12/17/2003	--*	--*	--*	--*
	6/16/2004	ND	ND	ND	ND
	12/16/2004	--	--	--	--
	6/14/2006	ND	ND	ND	ND
	12/14/2006	--	--	--	--
	6/14/2007	ND	ND	ND	ND
	12/17/2007	--*	--*	--*	--*
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	--*	--*	--*	--*
	12/10/2009	--*	--*	--*	--*
	6/22/2010	ND	ND	ND	ND
	6/28/2011	--*	--*	--*	--*
	12/15/2011	--*	--*	--*	--*
MW-8	6/22/2010	**6800**	27	23	32
	6/30/2011	**460**	ND	ND	ND
	12/14/2011	**9900**	7.7	15	12 P

Table 3
Brickland Refinery
BTEX Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples
June 2002 through December 2011

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
	6/23/2010	ND	ND	ND	ND
	12/8/2010	ND	ND	ND	ND
	6/29/2011	ND	ND	ND	ND
	12/15/2011	ND	ND	ND	ND
MW-10	6/24/2010	ND	ND	ND	3.9
	6/30/2011	ND	ND	ND	3.2
	12/14/2011	**30**	2.1	ND	50
MW-11	6/22/2010	ND	ND	ND	ND
	6/28/2011	4.7	ND	ND	ND
	12/15/2011	--	--	--	--
MW-14	6/28/2002	**11**	ND	ND	ND
	12/6/2002	--	--	--	--
	6/19/2003	--*	--*	--*	--*
	12/17/2003	--*	--*	--*	--*
	6/16/2004	**230**	ND	ND	ND
	12/16/2004	--*	--*	--*	--*
	6/14/2006	ND	ND	ND	ND
	12/14/2006	--	--	--	--
	6/14/2007	--*	--*	--*	--*
	12/17/2007	--*	--*	--*	--*
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	--*	--*	--*	--*
	12/10/2009	--*	--*	--*	--*
	6/22/2010	ND	ND	ND	ND
	6/28/2011	--*	--*	--*	--*
	12/15/2011	--*	--*	--*	--*
MW-15	6/28/2002	ND	ND	ND	ND
	12/6/2002	--	--	--	--
	6/19/2003	--*	--*	--*	--*
	12/17/2003	--*	--*	--*	--*
	6/16/2004	ND	ND	ND	ND
	12/16/2004	--	--	--	--
	6/14/2006	ND	ND	ND	ND
	12/14/2006	--	--	--	--
	6/14/2007	--*	--*	--*	--*
	12/17/2007	--*	--*	--*	--*
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	--*	--*	--*	--*
	12/10/2009	--*	--*	--*	--*
	6/23/2010	ND	ND	ND	ND
	6/28/2011	--*	--*	--*	--*
	12/15/2011	--*	--*	--*	--*

Table 3
Brickland Refinery
BTEX Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples
June 2002 through December 2011

Well	Date	Benzene	Toluene	Ethylbenzene	Xylenes
MW-17	6/22/2010	ND	ND	ND	ND
	6/28/2011	ND	ND	ND	ND
	12/15/2011	--	--	--	--
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
	6/23/2010	ND	ND	ND	ND
	12/7/2010	ND	ND	ND	ND
	6/30/2011	ND	ND	ND	ND
	12/13/2011	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
	6/23/2010	ND	ND	ND	ND
	12/7/2009	ND	ND	ND	ND
	6/30/2011	ND	ND	ND	ND
	12/13/2011	ND	ND	ND	ND
NMWQCC Standard (µg/L)		**10**	**750**	**750**	**620**

Notes:

BOLD = Concentrations in bold type indicate levels exceed New Mexico Water Quality Control Commission (NMWQCC) standards

J = The value is considered estimated by the laboratory as the analyte was detected below the laboratory's quantitation limit but above the laboratory's reporting limit.

ND = Not detected

P = Dual Column results percent difference > 40%

µg/L = micrograms per liter

(a) = MW-6S and Duplicate sample are reported in the same cell and seperated by a comma

-- = sample was not collected/analyzed for this constituent

--* = sample not collected/analyzed for this constituent in odd-numbered years

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

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	7/2/2009	7/21/2010	6/28/2011
MW-1	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	--	ND	ND	ND	ND	--	--	--	--	--	--	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-3S	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-3D	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-4	--	ND, ND	ND	ND	ND	--	--	--	--	--	--	--	ND	ND	ND	--	ND	--	ND	--	ND	ND	ND	--
MW-5	--	**107**	**117**	**191**	**139**	**117**	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.67	0.42
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	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	ND	ND
MW-7	--	ND	ND	ND	ND	--	--	--	--	--	--	ND,ND	ND,ND	ND	ND	--	ND	--	ND	--	ND	ND	ND	--
MW-8	--	**250**	**93**	**366**	**236**	**180**	--	**140**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.21	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	ND	ND
MW-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.13	1.66
MW-11	--	**29**	ND	**233**	**148**	ND	--	**140**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	0.06
MW-12	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-13	--	--	--	--	--	--	--	--	--	--	--	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-14	--	--	**570**	**40**	ND	ND	**12**	ND	--	--	--	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	ND	--
MW-16	--	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-17	--	--	--	**58, 37**	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	1.03
River-Upstream	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
River-Downstream	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

June 2011 Data Detail							
Well	Acenaphthene	Acenaphthylene	Anthracene	Flourene	Naphthalene	Phenanthrene	Pyrene
MW-5	ND	ND	ND	0.085 J	0.27	0.061J	ND
MW-10	0.29	0.11 J	0.15 J	0.55	0.14J	0.26	0.16 J
MW-11	ND	ND	ND	ND	ND	0.056 J	ND
MW-17	0.27	ND	ND	0.28	0.083 J	0.19 J	0.21

Notes:

BOLD = Concentrations in bold type indicate levels exceed New Mexico Water Quality Control Commission (NMWQCC) standards for PAH concentrations (30 µg/L).
J = The value is considered estimated by the laboratory as the analyte was detected below the laboratory's quantitation limit but above the laboratory's reporting limit.
ND = Not Detected
P&A = Well has been plugged and abandoned
-- = Not Sampled
µg/L = micrograms per liter
DUP-1 was collected at MW-6S during June 2011 sampling event. Result reported with MW-6S line, following the comma.

Table 5
Brickland Refinery
Lead Concentrations (mg/L)

Well	6/28/02	6/19/03	6/17/04	6/15/05	6/14/06	6/14/2007	6/25/2008	7/1/2009	6/21/2010	6/28/2011
MW-3S	ND	ND	ND	ND	ND	ND	ND	<0.005	<0.002	<0.00500
MW-3D	ND	ND	ND	ND	ND	ND	ND	<0.01	<0.004	<0.0250
MW-4	0.018	ND, ND	--	ND	ND	NS	ND	--*	<0.002	--*
MW-5	--	--*	--	--*	--	--*	--	--*	<0.004	0.00117J
MW-6S	ND	ND	ND, ND	ND	ND, ND	ND, ND	ND	<0.025	<0.002	<0.0250, 0.00274J
MW-6D	ND	ND	ND	ND	ND	ND	ND	<0.01	<0.004	<0.025
MW-7	0.022	ND	--	**0.190**	ND	--*	ND	--*	<0.002	--*
MW-8	--	--*	--	--*	--	--*	--	--*	<0.002	0.00841
MW-9S	ND	ND	ND	ND	ND	ND	ND	<0.01	<0.002	<0.00500
MW-10	--	--*	--	--*	--	--*	--	--*	<0.002	<0.00500
MW-11	--	--*	--	--*	--	--*	--	--*	<0.002	<0.01000
MW-14	0.015	ND	--	ND	ND	--*	ND	--*	<0.004	--*
MW-15	0.012	ND	--	ND	ND	--*	ND	--*	<0.002	--*
MW-17	--	--*	--	--*	--	--*	--	--*	<0.002	<0.00500
River Upstream	ND	ND	ND	ND	ND	0.0071	ND	<0.005	<0.0004	0.00214J
River Downstream	ND	ND	ND	ND	ND	0.0057	ND	<0.005	<0.0004	0.00216J

Notes:

BOLD = Concentrations in bold type indicate levels exceed New Mexico Water Quality Control Commission (NMWQCC) standards for lead (0.05 mg/L)

J = The value is considered estimated by the laboratory as the analyte was detected below the laboratory's quantitation limit but above the laboratory's reporting limit.

mg/L = Milligrams per liter

ND = concentration was below laboratory detection limits.

-- = sample was not collected/analyzed for this constituent

--* = sample not collected/analyzed for this constituent in odd-numbered years

DUP-1 was collected at MW-6S during June 2011 sampling event. Result reported with MW-6S line, following the comma.

Table 6
Brickland Refinery
LNAPL Thickness Measurements (Feet)

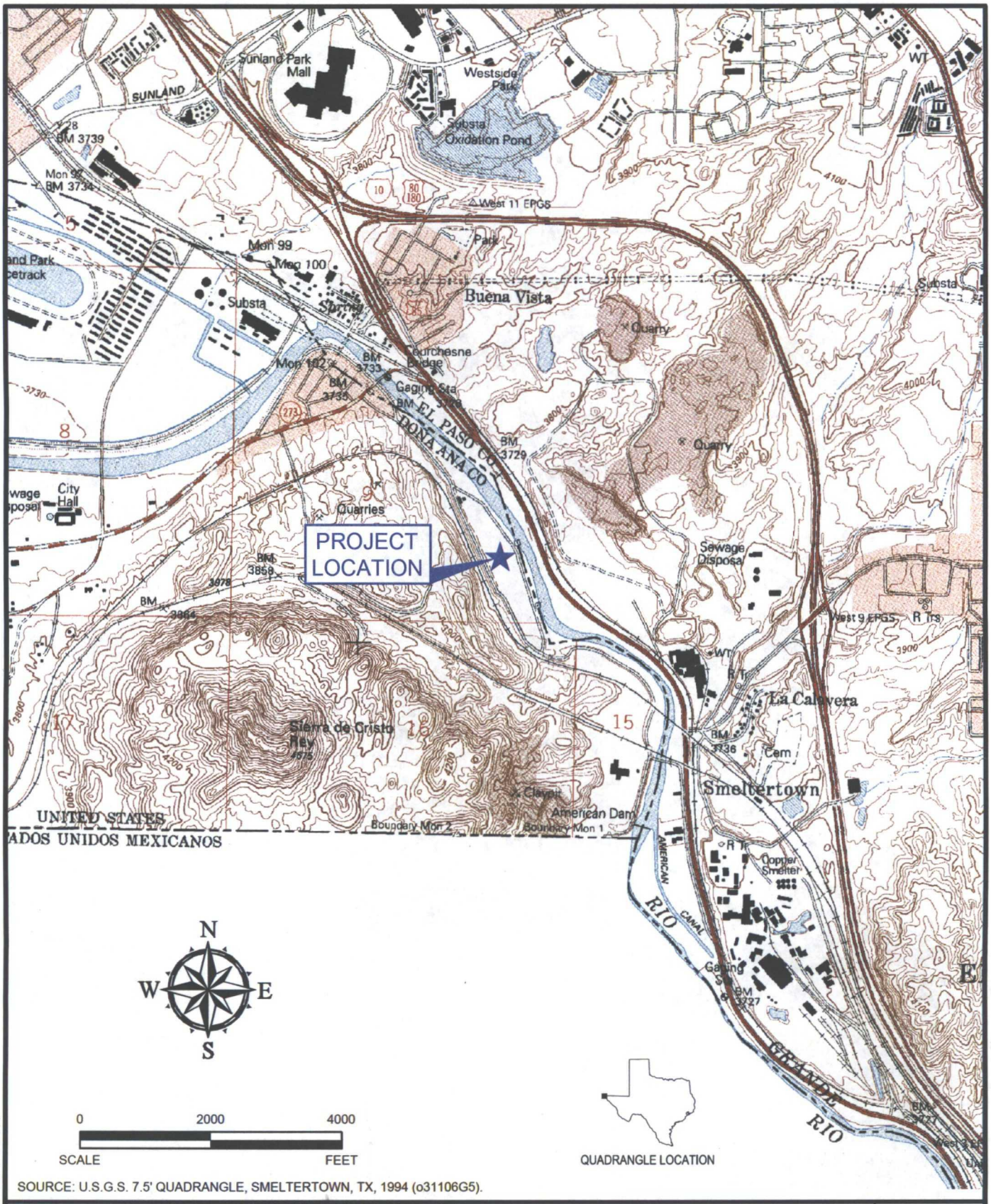
Well ID	Jun-03	Dec-03	Jun-04	Dec-04	Jun-05	Dec-05	Jun-06	Dec-06	Jun-07	Dec-07	Jun-08	Jan-09	Jul-09	Dec-09	Jun-10	Dec-10	Jun-11	Dec-11
MW-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-2	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&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	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	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	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	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	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	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	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	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	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	0.00	0.00	0.00	0.20
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	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	0.00	0.00	0.00	0.00
MW-13	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&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	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	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	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	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	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	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	0.00	0.00	0.00	Dry
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	0.00	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	0.00	0.00	0.02	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	0.00	0.00	0.00	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	0.00	0.00	0.00	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	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	0.00	0.00	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	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	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	0.00	NM	NM	NM
WP-32	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Trace	Dry	Dry	NM	NM	NM	NM	NM	Dry	Dry
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	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.
P&A = Well has been plugged and abandoned
Dry = Monitoring point was dry
NM = Monitoring point was not measured

Figures

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, Texas 78701
(512) 459-4700



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

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DESIGN: B. Stokes	DRAWN: EFC	CHKD.: B. Stokes
DATE: 2/10/2012	SCALE: AS SHOWN	REV.:
W.O. NO.: H:\DWG\B12\0137452_site.dwg, 2/10/2012 10:41:58 AM		

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

ERM

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N

0 200 400

SCALE FEET

DOWNSTREAM

MW-09S

MW-06D
MW-06S

WP-02

WP-01

WP-03

WP-27S
WP-27D

MW-15

WP-32

WP-25

MW-16

MW-17

MW-10

WP-07

WP-31

MW-03D
MW-03S

W. Paisano Dr. (Hwy 85)

Rio Grande River

WP-30

MW-07

MW-11

WP-33

WP-09

MW-14

MW-08

ACCESS ROAD

MW-04

FORMER
BRICKLAND
REFINERY SITE

WP-14

MW-01

UPSTREAM

MW-05

Brickland Rd.

MW-12

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

LEGEND

WP-16 • WELL POINT

MW-02 ◈ MONITORING WELL

■ APPROXIMATE RIVER SAMPLING LOCATION

⊏==⊐ CULVERT

—×—×— FENCE

NOTE: ONLY ACTIVELY MEASURED WELLS SHOWN, PLUGGED AND ABANDONED EXCLUDED.

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: J. Byrd	DRAWN: EFC	CHKD.:
DATE: 3/6/2012	SCALE: AS SHOWN	REV.:

W.O.NO.: H:\DWG\C12\0137452b2.dwg, 3/6/2012 1:42:42 PM

ERM

N

0 200 400
SCALE FEET

W. Paisano Dr. (Hwy 85)

Rio Grande River

ACCESS ROAD

FORMER BRICKLAND REFINERY SITE

Brickland Rd.

3725.00
3725.25
3725.50
3725.75
3726.00
3726.25
3726.50

MW-06D 3725.06
MW-06S 3725.11
MW-09S 3725.35
MW-09D Plugged 7/06
MW-03D 3725.37
MW-03S 3725.35
MW-17 3725.40
MW-07 3725.43
MW-11 3724.95
MW-10 3724.87
MW-15 3724.99
MW-16 3724.87
MW-08 3725.25
MW-14 3725.49
MW-04 3725.51
MW-05 3725.50
MW-01 3726.27
MW-13 Plugged 6/99
MW-02 Plugged 6/99
MW-12 3726.70

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

- 3726.0 — POTENTIOMETRIC SURFACE ELEVATION (FEET, MEAN SEA LEVEL) (DASHED WHERE INFERRED)
- DIRECTION OF GROUND WATER FLOW
- MW-01 3726.27 — MONITORING WELL WITH POTENTIOMETRIC SURFACE ELEVATION (FEET, MEAN SEA LEVEL)
- WP-16 — WELL POINT
- APPROXIMATE RIVER SAMPLING LOCATION
- CULVERT
- FENCE

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

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FIGURE 3
POTENTIOMETRIC SURFACE MAP
JUNE 2011
Former Brickland Refinery
Huntsman Corporation
Sunland Park, New Mexico

DESIGN: J. Byrd	DRAWN: CAK	CHKD.:
DATE: 2/10/2012	SCALE: AS SHOWN	REV.:

W.O.NO.: H:\DWG\B12\0137452b201.dwg, 2/10/2012 10:34:31 AM

ERM

N

0 200 400
SCALE FEET

W. Paisano Dr. (Hwy 85)

Rio Grande River

ACCESS ROAD

FORMER BRICKLAND REFINERY SITE

Brickland Rd.

MW-09S 3722.32
MW-09D Plugged 7/05
MW-06D 3722.76
MW-06S 3722.69
MW-03D 3722.93
MW-03S 3723.05
MW-17 3723.02
MW-10 3722.21
MW-15 3723.15
MW-16 3724.76
MW-11 3722.94
MW-07 3723.04
MW-14 3723.44
MW-08 3721.89
MW-04 3723.26
MW-01 3723.93
MW-05 3722.13
MW-13 Plugged 6/99
MW-02 Plugged 6/99
MW-12 3724.79

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

3723.5
3724.0
3724.5
3723.0
3724.0
3723.5
3723.0

LEGEND

3723.5	POTENTIOMETRIC SURFACE ELEVATION (FEET, MEAN SEA LEVEL) (DASHED WHERE INFERRED)
	DIRECTION OF GROUND WATER FLOW
MW-01 3723.93	MONITORING WELL WITH POTENTIOMETRIC SURFACE ELEVATION (FEET, MEAN SEA LEVEL)
WP-16	WELL POINT
	APPROXIMATE RIVER SAMPLING LOCATION
	CULVERT
	FENCE

NOTE: WATER LEVELS IN WELLS MW-05 AND MW-08 WERE ARTIFICIALLY LOW DUE TO REMOVAL OF O-SOX.

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

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FIGURE 4
POTENTIOMETRIC SURFACE MAP
DECEMBER 2011
Former Brickland Refinery
Huntsman Corporation
Sunland Park, New Mexico

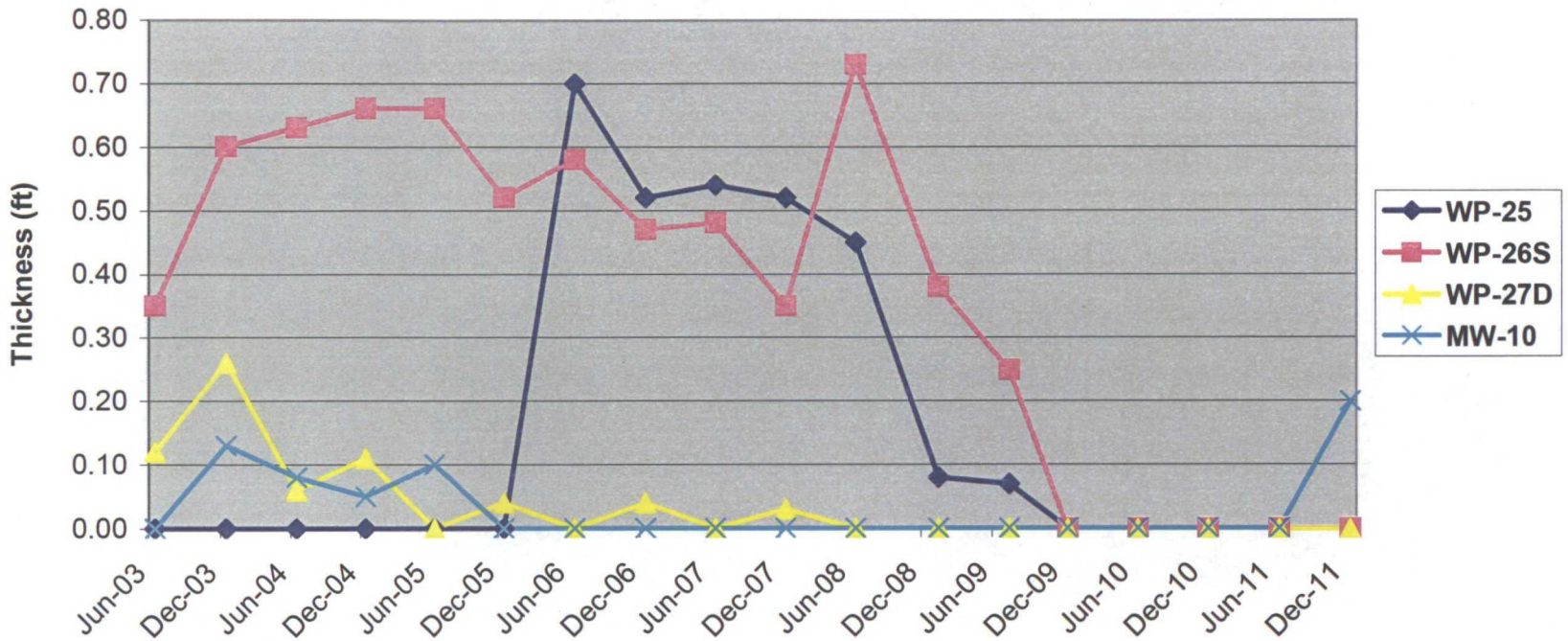
DESIGN: J. Byrd	DRAWN: CAK	CHKD.:
DATE: 2/8/2012	SCALE: AS SHOWN	REV.:

W.O.NO.: H:\DWG\B12\0137452b202.dwg, 2/10/2012 10:35:50 AM

ERM

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

Figure 5 - LNAPL Thickness



Notes:

LNAPL was measured at WP-14 (0.02 ft) in June 2011; LNAPL was not detected during the December 2011 sampling event.