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Final Closure Plan
North and South Aeration Lagoons
Bloomfield Refinery

Regulated Unit EPA ID# NMD089416416
HWB-GRCB-10-007

Western Refining Southwest, Inc.
Bloomfield Refinery
Bloomfield, New Mexico

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(Revised January 2011)

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Section 1
Introduction

The Bloomfield Refinery is located immediately south of Bloomfield, New Mexico in San Juan County. The physical location address is #50 Road 4990, Bloomfield, New Mexico 87413. The Bloomfield Refinery is located on approximately 263 acres. The site is located on a bluff approximately 100 feet above the south side of the San Juan River, a perennial river that flows to the west (Figure 1).

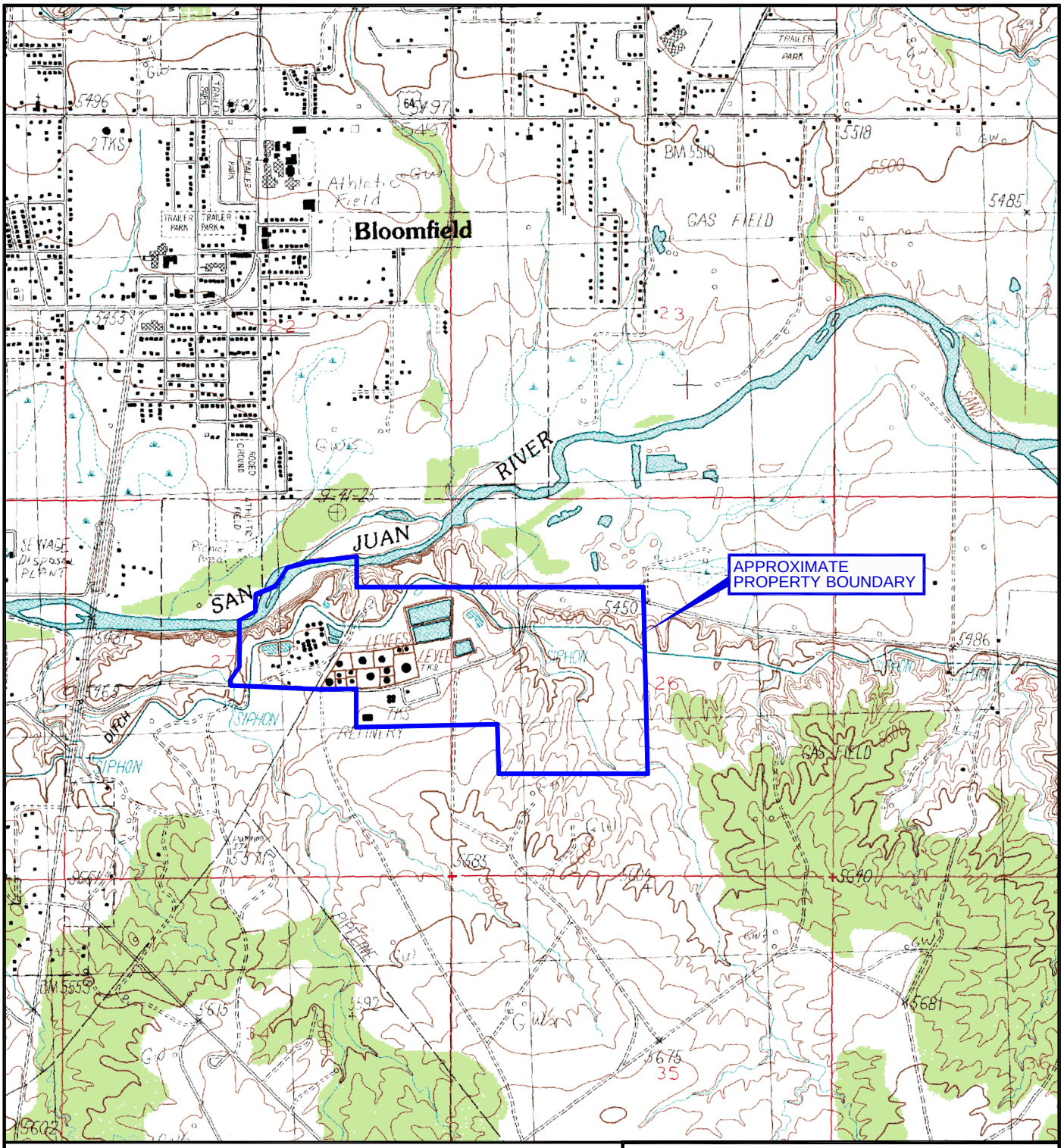
Bordering the facility is a combination of federal and private properties. Public property managed by the Bureau of Land Management lies to the south. The majority of undeveloped land in the vicinity of the facility is used extensively for oil and gas production and, in some instances, grazing. The town of Bloomfield is located to the north of the refinery, across the San Juan River. U.S. Highway 550 is located approximately one-half mile west of the facility. The topography of the site is generally flat with low-lying areas to the east of the process area.

The Bloomfield Refinery is a crude oil refinery currently owned by San Juan Refining Company and it is operated by Western Refining Southwest, Inc. – Bloomfield Refinery. The Bloomfield Refinery generally processed crude oil from the Four Corners area transported to the facility by pipeline or tanker truck and crude from West Texas transported by pipeline.

The Bloomfield Refinery has an approximate refining capacity of 18,000 barrels per day; however, the refinery suspended petroleum refining operations in November 2009. Various process units operated at the facility, included crude distillation, reforming, fluidized catalytic cracking, sulfur recovery, merox treater, catalytic polymerization and diesel hydrotreating. Products produced at the refinery included gasoline, diesel fuels, jet fuels, kerosene, propane, butane, naphtha, residual fuel, fuel oils and LPG.

This Closure Plan addresses the final closure of the North and South Aeration Lagoons. Historical monitoring data of the effluent from the API Separator, which discharges into the South Aeration Lagoon, indicated that concentrations of benzene above the toxicity characteristic (TC) regulatory threshold of 0.5 milligrams per liter (mg/l) entered the aeration lagoons. Modifications to the wastewater treatment system required that the lagoons be cleaned out to remove all hazardous waste, hazardous constituents, decomposition products, and leachate. These “partial closure” activities were completed in October 2008 through

February 2009 pursuant to the North and South Aeration Lagoons Closure Plan dated May 2008 [approved by the New Mexico Environment Department (NMED) on August 7, 2008]. Final closure of the aeration lagoons will be conducted in accordance with an Enforceable Document (July 27, 2007 NMED Order) and this Final Closure Plan.



Map Source: USGS 7.5 Min. Quad Sheet BLOOMFIELD, NM., 1985.

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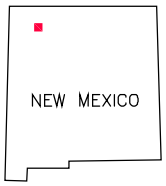
SCALE IN FEET



QUADRANGLE LOCATION

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 12/08/10	FILE: WestRef–A42

FIGURE 1
SITE LOCATION MAP
BLOOMFIELD REFINERY

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Section 2
Wastewater Treatment Unit Description and Operation

2.1 Environmental Regulatory Activities

All oil refineries produce process wastewater, which today must be managed in accordance with a variety of environmental requirements intended to assure adequate and appropriate protection of public health and the environment. Three federal regulatory programs [the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), and the Safe Drinking Water Act (SDWA)] have major significance for Bloomfield Refinery process wastewater. Two of these federal programs at Bloomfield are directly administered by the State of New Mexico, as it has primacy over the RCRA and SDWA Underground Injection Control (UIC) programs. In addition, there are additional State regulatory programs with varying applicability, including those administered by New Mexico Oil Conservation Division (OCD).

Initially, beginning in 1972 under the CWA regulatory program, EPA promulgated petroleum refinery wastewater management requirements pursuant to the National Pollutant Discharge Elimination System (NPDES) permit program. The principal federal regulations implementing this CWA program as it applies to petroleum refineries are found at 40 C.F.R. Parts 122 and 419. The Bloomfield Refinery, like other oil refineries impacted by 40 C.F.R. Part 419, had implemented a series of process wastewater treatment operations, including primary treatment of wastewaters with an oil/water separator followed by aggressive biological treatment in accordance with 40 CFR §261.31(b)(2). The two ponds where such biological treatment occurred were referred to at the time as the North Oily Water Pond and the South Oily Water Pond.

A second major regulatory program, the RCRA regulations, affecting hazardous waste was promulgated by EPA on November 19, 1980. Initially, these applied only to certain sludges created by petroleum refinery wastewater management, such as API oil/water separator sludge that was listed as K051 hazardous waste. In November 1980, the Bloomfield Refinery operator applied for a Part A permit as a generator and TSD facility as a protective filing for its so-called oily water ponds. It was later determined that they were not disposing of listed hazardous waste on site since D018 wastewater was not part of the 1980 EP toxicity test (it only became regulated after the 1990 TCLP toxicity test was adopted). In 1982 they petitioned for RCRA

reclassification under a generator only status.[1] In 1982/1983, the liquids and sludge were removed from the oily water ponds and disposed of offsite. Impacted soils were also excavated and the ponds were lined. This activity included the placement of a composite liner consisting of a 33% bentonite/soil bottom liner, a French drain system, and a 100 mill high density polyethylene (HDPE) upper liner.

In 1990, a significant revision to these regulations classified most petroleum refinery process wastewater as D018 benzene characteristic hazardous waste, leading the Bloomfield Refinery to submit a Part B RCRA permit application[2] in the mid-1990s and to operate its biological treatment impoundments pursuant to RCRA interim status as a regulated unit. To comply with RCRA interim status, the Bloomfield Refinery upgraded and retrofitted the impoundments with an additional set of RCRA double liners and leak detection/leachate collection system over the liner system that the Bloomfield Refinery had installed in 1982/1983.

In 1992, the listing of F037/F038 sludges by EPA as hazardous wastes effectively mandated a certain level of biological treatment and retention time in the biological treatment impoundments at the Bloomfield Refinery.[3] Thereafter, the aeration-enhanced impoundments were called the North Aeration Lagoon (NAL) or the South Aeration Lagoon (NAL) [also referred to herein as the North Aggressive Biological Treatment (ABT) Units (two impoundments known as NABT-E and NABT-W) and the South ABT Unit] (Figure 2). The compliance strategy employed aggressive biological treatment followed by disposition through evaporation ponds and a Class I underground injection well permitted consistent with the Safe Drinking Water Act UIC program requirements.[4]

---

[1] On November 26, 1985, the Bloomfield Refinery agreed to take an on-site landfill [where some of the materials from the 1982 impoundment cleanout had been placed] through RCRA closure. During 1989, these materials were removed and eventually determined by EPA delisting to be non-hazardous for offsite disposal. See, Hazardous Waste Delisting Petition, Petroleum Contaminated Soil, dated April 15, 1991 (ERM-Rocky Mountain, Inc.)

[2] This Part B application submitted in the mid-1990s included a RCRA closure plan for the biological treatment impoundments, as discussed later in this document.

[3] Integral to the operation of the Bloomfield Refinery, as with any oil refinery in the United States, is the operation of an aggressive biological treatment (ABT) unit system for wastewater management, mandated by EPA regulations regarding the listing of certain petroleum refinery wastes (F037/F038) that became effective in May, 1991. EPA regulations, as adopted by NMED, effectively require each petroleum refinery to implement an ABT system to biological treat organics with regulatorily-specified ABT technology to remove organics and eliminate F037/F038 formation. The Bloomfield Refinery has had such advanced organic aeration in place as required since that time, and these EPA-required treatment systems operate as multi-lined ABT wastewater treatment units at Bloomfield, backed up with a double set of leak detection/leachate collection systems, over and above what has been technologically required under EPA regulations.

[4] EPA promulgated regulatory requirements to assure that wastewater managed by UIC disposition not pose a risk to public health and the environment (40 C.F.R. Parts 144-146), but those did not apply at the Bloomfield Refinery until 1994 when Bloomfield installed a Class I UIC well for wastewater management.

As a result of an EPA Consent Agreement and Final Order (CAFO) dated May 18, 2006, additional upgrades were made to wastewater treatment operations at the Bloomfield Refinery in the fall of 2007. The upgrades included construction and operation of a benzene stripper/surge tank system that decharacterizes all potentially D018 characteristically hazardous process wastewater prior to further biological treatment in the ABT impoundments. The tank system includes a 10,000 barrel tank to provide surge capacity. As a result, all process wastewater streams, including any contaminated runoff, is decharacterized prior to discharge into the ABT units for aggressive biological treatment.

2.2 ABT Unit Operations

The refinery process wastewater that was generated [approx. 80 gallons per minute (gpm)] at the Bloomfield Refinery prior to suspension of the petroleum refining operations was managed first by treatment in an API oil/water separator, then benzene air strippers to remove the volatile components and the final treatment (biological) in the three ABT impoundments. The impoundments were designed and equipped with aerators sized to prevent F037/F038 waste generation through high rate aeration (i.e., aggressive biological treatment) in accordance with 40 CFR §261.31(b)(2). With the installation of the benzene stripper equipment in October 2007, the wastewater is “decharacterized” below the benzene TC levels prior to discharge into the first (South) ABT unit. The liner system for the ABT units, from top to bottom, includes:

- A 100-mil HDPE top liner;
- A geonet for collecting leaks that drain to sumps (i.e., a low point beneath each ABT Unit liner designed to collect any fluids passing the 100-mil liner), which are equipped with a 6" observation pipe;
- The observation pipes for the South ABT unit are located along the north side of the pond, close to the northeast corner of the pond. The observation pipes for the Northwest ABT unit are located near the northeast corner of the pond and the observation pipes for the Northeast ABT unit are located near the northeast corner of the pond;
- A 60-mil HDPE secondary liner;
- A composite geotextile/geonet with a 4" observation pipe;
- A cement amended sand that was compacted into a 1.5% slope;
- A 100-mil HDPE liner;
- A French drain system, which directs any collected fluids to a central low point; and
- A 6" layer of soil with 33% bentonite mixed into it.

The wastewater discharges from the API separator, passes through the benzene air stripper and into the first (South) ABT unit, which averages 4.4 feet in depth and has a surface area of about 6,652 square feet. The total volume is approximately 216,000 gallons. At 80 gpm, the holding time in the pond was 1.9 days. The South ABT unit is equipped with two, 5-horsepower aerators sized to prevent F037/F038 waste generation through high rate aeration.

Wastewater from the first (South) ABT unit is routed to the second (North) ABT unit through an overflow pipe. The second ABT unit is comprised of two impoundments that are operated together, and are generally referred to together as the North ABT unit. The first of the two impoundments (which can be referred to as North ABT-W as it is the westernmost of the two portions of the North ABT unit) is separated from the second (the second can be referred to as North ABT-E) by a concrete divider. An overflow pipe from the North ABT-W connects to the North ABT-E. The outflow from North ABT-E goes to a sump, where the non-hazardous wastewater can be pumped for final disposition, either in evaporation ponds or into an SDWA Class I permitted non-hazardous UIC well.

The North ABT-W averages 5.5 feet in depth with a surface area of 10,000 square feet. The total volume is approximately 411,500 gallons. The North ABT-W unit is equipped with two (each) 2-horsepower aerators and wastewater retention time (at 80 gpm) was 3.6 days at 80 gpm.

The North ABT-E (the second of the two in the North area) averages 5.7 feet in depth, with a surface area of 8,440 square feet and a volume of approximately 360,000 gallons. The North ABT-E is equipped with two 2-horsepower aerators and wastewater retention time (at 80 gpm) was 3.1 days

The North and South ABT units have been operated with a minimum freeboard of two feet under normal operating conditions. At the lowest points during operation, the South ABT, North ABT-W and North ABT-E have freeboards of 2.97, 2.54 and 3.08 feet respectively. Influent flow into the South ABT unit is limited by the size of the overflow pipe coming from the API separator/wastewater treatment unit system. Operating personnel monitor pond water levels on a daily basis. The only non-controlled inflow is direct rainfall onto the North and South unit areas.

To manage precipitation, outflow from the ABT unit system is routed to a sump, which has an automatic level control pump. Excess water from process areas generated during a 100-year

storm (2.6") is easily handled by this system. The impoundments have 698,000 gallons of additional capacity to the top of the freeboard and the pump can remove 720,000 gallons of water daily. This capacity management total greatly exceeds the 406,000 gallons of water that would be drained from 250,000 square feet of process area. The pump is backed up by two portable diesel backup pumps, which can function in the event of a power outage.

Since termination of the active refining operations, the flow to the ABT units has been reduced to approximately 40 to 60 gpm but this is the only change in operations at the units. The flows now include primarily ground water recovered from the remediation systems, stormwater and wastewater incidental to the continued terminal operations.

2.3 Contingency Plan

In the event of a major failure, the first contingency response is to direct the wastewaters that have not been through the benzene stripping treatment process into the 10,000 barrel surge tank. At a rate of wastewater flow of 60 gpm, that would permit 116 hours of flow to be managed without discharge to the ABT units in the event of a benzene stripper failure. During those 116 hours for repair work, the benzene strippers in most cases could be fixed and returned to operation. In the event the surge tank capacity may be exceeded, it may be possible to make additional surge tank capacity available, depending on other tank usage at the Bloomfield Refinery. Such evaluation would occur if there was a significant likelihood the strippers could not be restored to working order within the 116 hour time frame available for repairs.

Once the benzene strippers are made operational again, wastewaters collected in the surge tank will be appropriately metered back through the wastewater treatment system by being introduced upstream of the API separator consistent with capacity available (in excess of the 40 gpm flow being handled). After the wastewater in the surge tank has been removed, the tank will be inspected to determine if any potentially F037 or F038 listed waste has accumulated. However, it should be noted that since suspension of refining operations, F037 or F038 listed waste should not be present. If residual sludge is present, it will be physically removed from the tank via the manway, and characterized and sent off-site for disposal in accordance with all applicable Hazardous Waste regulations.

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FIGURE 2
AERATION LAGOONS LOCATION MAP
BLOOMFIELD REFINERY

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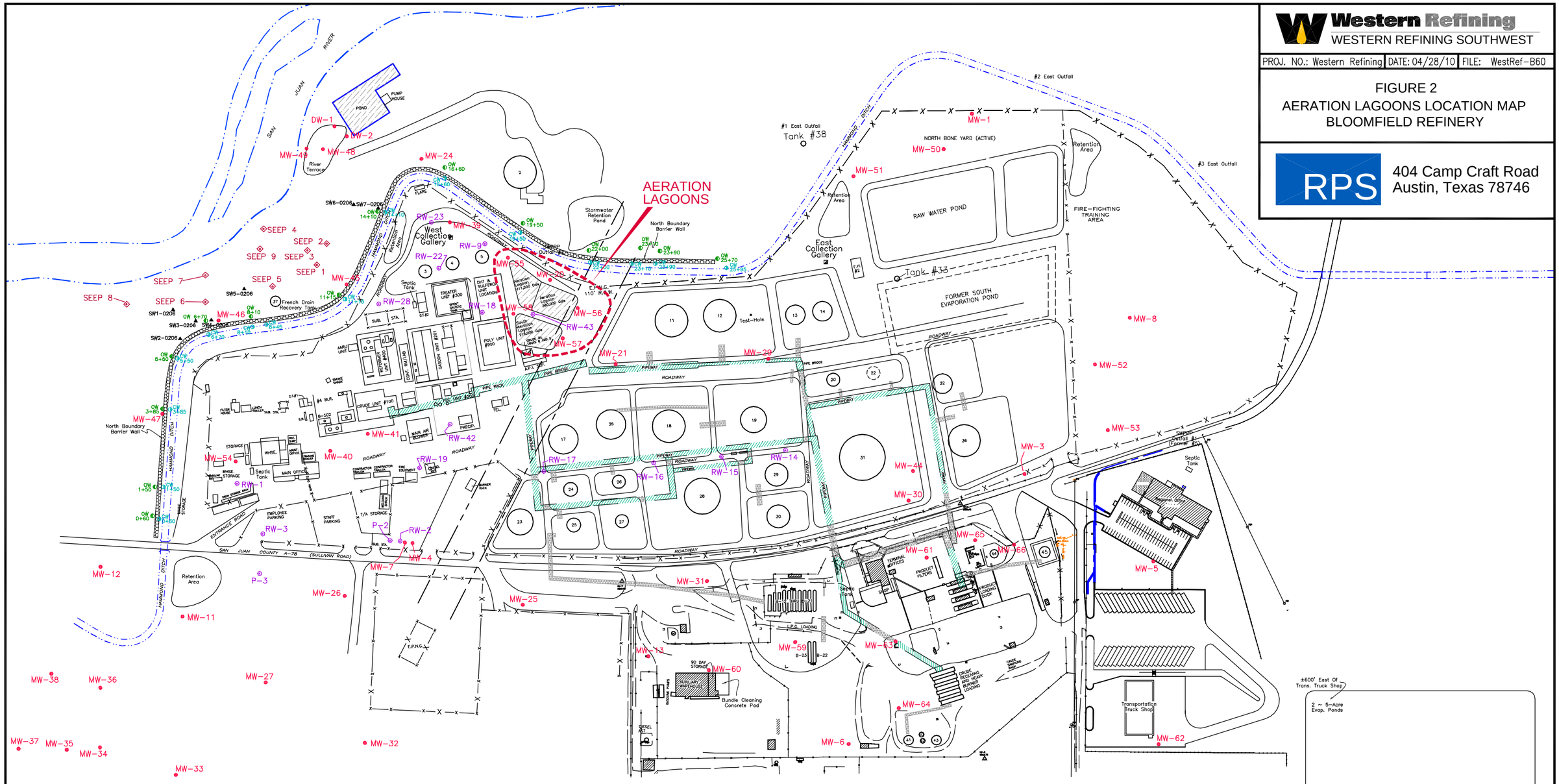


LEGEND

SEEP 1	SEEP LOCATION AND IDENTIFICATION NUMBER
MW-1	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
RW-1	RECOVERY WELL LOCATION AND IDENTIFICATION NUMBER
OW 1+50	OBSERVATION WELL LOCATION AND IDENTIFICATION NUMBER
CW 1+50	COLLECTION WELL LOCATION AND IDENTIFICATION NUMBER
SW1-0206	SUMP WELL LOCATION AND IDENTIFICATION NUMBER
P-2	PIEZOMETER IDENTIFICATION
	UNDER GROUND PIPE-WAY
	ABOVE GROUND PIPE-WAY
	SLURRY BARRIER WALL
	FORMER TANK LOCATION
— X — X —	FENCE

Section 3
Completed Partial Closure Activities

NMED approved the previous Closure Plan for the North and South Aeration Lagoons (dated May 2008) on August 7, 2008. The previous Closure Plan required the removal of all materials (water and sludge) from within the North and South Aeration Lagoons and decontamination and repairs, as necessary, of the RCRA liner/leachate collection system. The May 2008 Closure Plan was implemented between October 2008 and May 2009. The previously completed closure activities are discussed in detail in the North and South Aeration Lagoons Closure Certification Report dated September 2009 (supplemented via correspondence dated April 20, 2010) and are summarized below.

3.1 Sludge Characterization, Removal, and Disposal

In accordance with the Closure Plan, sixteen sludge samples were collected in a grid pattern from the South ABT unit on October 7, 2008. Five of the first seven sludge samples analyzed exhibited hazardous waste characteristics for benzene, therefore no further testing was conducted and the entire sludge volume (851,930 pounds) in the South ABT unit was removed from the unit via vacuum transport truck and directly shipped offsite as oil-bearing hazardous secondary materials to be recycled (fuels blending).

On October 9, 2008, twenty sludge samples were collected in a grid pattern from the Northwest ABT unit. Analytical results indicated that the sludge did not exhibit any hazardous characteristics. The sludge in the Northwest ABT unit was removed via vacuum truck, mixed with fly ash, transported, and disposed of at the San Juan County Landfill in Aztec, New Mexico. Approximately 2,476,880 pounds of material, including sludge and fly ash, was transported to the landfill.

On October 21, 2008, seven sludge samples were collected in a grid pattern from the Northeast ABT unit. Analytical results indicated that the sludge did not exhibit any hazardous characteristics. The sludge in the Northeast ABT unit was removed via vacuum truck, mixed with fly ash, transported and disposed of at the San Juan County Landfill in Aztec, New Mexico. Approximately 1,998,780 pounds of sludge and fly ash were transported to the landfill.

3.2 Liner Inspection and Repair

After removal of the sludge, the entire top RCRA liner of each lagoon was power washed with water. The wash water was collected via vacuum truck and off-loaded into the API Separator. The South ABT unit was physically inspected in November 2008 by an independent engineer licensed in the State of New Mexico during closure activities. A crack in the plastic weld was discovered at the crossover piping between South ABT unit and the Northwest ABT unit. During the inspection process, personnel also discovered damage to the boot on the lower RCRA liner and pitting and corrosion on the piping that discharges from the South ABT unit into the Northwest ABT unit. Both sections of discharge piping from the South ABT unit into the Northwest and Northeast ABT units were replaced. After the piping was replaced, the liner was repaired inside the South ABT unit and inspected again. There was no accumulation of fluids in the underlying collection system beneath the lower 60-ml RCRA liner to indicate damage to the secondary liner. The South ABT unit was put back in service by November 18, 2008.

The Northwest ABT unit's top RCRA liner was power washed with water after sludge removal. The wash water was collected via vacuum truck and off-loaded into the API Separator. The liner surrounding the new inlet pipe from the South ABT Unit was repaired. Inspection of the upper liner identified small scrapes and gouges that did not penetrate the liner. A reinforcing plastic weld bead was applied to those areas before water was put back in the Northwest ABT unit on December 29, 2009.

After sludge removal, the top RCRA liner of the Northeast ABT unit was power washed with water. The wash water was collected via vacuum truck and off-loaded into the API Separator. Clean out activities were completed January 20, 2009. Inspection of the upper RCRA line revealed a puncture on the north wall of the liner and a cut on the top east side of the upper liner; neither of these penetrations went through the lower liner. The discharge pipe from the Northeast ABT unit to the suction of P-616 (Transfer Pump from the Aeration Lagoon to the Evaporation Ponds) was found to be pitted and corroded and was replaced. The liner was repaired around the new discharge piping as well as around the new transfer piping from the South ABT unit. The repair of the aforementioned puncture and cut in the upper liner was completed February 4, 2009 and the unit was put back into service.

Liner repairs surrounding the piping replacement consisted of cutting out and removing all three liners and the geonet. The liners and geonet were replaced with new material and new boots were created to tie into the piping.

3.3 Flushing of Leachate Collection System

Pursuant to the previous Closure Plan, after repairs to the upper liner of the South ABT unit were completed, the geonet between the upper 100-ml liner and the lower 60-ml liner was flushed with clean water. The flush water was sampled using a bailer in the 6” observation pipe. Analytical results indicated that the flush water did not exhibit any hazardous characteristics. The following individual constituents were detected; benzoic acid, 2,4-dimethylphenol, benzene, toluene, methyl tert-butyl ether, 1,3,5-trimethylbenzene, acetone, 2-butanone, xylenes, barium, and selenium. The laboratory analytical report for this sample (#1 AL Flush Water) is included in Appendix A. The flush water was removed from underneath the upper liner via vacuum truck through the 6” observation pipe and off-loaded at the API Separator.

An inspection of the upper liner in the Northwest ABT unit did not reveal any penetrations of the liner. As there were no indications of impacts to the upper liner, the leachate collection system was not flushed with water.

As discussed above, inspection of the Northeast ABT unit revealed a puncture on the north wall of the upper liner and a cut on the top east side of the upper liner. In addition, spongy conditions were observed under the upper liner in the northeast section. This observation prompted sampling and analysis of the water between the upper 100-ml liner and the lower 60-ml liner. The water was sampled through a new incision placed in the liner. Analytical results indicate that the water did not exhibit any hazardous characteristics, thus the leachate collection system was not flushed. The following individual constituents were detected; aniline, 2,4-dimethylphenol, 2-methylphenol, 3+4-methylphenol, phenol, benzene, toluene, ethylbenzene, methyl tert-butyl ether, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, 1-methlynaphthlene, 2-methlynaphthalene, acetone, 2-butanone, xylenes, barium, chromium, lead, and silver. The laboratory analytical report for this sample (#3 AL Liner Water) is included in Appendix A. The water was removed from underneath the upper liner via vacuum truck through two new incisions placed in the liner and off-loaded at the API Separator. There was no accumulation of fluids in the underlying collection system beneath the 60-ml liner to indicate damage to the RCRA liner. The incisions were repaired along with the other repairs of the liner.

Section 4
ABT Unit Final Closure

This Final Closure Plan sets forth the activities that will be conducted to achieve final closure of the ABT units at the Bloomfield Refinery. These activities will be conducted in compliance with the requirements of the NMED Order dated July 27, 2007 (also referred to as the Enforceable Document) in addition to the applicable closure standards in 40 CFR Part 265.

The applicable closure standard for the North and South ABT Units is provided in 40 CFR §265.111 (Closure Performance Standard), which requires that the owner or operator must close the facility in a manner that:

> (a) Minimizes the need for further maintenance, and
>
> (b) Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere.

The objective of this scope of services is to reach complete closure of the units. The final closure activities are designed to meet the surface impoundment closure requirements of 40 CFR §265.228 (a)(1) – Remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless §261.3(d) of the chapter applies.

It is unlikely that the units will contain hazardous waste because of recent upgrades to the wastewater treatment operations discussed above in Section 2.1 and the partial closure activities that removed all hazardous waste from the ABT units as described above in Section 3. Regardless, all waste materials managed during closure will be tested to determine if they are characteristically hazardous in accordance with 40 CFR 261, Subpart C – Characteristics of Hazardous Waste.

4.1 ABT Units Closure Procedures

The steps described below will be implemented to achieve “clean closure” pursuant to 40 CFR §265.228(a)(1). The closure will begin by removing all liquids from the units using the current authorized wastewater treatment and discharge system. It is likely that only a small volume of

sludge/sediment will be present in the units at final closure, based on the fact that the units were completely cleaned out in late 2008 through early 2009 in order to remove all hazardous wastes, hazardous constituents, decomposition products, and leachate. Final closure for the three impoundments will be completed by implementing the steps discussed below.

4.1.1 Sludge/Sediment Removal

The sludge/sediment that remains in the ABT units above the top liner after removal of the free liquids will be allowed to dry for up to four weeks. If necessary, mechanical equipment such as a back hoe, track hoe, long-reach excavators, or similar may be used to facilitate physical drying of the sludge/sediment, moving the sludge/sediment to expose saturated portions to ambient air. At the conclusion of these activities, the material will be sampled for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of Hazardous Waste, including reactivity, corrosivity, ignitability, TCLP RCRA metals, TCLP semi-volatiles (SVOCs), and total volatiles (VOCs). If the material is non-hazardous, then it may be disposed at a landfill permitted by the NMED to accept Special Waste (e.g., the San Juan County Regional Landfill). Western will comply with all waste characterization and acceptance requirements of the receiving disposal facility and waste disposition will be documented in the Closure Report.

Samples of the sludge/sediment will be collected for waste characterization at a minimum of one sample per each 20 cubic yards. If the sludge/sediment does not exhibit any hazardous characteristics, it will be removed from the ABT units by a vacuum truck or other mechanical means (e.g., long-reach track hoe) depending upon the consistency of the material for appropriate disposal. Portland cement or fly ash may be added to improve physical strength and reduce moisture content prior to excavation out of the units. If sludge/sediment exhibits hazardous characteristics, then it will be placed into appropriate RCRA containers for disposal offsite as hazardous waste.

4.1.2 RCRA Liner Removal

The RCRA liners, which include an upper 100 mil HDPE liner, a geonet, and a lower 60 mil HDPE liner, will be removed and disposed at a landfill permitted by the NMED to accept Special Waste (e.g., the San Juan County Regional Landfill). Any liquids that are present in the leachate collection system will be containerized. The liquid will be sampled and analyzed for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of

Hazardous Waste, including reactivity, corrosivity, ignitability, total RCRA metals, SVOCs, and VOCs. If the liquid exhibits hazardous characteristics, then it will be disposed offsite as hazardous waste. If the liquid is non-hazardous, then it may be disposed through the on-site permitted discharge system. Any on-site discharges of non-hazardous liquids via the permitted discharge will be conducted in compliance with all applicable regulations at the time of final closure. The liners and geonet will be cut into manageable sized pieces and then rolled/folded to facilitate loading into trucks/roll-off boxes for transport for off-site disposal. The six-inch observation pipes will be disposed with the liners and geonet.

4.1.3 Non-RCRA Liner/Leachate Collection System Removal

There are a series of liners/leachate collection systems below the RCRA liner system that will be removed for off-site disposal. The uppermost layer beneath the RCRA lower 60 mil liner is a composite geotextile/geonet, which will be cut into manageable pieces and placed into roll-off boxes for off-site disposal. Beneath this composite geotextile/geonet layer is a 6” layer of cement amended sand. The sand layer will be excavated and stockpiled on-site pending waste characterization sampling. Beneath the sand layer is a 100 mil HDPE liner, which will be removed and handled with the previously removed composite geotextile/geonet layer. The lowermost layer consists of approximately 6 inches of bentonite amended soil with a French drain system.

Prior to removal of the French drain system, the soil dike separating the North and South ABT Units will be removed and stockpiled on-site. The French drain system will be checked for the presence of liquids prior to removal. Any liquids that are present will be containerized. The liquid will be sampled and analyzed for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of Hazardous Waste. If the liquid exhibits hazardous characteristics, then it will be disposed offsite as hazardous waste. If the liquid is non-hazardous, then it may be disposed through the facilities on-site permitted discharge. Any on-site discharges of non-hazardous liquids via the permitted discharge will be conducted in compliance with all applicable regulations at the time of final closure. Cement amended sand will be physically removed from the drain system piping and if the liquid present in the drain system is characteristically hazardous, then the piping will be triple rinsed with potable water prior to off-site disposal. The four-inch observation pipe and any ancillary piping associated with the French drain system will be disposed off-site along with the non-RCRA liner. The wash water will be containerized and analyzed for classification prior to disposal.

The cemented amended sand will be sampled for waste characterization at a minimum of one sample per 20 cubic yards. The samples will be analyzed for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of Hazardous Waste, including reactivity, corrosivity, ignitability, TCLP RCRA metals, TCLP SVOCs, and total VOCs. If the material does not exhibit any hazardous characteristics, then it will be transported for off-site disposal to a NMED permitted non-hazardous landfill. If the material exhibits hazardous characteristics, then it will be placed into appropriate RCRA containers for disposal offsite as hazardous waste.

The soil from the dike that separates the North and South ABT Units will be sampled for waste characterization at a minimum of one sample per 20 cubic yards. The samples will be analyzed for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of Hazardous Waste, including reactivity, corrosivity, ignitability, TCLP RCRA metals, and TCLP SVOCs and will also be analyzed for totals concentrations of the constituents set forth below in Section 4.2.7 to evaluate potential reuse. If all concentrations of constituents are below the applicable NMED residential soil screening levels and all applicable requirements in NMED's Technical Background for Development of Soil Screening Levels, as updated, (e.g., the cumulative target residential risk of lE-05 for carcinogens and hazard index of 1 for noncarcinogens) are met, then the soil may be reused for backfill. If the soil is not suitable to use on-site as backfill and does not exhibit any hazardous characteristics, then it will be transported for off-site disposal to a NMED permitted non-hazardous landfill. If the soil exhibits hazardous characteristics, then it will be placed into appropriate RCRA containers for disposal off-site as hazardous waste.

4.2 Soil Investigation

The purpose of the soil investigation is to determine if a release of contaminants from the ABT units has occurred and if so, to evaluate the nature and extent of the release. Guidance for Choosing a Sampling Design for Environmental Data Collection (EPA, 2000) was utilized to select the appropriate sampling strategy.

Investigation sample locations will be identified by gridding the bottom of the entire area (i.e., footprint of all three ABT Units) into 50 feet by 50 feet grids (Figure 3). Soil borings will be completed at the approximate center of each grid to a minimum depth of ten feet. If soils appear impacted (e.g., petroleum odor, staining, or elevated organic vapor readings) at ten feet,

then the soil boring(s) will be drilled deeper until the vertical extent of the impact is reached or ground water is encountered, whichever occurs first.

Discrete soil samples will be collected for laboratory analyses from the soil borings at the following intervals:

- 0-6";
- 18-24";
- The lowermost one-foot interval unless boring encounters ground water, in which case a sample will be collected from the six-inch interval at the top of saturation;
- The sample from each soil boring with the greatest apparent degree of contamination, based on field observations and field screening; and
- Any additional intervals as determined based on field screening results.

Shallow (0-6" and 18-24") samples will be collected from around the perimeter of the ABT Units using hand augers or similar manual tools on a 50-foot spacing. The samples will be collected from approximately half way up the sidewall of the ABT Units (Figure 3).

4.2.1 Soil Sample Field Screening and Logging

Samples obtained from the borings will be screened in the field on two foot intervals for evidence of contaminants. Field screening results will be recorded on the exploratory boring logs. Field screening results will be used to aid in the selection of soil samples for laboratory analysis. The primary screening methods include: (1) visual examination, (2) olfactory examination, and (3) headspace vapor screening for volatile organic compounds.

Visual screening includes examination of soil samples for evidence of staining caused by petroleum-related compounds. Headspace vapor screening targets volatile organic compounds and involves placing a soil sample in a plastic sample bag or a foil sealed container allowing space for ambient air. The container will be sealed and then shaken gently to expose the soil to the air trapped in the container. The sealed container will be allowed to stand for a minimum of 5 minutes while vapors equilibrate. Vapors present within the sample bag's headspace will then be measured by inserting the probe of the VOC screening instrument in a small opening in the bag or through the foil. The maximum value and the ambient air temperature will be recorded on the field boring or test pit log for each sample.

The monitoring instruments will be calibrated each day to the manufacturer's standard for instrument operation. A photo-ionization detector (PID) equipped with a 10.6 or higher electron

volt (eV) lamp or a combustible gas indicator will be used for VOC field screening. All conditions capable of influencing the results of field screening will be recorded on the field logs since field screening results may vary with instrument type, the media screened, weather conditions, moisture content, soil type, and type of contaminant,

The physical characteristics of the samples (such as mineralogy, ASTM soil classification, moisture content, texture, color, presence of stains or odors, and/or field screening results), depth where each sample was obtained, method of sample collection, and other observations will be recorded in the field log by a qualified geologist or engineer. Detailed logs of each boring will be completed in the field by a qualified engineer or geologist. Additional information, such as the presence of water-bearing zones and any unusual or noticeable conditions encountered during drilling, will be recorded on the logs.

Quality Assurance/Quality Control (QA/QC) samples will be collected to monitor the validity of the soil sample collection procedures as follows:

- Field duplicates will be collected at a rate of 10 percent; and
- Equipment blanks will be collected at a frequency of one per day.

4.2.2 Drilling Activities

Soil borings will be drilled using either a hand auger, cone penetrometer (CPT), hollow-stem auger or if necessary, air rotary methods including ODEX. The drilling equipment will be properly decontaminated before drilling each boring.

The NMED will be notified as early as practicable if conditions arise or are encountered that do not allow the advancement of borings to the specified depths or at planned sampling locations. Appropriate actions (e.g., installation of protective surface casing or relocation of borings to a less threatening location) will be taken to minimize any negative impacts from investigative borings. Soil samples will be collected continuously and logged by a qualified geologist or engineer.

Both sample information and visual observations of the cuttings and core samples will be recorded on the boring log. Known site features and/or site survey grid markers will be used as references to locate each boring. The boring locations will be measured to the nearest foot, and locations will be recorded on a scaled site map upon completion of each boring.

4.2.3 Sample Handling

At a minimum, the following procedures will be used at all times when collecting samples during investigation, corrective action, and monitoring activities:

1. Neoprene, nitrile, or other protective gloves will be worn when collecting samples. New disposable gloves will be used to collect each sample;

2. All samples collected of each medium for chemical analysis will be transferred into clean sample containers supplied by the project analytical laboratory with the exception of soil, rock, and sediment samples obtained in Encore® samplers. Sample container volumes and preservation methods will be in accordance with the most recent standard EPA and industry accepted practices for use by accredited analytical laboratories. Sufficient sample volume will be obtained for the laboratory to complete the method-specific QC analyses on a laboratory-batch basis; and

3. Sample labels and documentation will be completed for each sample following procedures discussed below. Immediately after the samples are collected, they will be stored in a cooler with ice or other appropriate storage method until they are delivered to the analytical laboratory. Standard chain-of-custody procedures, as described below, will be followed for all samples collected. All samples will be submitted to the laboratory soon enough to allow the laboratory to conduct the analyses within the method holding times. At a minimum, all samples will be submitted to the laboratory within 48 hours after their collection.

Chain-of-custody and shipment procedures will include the following:

1. Chain-of-custody forms will be completed at the end of each sampling day, prior to the transfer of samples off site.

2. Individual sample containers will be packed to prevent breakage and transported in a sealed cooler with ice or other suitable coolant or other EPA or industry-wide accepted method. The drainage hole at the bottom of the cooler will be sealed and secured in case of sample container leakage. Temperature blanks will be included with each shipping container.

3. Each cooler or other container will be delivered directly to the analytical laboratory.

4. Glass bottles will be separated in the shipping container by cushioning material to prevent breakage.

5. Plastic containers will be protected from possible puncture during shipping using cushioning material.

6. The chain-of-custody form and sample request form will be shipped inside the sealed storage container to be delivered to the laboratory.

7. Chain-of-custody seals will be used to seal the sample-shipping container in conformance with EPA protocol.

8. Signed and dated chain-of-custody seals will be applied to each cooler prior to transport of samples from the site.

9. Upon receipt of the samples at the laboratory, the custody seals will be broken, the chain-of-custody form will be signed as received by the laboratory, and the conditions of the samples will be recorded on the form. The original chain-of-custody form will remain with the laboratory and copies will be returned to the relinquishing party.

10. Copies of all chain-of-custody forms generated as part of sampling activities will be maintained on-site.

4.2.4 Collection and Management of Investigation Derived Waste

Drill cuttings, excess sample material and decontamination fluids, and all other investigation derived waste (IDW) associated with soil borings will be contained and characterized using methods based on the boring location, boring depth, drilling method, and type of contaminants suspected or encountered. All decontamination water will be characterized prior to disposal. If the water is hazardous, then it will be disposed off-site as a hazardous waste. If the water is non-hazardous and can meet all applicable discharge criteria for the on-site permitted discharge, then it may be managed on-site. An IDW management plan is included as Appendix B.

4.2.5 Field Equipment Calibration

Field equipment requiring calibration will be calibrated to known standards, in accordance with the manufacturers' recommended schedules and procedures. At a minimum, calibration checks will be conducted daily, or at other intervals approved by the Department, and the instruments will be recalibrated, if necessary. Calibration measurements will be recorded in the daily field logs. If field equipment becomes inoperable, its use will be discontinued until the necessary repairs are made. In the interim, a properly calibrated replacement instrument will be used.

4.2.6 Documentation of Field Activities

Daily field activities, including observations and field procedures, will be recorded in a field log book. Copies of the completed forms will be maintained in a bound and sequentially numbered field file for reference during field activities. Indelible ink will be used to record all field activities. Photographic documentation of field activities will be performed, as appropriate. The daily record of field activities will include the following:

Site or unit designation;

1. Date;

2. Time of arrival and departure;
3. Field investigation team members including subcontractors and visitors;
4. Weather conditions;
5. Daily activities and times conducted;
6. Observations;
7. Record of samples collected with sample designations and locations specified;
8. Photographic log, as appropriate;
9. Field monitoring data, including health and safety monitoring;
10. Equipment used and calibration records, if appropriate;
11. List of additional data sheets and maps completed;
12. An inventory of the waste generated and the method of storage or disposal; and
13. Signature of personnel completing the field record.

4.2.7 Soil Chemical Analyses

All samples collected for laboratory analysis will be submitted to an accredited laboratory. The laboratory will use the most recent standard EPA and industry-accepted analytical methods for target analytes as the testing methods for each medium sampled. Chemical analyses will be performed in accordance with the most recent EPA standard analytical methodologies and extraction methods.

Soil samples will be analyzed by the following methods:

- SW-846 Method 8260 volatile organic compounds;
- SW-846 Method 8270 semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline range (C5-C10), diesel range (>C10-C28), and motor oil range (>C28-C36) organics.
- Soil samples will also be analyzed for the following Skinner List metals using the indicated analytical methods.

Inorganic Analytical Methods

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020
Barium	SW-846 method 6010/6020
Beryllium	SW-846 method 6010/6020
Cadmium	SW-846 method 6010/6020
Chromium	SW-846 method 6010/6020
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.4/335.2 mod
Lead	SW-846 method 6010/6020

Analyte	Analytical Method
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
Selenium	SW-846 method 6010/6020
Silver	SW-846 method 6010/6020
Vanadium	SW-846 method 6010/6020
Zinc	SW-846 method 6010/6020

4.2.8 Data Quality Objectives

The Data Quality Objectives (DQOs) were developed to ensure that newly collected data are of sufficient quality and quantity to address the projects goals, including Quality Assurance/Quality Control (QA/QC) issues (EPA, 2006). The project goals are established to determine and evaluate the presence, nature, and extent of releases of contaminants from the ABT Units. The type of data required to meet the project goals includes chemical analyses of soil to determine if there has been a release of contaminants. Method detection limits should be 20% or less of the applicable background levels, cleanup standards and screening levels. If the desired method detection limits are not achieved, then an explanation will be included in the Closure Report.

Additional DQOs include precision, accuracy, representativeness, completeness, and comparability. Precision is a measurement of the reproducibility of measurements under a given set of circumstances and is commonly stated in terms of standard deviation or coefficient of variation (EPA, 1987). Precision is also specific to sampling activities and analytical performance. Sampling precision will be evaluated through the analyses of duplicate field samples and laboratory replicates will be utilized to assess laboratory precision.

Accuracy is a measurement in the bias of a measurement system and may include many sources of potential error, including the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques (EPA, 1987). An evaluation of the accuracy will be performed by reviewing the results of matrix spikes and laboratory QC samples.

Representativeness is an expression of the degree to which the data accurately and precisely represent the true environmental conditions. Sample locations and the number of samples have been selected to ensure the data is representative of actual environmental conditions.

Completeness is defined as the percentage of measurements taken that are actually valid measurements, considering field QA and laboratory QC problems. EPA Contract Laboratory Program (CLP) data has been found to be 80-85% complete on a nationwide basis and this has been extrapolated to indicate that Level III, IV, and V analytical techniques will generate data that are approximately 80% complete (EPA, 1987). As an overall project goal, the completeness goal is 85%; however, some samples may be critical based on location or field screening results and thus a sample –by-sample evaluation will be performed to determine if the completeness goals have been obtained.

Comparability is a qualitative parameter, which expresses the confidence with which one data set can be compared to another. Industry standard sample collection techniques and routine EPA analytical methods will be utilized to help ensure data are comparable to historical and future data. Analytical results will be reported in appropriate units for comparison to historical data and cleanup levels.

4.3 Soil Removal Action

Removal actions will be conducted in the event that there are concentrations of constituents present in soils beneath the ABT Units that exceed the NMED residential soil screening levels. The preferred method to address any such releases from the ABT Units is to remove and dispose the impacted soils at a permitted off-site landfill so as to meet the requirements of 40 CFR§265.228 (a)(1) for clean closure. If the volume or depth of impacted soils is such that a complete removal action is technically impracticable, then a demonstration of impracticability and proposed additional phases of work or post-closure care will be included in the Closure Report.

4.3.1 Soil Excavation

Soil containing concentrations of constituents above the applicable NMED residential screening levels will be excavated for off-site disposal. The soil will be excavated using back hoes, track hoes, long-reach excavators, or similar equipment. The excavated soil will either be stocked piled on poly sheeting within the footprint of the ABT Units or placed directly into roll-off boxes. The soil will be sampled (discrete samples for VOCs) and analyzed for waste characterization at a minimum of one sample per 20 cubic yards. The samples will be analyzed for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of Hazardous Waste, including reactivity, corrosivity, ignitability, TCLP RCRA metals, TCLP SVOCs, and total

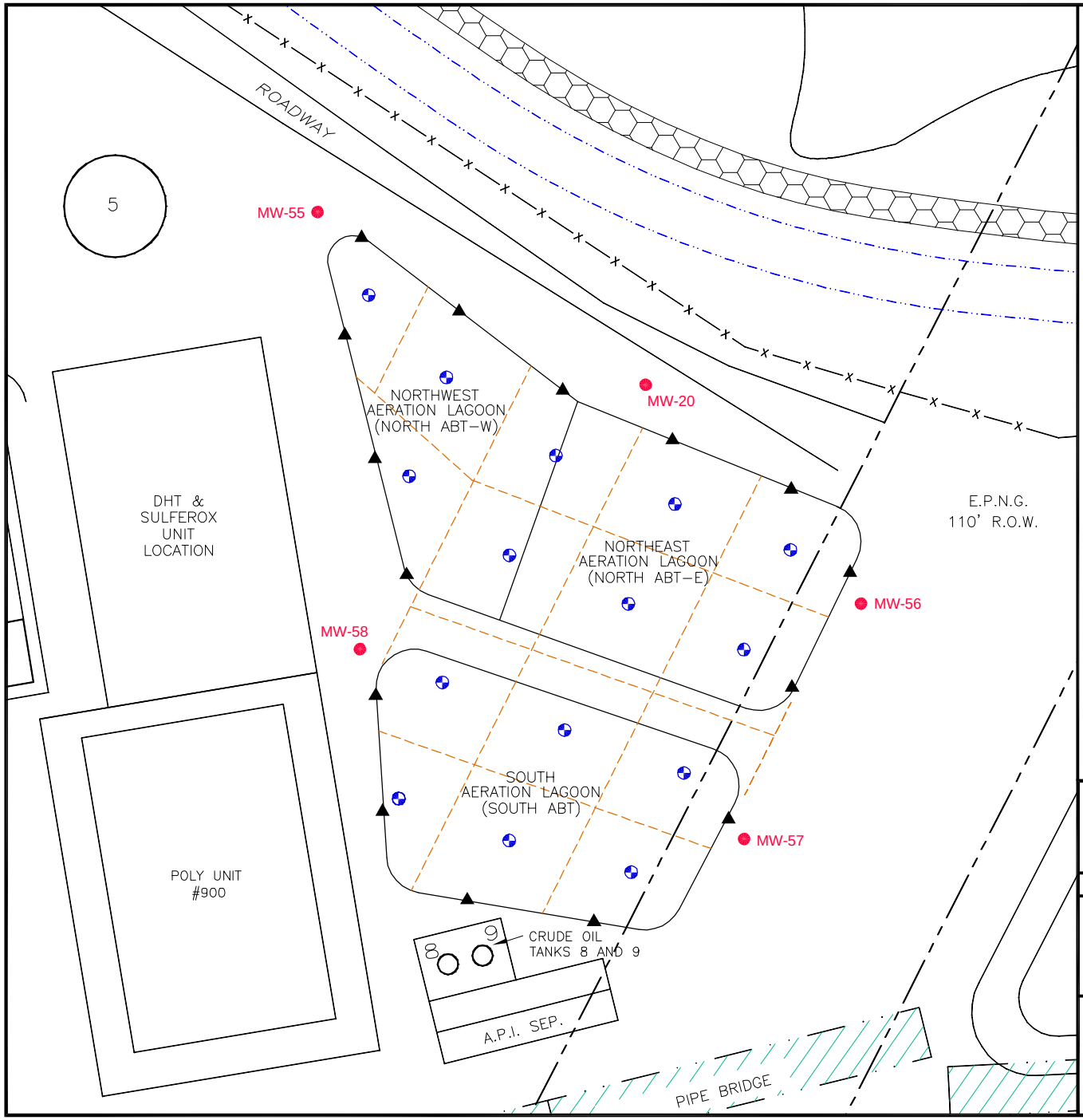
VOCs. If the material does not exhibit any hazardous characteristics, then it will be transported for off-site disposal to a NMED permitted non-hazardous landfill. If the material exhibits hazardous characteristics, then it will be placed into appropriate RCRA containers for disposal offsite as hazardous waste. All materials sent off-site for disposal will meet the requirements of the receiving disposal facility.

4.3.2 Confirmation Sampling

After removal of impacted soils, discrete samples of the underlying soils will be collected along all faces of the excavations with an approximate spacing of 20 feet between sample grid locations. The analyses selected for the confirmation soil samples will be dependent upon the results of investigation soil samples analyzed pursuant to Section 4.2.7. Any constituents that are found to be present in the initial investigation soil samples at concentrations above the NMED residential screening levels will be included in the analyses for the confirmation soil samples. All of the confirmation soil samples will be analyzed for this same list of constituents. The same analytical methods will be used as specified for soils in Section 4.2.7. Sample results will be compared to NMED residential soil screening levels. Locations exhibiting constituent concentrations in excess of NMED residential soil screening levels will be further excavated and the excavated soils will be stockpiled within the footprint of the ABT Units or placed directly into roll-off boxes in anticipation of characterization, transport and off-site disposal. This process will be repeated until impacted soils with concentrations exceeding the NMED residential Soil Screening Levels have been removed from beneath the ABT Units.

4.4 Closure Certification

Upon completion of all activities, a Closure Certification Report will be prepared in accordance with 40 CFR §265.115 Certification of Closure. The certification will described how the ABT Units were closed in accordance with the approved Closure Plan.



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SCALE IN FEET

LEGEND

- SOIL BORING LOCATION
- SIDEWALL SAMPLE LOCATION
- MW-55 MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- FENCE
- SLURRY BARRIER WALL
- APPROXIMATE 50' GRID LINES

Western Refining

WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining	DATE:04/28/10	FILE: WestRef-A43

FIGURE 3
SAMPLE LOCATION MAP
BLOOMFIELD REFINERY

RPS

404 Camp Craft Road
Austin, Texas 78746

Section 5
Construction Schedule

The schedule for closure of three ABT Units is as follows:

Description	Duration
Removal of liquids in ABT Units	1 week
Drying of residual solids	4 weeks
Testing of residual solids	1 week
Removal of RCRA liners	2 weeks
Removal of Non-RCRA lines/leachate collection	3 weeks
Soil Investigation (including analyses)	6 weeks
Soil excavation	8 weeks
Final confirmation sampling and Analyses	4 weeks
Total time required	29 weeks

The current cost of closure for the aeration ABT Units is estimated at $324,800, based on the estimated volumes and other assumptions as detailed in the cost estimate tables presented in Appendix C.

Section 6
References

EPA, 1987, Data Quality Objectives for Remedial Response Activities; United States Environmental Protection Agency, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, OSWER Directive 9355.0-7B, 85p

EPA, 2000, Guidance on Choosing a Sampling Design for Environmental Data Collection, EPA/240/R-02/005, EPA QA/G-5S, 168 p.

EPA, 2006, Guidance on Systematic Planning Using the Data Quality Objectives Process, United States Environmental Protection Agency, Office of Environmental Information; EPA/240/B-06/001, p. 111.

Appendix A

Analytical Reports

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

COVER LETTER

Thursday, January 08, 2009

Cindy Hurtado
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413

TEL: (505) 632-4161
FAX: (505) 632-3911

RE: #1 AL Flush Water 11-19-08

Order No.: 0811321

Dear Cindy Hurtado:

Hall Environmental Analysis Laboratory, Inc. received 1 sample(s) on 11/20/2008 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. Below is a list of our accreditations. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

NM Lab # NM9425
AZ license # AZ0682
ORELAP Lab # NM100001
Texas Lab# T104704424-08-TX

ACCREDITED IN ACCORDANCE WITH nelac

4901 Hawkins NE ■ Suite D ■ Albuquerque, NM 87109
505.345.3975 ■ Fax 505.345.4107
www.hallenvironmental.com

Hall Environmental Analysis Laboratory, Inc.

Date: *08-Jan-09*

CLIENT: Western Refining Southwest, Inc.
Project: #1 AL Flush Water 11-19-08
Lab Order: 0811321

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Batch ID	Test Name	Collection Date
0811321-01A	#1 AL Flush Water	R31308	EPA Method 8260B: VOLATILES	11/19/2008 8:40:00 AM
0811321-01A	#1 AL Flush Water	R31308	EPA Method 8260B: VOLATILES	11/19/2008 8:40:00 AM
0811321-01B	#1 AL Flush Water	17731	EPA Method 8270C: Semivolatiles	11/19/2008 8:40:00 AM

Hall Environmental Analysis Laboratory, Inc.

Date: *08-Jan-09*

CLIENT:	Western Refining Southwest, Inc.	**Client Sample ID:**	#1 AL Flush Water
Lab Order:	0811321	**Collection Date:**	11/19/2008 8:40:00 AM
Project:	#1 AL Flush Water 11-19-08	**Date Received:**	11/20/2008
Lab ID:	0811321-01	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8270C: SEMIVOLATILES						Analyst: JDC
Acenaphthene	ND	50		µg/L	1	12/4/2008
Acenaphthylene	ND	50		µg/L	1	12/4/2008
Aniline	ND	50		µg/L	1	12/4/2008
Anthracene	ND	50		µg/L	1	12/4/2008
Azobenzene	ND	50		µg/L	1	12/4/2008
Benz(a)anthracene	ND	50		µg/L	1	12/4/2008
Benzo(a)pyrene	ND	50		µg/L	1	12/4/2008
Benzo(b)fluoranthene	ND	50		µg/L	1	12/4/2008
Benzo(g,h,i)perylene	ND	50		µg/L	1	12/4/2008
Benzo(k)fluoranthene	ND	50		µg/L	1	12/4/2008
Benzoic acid	120	100		µg/L	1	12/4/2008
Benzyl alcohol	ND	50		µg/L	1	12/4/2008
Bis(2-chloroethoxy)methane	ND	50		µg/L	1	12/4/2008
Bis(2-chloroethyl)ether	ND	50		µg/L	1	12/4/2008
Bis(2-chloroisopropyl)ether	ND	50		µg/L	1	12/4/2008
Bis(2-ethylhexyl)phthalate	ND	50		µg/L	1	12/4/2008
4-Bromophenyl phenyl ether	ND	50		µg/L	1	12/4/2008
Butyl benzyl phthalate	ND	50		µg/L	1	12/4/2008
Carbazole	ND	50		µg/L	1	12/4/2008
4-Chloro-3-methylphenol	ND	50		µg/L	1	12/4/2008
4-Chloroaniline	ND	50		µg/L	1	12/4/2008
2-Chloronaphthalene	ND	50		µg/L	1	12/4/2008
2-Chlorophenol	ND	50		µg/L	1	12/4/2008
4-Chlorophenyl phenyl ether	ND	50		µg/L	1	12/4/2008
Chrysene	ND	50		µg/L	1	12/4/2008
Di-n-butyl phthalate	ND	50		µg/L	1	12/4/2008
Di-n-octyl phthalate	ND	50		µg/L	1	12/4/2008
Dibenz(a,h)anthracene	ND	50		µg/L	1	12/4/2008
Dibenzofuran	ND	50		µg/L	1	12/4/2008
1,2-Dichlorobenzene	ND	50		µg/L	1	12/4/2008
1,3-Dichlorobenzene	ND	50		µg/L	1	12/4/2008
1,4-Dichlorobenzene	ND	50		µg/L	1	12/4/2008
3,3'-Dichlorobenzidine	ND	50		µg/L	1	12/4/2008
Diethyl phthalate	ND	50		µg/L	1	12/4/2008
Dimethyl phthalate	ND	50		µg/L	1	12/4/2008
2,4-Dichlorophenol	ND	100		µg/L	1	12/4/2008
2,4-Dimethylphenol	54	50		µg/L	1	12/4/2008
4,6-Dinitro-2-methylphenol	ND	100		µg/L	1	12/4/2008
2,4-Dinitrophenol	ND	100		µg/L	1	12/4/2008
2,4-Dinitrotoluene	ND	50		µg/L	1	12/4/2008
2,6-Dinitrotoluene	ND	50		µg/L	1	12/4/2008
Fluoranthene	ND	50		µg/L	1	12/4/2008

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *08-Jan-09*

CLIENT:	Western Refining Southwest, Inc.	**Client Sample ID:**	#1 AL Flush Water
Lab Order:	0811321	**Collection Date:**	11/19/2008 8:40:00 AM
Project:	#1 AL Flush Water 11-19-08	**Date Received:**	11/20/2008
Lab ID:	0811321-01	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8270C: SEMIVOLATILES						Analyst: JDC
Fluorene	ND	50		µg/L	1	12/4/2008
Hexachlorobenzene	ND	50		µg/L	1	12/4/2008
Hexachlorobutadiene	ND	50		µg/L	1	12/4/2008
Hexachlorocyclopentadiene	ND	50		µg/L	1	12/4/2008
Hexachloroethane	ND	50		µg/L	1	12/4/2008
Indeno(1,2,3-cd)pyrene	ND	50		µg/L	1	12/4/2008
Isophorone	ND	50		µg/L	1	12/4/2008
2-Methylnaphthalene	ND	50		µg/L	1	12/4/2008
2-Methylphenol	ND	50		µg/L	1	12/4/2008
3+4-Methylphenol	ND	50		µg/L	1	12/4/2008
N-Nitrosodi-n-propylamine	ND	50		µg/L	1	12/4/2008
N-Nitrosodimethylamine	ND	50		µg/L	1	12/4/2008
N-Nitrosodiphenylamine	ND	50		µg/L	1	12/4/2008
Naphthalene	ND	50		µg/L	1	12/4/2008
2-Nitroaniline	ND	50		µg/L	1	12/4/2008
3-Nitroaniline	ND	50		µg/L	1	12/4/2008
4-Nitroaniline	ND	50		µg/L	1	12/4/2008
Nitrobenzene	ND	50		µg/L	1	12/4/2008
2-Nitrophenol	ND	50		µg/L	1	12/4/2008
4-Nitrophenol	ND	50		µg/L	1	12/4/2008
Pentachlorophenol	ND	100		µg/L	1	12/4/2008
Phenanthrene	ND	50		µg/L	1	12/4/2008
Phenol	ND	50		µg/L	1	12/4/2008
Pyrene	ND	50		µg/L	1	12/4/2008
Pyridine	ND	50		µg/L	1	12/4/2008
1,2,4-Trichlorobenzene	ND	50		µg/L	1	12/4/2008
2,4,5-Trichlorophenol	ND	50		µg/L	1	12/4/2008
2,4,6-Trichlorophenol	ND	50		µg/L	1	12/4/2008
Surr: 2,4,6-Tribromophenol	86.1	16.6-150		%REC	1	12/4/2008
Surr: 2-Fluorobiphenyl	80.3	19.6-134		%REC	1	12/4/2008
Surr: 2-Fluorophenol	56.4	9.54-113		%REC	1	12/4/2008
Surr: 4-Terphenyl-d14	73.1	22.7-145		%REC	1	12/4/2008
Surr: Nitrobenzene-d5	79.0	14.6-134		%REC	1	12/4/2008
Surr: Phenol-d5	58.5	10.7-80.3		%REC	1	12/4/2008
EPA METHOD 8260B: VOLATILES						Analyst: HL
Benzene	11	1.0		µg/L	1	11/21/2008 11:57:11 AM
Toluene	2.0	1.0		µg/L	1	11/21/2008 11:57:11 AM
Ethylbenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Methyl tert-butyl ether (MTBE)	120	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,3,5-Trimethylbenzene	2.3	1.0		µg/L	1	11/21/2008 11:57:11 AM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- RL Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

Date: *08-Jan-09*

CLIENT:	Western Refining Southwest, Inc.	**Client Sample ID:**	#1 AL Flush Water
Lab Order:	0811321	**Collection Date:**	11/19/2008 8:40:00 AM
Project:	#1 AL Flush Water 11-19-08	**Date Received:**	11/20/2008
Lab ID:	0811321-01	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: HL
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Naphthalene	ND	2.0		µg/L	1	11/21/2008 11:57:11 AM
1-Methylnaphthalene	ND	4.0		µg/L	1	11/21/2008 11:57:11 AM
2-Methylnaphthalene	ND	4.0		µg/L	1	11/21/2008 11:57:11 AM
Acetone	1100	100		µg/L	10	11/21/2008 2:25:47 PM
Bromobenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Bromodichloromethane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Bromoform	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Bromomethane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
2-Butanone	44	10		µg/L	1	11/21/2008 11:57:11 AM
Carbon disulfide	ND	10		µg/L	1	11/21/2008 11:57:11 AM
Carbon Tetrachloride	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Chlorobenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Chloroethane	ND	2.0		µg/L	1	11/21/2008 11:57:11 AM
Chloroform	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Chloromethane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
2-Chlorotoluene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
4-Chlorotoluene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
cis-1,2-DCE	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/21/2008 11:57:11 AM
Dibromochloromethane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Dibromomethane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,1-Dichloroethane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,1-Dichloroethene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,2-Dichloropropane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,3-Dichloropropane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
2,2-Dichloropropane	ND	2.0		µg/L	1	11/21/2008 11:57:11 AM
1,1-Dichloropropene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Hexachlorobutadiene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
2-Hexanone	ND	10		µg/L	1	11/21/2008 11:57:11 AM
Isopropylbenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
4-Isopropyltoluene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
4-Methyl-2-pentanone	ND	10		µg/L	1	11/21/2008 11:57:11 AM
Methylene Chloride	ND	3.0		µg/L	1	11/21/2008 11:57:11 AM
n-Butylbenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
n-Propylbenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *08-Jan-09*

CLIENT:	Western Refining Southwest, Inc.	**Client Sample ID:**	#1 AL Flush Water
Lab Order:	0811321	**Collection Date:**	11/19/2008 8:40:00 AM
Project:	#1 AL Flush Water 11-19-08	**Date Received:**	11/20/2008
Lab ID:	0811321-01	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: HL
sec-Butylbenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Styrene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
tert-Butylbenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	11/21/2008 11:57:11 AM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
trans-1,2-DCE	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Trichloroethene (TCE)	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Trichlorofluoromethane	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	11/21/2008 11:57:11 AM
Vinyl chloride	ND	1.0		µg/L	1	11/21/2008 11:57:11 AM
Xylenes, Total	30	1.5		µg/L	1	11/21/2008 11:57:11 AM
Surr: 1,2-Dichloroethane-d4	104	68.1-123		%REC	1	11/21/2008 11:57:11 AM
Surr: 4-Bromofluorobenzene	102	53.2-145		%REC	1	11/21/2008 11:57:11 AM
Surr: Dibromofluoromethane	115	68.5-119		%REC	1	11/21/2008 11:57:11 AM
Surr: Toluene-d8	103	64-131		%REC	1	11/21/2008 11:57:11 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

08-Jan-09

Lab Order: 0811321
Client: Western Refining Southwest, Inc.
Project: #1 AL Flush Water 11-19-08

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Instrument Run ID	QC Batch ID	Prep Date	Analysis Date
0811321-01A	#1 AL Flush Water	11/19/2008 8:40:00 AM	Aqueous	EPA Method 8260B: VOLATILES	THOR_081121A	R31308		11/21/2008
				EPA Method 8260B: VOLATILES	THOR_081121A	R31308		11/21/2008
0811321-01B				EPA Method 8270C: Semivolatiles	ELMO_081204A	17731	11/26/2008	12/4/2008

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Andy Freeman
Hall Environmental Analysis Laboratory
4901 Hawkins NE

Albuquerque, NM 87109

Report Summary

Thursday December 04, 2008

Report Number: L376079
Samples Received: 11/21/08
Client Project: 0811321

Description:

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Daphne R Richards
Daphne Richards, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375,DW21704, ND - R-140
NJ - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

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Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Andy Freeman
Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

December 04, 2008

ESC Sample # : L376079-01

Date Received : November 21, 2008
Description :

Site ID :

Sample ID : #1 AL FLUSH WATER

Project # : 0811321

Collected By :
Collection Date : 11/19/08 08:40

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Corrosivity	7.2			9040C	11/28/08	1
Flashpoint	See Footnote		deg F	D93/1010A	11/28/08	1
Reactive CN (SW846 7.3.3.2)	BDL	0.125	mg/l	9012B	12/01/08	1
Reactive Sulf.(SW846 7.3.4.1)	BDL	25.	mg/l	9034/9030B	12/01/08	1
Mercury	BDL	0.00020	mg/l	7470A	12/01/08	1
Arsenic	BDL	0.020	mg/l	6010B	12/03/08	1
Barium	0.046	0.0050	mg/l	6010B	12/03/08	1
Cadmium	BDL	0.0050	mg/l	6010B	12/03/08	1
Chromium	BDL	0.010	mg/l	6010B	12/03/08	1
Lead	BDL	0.0050	mg/l	6010B	12/03/08	1
Selenium	0.039	0.020	mg/l	6010B	12/03/08	1
Silver	BDL	0.010	mg/l	6010B	12/03/08	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.
This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 12/04/08 10:24 Printed: 12/04/08 10:24
L376079-01 (FLASHPOINT) - Did Not Flash @ 170f

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L376079-01	WG395671	SAMP	Corrosivity	R547430	T8

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable unless qualified as 'R' (Rejected).

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
12/04/08 at 10:24:54

TSR Signing Reports: 288
R5 - Desired TAT

DO NOT USE Lab Id's as sample name. Use Client Sample ID names Dissolved metals are field filtered unless otherwise noted

Sample: L376079-01 Account: HALLENVANM Received: 11/21/08 09:00 Due Date: 12/01/08 00:00 RPT Date: 12/04/08 10:24

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Quality Assurance Report
Level II

L376079

December 04, 2008

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Corrosivity	7.10	SU			WG395671	11/28/08 10:11
Reactive Sulf.(SW846 7.3.4.1)	< 25	mg/l			WG396128	12/01/08 10:00
Mercury	< .0002	mg/l			WG395863	12/01/08 15:16
Arsenic	< .02	mg/l			WG395656	12/03/08 11:31
Barium	< .005	mg/l			WG395656	12/03/08 11:31
Cadmium	< .005	mg/l			WG395656	12/03/08 11:31
Chromium	< .01	mg/l			WG395656	12/03/08 11:31
Lead	< .005	mg/l			WG395656	12/03/08 11:31
Selenium	< .02	mg/l			WG395656	12/03/08 11:31
Silver	< .01	mg/l			WG395656	12/03/08 11:31

Duplicates

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Corrosivity	SU	7.20	7.30	1.39	20	L376079-01	WG395671
Reactive Sulf.(SW846 7.3.4.1)	mg/l	0.00	0.00	0.00	20	L376079-01	WG396128
Mercury	mg/l	0.00	0.00	0.00	20	L376756-01	WG395863
Reactive CN (SW846 7.3.3.2)	mg/l	0.00	0.00	0.00	20	L376079-01	WG396129
Arsenic	mg/l	0.0496	0.0568	13.5	20	L376099-03	WG395656
Barium	mg/l	0.0187	0.0190	1.59	20	L376099-03	WG395656
Cadmium	mg/l	0.00	0.00	0.00	20	L376099-03	WG395656
Chromium	mg/l	0.00	0.00	0.00	20	L376099-03	WG395656
Lead	mg/l	0.00	0.00	0.00	20	L376099-03	WG395656
Selenium	mg/l	0.0562	0.0609	8.03	20	L376099-03	WG395656
Silver	mg/l	0.00	0.00120	NA*	20	L376099-03	WG395656

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Corrosivity	SU	7.00	7.10	101	97-102	WG395671
Flashpoint	deg F	82	81.0	98.8	96-103	WG395916
Reactive Sulf.(SW846 7.3.4.1)	mg/l	100	91.0	91.0	70-130	WG396128
Mercury	mg/l	0.005	0.00501	100	85-115	WG395863
Arsenic	mg/l	1.13	1.04	92.0	85-115	WG395656
Barium	mg/l	1.13	1.08	95.6	85-115	WG395656
Cadmium	mg/l	1.13	1.08	95.6	85-115	WG395656

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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L376079

December 04, 2008

Analyte	Units	Laboratory Control Sample Known Val	Result	% Rec	Limit	Batch
Chromium	mg/l	1.13	1.06	93.8	85-115	WG395656
Lead	mg/l	1.13	1.07	94.7	85-115	WG395656
Selenium	mg/l	1.13	0.997	88.2	85-115	WG395656
Silver	mg/l	1.13	1.05	92.9	85-115	WG395656

Analyte	Units	Laboratory Control Sample Duplicate Result	Ref	%Rec	Limit	RPD	Limit	Batch
Specific Cond.	umhos/cm	7.90	7.50	101.	99-101	0.00	20	WG395671
Flashpoint	deg F	82.0	81.0	100.	96-103	1.23	7	WG395916
Reactive Sulf.(SW846 7.3.4.1)	mg/l	91.0	91.0	91.0	70-130	0.00	20	WG396128

Analyte	Units	Matrix Spike MS	Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Mercury	mg/l	0.003	0.000	0.000	0.003	109.	70-130	L376780-01	WG395863
Arsenic	mg/l	1.10	0.056	1.13	92.3	75-125	L376099-03	WG395656
Barium	mg/l	1.24	0.190	1.13	94.9	75-125	L376099-03	WG395656
Cadmium	mg/l	1.05	0.00	1.13	92.9	75-125	L376099-03	WG395656
Chromium	mg/l	1.04	0.00	1.13	92.0	75-125	L376099-03	WG395656
Lead	mg/l	1.03	0.000	1.13	91.2	75-125	L376099-03	WG395656
Selenium	mg/l	1.07	0.060	1.13	89.3	75-125	L376099-03	WG395656
Silver	mg/l	0.038	0.001	1.13	3.32*	75-125	L376099-03	WG395656

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Mercury	mg/l	0.00	0.00	96.0	70-130	12.7	20	L376780-01	WG395863
Arsenic	mg/l	1.10	1.10	92.3	75-125	0.00	20	L376099-03	WG395656
Barium	mg/l	1.23	1.24	95.6	75-125	2.99	20	L376099-03	WG395656
Cadmium	mg/l	1.07	1.05	94.7	75-125	1.89	20	L376099-03	WG395656
Chromium	mg/l	1.06	1.04	93.8	75-125	1.90	20	L376099-03	WG395656
Lead	mg/l	1.03	1.03	91.2	75-125	0.00	20	L376099-03	WG395656
Selenium	mg/l	1.08	1.07	90.2	75-125	0.93	20	L376099-03	WG395656
Silver	mg/l	0.03	0.03	3.381	75-125	1.79	20	L376099-03	WG395656

Batch number /Run number / Sample number cross reference

WG395671: R547430: L376079-01
WG395916: R547548: L376079-01
WG396128: R548738: L376079-01
WG395863: R549005: L376079-01
WG396129: R549105: L376079-01
WG395656: R551545: L376079-01

* * Calculations are performed prior to rounding of reported values .
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Quality Assurance Report
Level II

L376079

December 04, 2008

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

Hall Environmental Analysis Laboratory, Inc.
4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109-4372
TEL: *5053453975* FAX: *5053454107*

CHAIN-OF-CUSTODY RECORD

F004

Subcontractor:
ESC
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (800) 767-5859
FAX: (615) 758-5859
Acct #:

Project Name: 0811321

26-Nov-08

Lab ID	Client Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests
0811321-01C	#1 AL Flush Water	Aqueous	11/19/2008 8:40:00 AM	VARIOUS	SEE BELOW

L316019-01

ANALYTICAL COMMENTS: RCI-LEVEL 4 QC

Received by lab
Date 11/21/08 Time 0700
Temp 3.5 Bottles Received 4
pH Checked <2 & >12 Condition
Custody Seal Intact Yes No N/A
Fedex UPS Courier Other

9632 6253 3260

Standard TAT. Please fax (505) 345-4107 results when completed, or email to lab@hallenvironmental.com. Thank you.

3.5 ok

		Date/Time			Date/Time
Relinquished by:		14:18	11/20/08	Received by:	
Relinquished by:				Received by:	11/21/08 0900

ENVIRONMENTAL SCIENCE CORP.

SAMPLE NON-CONFORMANCE FORM

Login No.: L-376079

Date: 11.21.08

Evaluated by: Jason D.

Client: HALLENVANM

Non-Conformance (check applicable items)

____	Chain of Custody is missing	X	Login Clarification Needed
____	Improper container type	____	Improper preservation
____	Chain of custody is incomplete	____	Container lid not intact
____	Parameter(s) past holding time	____	Improper temperature
____	Broken container(s) **see below**	____	Broken container: sufficient sample volume remains for analysis requested

____ Insufficient packing material around container

____ Insufficient packing material inside cooler

____ Improper handling by carrier (FedEx / UPS / Courier)

____ Sample was frozen

Comments: Received containers for CN, Sulfide, Metals, and one unpres. container. Only analysis requested is RCI. Containers are plastic. Please confirm & clarify analysis

Login Instructions: **TSR Initials:** DR

Client informed by (call) / email / fax / voice mail date: 11/24 time: 9:10

Client contact:

Run RCI + MRCRH8 per client

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #1 AL Flush Water 11-19-08 **Work Order:** 0811321

Method: EPA Method 8260B: VOLATILES
Sample ID: 5ml rb *MBLK* Batch ID: R31308 Analysis Date: 11/21/2008 9:31:51 AM

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	µg/L	1.0						
Toluene	ND	µg/L	1.0						
Ethylbenzene	ND	µg/L	1.0						
Methyl tert-butyl ether (MTBE)	ND	µg/L	1.0						
1,2,4-Trimethylbenzene	ND	µg/L	1.0						
1,3,5-Trimethylbenzene	ND	µg/L	1.0						
1,2-Dichloroethane (EDC)	ND	µg/L	1.0						
1,2-Dibromoethane (EDB)	ND	µg/L	1.0						
Naphthalene	ND	µg/L	2.0						
1-Methylnaphthalene	ND	µg/L	4.0						
2-Methylnaphthalene	ND	µg/L	4.0						
Acetone	ND	µg/L	10						
Bromobenzene	ND	µg/L	1.0						
Bromodichloromethane	ND	µg/L	1.0						
Bromoform	ND	µg/L	1.0						
Bromomethane	ND	µg/L	1.0						
2-Butanone	ND	µg/L	10						
Carbon disulfide	ND	µg/L	10						
Carbon Tetrachloride	ND	µg/L	1.0						
Chlorobenzene	ND	µg/L	1.0						
Chloroethane	ND	µg/L	2.0						
Chloroform	ND	µg/L	1.0						
Chloromethane	ND	µg/L	1.0						
2-Chlorotoluene	ND	µg/L	1.0						
4-Chlorotoluene	ND	µg/L	1.0						
cis-1,2-DCE	ND	µg/L	1.0						
cis-1,3-Dichloropropene	ND	µg/L	1.0						
1,2-Dibromo-3-chloropropane	ND	µg/L	2.0						
Dibromochloromethane	ND	µg/L	1.0						
Dibromomethane	ND	µg/L	1.0						
1,2-Dichlorobenzene	ND	µg/L	1.0						
1,3-Dichlorobenzene	ND	µg/L	1.0						
1,4-Dichlorobenzene	ND	µg/L	1.0						
Dichlorodifluoromethane	ND	µg/L	1.0						
1,1-Dichloroethane	ND	µg/L	1.0						
1,1-Dichloroethene	ND	µg/L	1.0						
1,2-Dichloropropane	ND	µg/L	1.0						
1,3-Dichloropropane	ND	µg/L	1.0						
2,2-Dichloropropane	ND	µg/L	2.0						
1,1-Dichloropropene	ND	µg/L	1.0						
Hexachlorobutadiene	ND	µg/L	1.0						
2-Hexanone	ND	µg/L	10						
Isopropylbenzene	ND	µg/L	1.0						
4-Isopropyltoluene	ND	µg/L	1.0						

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #1 AL Flush Water 11-19-08 **Work Order:** 0811321

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8260B: VOLATILES									
Sample ID: 5ml rb		*MBLK*			Batch ID:	R31308	Analysis Date:	11/21/2008 9:31:51 AM	
4-Methyl-2-pentanone	ND	µg/L	10						
Methylene Chloride	ND	µg/L	3.0						
n-Butylbenzene	ND	µg/L	1.0						
n-Propylbenzene	ND	µg/L	1.0						
sec-Butylbenzene	ND	µg/L	1.0						
Styrene	ND	µg/L	1.0						
tert-Butylbenzene	ND	µg/L	1.0						
1,1,1,2-Tetrachloroethane	ND	µg/L	1.0						
1,1,2,2-Tetrachloroethane	ND	µg/L	2.0						
Tetrachloroethene (PCE)	ND	µg/L	1.0						
trans-1,2-DCE	ND	µg/L	1.0						
trans-1,3-Dichloropropene	ND	µg/L	1.0						
1,2,3-Trichlorobenzene	ND	µg/L	1.0						
1,2,4-Trichlorobenzene	ND	µg/L	1.0						
1,1,1-Trichloroethane	ND	µg/L	1.0						
1,1,2-Trichloroethane	ND	µg/L	1.0						
Trichloroethene (TCE)	ND	µg/L	1.0						
Trichlorofluoromethane	ND	µg/L	1.0						
1,2,3-Trichloropropane	ND	µg/L	2.0						
Vinyl chloride	ND	µg/L	1.0						
Xylenes, Total	ND	µg/L	1.5						
Surr: 1,2-Dichloroethane-d4	11.27	µg/L	0	113	68.1	123			
Surr: 4-Bromofluorobenzene	10.75	µg/L	0	108	53.2	145			
Surr: Dibromofluoromethane	12.20	µg/L	0	122	68.5	119			S
Surr: Toluene-d8	10.40	µg/L	0	104	64	131			
Sample ID: b5		*MBLK*			Batch ID:	R31308	Analysis Date:	11/22/2008 12:42:24 AM	
Benzene	ND	µg/L	1.0						
Toluene	ND	µg/L	1.0						
Ethylbenzene	ND	µg/L	1.0						
Methyl tert-butyl ether (MTBE)	ND	µg/L	1.0						
1,2,4-Trimethylbenzene	ND	µg/L	1.0						
1,3,5-Trimethylbenzene	ND	µg/L	1.0						
1,2-Dichloroethane (EDC)	ND	µg/L	1.0						
1,2-Dibromoethane (EDB)	ND	µg/L	1.0						
Naphthalene	ND	µg/L	2.0						
1-Methylnaphthalene	ND	µg/L	4.0						
2-Methylnaphthalene	ND	µg/L	4.0						
Acetone	ND	µg/L	10						
Bromobenzene	ND	µg/L	1.0						
Bromodichloromethane	ND	µg/L	1.0						
Bromoform	ND	µg/L	1.0						
Bromomethane	ND	µg/L	1.0						
2-Butanone	ND	µg/L	10						
Carbon disulfide	ND	µg/L	10						

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #1 AL Flush Water 11-19-08

Work Order: 0811321

Method: EPA Method 8260B: VOLATILES

Sample ID: b5 *MBLK* — Batch ID: R31308 — Analysis Date: 11/22/2008 12:42:24 AM

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Carbon Tetrachloride	ND	µg/L	1.0						
Chlorobenzene	ND	µg/L	1.0						
Chloroethane	ND	µg/L	2.0						
Chloroform	ND	µg/L	1.0						
Chloromethane	ND	µg/L	1.0						
2-Chlorotoluene	ND	µg/L	1.0						
4-Chlorotoluene	ND	µg/L	1.0						
cis-1,2-DCE	ND	µg/L	1.0						
cis-1,3-Dichloropropene	ND	µg/L	1.0						
1,2-Dibromo-3-chloropropane	ND	µg/L	2.0						
Dibromochloromethane	ND	µg/L	1.0						
Dibromomethane	ND	µg/L	1.0						
1,2-Dichlorobenzene	ND	µg/L	1.0						
1,3-Dichlorobenzene	ND	µg/L	1.0						
1,4-Dichlorobenzene	ND	µg/L	1.0						
Dichlorodifluoromethane	ND	µg/L	1.0						
1,1-Dichloroethane	ND	µg/L	1.0						
1,1-Dichloroethene	ND	µg/L	1.0						
1,2-Dichloropropane	ND	µg/L	1.0						
1,3-Dichloropropane	ND	µg/L	1.0						
2,2-Dichloropropane	ND	µg/L	2.0						
1,1-Dichloropropene	ND	µg/L	1.0						
Hexachlorobutadiene	ND	µg/L	1.0						
2-Hexanone	ND	µg/L	10						
Isopropylbenzene	ND	µg/L	1.0						
4-Isopropyltoluene	ND	µg/L	1.0						
4-Methyl-2-pentanone	ND	µg/L	10						
Methylene Chloride	ND	µg/L	3.0						
n-Butylbenzene	ND	µg/L	1.0						
n-Propylbenzene	ND	µg/L	1.0						
sec-Butylbenzene	ND	µg/L	1.0						
Styrene	ND	µg/L	1.0						
tert-Butylbenzene	ND	µg/L	1.0						
1,1,1,2-Tetrachloroethane	ND	µg/L	1.0						
1,1,2,2-Tetrachloroethane	ND	µg/L	2.0						
Tetrachloroethene (PCE)	ND	µg/L	1.0						
trans-1,2-DCE	ND	µg/L	1.0						
trans-1,3-Dichloropropene	ND	µg/L	1.0						
1,2,3-Trichlorobenzene	ND	µg/L	1.0						
1,2,4-Trichlorobenzene	ND	µg/L	1.0						
1,1,1-Trichloroethane	ND	µg/L	1.0						
1,1,2-Trichloroethane	ND	µg/L	1.0						
Trichloroethene (TCE)	ND	µg/L	1.0						
Trichlorofluoromethane	ND	µg/L	1.0						

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #1 AL Flush Water 11-19-08 **Work Order:** 0811321

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8260B: VOLATILES									
Sample ID: b5		*MBLK*			Batch ID:	R31308	Analysis Date:	11/22/2008 12:42:24 AM	
1,2,3-Trichloropropane	ND	µg/L	2.0						
Vinyl chloride	ND	µg/L	1.0						
Xylenes, Total	ND	µg/L	1.5						
Surr: 1,2-Dichloroethane-d4	10.75	µg/L	0	108	68.1	123			
Surr: 4-Bromofluorobenzene	10.64	µg/L	0	106	53.2	145			
Surr: Dibromofluoromethane	11.88	µg/L	0	119	68.5	119			
Surr: Toluene-d8	9.928	µg/L	0	99.3	64	131			
Sample ID: 100ng lcs		*LCS*			Batch ID:	R31308	Analysis Date:	11/21/2008 10:29:59 AM	
Benzene	22.06	µg/L	1.0	110	88	116			
Toluene	19.62	µg/L	1.0	98.1	82.9	112			
Chlorobenzene	18.73	µg/L	1.0	93.7	71.4	133			
1,1-Dichloroethene	21.88	µg/L	1.0	109	97.9	140			
Trichloroethene (TCE)	20.61	µg/L	1.0	103	90.5	112			
Surr: 1,2-Dichloroethane-d4	10.64	µg/L	0	106	68.1	123			
Surr: 4-Bromofluorobenzene	10.27	µg/L	0	103	53.2	145			
Surr: Dibromofluoromethane	11.02	µg/L	0	110	68.5	119			
Surr: Toluene-d8	10.16	µg/L	0	102	64	131			
Sample ID: 100ng lcs		*LCS*			Batch ID:	R31308	Analysis Date:	11/21/2008 11:15:38 PM	
Benzene	21.60	µg/L	1.0	108	88	116			
Toluene	19.08	µg/L	1.0	95.4	82.9	112			
Chlorobenzene	17.93	µg/L	1.0	89.7	71.4	133			
1,1-Dichloroethene	22.21	µg/L	1.0	111	97.9	140			
Trichloroethene (TCE)	20.52	µg/L	1.0	103	90.5	112			
Surr: 1,2-Dichloroethane-d4	10.58	µg/L	0	106	68.1	123			
Surr: 4-Bromofluorobenzene	11.00	µg/L	0	110	53.2	145			
Surr: Dibromofluoromethane	11.78	µg/L	0	118	68.5	119			
Surr: Toluene-d8	9.556	µg/L	0	95.6	64	131			

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #1 AL Flush Water 11-19-08 **Work Order:** 0811321

Method: EPA Method 8270C: Semivolatiles
Sample ID: mb-17731 *MBLK* Batch ID: 17731 Analysis Date: 12/4/2008

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	µg/L	10						
Acenaphthylene	ND	µg/L	10						
Aniline	ND	µg/L	10						
Anthracene	ND	µg/L	10						
Azobenzene	ND	µg/L	10						
Benz(a)anthracene	ND	µg/L	10						
Benzo(a)pyrene	ND	µg/L	10						
Benzo(b)fluoranthene	ND	µg/L	10						
Benzo(g,h,i)perylene	ND	µg/L	10						
Benzo(k)fluoranthene	ND	µg/L	10						
Benzoic acid	ND	µg/L	20						
Benzyl alcohol	ND	µg/L	10						
Bis(2-chloroethoxy)methane	ND	µg/L	10						
Bis(2-chloroethyl)ether	ND	µg/L	10						
Bis(2-chloroisopropyl)ether	ND	µg/L	10						
Bis(2-ethylhexyl)phthalate	ND	µg/L	10						
4-Bromophenyl phenyl ether	ND	µg/L	10						
Butyl benzyl phthalate	ND	µg/L	10						
Carbazole	ND	µg/L	10						
4-Chloro-3-methylphenol	ND	µg/L	10						
4-Chloroaniline	ND	µg/L	10						
2-Chloronaphthalene	ND	µg/L	10						
2-Chlorophenol	ND	µg/L	10						
4-Chlorophenyl phenyl ether	ND	µg/L	10						
Chrysene	ND	µg/L	10						
Di-n-butyl phthalate	ND	µg/L	10						
Di-n-octyl phthalate	ND	µg/L	10						
Dibenz(a,h)anthracene	ND	µg/L	10						
Dibenzofuran	ND	µg/L	10						
1,2-Dichlorobenzene	ND	µg/L	10						
1,3-Dichlorobenzene	ND	µg/L	10						
1,4-Dichlorobenzene	ND	µg/L	10						
3,3'-Dichlorobenzidine	ND	µg/L	10						
Diethyl phthalate	ND	µg/L	10						
Dimethyl phthalate	ND	µg/L	10						
2,4-Dichlorophenol	ND	µg/L	20						
2,4-Dimethylphenol	ND	µg/L	10						
4,6-Dinitro-2-methylphenol	ND	µg/L	20						
2,4-Dinitrophenol	ND	µg/L	20						
2,4-Dinitrotoluene	ND	µg/L	10						
2,6-Dinitrotoluene	ND	µg/L	10						
Fluoranthene	ND	µg/L	10						
Fluorene	ND	µg/L	10						
Hexachlorobenzene	ND	µg/L	10						

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #1 AL Flush Water 11-19-08 **Work Order:** 0811321

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8270C: Semivolatiles									
Sample ID: mb-17731		*MBLK*			Batch ID:	17731	Analysis Date:		12/4/2008
Hexachlorobutadiene	ND	µg/L	10						
Hexachlorocyclopentadiene	ND	µg/L	10						
Hexachloroethane	ND	µg/L	10						
Indeno(1,2,3-cd)pyrene	ND	µg/L	10						
Isophorone	ND	µg/L	10						
2-Methylnaphthalene	ND	µg/L	10						
2-Methylphenol	ND	µg/L	10						
3+4-Methylphenol	ND	µg/L	10						
N-Nitrosodi-n-propylamine	ND	µg/L	10						
N-Nitrosodimethylamine	ND	µg/L	10						
N-Nitrosodiphenylamine	ND	µg/L	10						
Naphthalene	ND	µg/L	10						
2-Nitroaniline	ND	µg/L	10						
3-Nitroaniline	ND	µg/L	10						
4-Nitroaniline	ND	µg/L	10						
Nitrobenzene	ND	µg/L	10						
2-Nitrophenol	ND	µg/L	10						
4-Nitrophenol	ND	µg/L	10						
Pentachlorophenol	ND	µg/L	20						
Phenanthrene	ND	µg/L	10						
Phenol	ND	µg/L	10						
Pyrene	ND	µg/L	10						
Pyridine	ND	µg/L	10						
1,2,4-Trichlorobenzene	ND	µg/L	10						
2,4,5-Trichlorophenol	ND	µg/L	10						
2,4,6-Trichlorophenol	ND	µg/L	10						
Surr: 2,4,6-Tribromophenol	134.5	µg/L	0	67.2	16.6	150			
Surr: 2-Fluorobiphenyl	67.34	µg/L	0	67.3	19.6	134			
Surr: 2-Fluorophenol	82.02	µg/L	0	41.0	9.54	113			
Surr: 4-Terphenyl-d14	59.34	µg/L	0	59.3	22.7	145			
Surr: Nitrobenzene-d5	62.42	µg/L	0	62.4	14.6	134			
Surr: Phenol-d5	74.60	µg/L	0	37.3	10.7	80.3			
Sample ID: lcs-17731		*LCS*			Batch ID:	17731	Analysis Date:		12/4/2008
Acenaphthene	69.82	µg/L	10	69.8	11	123			
4-Chloro-3-methylphenol	168.0	µg/L	10	84.0	15.4	119			
2-Chlorophenol	146.1	µg/L	10	73.0	12.2	122			
1,4-Dichlorobenzene	61.28	µg/L	10	61.3	16.9	100			
2,4-Dinitrotoluene	75.82	µg/L	10	75.8	13	138			
N-Nitrosodi-n-propylamine	76.10	µg/L	10	76.1	9.93	122			
4-Nitrophenol	111.4	µg/L	10	55.7	12.5	87.4			
Pentachlorophenol	160.5	µg/L	20	80.2	3.55	114			
Phenol	78.82	µg/L	10	39.4	7.53	73.1			
Pyrene	68.34	µg/L	10	68.3	12.6	140			
1,2,4-Trichlorobenzene	67.42	µg/L	10	67.4	17.4	98.7			

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #1 AL Flush Water 11-19-08 **Work Order:** 0811321

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8270C: Semivolatiles									
Sample ID: lcs-17731		*LCS*			Batch ID:	17731	Analysis Date:		12/4/2008
Surr: 2,4,6-Tribromophenol	166.4	µg/L	0	83.2	16.6	150			
Surr: 2-Fluorobiphenyl	87.06	µg/L	0	87.1	19.6	134			
Surr: 2-Fluorophenol	112.3	µg/L	0	56.2	9.54	113			
Surr: 4-Terphenyl-d14	71.94	µg/L	0	71.9	22.7	145			
Surr: Nitrobenzene-d5	80.14	µg/L	0	80.1	14.6	134			
Surr: Phenol-d5	125.5	µg/L	0	62.7	10.7	80.3			
Sample ID: lcsd-17731		*LCSD*			Batch ID:	17731	Analysis Date:		12/4/2008
Acenaphthene	69.40	µg/L	10	69.4	11	123	0.603	30.5	
4-Chloro-3-methylphenol	165.0	µg/L	10	82.5	15.4	119	1.81	28.6	
2-Chlorophenol	146.5	µg/L	10	73.3	12.2	122	0.287	107	
1,4-Dichlorobenzene	61.30	µg/L	10	61.3	16.9	100	0.0326	62.1	
2,4-Dinitrotoluene	77.52	µg/L	10	77.5	13	138	2.22	14.7	
N-Nitrosodi-n-propylamine	82.56	µg/L	10	82.6	9.93	122	8.14	30.3	
4-Nitrophenol	113.1	µg/L	10	56.5	12.5	87.4	1.52	36.3	
Pentachlorophenol	160.7	µg/L	20	80.4	3.55	114	0.162	49	
Phenol	81.12	µg/L	10	40.6	7.53	73.1	2.88	52.4	
Pyrene	67.42	µg/L	10	67.4	12.6	140	1.36	16.3	
1,2,4-Trichlorobenzene	69.12	µg/L	10	69.1	17.4	98.7	2.49	36.4	
Surr: 2,4,6-Tribromophenol	161.4	µg/L	0	80.7	16.6	150	0	0	
Surr: 2-Fluorobiphenyl	84.98	µg/L	0	85.0	19.6	134	0	0	
Surr: 2-Fluorophenol	114.0	µg/L	0	57.0	9.54	113	0	0	
Surr: 4-Terphenyl-d14	73.66	µg/L	0	73.7	22.7	145	0	0	
Surr: Nitrobenzene-d5	79.54	µg/L	0	79.5	14.6	134	0	0	
Surr: Phenol-d5	127.5	µg/L	0	63.7	10.7	80.3	0	0	

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name WESTERN REFINING SOUT

Date Received: 11/20/2008

Work Order Number 0811321

Received by: TLS

Sample ID labels checked by: _____ Initials

Checklist completed by: _____ Signature _____ 11/20/08 Date

Matrix: Carrier name UPS

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐	Not Shipped ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	N/A ☑	
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 ☐		
Water - VOA vials have zero headspace?	No VOA vials submitted ☐	Yes ☑	No ☐	
Water - Preservation labels on bottle and cap match?	Yes ☑	No ☐	N/A ☐	
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐	
Container/Temp Blank temperature?	3°	*<6° C Acceptable* If given sufficient time to cool.		

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

CHAIN-OF-CUSTODY RECORD

QA / QC Package: Std ☐ Level 4 ☑ Other: _____

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

Client: Western Refining (Blmfld)

Address: ~~#58~~ CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4161

Fax #: 505-632-3911

Project Name: #1 AL flush water 11-19-08

Project #:

Project Manager:

Sampler: Cindy & Bob

Sample Temperature: 3

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative: $HgCl_2$	Preservative: HNO_3	Preservative:	HEAL No. 0811321	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gasoline Only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO_3, NO_2, PO_4, SO_4)	8081 Pesticides / PCB's (8082)	8260B (VOA)	8270 (Semi-VOA)	RCI				Air Bubbles or Headspace (Y or N)
11-19-08	8:40	H_2O	#1 AL flush water	3-VOA			HCl	1											X						
				1 liter			Amber	1												X					
				1 500 ml			NaOH	1													X				
				1 500 ml			Zn Acetate NaOH	1													X				
				1 500 ml			N/A	1													X				
				1 500 ml		X		1								X									

Date	Time	Relinquished By: (Signature)	Received By: (Signature)	Remarks:
11-19-08	9:10	Robert Gracker	11/20/08 1125	
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)	

HALL ENVIRONMENTAL ANALYSIS LABORATORY

COVER LETTER

Tuesday, January 27, 2009

Cindy Hurtado
Western Refining Southwest, Inc.
#50 CR 4990
Bloomfield, NM 87413

TEL: (505) 632-4161
FAX (505) 632-3911

RE: #3 Al Liner Water 1/20/09

Order No.: 0901281

Dear Cindy Hurtado:

Hall Environmental Analysis Laboratory, Inc. received 2 sample(s) on 1/21/2009 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. Below is a list of our accreditations. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

NM Lab # NM9425
AZ license # AZ0682
ORELAP Lab # NM100001
Texas Lab# T104704424-08-TX

ACCREDITED IN ACCORDANCE WITH nelac

4901 Hawkins NE ■ Suite D ■ Albuquerque, NM 87109
505.345.3975 ■ Fax 505.345.4107
www.hallenvironmental.com

Hall Environmental Analysis Laboratory, Inc.

Date: *27-Jan-09*

CLIENT: Western Refining Southwest, Inc.
Project: #3 Al Liner Water 1/20/09
Lab Order: 0901281

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Batch ID	Test Name	Collection Date
0901281-01A	#3 AL liner water	R32112	EPA Method 8260B: VOLATILES	1/20/2009 3:25:00 PM
0901281-01A	#3 AL liner water	R32112	EPA Method 8260B: VOLATILES	1/20/2009 3:25:00 PM
0901281-01B	#3 AL liner water	18138	EPA Method 8270C: Semivolatiles	1/20/2009 3:25:00 PM
0901281-02A	Trip Blank	R32112	EPA Method 8260B: VOLATILES	

Hall Environmental Analysis Laboratory, Inc.

Date: *27-Jan-09*

CLIENT:	Western Refining Southwest, Inc.	**Client Sample ID:**	#3 AL liner water
Lab Order:	0901281	**Collection Date:**	1/20/2009 3:25:00 PM
Project:	#3 Al Liner Water 1/20/09	**Date Received:**	1/21/2009
Lab ID:	0901281-01	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8270C: SEMIVOLATILES						Analyst: JDC
Acenaphthene	ND	10		µg/L	1	1/23/2009
Acenaphthylene	ND	10		µg/L	1	1/23/2009
Aniline	18	10		µg/L	1	1/23/2009
Anthracene	ND	10		µg/L	1	1/23/2009
Azobenzene	ND	10		µg/L	1	1/23/2009
Benz(a)anthracene	ND	10		µg/L	1	1/23/2009
Benzo(a)pyrene	ND	10		µg/L	1	1/23/2009
Benzo(b)fluoranthene	ND	10		µg/L	1	1/23/2009
Benzo(g,h,i)perylene	ND	10		µg/L	1	1/23/2009
Benzo(k)fluoranthene	ND	10		µg/L	1	1/23/2009
Benzoic acid	ND	20		µg/L	1	1/23/2009
Benzyl alcohol	ND	10		µg/L	1	1/23/2009
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	1/23/2009
Bis(2-chloroethyl)ether	ND	10		µg/L	1	1/23/2009
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	1/23/2009
Bis(2-ethylhexyl)phthalate	ND	10		µg/L	1	1/23/2009
4-Bromophenyl phenyl ether	ND	10		µg/L	1	1/23/2009
Butyl benzyl phthalate	ND	10		µg/L	1	1/23/2009
Carbazole	ND	10		µg/L	1	1/23/2009
4-Chloro-3-methylphenol	ND	10		µg/L	1	1/23/2009
4-Chloroaniline	ND	10		µg/L	1	1/23/2009
2-Chloronaphthalene	ND	10		µg/L	1	1/23/2009
2-Chlorophenol	ND	10		µg/L	1	1/23/2009
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	1/23/2009
Chrysene	ND	10		µg/L	1	1/23/2009
Di-n-butyl phthalate	ND	10		µg/L	1	1/23/2009
Di-n-octyl phthalate	ND	10		µg/L	1	1/23/2009
Dibenz(a,h)anthracene	ND	10		µg/L	1	1/23/2009
Dibenzofuran	ND	10		µg/L	1	1/23/2009
1,2-Dichlorobenzene	ND	10		µg/L	1	1/23/2009
1,3-Dichlorobenzene	ND	10		µg/L	1	1/23/2009
1,4-Dichlorobenzene	ND	10		µg/L	1	1/23/2009
3,3'-Dichlorobenzidine	ND	10		µg/L	1	1/23/2009
Diethyl phthalate	ND	10		µg/L	1	1/23/2009
Dimethyl phthalate	ND	10		µg/L	1	1/23/2009
2,4-Dichlorophenol	ND	20		µg/L	1	1/23/2009
2,4-Dimethylphenol	12	10		µg/L	1	1/23/2009
4,6-Dinitro-2-methylphenol	ND	20		µg/L	1	1/23/2009
2,4-Dinitrophenol	ND	20		µg/L	1	1/23/2009
2,4-Dinitrotoluene	ND	10		µg/L	1	1/23/2009
2,6-Dinitrotoluene	ND	10		µg/L	1	1/23/2009
Fluoranthene	ND	10		µg/L	1	1/23/2009

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *27-Jan-09*

CLIENT:	Western Refining Southwest, Inc.	**Client Sample ID:**	#3 AL liner water
Lab Order:	0901281	**Collection Date:**	1/20/2009 3:25:00 PM
Project:	#3 Al Liner Water 1/20/09	**Date Received:**	1/21/2009
Lab ID:	0901281-01	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **JDC**
Fluorene	ND	10		µg/L	1	1/23/2009
Hexachlorobenzene	ND	10		µg/L	1	1/23/2009
Hexachlorobutadiene	ND	10		µg/L	1	1/23/2009
Hexachlorocyclopentadiene	ND	10		µg/L	1	1/23/2009
Hexachloroethane	ND	10		µg/L	1	1/23/2009
Indeno(1,2,3-cd)pyrene	ND	10		µg/L	1	1/23/2009
Isophorone	ND	10		µg/L	1	1/23/2009
2-Methylnaphthalene	ND	10		µg/L	1	1/23/2009
2-Methylphenol	13	10		µg/L	1	1/23/2009
3+4-Methylphenol	170	10		µg/L	1	1/23/2009
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	1/23/2009
N-Nitrosodimethylamine	ND	10		µg/L	1	1/23/2009
N-Nitrosodiphenylamine	ND	10		µg/L	1	1/23/2009
Naphthalene	ND	10		µg/L	1	1/23/2009
2-Nitroaniline	ND	10		µg/L	1	1/23/2009
3-Nitroaniline	ND	10		µg/L	1	1/23/2009
4-Nitroaniline	ND	10		µg/L	1	1/23/2009
Nitrobenzene	ND	10		µg/L	1	1/23/2009
2-Nitrophenol	ND	10		µg/L	1	1/23/2009
4-Nitrophenol	ND	10		µg/L	1	1/23/2009
Pentachlorophenol	ND	20		µg/L	1	1/23/2009
Phenanthrene	ND	10		µg/L	1	1/23/2009
Phenol	20	10		µg/L	1	1/23/2009
Pyrene	ND	10		µg/L	1	1/23/2009
Pyridine	ND	10		µg/L	1	1/23/2009
1,2,4-Trichlorobenzene	ND	10		µg/L	1	1/23/2009
2,4,5-Trichlorophenol	ND	10		µg/L	1	1/23/2009
2,4,6-Trichlorophenol	ND	10		µg/L	1	1/23/2009
Surr: 2,4,6-Tribromophenol	52.8	16.6-150		%REC	1	1/23/2009
Surr: 2-Fluorobiphenyl	75.4	19.6-134		%REC	1	1/23/2009
Surr: 2-Fluorophenol	49.8	9.54-113		%REC	1	1/23/2009
Surr: 4-Terphenyl-d14	66.7	22.7-145		%REC	1	1/23/2009
Surr: Nitrobenzene-d5	73.0	14.6-134		%REC	1	1/23/2009
Surr: Phenol-d5	62.4	10.7-80.3		%REC	1	1/23/2009
EPA METHOD 8260B: VOLATILES						Analyst: **HL**
Benzene	130	5.0		µg/L	5	1/21/2009 2:56:54 PM
Toluene	10	1.0		µg/L	1	1/21/2009 3:54:16 PM
Ethylbenzene	1.3	1.0		µg/L	1	1/21/2009 3:54:16 PM
Methyl tert-butyl ether (MTBE)	660	5.0		µg/L	5	1/21/2009 2:56:54 PM
1,2,4-Trimethylbenzene	3.4	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,3,5-Trimethylbenzene	1.7	1.0		µg/L	1	1/21/2009 3:54:16 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *27-Jan-09*

CLIENT:	Western Refining Southwest, Inc.	**Client Sample ID:**	#3 AL liner water
Lab Order:	0901281	**Collection Date:**	1/20/2009 3:25:00 PM
Project:	#3 Al Liner Water 1/20/09	**Date Received:**	1/21/2009
Lab ID:	0901281-01	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: HL
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Naphthalene	2.2	2.0		µg/L	1	1/21/2009 3:54:16 PM
1-Methylnaphthalene	6.2	4.0		µg/L	1	1/21/2009 3:54:16 PM
2-Methylnaphthalene	4.6	4.0		µg/L	1	1/21/2009 3:54:16 PM
Acetone	140	10		µg/L	1	1/21/2009 3:54:16 PM
Bromobenzene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Bromodichloromethane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Bromoform	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Bromomethane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
2-Butanone	47	10		µg/L	1	1/21/2009 3:54:16 PM
Carbon disulfide	ND	10		µg/L	1	1/21/2009 3:54:16 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Chlorobenzene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Chloroethane	ND	2.0		µg/L	1	1/21/2009 3:54:16 PM
Chloroform	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Chloromethane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
2-Chlorotoluene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
4-Chlorotoluene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
cis-1,2-DCE	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/21/2009 3:54:16 PM
Dibromochloromethane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Dibromomethane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	1/21/2009 3:54:16 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
2-Hexanone	ND	10		µg/L	1	1/21/2009 3:54:16 PM
Isopropylbenzene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	1/21/2009 3:54:16 PM
Methylene Chloride	ND	3.0		µg/L	1	1/21/2009 3:54:16 PM
n-Butylbenzene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
n-Propylbenzene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- RL Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

Date: *27-Jan-09*

CLIENT:	Western Refining Southwest, Inc.	**Client Sample ID:**	#3 AL liner water
Lab Order:	0901281	**Collection Date:**	1/20/2009 3:25:00 PM
Project:	#3 Al Liner Water 1/20/09	**Date Received:**	1/21/2009
Lab ID:	0901281-01	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: HL
sec-Butylbenzene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Styrene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
tert-Butylbenzene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/21/2009 3:54:16 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
trans-1,2-DCE	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/21/2009 3:54:16 PM
Vinyl chloride	ND	1.0		µg/L	1	1/21/2009 3:54:16 PM
Xylenes, Total	12	1.5		µg/L	1	1/21/2009 3:54:16 PM
Surr: 1,2-Dichloroethane-d4	97.0	68.1-123		%REC	1	1/21/2009 3:54:16 PM
Surr: 4-Bromofluorobenzene	97.7	53.2-145		%REC	1	1/21/2009 3:54:16 PM
Surr: Dibromofluoromethane	84.0	68.5-119		%REC	1	1/21/2009 3:54:16 PM
Surr: Toluene-d8	90.3	64-131		%REC	1	1/21/2009 3:54:16 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *27-Jan-09*

CLIENT:	Western Refining Southwest, Inc.	**Client Sample ID:**	Trip Blank
Lab Order:	0901281	**Collection Date:**	
Project:	#3 Al Liner Water 1/20/09	**Date Received:**	1/21/2009
Lab ID:	0901281-02	**Matrix:**	TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: HL
Benzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Toluene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Ethylbenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Naphthalene	ND	2.0		µg/L	1	1/21/2009 3:25:35 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	1/21/2009 3:25:35 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	1/21/2009 3:25:35 PM
Acetone	ND	10		µg/L	1	1/21/2009 3:25:35 PM
Bromobenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Bromodichloromethane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Bromoform	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Bromomethane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
2-Butanone	ND	10		µg/L	1	1/21/2009 3:25:35 PM
Carbon disulfide	ND	10		µg/L	1	1/21/2009 3:25:35 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Chlorobenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Chloroethane	ND	2.0		µg/L	1	1/21/2009 3:25:35 PM
Chloroform	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Chloromethane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
2-Chlorotoluene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
4-Chlorotoluene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
cis-1,2-DCE	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/21/2009 3:25:35 PM
Dibromochloromethane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Dibromomethane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	1/21/2009 3:25:35 PM
1,1-Dichloropropene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
2-Hexanone	ND	10		µg/L	1	1/21/2009 3:25:35 PM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- RL Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

Date: *27-Jan-09*

CLIENT:	Western Refining Southwest, Inc.	**Client Sample ID:**	Trip Blank
Lab Order:	0901281	**Collection Date:**	
Project:	#3 Al Liner Water 1/20/09	**Date Received:**	1/21/2009
Lab ID:	0901281-02	**Matrix:**	TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: HL
Isopropylbenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	1/21/2009 3:25:35 PM
Methylene Chloride	ND	3.0		µg/L	1	1/21/2009 3:25:35 PM
n-Butylbenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
n-Propylbenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
sec-Butylbenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Styrene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
tert-Butylbenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/21/2009 3:25:35 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
trans-1,2-DCE	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/21/2009 3:25:35 PM
Vinyl chloride	ND	1.0		µg/L	1	1/21/2009 3:25:35 PM
Xylenes, Total	ND	1.5		µg/L	1	1/21/2009 3:25:35 PM
Surr: 1,2-Dichloroethane-d4	81.7	68.1-123		%REC	1	1/21/2009 3:25:35 PM
Surr: 4-Bromofluorobenzene	97.7	53.2-145		%REC	1	1/21/2009 3:25:35 PM
Surr: Dibromofluoromethane	85.5	68.5-119		%REC	1	1/21/2009 3:25:35 PM
Surr: Toluene-d8	87.3	64-131		%REC	1	1/21/2009 3:25:35 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

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REPORT OF ANALYSIS

January 27, 2009

Anne Thorne
Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

ESC Sample # : L384618-01

Date Received : January 22, 2009
Description :

Site ID :

Sample ID : #3 AL LINER WATER

Project # : 0901281

Collected By :
Collection Date : 01/20/09 15:25

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Mercury	BDL	0.00020	mg/l	7470A	01/23/09	1
Arsenic	BDL	0.020	mg/l	6010B	01/23/09	1
Barium	0.054	0.0050	mg/l	6010B	01/23/09	1
Cadmium	BDL	0.0050	mg/l	6010B	01/23/09	1
Chromium	0.019	0.010	mg/l	6010B	01/23/09	1
Lead	0.021	0.0050	mg/l	6010B	01/23/09	1
Selenium	BDL	0.020	mg/l	6010B	01/23/09	1
Silver	0.015	0.010	mg/l	6010B	01/23/09	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.
This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 01/27/09 17:04 Printed: 01/27/09 17:05

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REPORT OF ANALYSIS

January 27, 2009

Anne Thorne
Hall Environmental Analysis Laborat
4901 Hawkins NE
Albuquerque, NM 87109

ESC Sample # : L384618-02

Date Received : January 22, 2009
Description :

Site ID :

Sample ID : #3 AL LINER WATER

Project # : 0901281

Collected By :
Collection Date : 01/20/09 15:25

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Corrosivity	Non-Corrosive			9040C	01/27/09	1
Flashpoint	See Footnote		deg F	D93/1010A	01/23/09	1
Reactive CN (SW846 7.3.3.2)	BDL	0.125	mg/l	9012B	01/23/09	1
Reactive Sulf.(SW846 7.3.4.1)	BDL	25.	mg/l	9034/9030B	01/23/09	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.
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Reported: 01/27/09 17:04 Printed: 01/27/09 17:05
L384618-02 (FLASHPOINT) - Did Not Flash @ 170f

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L384618-02	WG404460	SAMP	Corrosivity	R607425	T8

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable unless qualified as 'R' (Rejected).

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

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Hall Environmental Analysis Laboratory
Anne Thorne
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Albuquerque, NM 87109

Quality Assurance Report
Level II

L384618

January 27, 2009

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Reactive Sulf.(SW846 7.3.4.1)	.25	mg/l			WG403882	01/23/09 10:30
Mercury	< .0002	mg/l			WG403646	01/23/09 21:02
Arsenic	< .02	mg/l			WG403732	01/23/09 22:44
Barium	< .005	mg/l			WG403732	01/23/09 22:44
Cadmium	< .005	mg/l			WG403732	01/23/09 22:44
Chromium	< .01	mg/l			WG403732	01/23/09 22:44
Lead	< .005	mg/l			WG403732	01/23/09 22:44
Selenium	< .02	mg/l			WG403732	01/23/09 22:44
Silver	< .01	mg/l			WG403732	01/23/09 22:44
Corrosivity	4.60				WG404460	01/27/09 16:20

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Reactive CN (SW846 7.3.3.2)	mg/l	0.00	0.00	0.00	20	L384618-02	WG403883
Flashpoint	deg F	0.00	0.00	0.00	20	L384618-02	WG403748
Reactive Sulf.(SW846 7.3.4.1)	mg/l	0.00	0.00	0.00	20	L384618-02	WG403882
Mercury	mg/l	0.00	0.00	0.00	20	L384477-02	WG403646
Arsenic	mg/l	0.00	0.00	0.00	20	L384623-04	WG403732
Barium	mg/l	0.183	0.177	3.33	20	L384623-04	WG403732
Cadmium	mg/l	0.00	0.00	0.00	20	L384623-04	WG403732
Chromium	mg/l	0.0128	0.0127	0.784	20	L384623-04	WG403732
Lead	mg/l	0.00	0.00058	NA*	20	L384623-04	WG403732
Selenium	mg/l	0.00	0.00010	NA*	20	L384623-04	WG403732
Silver	mg/l	0.00	0.00290	NA*	20	L384623-04	WG403732
Corrosivity		0.00	0.00	0.00	20	L384618-02	WG404460

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Flashpoint	deg F	82	83.0	101	96-103	WG403748
Reactive Sulf.(SW846 7.3.4.1)	mg/l	100	83.0	83.0	70-130	WG403882
Mercury	mg/l	.003	0.00275	91.7	85-115	WG403646
Arsenic	mg/l	1.13	1.07	94.7	85-115	WG403732
Barium	mg/l	1.13	1.11	98.2	85-115	WG403732
Cadmium	mg/l	1.13	1.11	98.2	85-115	WG403732

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Hall Environmental Analysis Laboratory
Anne Thorne
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Quality Assurance Report
Level II

L384618

January 27, 2009

Analyte	Units	Laboratory Control Sample Known Val	Result	% Rec	Limit	Batch
Chromium	mg/l	1.13	1.09	95.6	85-115	WG403732
Lead	mg/l	1.13	1.12	99.1	85-115	WG403732
Selenium	mg/l	1.13	0.964	85.3	85-115	WG403732
Silver	mg/l	1.13	1.01	89.4	85-115	WG403732
Corrosivity		5.4	5.40	100.	97.4-102.	WG404460

Analyte	Units	Laboratory Control Sample Duplicate Result	Ref	%Rec	Limit	RPD	Limit	Batch
Flashpoint	deg F	83.0	83.0	101.	96-103	0.00	7	WG403748
Reactive Sulf.(SW846 7.3.4.1)	mg/l	95.0	83.0	95.0	70-130	13.5	20	WG403882
Corrosivity		5.40	5.40	100.	97.4-10	0.00	20	WG404460

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Mercury	mg/l	0.003	0.001	0.003	101.	70-130	L384477-02	WG403646
Arsenic	mg/l	1.10	0.00	1.13	97.3	75-125	L384623-04	WG403732
Barium	mg/l	1.29	0.177	1.13	98.5	75-125	L384623-04	WG403732
Cadmium	mg/l	1.11	0.00	1.13	98.2	75-125	L384623-04	WG403732
Chromium	mg/l	1.11	0.012	1.13	97.1	75-125	L384623-04	WG403732
Lead	mg/l	1.11	0.000	1.13	98.2	75-125	L384623-04	WG403732
Selenium	mg/l	0.967	0.000	1.13	85.6	75-125	L384623-04	WG403732
Silver	mg/l	0.055	0.002	1.13	4.69*	75-125	L384623-04	WG403732

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Mercury	mg/l	0.00	0.00	105.	70-130	3.88	20	L384477-02	WG403646
Arsenic	mg/l	1.11	1.10	98.2	75-125	0.90	20	L384623-04	WG403732
Barium	mg/l	1.29	1.29	98.5	75-125	0.00	20	L384623-04	WG403732
Cadmium	mg/l	1.12	1.11	99.1	75-125	0.89	20	L384623-04	WG403732
Chromium	mg/l	1.12	1.11	98.0	75-125	0.89	20	L384623-04	WG403732
Lead	mg/l	1.12	1.11	99.1	75-125	0.89	20	L384623-04	WG403732
Selenium	mg/l	0.96	0.96	85.2	75-125	0.41	20	L384623-04	WG403732
Silver	mg/l	0.04	0.05	3.699	75-125	22.3*	20	L384623-04	WG403732

Batch number /Run number / Sample number cross reference

WG403883: R603885: L384618-02
WG403748: R603948: L384618-02
WG403882: R603951: L384618-02
WG403646: R604505: L384618-01
WG403732: R604650: L384618-01
WG404460: R607425: L384618-02

* * Calculations are performed prior to rounding of reported values .
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

Hall Environmental Analysis Laboratory, Inc.

27-Jan-09

Lab Order: 0901281
Client: Western Refining Southwest, Inc.
Project: #3 Al Liner Water 1/20/09

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Instrument Run ID	QC Batch ID	Prep Date	Analysis Date
0901281-01A	#3 AL liner water	1/20/2009 3:25:00 PM	Aqueous	EPA Method 8260B: VOLATILES	NEPTUNE_090121A	R32112		1/21/2009
				EPA Method 8260B: VOLATILES	NEPTUNE_090121A	R32112		1/21/2009
0901281-01B				EPA Method 8270C: Semivolatiles	ELMO_090123A	18138	1/22/2009	1/23/2009
0901281-02A	Trip Blank		Trip Blank	EPA Method 8260B: VOLATILES	NEPTUNE_090121A	R32112		1/21/2009

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #3 Al Liner Water 1/20/09

Work Order: 0901281

Method: EPA Method 8260B: VOLATILES
Sample ID: 5ml rb — *MBLK* — Batch ID: **R32112** — Analysis Date: 1/21/2009 8:31:32 AM

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	µg/L	1.0						
Toluene	ND	µg/L	1.0						
Ethylbenzene	ND	µg/L	1.0						
Methyl tert-butyl ether (MTBE)	ND	µg/L	1.0						
1,2,4-Trimethylbenzene	ND	µg/L	1.0						
1,3,5-Trimethylbenzene	ND	µg/L	1.0						
1,2-Dichloroethane (EDC)	ND	µg/L	1.0						
1,2-Dibromoethane (EDB)	ND	µg/L	1.0						
Naphthalene	ND	µg/L	2.0						
1-Methylnaphthalene	ND	µg/L	4.0						
2-Methylnaphthalene	ND	µg/L	4.0						
Acetone	ND	µg/L	10						
Bromobenzene	ND	µg/L	1.0						
Bromodichloromethane	ND	µg/L	1.0						
Bromoform	ND	µg/L	1.0						
Bromomethane	ND	µg/L	1.0						
2-Butanone	ND	µg/L	10						
Carbon disulfide	ND	µg/L	10						
Carbon Tetrachloride	ND	µg/L	1.0						
Chlorobenzene	ND	µg/L	1.0						
Chloroethane	ND	µg/L	2.0						
Chloroform	ND	µg/L	1.0						
Chloromethane	ND	µg/L	1.0						
2-Chlorotoluene	ND	µg/L	1.0						
4-Chlorotoluene	ND	µg/L	1.0						
cis-1,2-DCE	ND	µg/L	1.0						
cis-1,3-Dichloropropene	ND	µg/L	1.0						
1,2-Dibromo-3-chloropropane	ND	µg/L	2.0						
Dibromochloromethane	ND	µg/L	1.0						
Dibromomethane	ND	µg/L	1.0						
1,2-Dichlorobenzene	ND	µg/L	1.0						
1,3-Dichlorobenzene	ND	µg/L	1.0						
1,4-Dichlorobenzene	ND	µg/L	1.0						
Dichlorodifluoromethane	ND	µg/L	1.0						
1,1-Dichloroethane	ND	µg/L	1.0						
1,1-Dichloroethene	ND	µg/L	1.0						
1,2-Dichloropropane	ND	µg/L	1.0						
1,3-Dichloropropane	ND	µg/L	1.0						
2,2-Dichloropropane	ND	µg/L	2.0						
1,1-Dichloropropene	ND	µg/L	1.0						
Hexachlorobutadiene	ND	µg/L	1.0						
2-Hexanone	ND	µg/L	10						
Isopropylbenzene	ND	µg/L	1.0						
4-Isopropyltoluene	ND	µg/L	1.0						

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #3 Al Liner Water 1/20/09 **Work Order:** 0901281

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8260B: VOLATILES									
Sample ID: 5ml rb		*MBLK*			Batch ID:	**R32112**	Analysis Date:	1/21/2009 8:31:32 AM	
4-Methyl-2-pentanone	ND	µg/L	10						
Methylene Chloride	ND	µg/L	3.0						
n-Butylbenzene	ND	µg/L	1.0						
n-Propylbenzene	ND	µg/L	1.0						
sec-Butylbenzene	ND	µg/L	1.0						
Styrene	ND	µg/L	1.0						
tert-Butylbenzene	ND	µg/L	1.0						
1,1,1,2-Tetrachloroethane	ND	µg/L	1.0						
1,1,2,2-Tetrachloroethane	ND	µg/L	2.0						
Tetrachloroethene (PCE)	ND	µg/L	1.0						
trans-1,2-DCE	ND	µg/L	1.0						
trans-1,3-Dichloropropene	ND	µg/L	1.0						
1,2,3-Trichlorobenzene	ND	µg/L	1.0						
1,2,4-Trichlorobenzene	ND	µg/L	1.0						
1,1,1-Trichloroethane	ND	µg/L	1.0						
1,1,2-Trichloroethane	ND	µg/L	1.0						
Trichloroethene (TCE)	ND	µg/L	1.0						
Trichlorofluoromethane	ND	µg/L	1.0						
1,2,3-Trichloropropane	ND	µg/L	2.0						
Vinyl chloride	ND	µg/L	1.0						
Xylenes, Total	ND	µg/L	1.5						
Surr: 1,2-Dichloroethane-d4	8.275	µg/L	0	82.8	68.1	123			
Surr: 4-Bromofluorobenzene	10.30	µg/L	0	103	53.2	145			
Surr: Dibromofluoromethane	9.075	µg/L	0	90.8	68.5	119			
Surr: Toluene-d8	8.788	µg/L	0	87.9	64	131			
Sample ID: b3		*MBLK*			Batch ID:	**R32112**	Analysis Date:	1/21/2009 9:10:30 PM	
Benzene	ND	µg/L	1.0						
Toluene	ND	µg/L	1.0						
Ethylbenzene	ND	µg/L	1.0						
Methyl tert-butyl ether (MTBE)	ND	µg/L	1.0						
1,2,4-Trimethylbenzene	ND	µg/L	1.0						
1,3,5-Trimethylbenzene	ND	µg/L	1.0						
1,2-Dichloroethane (EDC)	ND	µg/L	1.0						
1,2-Dibromoethane (EDB)	ND	µg/L	1.0						
Naphthalene	ND	µg/L	2.0						
1-Methylnaphthalene	ND	µg/L	4.0						
2-Methylnaphthalene	ND	µg/L	4.0						
Acetone	ND	µg/L	10						
Bromobenzene	ND	µg/L	1.0						
Bromodichloromethane	ND	µg/L	1.0						
Bromoform	ND	µg/L	1.0						
Bromomethane	ND	µg/L	1.0						
2-Butanone	ND	µg/L	10						
Carbon disulfide	ND	µg/L	10						

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #3 Al Liner Water 1/20/09 **Work Order:** 0901281

Method: EPA Method 8260B: VOLATILES
Sample ID: b3 *MBLK* Batch ID: **R32112** Analysis Date: 1/21/2009 9:10:30 PM

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Carbon Tetrachloride	ND	µg/L	1.0						
Chlorobenzene	ND	µg/L	1.0						
Chloroethane	ND	µg/L	2.0						
Chloroform	ND	µg/L	1.0						
Chloromethane	ND	µg/L	1.0						
2-Chlorotoluene	ND	µg/L	1.0						
4-Chlorotoluene	ND	µg/L	1.0						
cis-1,2-DCE	ND	µg/L	1.0						
cis-1,3-Dichloropropene	ND	µg/L	1.0						
1,2-Dibromo-3-chloropropane	ND	µg/L	2.0						
Dibromochloromethane	ND	µg/L	1.0						
Dibromomethane	ND	µg/L	1.0						
1,2-Dichlorobenzene	ND	µg/L	1.0						
1,3-Dichlorobenzene	ND	µg/L	1.0						
1,4-Dichlorobenzene	ND	µg/L	1.0						
Dichlorodifluoromethane	ND	µg/L	1.0						
1,1-Dichloroethane	ND	µg/L	1.0						
1,1-Dichloroethene	ND	µg/L	1.0						
1,2-Dichloropropane	ND	µg/L	1.0						
1,3-Dichloropropane	ND	µg/L	1.0						
2,2-Dichloropropane	ND	µg/L	2.0						
1,1-Dichloropropene	ND	µg/L	1.0						
Hexachlorobutadiene	ND	µg/L	1.0						
2-Hexanone	ND	µg/L	10						
Isopropylbenzene	ND	µg/L	1.0						
4-Isopropyltoluene	ND	µg/L	1.0						
4-Methyl-2-pentanone	ND	µg/L	10						
Methylene Chloride	ND	µg/L	3.0						
n-Butylbenzene	ND	µg/L	1.0						
n-Propylbenzene	ND	µg/L	1.0						
sec-Butylbenzene	ND	µg/L	1.0						
Styrene	ND	µg/L	1.0						
tert-Butylbenzene	ND	µg/L	1.0						
1,1,1,2-Tetrachloroethane	ND	µg/L	1.0						
1,1,2,2-Tetrachloroethane	ND	µg/L	2.0						
Tetrachloroethene (PCE)	ND	µg/L	1.0						
trans-1,2-DCE	ND	µg/L	1.0						
trans-1,3-Dichloropropene	ND	µg/L	1.0						
1,2,3-Trichlorobenzene	ND	µg/L	1.0						
1,2,4-Trichlorobenzene	ND	µg/L	1.0						
1,1,1-Trichloroethane	ND	µg/L	1.0						
1,1,2-Trichloroethane	ND	µg/L	1.0						
Trichloroethene (TCE)	ND	µg/L	1.0						
Trichlorofluoromethane	ND	µg/L	1.0						

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #3 Al Liner Water 1/20/09 **Work Order:** 0901281

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8260B: VOLATILES									
Sample ID: b3		*MBLK*			Batch ID:	**R32112**	Analysis Date:	1/21/2009 9:10:30 PM	
1,2,3-Trichloropropane	ND	µg/L	2.0						
Vinyl chloride	ND	µg/L	1.0						
Xylenes, Total	ND	µg/L	1.5						
Surr: 1,2-Dichloroethane-d4	8.188	µg/L	0	81.9	68.1	123			
Surr: 4-Bromofluorobenzene	9.932	µg/L	0	99.3	53.2	145			
Surr: Dibromofluoromethane	8.988	µg/L	0	89.9	68.5	119			
Surr: Toluene-d8	8.759	µg/L	0	87.6	64	131			
Sample ID: 100ng lcs		*LCS*			Batch ID:	**R32112**	Analysis Date:	1/21/2009 9:37:47 AM	
Benzene	20.79	µg/L	1.0	104	88	116			
Toluene	19.34	µg/L	1.0	96.7	82.9	112			
Chlorobenzene	20.58	µg/L	1.0	103	71.4	133			
1,1-Dichloroethene	22.72	µg/L	1.0	114	97.9	140			
Trichloroethene (TCE)	20.98	µg/L	1.0	105	90.5	112			
Surr: 1,2-Dichloroethane-d4	8.029	µg/L	0	80.3	68.1	123			
Surr: 4-Bromofluorobenzene	10.07	µg/L	0	101	53.2	145			
Surr: Dibromofluoromethane	9.433	µg/L	0	94.3	68.5	119			
Surr: Toluene-d8	8.811	µg/L	0	88.1	64	131			
Sample ID: 100ng lcs_b		*LCS*			Batch ID:	**R32112**	Analysis Date:	1/21/2009 10:07:32 PM	
Benzene	20.33	µg/L	1.0	102	88	116			
Toluene	18.81	µg/L	1.0	94.0	82.9	112			
Chlorobenzene	20.08	µg/L	1.0	100	71.4	133			
1,1-Dichloroethene	21.81	µg/L	1.0	109	97.9	140			
Trichloroethene (TCE)	19.94	µg/L	1.0	99.7	90.5	112			
Surr: 1,2-Dichloroethane-d4	7.817	µg/L	0	78.2	68.1	123			
Surr: 4-Bromofluorobenzene	10.05	µg/L	0	101	53.2	145			
Surr: Dibromofluoromethane	9.355	µg/L	0	93.5	68.5	119			
Surr: Toluene-d8	8.701	µg/L	0	87.0	64	131			

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #3 Al Liner Water 1/20/09 **Work Order:** 0901281

Method: EPA Method 8270C: Semivolatiles
Sample ID: mb-18138 *MBLK* Batch ID: 18138 Analysis Date: 1/23/2009

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	µg/L	10						
Acenaphthylene	ND	µg/L	10						
Aniline	ND	µg/L	10						
Anthracene	ND	µg/L	10						
Azobenzene	ND	µg/L	10						
Benz(a)anthracene	ND	µg/L	10						
Benzo(a)pyrene	ND	µg/L	10						
Benzo(b)fluoranthene	ND	µg/L	10						
Benzo(g,h,i)perylene	ND	µg/L	10						
Benzo(k)fluoranthene	ND	µg/L	10						
Benzoic acid	ND	µg/L	20						
Benzyl alcohol	ND	µg/L	10						
Bis(2-chloroethoxy)methane	ND	µg/L	10						
Bis(2-chloroethyl)ether	ND	µg/L	10						
Bis(2-chloroisopropyl)ether	ND	µg/L	10						
Bis(2-ethylhexyl)phthalate	ND	µg/L	10						
4-Bromophenyl phenyl ether	ND	µg/L	10						
Butyl benzyl phthalate	ND	µg/L	10						
Carbazole	ND	µg/L	10						
4-Chloro-3-methylphenol	ND	µg/L	10						
4-Chloroaniline	ND	µg/L	10						
2-Chloronaphthalene	ND	µg/L	10						
2-Chlorophenol	ND	µg/L	10						
4-Chlorophenyl phenyl ether	ND	µg/L	10						
Chrysene	ND	µg/L	10						
Di-n-butyl phthalate	ND	µg/L	10						
Di-n-octyl phthalate	ND	µg/L	10						
Dibenz(a,h)anthracene	ND	µg/L	10						
Dibenzofuran	ND	µg/L	10						
1,2-Dichlorobenzene	ND	µg/L	10						
1,3-Dichlorobenzene	ND	µg/L	10						
1,4-Dichlorobenzene	ND	µg/L	10						
3,3'-Dichlorobenzidine	ND	µg/L	10						
Diethyl phthalate	ND	µg/L	10						
Dimethyl phthalate	ND	µg/L	10						
2,4-Dichlorophenol	ND	µg/L	20						
2,4-Dimethylphenol	ND	µg/L	10						
4,6-Dinitro-2-methylphenol	ND	µg/L	20						
2,4-Dinitrophenol	ND	µg/L	20						
2,4-Dinitrotoluene	ND	µg/L	10						
2,6-Dinitrotoluene	ND	µg/L	10						
Fluoranthene	ND	µg/L	10						
Fluorene	ND	µg/L	10						
Hexachlorobenzene	ND	µg/L	10						

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #3 Al Liner Water 1/20/09 **Work Order:** 0901281

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8270C: Semivolatiles									
Sample ID: mb-18138		*MBLK*			Batch ID:	18138	Analysis Date:		1/23/2009
Hexachlorobutadiene	ND	µg/L	10						
Hexachlorocyclopentadiene	ND	µg/L	10						
Hexachloroethane	ND	µg/L	10						
Indeno(1,2,3-cd)pyrene	ND	µg/L	10						
Isophorone	ND	µg/L	10						
2-Methylnaphthalene	ND	µg/L	10						
2-Methylphenol	ND	µg/L	10						
3+4-Methylphenol	ND	µg/L	10						
N-Nitrosodi-n-propylamine	ND	µg/L	10						
N-Nitrosodimethylamine	ND	µg/L	10						
N-Nitrosodiphenylamine	ND	µg/L	10						
Naphthalene	ND	µg/L	10						
2-Nitroaniline	ND	µg/L	10						
3-Nitroaniline	ND	µg/L	10						
4-Nitroaniline	ND	µg/L	10						
Nitrobenzene	ND	µg/L	10						
2-Nitrophenol	ND	µg/L	10						
4-Nitrophenol	ND	µg/L	10						
Pentachlorophenol	ND	µg/L	20						
Phenanthrene	ND	µg/L	10						
Phenol	ND	µg/L	10						
Pyrene	ND	µg/L	10						
Pyridine	ND	µg/L	10						
1,2,4-Trichlorobenzene	ND	µg/L	10						
2,4,5-Trichlorophenol	ND	µg/L	10						
2,4,6-Trichlorophenol	ND	µg/L	10						
Surr: 2,4,6-Tribromophenol	134.1	µg/L	0	67.1	16.6	150			
Surr: 2-Fluorobiphenyl	85.24	µg/L	0	85.2	19.6	134			
Surr: 2-Fluorophenol	108.4	µg/L	0	54.2	9.54	113			
Surr: 4-Terphenyl-d14	65.52	µg/L	0	65.5	22.7	145			
Surr: Nitrobenzene-d5	77.66	µg/L	0	77.7	14.6	134			
Surr: Phenol-d5	116.2	µg/L	0	58.1	10.7	80.3			
Sample ID: lcs-18138		*LCS*			Batch ID:	18138	Analysis Date:		1/23/2009
Acenaphthene	71.48	µg/L	10	71.5	11	123			
4-Chloro-3-methylphenol	121.1	µg/L	10	60.5	15.4	119			
2-Chlorophenol	133.6	µg/L	10	66.8	12.2	122			
1,4-Dichlorobenzene	59.38	µg/L	10	59.4	16.9	100			
2,4-Dinitrotoluene	68.94	µg/L	10	68.9	13	138			
N-Nitrosodi-n-propylamine	74.32	µg/L	10	74.3	9.93	122			
4-Nitrophenol	91.78	µg/L	10	45.9	12.5	87.4			
Pentachlorophenol	126.5	µg/L	20	63.2	3.55	114			
Phenol	74.88	µg/L	10	37.4	7.53	73.1			
Pyrene	61.04	µg/L	10	61.0	12.6	140			
1,2,4-Trichlorobenzene	64.46	µg/L	10	64.5	17.4	98.7			

Qualifiers:

B	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Western Refining Southwest, Inc.
Project: #3 Al Liner Water 1/20/09 **Work Order:** 0901281

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8270C: Semivolatiles									
Sample ID: lcs-18138		*LCS*			Batch ID:	18138	Analysis Date:		1/23/2009
Surr: 2,4,6-Tribromophenol	154.7	µg/L	0	77.3	16.6	150			
Surr: 2-Fluorobiphenyl	89.50	µg/L	0	89.5	19.6	134			
Surr: 2-Fluorophenol	115.3	µg/L	0	57.6	9.54	113			
Surr: 4-Terphenyl-d14	71.50	µg/L	0	71.5	22.7	145			
Surr: Nitrobenzene-d5	86.34	µg/L	0	86.3	14.6	134			
Surr: Phenol-d5	143.3	µg/L	0	71.7	10.7	80.3			
Sample ID: lcsd-18138		*LCSD*			Batch ID:	18138	Analysis Date:		1/23/2009
Acenaphthene	60.02	µg/L	10	60.0	11	123	17.4	30.5	
4-Chloro-3-methylphenol	98.60	µg/L	10	49.3	15.4	119	20.5	28.6	
2-Chlorophenol	109.9	µg/L	10	54.9	12.2	122	19.5	107	
1,4-Dichlorobenzene	50.28	µg/L	10	50.3	16.9	100	16.6	62.1	
2,4-Dinitrotoluene	58.98	µg/L	10	59.0	13	138	15.6	14.7	R
N-Nitrosodi-n-propylamine	60.58	µg/L	10	60.6	9.93	122	20.4	30.3	
4-Nitrophenol	75.48	µg/L	10	37.7	12.5	87.4	19.5	36.3	
Pentachlorophenol	109.3	µg/L	20	54.7	3.55	114	14.5	49	
Phenol	61.70	µg/L	10	30.9	7.53	73.1	19.3	52.4	
Pyrene	53.10	µg/L	10	53.1	12.6	140	13.9	16.3	
1,2,4-Trichlorobenzene	53.46	µg/L	10	53.5	17.4	98.7	18.7	36.4	
Surr: 2,4,6-Tribromophenol	172.4	µg/L	0	86.2	16.6	150	0	0	
Surr: 2-Fluorobiphenyl	97.22	µg/L	0	97.2	19.6	134	0	0	
Surr: 2-Fluorophenol	121.5	µg/L	0	60.8	9.54	113	0	0	
Surr: 4-Terphenyl-d14	74.58	µg/L	0	74.6	22.7	145	0	0	
Surr: Nitrobenzene-d5	93.04	µg/L	0	93.0	14.6	134	0	0	
Surr: Phenol-d5	149.3	µg/L	0	74.7	10.7	80.3	0	0	

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name WESTERN REFINING SOUT

Date Received: 1/21/2009

Work Order Number 0901281

Received by: TLS

Sample ID labels checked by: AT (Initials)

Checklist completed by: (Signature) 1/21/09 (Date)

Matrix: Carrier name UPS

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐	Not Shipped ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	N/A ☑	
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 ☐		
Water - VOA vials have zero headspace?	No VOA vials submitted ☐	Yes ☑	No ☐	
Water - Preservation labels on bottle and cap match?	Yes ☑	No ☐	N/A ☐	
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐	
Container/Temp Blank temperature?	2°	*<6° C Acceptable* If given sufficient time to cool.		

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Chain-of-Custody Record

Client: Western Refining (Blmfld)

Mailing Address: #50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4101

email or Fax#: 505-632-3911

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☐ EDD (Type)

Turn-Around Time:
☐ Standard ☑ Rush

Project Name: #3 AL Liner water 1-20-09

Project #:

Project Manager:

Sampler: Cindy + Bob

On Ice: ☑ Yes ☐ No

Sample Temperature: 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0901241	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	RCI				Air Bubbles (Y or N)
1-20-09	3:25	H_2O	#3 AL liner water	3-VOA	HCl	-1										X						
				1-liter	Amber	-1											X					
				1-500 ml	NaOH	-1												X				
				1-500 ml	ZN ACETATE NaOH	-1												X				
				1-500 ml	N/A	-1												X				
				1-500 ml	HNO_3	-1							X									
			triplank			-2																

Date	Time	Relinquished by	Received by	Date	Time
1/20/09	3:45 PM	Cindy Hurtado		1/21/09	1005
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Appendix B

Management of Investigation Derived Waste

Investigation-Derived Waste Management Plan

All investigation-derived waste (IDW) will be properly characterized and disposed of in accordance with all federal, State, and local rules and regulations for storage, labeling, handling, transport, and disposal of waste. The IDW may be characterized for disposal based on the known or suspected contaminants potentially present in the waste. It is assumed that there are no listed wastes present in environmental media at any of the planned investigation areas.

A dedicated decontamination area will be setup prior to any sample collection activities. The decontamination pad will be constructed so as to capture and contain all decontamination fluids (e.g., wash water and rinse water) and foreign materials washed off the sampling equipment. The fluids will be pumped directly into suitable storage containers (e.g., labeled 55-gallon drums), which will be located at satellite accumulation areas. The decontamination water will be characterized in accordance with 40 Code of Federal Regulations (CFR) Part 261and if the water is hazardous, then it will be disposed off-site as a hazardous waste. If the water is non-hazardous and can meet all applicable discharge criteria for the on-site permitted discharge, then it may be managed on-site. The solids captured in the decontamination pad will be shoveled into 55-gallon drums and stored at the designated satellite accumulation area pending proper waste characterization for off-site disposal.

Drill cuttings generated during installation of soil borings and monitoring wells will be placed directly into 55-gallon drums and staged in the satellite accumulation area pending results of the waste characterization sampling. The portion of soil cores, which are not retained for analytical testing, will be placed into the same 55-gallon drums used to store the associated drill cuttings.

The solids (e.g., drill cuttings and used soil cores) will be characterized by testing to determine if there are any hazardous characteristics in accordance with 40 Code of Federal Regulations (CFR) Part 261. This includes tests for ignitability, corrosivity, reactivity, and toxicity. If the materials are not characteristically hazardous, then further testing will be performed pursuant to the requirements of the facility to which the materials will be transported. Depending upon the results of analyses for individual investigation soil samples, additional analyses may include TPH and polynuclear aromatic hydrocarbons (PAHs).

Appendix C

Closure Cost Estimate

TABLE 1
Final Closure Cost Estimate
Western Refining - Bloomfied Refinery
North and South Aeration Lagoons
January 10, 2011

Item	Description	Quantity	Units	Unit Cost	Cost
	Professional Services				
1	Analyses for waste characterization & investigation/soil confirmation sampling (Table 2)	1	LS	$140,000	$140,000
2	Final closure report	1	LS	$20,000	$20,000
3	Project administration (engineering, bidding, construction administration, etc.)	1	LS	$18,700	$18,700
	Construction				
5	Mobilization	1	LS	$6,200	$6,200
6	Administrative costs (office facilities & staff, H&S plan, SWPPP, insurance, eqpmt decon, QA/QC, etc.)	1	LS	$12,500	$12,500
7	Dewater lagoons (1 ft water over 25,092 sq. ft.) Dispose water at authorized on-site discharge	188,000	Gal	$0.011	$2,100
8	Excavate and load sludge from aeration lagoons for disposal at local NMED permitted landfill. (1)	310	CY	$4	$1,200
9	Transfer sludge from aeration lagoons to local NMED permitted landfill. (2)	403	CY	$12.5	$5,000
10	Dispose of sludge at local landfill as Special Waste	403	CY	$16.5	$6,600
11	Remove and dispose of RCRA liners at local landfill (3)	1	LS	$5,340	$5,300
12	Remove and dispose of non-RCRA composite geotextile/geonet layer and 100 mil liner at local landfill; stockpile cemented amended sand (4) (5)	1	LS	$7,780	$7,800
13	Transport and dispose of cemented amended sand at local NMED permitted landfill as special waste (5)	605	CY	$29	$17,500
14	Excavate upper two feet of soils across all lagoons (6)	1,859	CY	$5	$9,300
15	Transport and dispose of excavated soils at local landfill as Special Waste	2,416	CY	$29	$70,100
16	Demobilization	1	LS	$2,500	$2,500
	TOTAL				**$324,800**

Notes

1 Assumed dried sludge in-place volume = 25,092 sq. ft. x 0.333ft = 310 cy (special waste). Estimated truck yards = 310 cy x 1.3 (fluff) = 403 cy. Estimated excavation cost = $4/cy

2 Estimated transportation cost to NMED permitted landfill in Aztec, NM = $12.50/cy ($125/hr @ 2hrs per trip & 20 yd. truck)

3 Assume three 20-yd trucks @ $16.50/cy; $750 transporation & 72 hours labor @ $50/hr = $5,340

4 Assume four 20-yd trucks @ $16.50/cy, $1,000 transporation, 72 hours labor @ $50/hr, & stockpile cemented amended sand ($4/cy x 465 cy) = $7,780

5 Estimated in-place volume of cemented amended sand = 25,092 sq. ft. x .5 ft. x 1.3 = 465 cy. Estimated truck yards = 465 cy x 1.3 (fluff) = 605 cy

6 Estimated in-place volume of excavated soils beneath lagoons = 25,092 sq.ft. x 2 ft. = 1,859 cy. Estimated truck yards = 2,203 cy x 1.3 (fluff) = 2,416 cy

LS - Lump Sum
CY - cubic yard
Gal - gallon

TABLE 2
Investigation & Confirmation Sampling Cost Estimate
Western Refining - Bloomfied Refinery
North and South Aeration Lagoons

Analysis	# of Samples	Cost/Sample	Costs
Waste Characterization Samples [1]			
VOCs 8260B	155	$90	$13,950
TCLP SVOCs 8270C	155	$220	$34,100
Haz. Characteristics	155	$140	$21,700
TCLP Skinner List Metals	155	$185	$525
Sampling Labor	40 hours	$75/hour	$3,000
		Subtotal	**$73,275**
Investigation/Confirmation Samples [2]			
VOCs 8260B	87	$90	$7,830
SVOCs 8270C	87	$220	$19,140
TPH 8015B (GRO, DRO, MRO)	87	$90	$7,830
Skinner List Metals	87	$185	$16,095
Sampling Labor	40 hours	$75/hour	$3,000
Subcontract drilling			$12,000
		Subtotal	**$65,895**
		Total	**$139,170**

1 - sludge samples (25,092 sq. ft. x .33 ft. = 310 yds / 20 yds/sample) = 16 samples; cement amended sand samples (25, 092 sq. ft. x .5 ft = 465 yds / 20 yds/sample) = 24 samples; excavated soil samples (25,092 sq. ft. x 2 ft. x 1.2 (fluff factor) / 27 (cu. ft/yd.) = 2,230 yds / 20 yds/sample) = 112 samples; potential leachate samples (RCRA liner, non-RCRA liner & French drain) = 3 samples; estimated total of 155 characterization samples

2 - assumes two samples (0-6" & 18-24") at each of 15 soil borings & 15 sidewall samples, one additional sample (lower interval) at each of the 15 soil borings, seven duplicate samples, and five equipment blanks

TPH - total petroleum hydrocarbons

GRO - Gasoline Range Organics
DRO - Diesel Range Organics
MRO - Motor Oil Range Organics
VOCs - volatile organic compounds
SVOCs - semi-volatile organic compounds