GW - 001

REPORTS

Investigation Report Group 2

May 2009

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INVESTIGATION REPORT

GROUP 2

(SWMU No. 2 Drum Storage Area North Bone Yard, SWMU No. 8 Inactive Landfill, SWMU No. 9 Landfill Pond, SWMU No. 11 Spray Irrigation Area, and SWMU No. 18 Warehouse Yard)

Bloomfield Refinery
Western Refining Southwest, Inc.
#50 Rd 4990
Bloomfield, New Mexico 87413

May 2009

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Environmental Manager
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Bloomfield Refinery

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Western Refining

BLOOMFIELD REFINERY

WNR LISTED NYSE

May 12, 2009

James Bearzi, Bureau Chief
New Mexico Environmental Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Re: Giant Refining Company, Bloomfield Refinery (currently known as Western Refining Southwest, Inc. – Bloomfield Refinery) Order No. HWB 07-34 (CO) Solid Waste Management Unit (SWMU) Group No. 2 Investigation Report

Dear Mr. Bearzi:

Western Refining Southwest, Inc. – Bloomfield Refinery submits the referenced Investigation Report pursuant to Section IV.B.7 of the July 2007 HWB Order. The Investigation Report summarizes the site environmental investigation activities completed for SWMUs designated as Group 2. These include SWMU No. 2 Drum Storage Area North Bone Yard, SWMU No. 8 Inactive Landfill, SWMU No. 9 Landfill Pond, SWMU No. 11 Spray Irrigation Area, and SWMU No. 18 Warehouse Yard. The Investigation Report was developed and formatted to meet the requirements of Section X.C of the July 2007 HWB Order.

If you have any questions or would like to discuss the Investigation Report, please contact me at (505) 632-4171.

Sincerely,

James R. Schmaltz
Environmental Manager
Western Refining Southwest, Inc.
Bloomfield Refinery

cc: Hope Monzeglio – NMED HWB
Carl Chavez – NMOCD (w/attachment)
Brad Jones - NMOCD
Dave Cobrain – NMED HWB
Laurie King – EPA Region 6 (w/attachment)
Todd Doyle – Bloomfield Refinery
Allen Hains – Western Refining El Paso

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Executive Summary

The Bloomfield Refinery, which is located in the Four Corners Area of New Mexico, has been in operation since the late 1950s. Past inspections by State and federal environmental inspectors have identified locations where releases to the environment may have occurred. These locations are generally referred to as Solid Waste Management Units (SWMUs) or Areas of Concern (AOCs).

Pursuant to the terms and conditions of an Order issued on July 27, 2007 by the New Mexico Environment Department (NMED) to San Juan Refining Company and Giant Industries Arizona, Inc. for the Bloomfield Refinery, this environmental site investigation was completed for the SWMUs designated as Group 2. This includes SWMU No. 2 Drum Storage Area North Bone Yard, SWMU No. 8 Inactive Landfill, SWMU No. 9 Landfill Pond, SWMU No. 11 Spray Irrigation Area, and SWMU No. 18 Warehouse Yard. The New Mexico Oil Conservation Division (NMOCD) previously approved closure of SWMU No. 11 Spray Irrigation Area and no further action was proposed for this SWMU in the Group 2 Investigation Work Plan (RPS JDC, 2008). The NMED concurred with this recommendation on June 11, 2008 and did not require additional assessment for this SWMU.

The Order requires that San Juan Refining Company and Giant Industries Arizona, Inc. determine and evaluate the presence, nature, and extent of historical releases of contaminants at the aforementioned SWMUs. A Class I permit modification was approved on June 10, 2008 to reflect the change in ownership of the refinery to Western Refining Southwest, Inc. The operator is now Western Refining Southwest, Inc. – Bloomfield Refinery.

The investigation activities included collection and analysis of soil and ground water samples for potential site-related constituents starting on September 23, 2008 and continuing through January 8, 2009. This included the completion of 27 soil borings with eight borings completed as temporary monitoring wells and five completed as permanent monitoring wells.

At the SWMU No. 2 nine soil borings were completed with two installed as permanent wells and the other seven completed as temporary monitoring wells. There was only one constituent (mercury) that was present in soil at concentrations, which exceed the soil screening level for protection of ground water, but the maximum detected value of 11 mg/kg is significantly below the NMED residential soil screening level of 100,000 mg/kg and the more conservative construction worker screening level of 927 mg/kg. Ground water samples were collected from 7 temporary wells and 2 permanent wells located at SWMU No. 2. There are no detections of organic constituents in ground water samples collected from any of the permanent or temporary wells. Mercury was not detected in ground water at SWMU No. 2. Low concentrations of other metals were detected but may be attributable to entrained sediment in total metals analyses.

Thirteen soil borings were completed at SWMU No. 8, with two installed as permanent monitoring wells. None of the soil analyses indicate concentrations of constituents exceeding the applicable screening levels. All of the organic analyses of ground water samples from the two permanent monitoring wells are non-detect with the single exception of chloromethane, which was detected at a concentration below the screening level on the second sampling event conducted in January 2009. A few metals were detected in ground water samples at low concentrations that exceed their applicable screening levels but these may be the result of sample collection techniques.

One soil boring, which was completed as a temporary monitoring well, was located at SWMU No. 9. The analyses conducted on soil samples collected from beneath the location of the former "landfill pond" were non-detect for most constituents. There were low concentrations of naturally occurring metals, all of which are well below their applicable screening levels. There are a few organic constituents (1-methylnaphthalene, 2-methylnaphthalene, and naphthalene) that were detected at generally low concentrations but above the lowest screening level, which is based on protection of ground water. The ground water sample collected from the temporary well installed in soil boring SWMU 9-1 was non-detect for all of the organic analyses, including 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene. Several of the total metals analyses contained concentrations exceeding the screening levels; however, the ground water sample collected from the temporary well was turbid and the entrained sediment caused artificially high concentrations to be reported for metals.

Four soil borings were completed within SWMU No. 18 with one completed as a permanent monitoring well. All of the soil analytical results for individual organic constituents (e.g., benzene, xylene, etc.) are below the applicable screening levels but two samples have concentrations of motor oil range organics above the screening level. All of the analytical results for the metals are below the applicable screening levels. A ground water sample collected from the permanent monitoring well installed in SWMU No. 18 confirmed historical analyses from this area indicating the presence of petroleum hydrocarbons in shallow ground water.

Section 1
Introduction

The Bloomfield Refinery is located immediately south of Bloomfield, New Mexico in San Juan County (Figure 1). The physical address is #50 Road 4990, Bloomfield, New Mexico 87413. The Bloomfield Refinery is located on approximately 263 acres. 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. U.S. Highway 44 is located approximately one-half mile west of the facility. The topography of the main portion of the site is generally flat with steep bluffs to the north where the San Juan River intersects Tertiary terrace deposits.

The Bloomfield Refinery is a crude oil refinery currently owned by Western Refining Southwest, Inc., which is a wholly owned subsidiary of Western Refining Company, and it is operated by Western Refining Southwest, Inc. – Bloomfield Refinery. The Bloomfield Refinery has an approximate refining capacity of 18,000 barrels per day. Various process units are operated at the facility, including crude distillation, reforming, fluidized catalytic cracking, sulfur recovery, merox treater, catalytic polymerization, and diesel hydrotreating. Current and past operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, naphtha, residual fuel, fuel oils, and LPG.

On July 27, 2007, the New Mexico Environment Department (NMED) issued an Order to San Juan Refining Company and Giant Industries Arizona, Inc. ("Western") requiring investigation and corrective action at the Bloomfield Refinery. This Investigation Report has been prepared for the Solid Waste Management Units (SWMUs) designated as Group 2 in the Order, with the exception of SWMU No. 11 Spray Irrigation Area. This includes:

- SWMU No. 2 Drum Storage Area North Bone Yard (North Bone Yard);
- SWMU No. 8 Inactive Landfill (Landfill);
- SWMU No. 9 Landfill Pond; and
- SWMU No. 18 Warehouse Yard.

The location of the individual SWMUs is shown on Figure 2 and all of the SWMUs except the Warehouse Yard are located at the far eastern end of the refinery property. The Warehouse Yard is located on the far western end of the property. Only two of the SWMUs (North Bone Yard and Warehouse Yard) are still actively used by Western. The Spray Irrigation Area was previously closed by the NMOCD in August 1996. The Landfill and associated pond area have been inactive since 1989.

The purpose of the site investigation is to determine and evaluate the presence, nature, and extent of releases of contaminants in accordance with 20.4.1.500 New Mexico Administrative Code (NMAC) incorporating 40 Code of Federal Regulations (CFR) Section 264.101. The investigation activities were conducted in accordance with Section IV of the Order and focused on soils and ground water as those are the environmental media in these areas that may potentially contain contaminants.

The samples of soil and ground water were analyzed for volatile and semi-volatile organic constituents, metals, and inorganic general chemistry constituents. The results of these analyses are compared to applicable State or federal cleanup and screening levels as specified in Section VII. of the Order.

Section 2
Background

This section presents background information for each of the SWMUs, including a review of historical waste management activities for each location to identity the following:

- type and characteristics of all waste and all contaminants handled in the subject SWMU;
- known and possible sources of contamination;
- history of releases; and
- known extent of contamination prior to the current investigation.

2.1 SWMU No. 2 Drum Storage Area North Bone Yard

The North Bone Yard (Drum Storage Area) is located to the north of the fresh water pond and south of the Hammond Ditch. It is enclosed by a fence with a single entry point at the southwest corner and is used to store various pieces of equipment, including some scrap metal that is routinely shipped off-site for recycling. In addition, some empty drums may be temporarily stored in this area (see photos in Appendix D). No waste materials are currently managed in this area.

During an inspection conducted by EPA in 1984, several drums containing solvents and oils used in the refining process were noted as being stored in this area. The drums were removed from the North Bone Yard in July 1987 and placed in a designated drum storage area in the warehouse yard located on the west side of the refinery. There has not been a report of any releases from the drums in the North Bone Yard; however, there is no record of historical soil samples from this area. Monitoring well MW-1 is located within the North Bone Yard and numerous ground water samples have been collected and analyzed. The analytical results are included in Tables 1 – 4. There was no indication of ground water impacts at SWMU No. 2 based on the historical ground water analyses at MW-1, which do not indicate concentrations of constituents above the screening levels.

2.2 SWMU No. 8 Landfill

The “landfill”, which has been identified as SWMU No. 8, is a located to the east of the tank farm. In 1982, sludge was removed from the North and South Aeration Lagoons (known earlier as the North and South Oily Water Ponds) and disposed of in an off-site hazardous disposal facility. The underlying potentially contaminated soils, which were removed from beneath the North and South Aeration Lagoons, were placed in the landfill. The potential contaminants placed in the landfill in 1982 were formed during the secondary treatment of the refinery wastewaters and as such the types of and characteristics of the waste are well known. This includes the more prevalent types of hydrocarbons (e.g., BTEX and semi-volatile organics) associated with crude oil and refined petroleum products and possibly inorganic contaminants (e.g., lead and chromium) that are utilized in or are byproducts of the refining process.

This area was investigated in 1985 to support preparation of a Closure Plan for the API Wastewater Ponds, Landfill and the Landfill Pond (related documentation in Appendix C). Eight soil samples were collected from across the area of the landfill and analyzed for benzene, toluene, ethylbenzene, and xylene (BTEX), phenolics, total chromium, and total lead. The results of these analyses are included in Table 5. As indicated, all analyses were non-detect with detection limits below the applicable action levels except for benzene, which was non-detect but had detection limits above the action level. There is no map of the actual sample locations but the area of the landfill was divided into quadrants and two samples from depths of 0-6" and 6-12" were collected from the center of each quadrant.

In 1989, approximately 2,000 yards of soil were excavated and stockpiled at one location within the landfill. This activity was taken to support closure of this area and in 1991 Bloomfield filed a petition for delisting of these stockpiled materials, which had earlier been classified as a listed hazardous waste (K051 – API separator sludge from the petroleum refining industry). The stockpiled soils were sampled to support the delisting petition and the results are summarized in Table 4 of the <u>Hazardous Waste Delisting Petition Petroleum Contaminated Soil</u> document prepared by ERM-Rocky Mountain, Inc. in April 1991. The Environmental Protection Agency (EPA) granted the delisting petition, with an effective date of September 3, 1996. On February 25, 1998, the NMOCD approved the on-site disposal of these soils as fill material near the naphtha loading rack with the placement of clean soil as a cap.

There is no record of any other waste materials being placed in the landfill with the possible exception of minor quantities of catalyst fines and sulfur. The area is currently inactive as shown in the pictures in Appendix D. There is a single wastewater pipeline at a depth of approximately six feet below ground surface that runs across the landfill, as depicted in Figure 6.

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2.3 SWMU No. 9 Landfill Pond

The Landfill Pond is located to the northeast of SWMU No. 8 Landfill and immediately east of SWMU No. 10 Fire Training Area (Figure 2). The "pond" was created when a shallow arroyo was blocked by the construction of the Hammond Irrigation Ditch. This area was designated as a SWMU due to the fact that it is topographically lower than the landfill and EPA was concerned that stormwater flowing from the landfill could have transported contaminants to this location. Wastes have not historically been and are not today managed in this area. The potential contaminants that could have impacted this area are the same contaminants that were placed in the landfill (SWMU No. 8).

Seven soil samples were collected from the Landfill Pond in 1985. All of the samples were analyzed for BTEX, phenolics, total chromium, and total lead, and one of the samples was analyzed for the EPA Skinner List constituents. The results of these analyses are include on pages 7 – 16 of the Report of Analytical Results for Engineering Science Bloomfield Refining Company, which was prepared by Rocky Mountain Analytical Laboratory on May 28, 1986 (Appendix C). As indicated, all analyses were non-detect with the exception of chromium and lead, which had low concentrations below the action levels.

In 1986, a closure plan for the API Wastewater Ponds, Landfill, and Landfill Pond was completed. The closure plan documented that the existing conditions at the landfill pond were protective of human health and the environment and proposed no additional actions. The proposed closure plan was submitted for public comment from December 10, 1993 through January 9, 1994. One comment was received, which recommended that measures be taken to prevent water from ponding in the site for extended periods of time. NMED approved closure of the landfill pond on January 25, 1994 and noted that no changes were required to the proposed closure plan. The January 25, 1994 letter, a copy of which is included in Appendix C, stated the following, "No additional closure activities are required to demonstrate clean closure of the site." In correspondence dated June 11, 2008, NMED noted that their administrative record does not contain a report that describes implementation of a closure plan and that NMED did not have corrective action authority delegated from EPA until 1996, thus any prior approvals of no further action should have been approved and signed by EPA. Additional characterization was conducted for this area.

2.4 SWMU No. 11 Spray Irrigation Area

The Spray Irrigation Area is located across the road south of the landfill and east of Tank 45 (Figure 2). This area covered approximately 10 acres and was irrigated through stationary sprinkler heads with refinery wastewater pumped from the north evaporation pond. A dike was located around the area to prevent runoff. The irrigation activities were conducted from 1981 through 1994, primarily during the summer months (March to October). The irrigation activities stopped in 1995 when the Class 1 injection well was put into service. No other waste management activities were conducted in this location. The potential contaminants that may have impacted this area are the same petroleum refinery wastes discussed above for SWMUs No. 8 and 9.

A closure plan entitled, Closure Plan for the Unlined Evaporation Lagoons and the Spray Evaporation Area, was completed on August 13, 1996. A copy of the closure plan was included in Appendix C of the SWMU Group No. 2 Investigation Work Plan. The results of analytical testing on soil samples collected from the Spray Irrigation Area are summarized in a table in Attachment C to the closure plan. Giant proposed to use the Spray Irrigation Area as the site for Giant's new Pipeline and Transportation truck shop and office building. The activities associated with the construction included grading the area to eliminate the dikes. Otherwise, no additional activities were proposed. A monitoring well (MW-5) is located within the Spray Irrigation Area that is screened within the shallow aquifer but this well has been dry for at least the last six years. MW-3 is located immediately down-gradient of SWMU No. 11 and chemical analyses of ground water samples collected from MW-3 are summarized in Tables 1 – 3. These data do not indicate any impacts from the historical irrigation activities. Manganese was detected at low concentrations that are above the standard but it is likely these concentrations are representative of background concentrations. Similar manganese concentrations were detected in MW-8, which is also in an up-gradient location relative to site operations.

The New Mexico Oil Conservation Division (NMOCD) approved the Closure Plan for the Unlined Evaporation Lagoons and the Spray Evaporation Area on August 28, 1996 with the requirement to continue monitoring ground water at MW-1 and MW-5. Based on the limited potential for environmental impacts and the results of previous analyses of soils and ground water in this area, Western proposed no further action for SWMU No. 11 in the SWMU No. 2 Investigation Work Plan. The NMED stated on June 11, 2008, "At this time, NMED does not require further investigation of this area." The NMED did direct Western to continue monitoring ground water at MW-3 but no other investigation activities were proposed for this SWMU.

2.5 SWMU No. 18 Warehouse Yard

The Warehouse Yard lies at the far western end of the refinery, west of the main office and warehouse buildings. It is enclosed on the east, south and west sides by a fence and is partially open to the refinery complex on the north side. During an inspection conducted in 1987, drums containing solvents and oils used in the refining process were noted as being stored within this area. Pictures of the former drum storage location are included in Appendix D. In 1988, the refinery changed its methods of storing bulk chemical products in drums to utilizing portafeed tanks and stainless-steel totes located within the process area. In addition, the drum storage area (drum storage rack) in the Warehouse Yard was upgraded by constructing a metal frame storage area with a concrete floor and curbing with a collection sump. After the upgrade, only drums containing primarily lube oils were stored in the original drum storage area. An above ground storage tank that contains gasoline is located within the yard and it has secondary containment. The warehouse yard has historically been used and is still primarily used today for shipping and receiving.

No previous investigations of soils have been conducted for the Warehouse Yard but there is one recovery well (RW-1) from which ground water samples are collected. Separate phase hydrocarbon (SPH) has historically been present in RW-1; however, this well is located down-gradient of a larger area of ground water contamination that extends from the refinery tank farm to the processing units. There is a liquid petroleum gas (LPG) pipeline and water line that runs along the western end of the warehouse yard but they are not close to the former drum storage location. There is a septic drain field in the area where the drums were originally stored.

Section 3
Scope of Activities

3.1 Soil Boring and Monitoring Well Installation

Pursuant to Section IV of the Order, an investigation of soils and ground water was conducted to determine and evaluate the presence, nature, extent, fate, and transport of contaminants. To accomplish this objective, soil borings and monitoring wells were installed at the North Bone yard (SWMUs No. 2), the Landfill (SWMU No. 8), the Landfill Pond (SWMU No. 9), and the Warehouse Yard (SWMU No. 18).

The soil borings were drilled using hollow-stem auguring (HSA) method or air rotary-ODEX method. All soil borings were drilled to a minimum depth of 10 feet with at least one boring at each of the individual potential source areas drilled to the top of saturation, with the exception of SWMU No. 2 where all soil borings were drilled to the water table. Soil samples were collected continuously and logged by a qualified geologist in accordance with USCS nomenclature. Soil samples were collected using split-spoon samplers.

3.2 Background Information Research

Documents containing the results of previous investigations and subsequent routine ground water monitoring data from monitoring wells were reviewed to facilitate development of the Investigation Work Plan. The previously collected data provides very good information on the overall subsurface conditions, including hydrogeology and contaminant distribution within ground water. The data collected under this scope of services supplements the historical ground water information and provide SWMU-specific information regarding contaminant occurrence and distribution within soils.

3.3 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 was contained and characterized using methods based on the boring location, boring depth, drilling method, and type of contaminants suspected or encountered. All purged ground water and decontamination water was disposed in the refinery wastewater treatment system upstream of the API Separator.

3.4 Surveys

The horizontal coordinates and elevation of each surface sampling location; the surface coordinates and elevation of each boring, the top of each monitoring well casing, and the ground surface at each monitoring well location; and the locations of all other pertinent structures was determined by a registered New Mexico professional land surveyor in accordance with the State Plane Coordinate System (NMSA 1978 47-1-49-56 (Repl. Pamp. 1993)). The surveys were conducted in accordance with Sections 500.1 through 500.12 of the Regulations and Rules of the Board of Registration for Professional Engineers and Surveyors Minimum Standards for Surveying in New Mexico. Horizontal positions were measured to the nearest 0.1-ft, and vertical elevations were measured to the nearest 0.01-ft.

Section 4
Field Investigation Results

This section provides a summary of the procedures used and the results of all field investigation activities conducted at the site including, the dates that investigation activities were conducted, the type and purpose of field investigation activities performed, field screening measurements, logging and sampling results, monitoring well construction details and conditions observed. Field observations or conditions that altered the planned work or may have influenced the results of sampling, testing and logging are reported in this section.

4.1 Surface Conditions

Regionally, the surface topography slopes toward the floodplain of the San Juan River, which runs along the northern boundary of the refinery complex. To the south of the refinery, the drainage is to the northwest. North of the refinery, surface water flows in a southeasterly direction toward the San Juan River. The active portion of the refinery property, where the process units and storage tanks are located, is generally of low relief with an overall northwest gradient of approximately 0.02 ft/ft. The refinery sits on an alluvial floodplain terrace deposit and there is a steep bluff (approx. drop of 90 feet) at the northern boundary of the refinery where the San Juan River intersects the floodplain terrace, which marks the southern boundary of the floodplain.

There are two locally significant arroyos, one immediately east and another immediately west of the refinery, which collect most of the surface water flows in the area, thus significantly reducing surface water flows across the refinery. A minor drainage feature is located on the eastern portion of the refinery, where the Landfill Pond (SWMU No. 9) is located and there are several steep arroyos along the northern refinery boundary that primarily capture only local surface water flows and minor ground water discharges.

The refinery complex is bisected by County Rd #4990 (Sullivan Road), which runs east-west. The process units, storage tanks (crude oil and liquid products), and wastewater treatment systems are located north of the county road. The crude oil and product loading racks, LPG storage tanks and loading racks, maintenance buildings/90-day storage area, pipeline offices, transportation truck shop, and the Class I injection well are located south of the county road. There is very little vegetation throughout these areas with most surfaces composed of concrete, asphalt, or gravel. The area between the refinery and the San Juan River does have limited vegetation on slopes that are not too steep to support vegetation.

4.2 Exploratory Drilling or Excavation Investigations

The soil borings were drilled using hollow-stem auguring (HSA) method or air rotary-ODEX method. The drilling equipment was decontaminated between each borehole using a high pressure potable water wash. All soil borings were drilled to a minimum depth of 10 feet with at least one boring at each of the individual potential source areas drilled to the top of saturation, with the exception of SWMU No. 2 where all soil borings were drilled to the water table. If there was any indication of contamination based on field screening results at 10 feet or evidence of waste materials or other signs of contamination, then the boring was drilled deeper until no impacts (e.g., presence of waste materials in landfill areas) were observed or to the top of saturation, whichever was achieved first. If contamination was detected at the water table, then the boring was drilled five feet below the water table or to refusal, whichever occurred first.

Soil samples were collected continuously and logged by a qualified geologist. The soil sample descriptions were made in accordance with USCS nomenclature and recorded on the individual field boring logs. As seen on the boring logs the data recorded included the lithologic interval, symbol, percent recovery and a sample description of the cuttings and core samples.

Soil samples were collected using split-spoon samplers. The split-spoon samplers were decontaminated between each use using a potable water rinse, an Alconox wash and then a distilled water rinse. In the event that more than one SWMU was investigated during the day a new batch of wash water and rinse water was prepared prior to decontamination. The decontamination water was collected in buckets and placed in open top 55-gallon drums, which were sealed at the end of each work day. Each drum was labeled. Soil cuttings were also placed in open top 55-gallon drums and were sealed when not in use.

Soil borings completed as permanent monitoring wells were drilled to the top of bedrock (Nacimiento Formation). The completion depths range from 20 to 41.5 feet. Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 10 to 15 feet to ensure that the entire saturated zone is open to the well. Rigid PVC with threads was utilized for the well casing and no glues/solvents were utilized. A 10/20 sand filter pack was installed to a minimum of two feet over the top of the well screen. A six-inch sand bed was also installed at the base of the monitor well. Pursuant to Section IX.C. of the Order, a minimum of two feet of bentonite seal was placed over the filter pack and hydrated. An annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours before surface pad and protective casing were installed.

The surface completion for each ground water monitoring well consisted of a protective aluminum enclosure with cap that was secured in a concrete pad measuring 4-feet by 4-feet wide by 6-inches thick. The concrete pad was wire reinforced and included a one-inch diameter bolt placed on the north side of the pad to serve as a point for surveying pad elevation. The aluminum protective casing extended 4 feet above the top surface of the concrete pad.

Four-inch diameter steel bollards were installed six-inches from each corner of the concrete pad. The bollards were installed two feet below grade and extended three feet above grade. The bollards were installed vertically level and extend the same height. The holes for the bollards were dug by hand with the diameter of the borehole measured a minimum of 6-inches. Each bollard was cemented into the ground with the cement extending from the bottom of the hole to the surface. The bollard was filled with cement. Each bollard was pretreated to remove rust, primed, and painted with two coats of safety-yellow paint.

4.3 Subsurface Conditions

Numerous soil borings and monitoring wells have been completed across the refinery property during previous site investigations and installation of the slurry wall, which runs along the northern and western refinery boundary. Twenty seven soil borings, five of which were completed as permanent monitoring wells, were completed under this scope of work for SWMU Group No. 2. Based on the available site-specific and regional subsurface information, the site is underlain by the Quaternary Jackson Lake terrace deposits, which unconformably overlie the Tertiary Nacimiento Formation. The Jackson Lake deposits consist of fine grained sand, silt and clay that grades to coarse sand, gravel and cobble size material closer to the contact with the Nacimiento Formation. The Jackson Lake Formation is over 40 feet near thick near the southeast portion of the site and generally thins to the northwest toward the San Juan River. The Nacimiento Formation is primarily composed of fine grained materials (e.g., carbonaceous mudstone/claystone with interbedded sandstones) with a reported local thickness of approximately 570 feet (Groundwater Technology, 1994).

Figures 3 and 4 present cross-sections of the shallow subsurface based on borings logs from on-site monitoring well completions.

One underground pipeline is present in the area included in the SWMU Group No. 2 investigation. This wastewater line runs beneath SWMU No. 8 (Inactive Landfill) as shown on Figure 6 and does not appear to have had any impacted on contaminant migration.

4.4 Monitoring Well Construction, Boring, or Excavation Abandonment

This section describes the methods and details of monitoring well construction and abandonment of exploratory borings. The description includes the dates of well construction and boring abandonment.

SWMU No. 2 Drum Storage Area North Bone Yard

As previously discussed in Section 3.1 all nine soil borings at SWMU No. 2 were initially drilled to a depth of 10 feet. There no were indications of contamination based on the field screening results at 10 feet nor was there any evidence of waste materials or other signs of contamination. Seven of the nine borings were then drilled to the water table. Temporary wells were installed in the seven borings and ground water samples and water quality data was collected.

Temporary wells were installed at locations SWMU 2-1, SWMU 2-2, and SWMU 2-3 on September 29, 2008 with the well screen extending from 15' to 20', 13' to 18', and 13 to 18' bgl, respectively. On September 30, 2008 temporary wells SWMU 2-4, SWMU 2-6, and SWMU 2-7 were completed with well screens set at 14' to 19', 13' to 18', and 13 to 18' bgl, respectively. A temporary well was installed at SWMU 2-8 on October 1, 2008, with the screen set from 13' to 18' bgl.

On October 1, 2008 the drilling rig was set up on location SWMU 2-9/MW-51 and drilling and sampling was continued to a depth of 20 feet bgl. There were no indications of contamination based on the field screening results nor were there any visual or olfactory evidence of contamination in 10 to 20 foot interval. Since saturation was encountered at 14 feet bgl a soil sample was collected from the interval 13.5 to 14 feet bgl. As seen on the well construction log the Nacimiento Formation was encountered at 18 feet bgl. A recommendation was made to the NMED and approved on October 1, 2008 to modify the screened interval to 8 to 18 feet bgl, using a screen length of 10 feet instead of 15 feet as provided for in the Investigation Work Plan. The shorter screen length allowed for adequate coverage of the vadose zone while reducing the potential for surface infiltration into the wellbore, which could have been more likely if the screen extended to three feet bgl.

Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 10 feet (8 to 18 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. No glues or solvents were utilized. A six-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was installed to two feet over the top of the well screen. As the sand was installed in the wellbore the hollow stem augers were removed. Pursuant to Section IX.C. of the Order, a minimum of two feet of bentonite seal was placed over the filter pack and hydrated. An annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours before surface pad and protective casing were installed. Soil cuttings were placed in open-top 55 gallon drums and were sealed when not in use.

On October 15, 2008 the drilling rig was set up on location SWMU 2-5/MW-50 and drilling and sampling was continued to a depth of 20 feet bgl using the air rotary/ODEX drilling method. There were no indications of contamination based on the field screening results nor was there any visual or olfactory evidence of contamination in 10 to 20 foot interval. Since saturation was encountered at 14 feet bgl a soil sample was collected from the interval 13 to 14 feet bgl. As seen on the well construction log the Nacimiento Formation was encountered at 18 feet below ground surface. A recommendation was made to the NMED and approved on October 1, 2008 to modify the screen to 8 to 18 feet bgl.

Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 10 feet (8 to 18 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. No glues or solvents were utilized. A six-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was installed to 3.25 feet over the top of the well screen. As the sand was installed in the wellbore the hollow stem augers were removed. Pursuant to Section IX.C. of the Order, a minimum of two feet of bentonite seal was placed over the filter pack and hydrated. An annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours before surface pad and protective casing were installed. Soil cuttings were placed in open top 55-gallon drums and were sealed when not in use.

Copies of the well construction logs are located in Appendix B.

SWMU No. 8 Landfill

All soil borings were advanced to a minimum depth of 10 feet in accordance with the Site Investigation Work Plan (Figure 6). There no were indications of contamination based on the field screening results at 10 feet nor were there any evidence of waste materials or other signs of contamination. Ten of the 12 borings were terminated at the preplanned depth of 10 feet.

As directed by NMED, two soil borings (SWMU 8-6A and SWMU 8-12) were drilled to the water table and were subsequently converted to monitor wells (MW-52 and MW-53). Upon completing the sampling and logging of the top 10 feet in the 12 soil borings the drilling rig was mobilized to location SWMU 8-6 to continue sampling and logging beyond 10 feet in depth. A water line was nicked by the drilling augers. The drilling, sampling and logging was stopped for the day. The water line was isolated and repaired, and the monitor well location (SWMU 8-6A) was moved approximately 40 feet due west.

On September 24, 2008 the CME 75 drilling rig was mobilized to location SWMU 8-12. Using HSA drilling method the boring was sampled, screened and logged as described in Section 4.2. At a depth of 39 feet the drilling became difficult. The augers were tripped out of the borehole and were found to be missing cutting teeth. In addition, the blades on the flight augers were severely damaged due to the large cobbles in the formation. A new auger was installed and the drilling commenced. The borehole was drilled to a depth of 41.5 feet prior to ending the day. As seen on the well construction log the Nacimiento Formation was encountered at 38.5 feet bgl. A soil sample was collected from the depth of 37 to 38.5 feet. There were no indications of contamination based on the field screening results nor was there any visual or olfactory evidence of contamination in the interval from 10 to 41.5 feet below ground surface.

The driller recommended that the drilling method should be changed to air rotary-ODEX method. When drilling with the air rotary/ODEX equipment a bit is advanced below casing. The bit consists of “reamer wings” that expand outward during drilling to drill a hole that is larger than the casing outer diameter. When the desired drilling depth is acquired, the bit is rotated backwards and the wings retract allowing the reamer to swing into a retracting position. The drill bit can be retracted through the remaining casing leaving it intact within the borehole. Using this method allows for the collection soil samples as the casing is advanced.

On September 25, 2008 Western Refining requested from NMED a change in the planned location for SWMU 8-6 and also a change in drilling methodology. The changes were granted on September 25, 2008 and a copy of the related correspondence is included in Appendix E.

Since the ODEX drilling equipment would have to be transported to the site the decision was made to continue drilling and sampling at other SWMUs using the HSA method until the equipment arrived.

On September 28, 2008 the borehole for SWMU 8-12 was re-entered. During the drilling process the threads from the blow tube sheared off in the ODEX sub, twice. The parts were required to be transported off site to a machine shop to be repaired. Since the ODEX drilling equipment was inoperable the decision was made to continue drilling and sampling at other SWMUs using the HSA method until the equipment was repaired.

On October 13, 2008 the borehole for SWMU 8-12/MW-53 was re-entered. The borehole was drilled to a depth of 41 feet. Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 15 feet (25 to 40 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. No glues or solvents were utilized. A six-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was installed to two feet over the top of the well screen. As the sand was installed in the wellbore the outer casing of the ODEX drilling system was removed. Pursuant to Section IX.C. of the Order, a minimum of two feet of bentonite seal was placed over the filter pack and hydrated. An annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours before surface pad and protective casing were installed. Soil cuttings were placed in open top 55-gallon drums and were sealed when not in use.

On October 13, 2008 the borehole for SWMU 8-6A/MW-52 was re-entered. The original location, SWMU 8-6, was abandoned after a water line was struck. With NMED approval the new location was moved 42 feet to the west. Using HSA drilling methods and split spoon samplers the borehole was drilled to a depth of 10 feet prior to shutting down for the end of the day.

On October 14, 2008 the drilling and sampling continued at SWMU 8-6A/MW-52 using HSA drilling methods and split spoon sampling. Saturation was encountered at 34 feet bgl. A soil sample was collected from the interval 33 to 34 feet bgl. The augers were then tripped out of the borehole and the air rotary/ODEX drilling system was then tripped back into the borehole. Drilling and sampling continued with the air/rotary ODEX drilling system. The borehole was drilled to a depth of 39 feet bgl and sampled to a depth of 41 feet bgl. There were no indications of contamination based on the field screening results nor were there any visual or olfactory evidence of contamination in the interval from 0 to 41 feet bgl.

Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 15 feet (23 to 38 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. No glues or solvents were utilized. A six-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was installed approximately three feet over the top of the well screen. As the sand was installed in the wellbore the outer casing of the ODEX drilling system was removed. Pursuant to Section IX.C. of the Order, a minimum of two feet of bentonite seal was placed over the filter pack and hydrated. An annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours before surface pad and protective casing were installed. Soil cuttings were placed in open top 55-gallon drums and were sealed when not in use.

Copies of the well construction logs are located in Appendix B.

<u>SWMU No. 9 landfill pond</u>

On September 28, 2008 the drilling rig was mobilized to the SWMU No. 9 area (Figure 6). Using the HSA drilling method and split spoon samplers the borehole (SWMU 9-1) was advanced to a depth of 17 feet bgl, two feet below the top of Nacimiento Formation. The boring was converted to a temporary monitoring well with the screen set at 12 to 17 feet bgl. A ground water sample was collected and the boring was plugged with grout.

A copy of the field boring log is located in Appendix B.

<u>SWMU No. 18 Warehouse Yard</u>

On September 26, 2008, four soil borings were advanced to a depth of 10 feet (Figure 9). Since there no were indications of contamination based on the field screening results at 10 feet bgl, three of the four borings were terminated at the preplanned depth of 10 feet. The borings were plugged using grout pumped under pressure through a tremie pipe with a concrete plug placed at the surface.

On October 15, 2008 the drilling and sampling continued at SWMU 18-2 using HSA drilling methods and split spoon sampling. Soil boring SWMU 18-2 was drilled to the water table and was subsequently converted to a monitor well (MW-54). Saturation was encountered at 30 feet bgl. A soil sample was collected from the interval immediately above saturation, 28 to 29 feet bgl. An additional soil sample was collected from the 18 to 20 foot interval due to the appearance of black discoloration and odor in the soil. Elevated PID readings were also observed from 18 to 30 feet bgl. A significant reading of 400 ppm was observed in the interval from 28 to 30 feet bgl, which corresponded to the occurrence of saturation. A component on the rig failed and the drilling ceased for the day.

The rig was repaired and the hole was re-entered on October 16, 2008. The sampling and drilling continued to a depth of 38 feet bgl. The Nacimiento Formation was encountered at 36 feet bgl. While the hollow stem augers were being tripped out of the borehole the lead auger became unattached and was lost in the borehole. Efforts to retrieve the lead auger were futile so the borehole was abandoned. A new location was chosen within five feet of the original boring and drilling resumed using the air rotary/ODEX drilling system. During the drilling of the borehole the bottom collar on the casing became dislodged and allowed large cobbles to become wedged between the drill stem and the casing. The cobbles were removed and drilling and sampling ceased for the day.

On October 17, 2008 drilling continued and total depth was reached at 38 feet bgl. Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 15 feet (22 to 37 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. No glues or solvents were utilized. A six-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was partially installed due to a shortage of filter pack sand. The casing was left in the well bore and the remaining filter pack sand was installed on October 20, 2008 with approximately 4.25 feet of sand installed over the top of the well screen. As the sand was installed in the wellbore the outer casing of the ODEX drilling system was removed. Pursuant to Section IX.C. of the Order, a minimum of two feet of bentonite seal was placed over the filter pack and hydrated. An annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours before surface pad and protective casing were installed. Soil cuttings were placed in open top 55-gallon drums and were sealed when not in use.

Copies of the well construction logs are located in Appendix B.

4.5 Ground Water Conditions

The uppermost aquifer is under water table conditions and occurs within the sand and gravel deposits of the Jackson Lake Formation. The Nacimiento Formation functions as an aquitard at the site and prevents site related contaminants from migrating to deeper aquifers. The potentiometric surface as measured in August 2008 is presented in Figure 10 and shows the ground water flowing to the northwest, toward the San Juan River. The potentiometric surface at the site is consistent with the regional gradient in that movement is toward to the San Juan River, which is a location of regional ground water discharge.

The depth to water in the area of the Group No. 2 SWMUs varies from approximately 35 feet near SWMU No. 8 (Inactive Landfill) to only 15 feet at SWMU No. 2 (Drum Storage Area North Bone Yard). No separate phase hydrocarbon (SPH) was measured in any of the new wells installed during this investigation and based on historical data only SWMU No. 18 (Warehouse yard) is located in an area that had SPH present in the past.

The saturated thickness in the water table aquifer varies from zero feet in the southern portion of the site to a maximum of approximately eight feet along the northern portion of the refinery (Figure 11). The areas with the greatest saturated thickness are found near and along the Hammond Ditch and on-site surface impoundments (i.e., the current and former Raw Water Ponds). The predominant source of recharge to the shallow aquifer beneath the refinery is recharge from man-made features (e.g., the Hammond Ditch and on-site surface impoundments).

4.6 Surface Water Conditions

The only local surface water body, excluding on-site surface impounds and the Hammond Irrigation Ditch, is the San Juan River, which flows along the northern most property boundary. There were no accumulations of surface water observed during the site investigation or conditions likely to result in the future accumulation of surface water. Regionally, the surface topography slopes toward the floodplain of the San Juan River, and across most of the refinery and to the south of the refinery, the drainage is to the northwest. The active portion of the refinery property, where the process units and storage tanks are located, is generally of low relief with an overall northwest gradient of approximately 0.02 ft/ft. There is a steep bluff (approx. drop of 90 feet) at the northern boundary of the refinery where the San Juan River intersects the floodplain terrace, which marks the southern boundary of the floodplain.

There are two locally significant arroyos, one immediately east and another immediately west of the refinery, which collect most of the surface water flows in the area, thus significantly reducing surface water flows across the refinery. A minor drainage feature is located on the eastern portion of the refinery, where the Landfill Pond (SWMU No. 9) is located and there are several steep arroyos along the northern refinery boundary that primarily capture only local surface water flows.

The average annual rainfall is only approximately 7.5 inches, thus the threat of surface water transport of contaminants as suspended load or dissolved phase is low. Further, the refinery implements a Stormwater Pollution Prevention Plan to ensure that surface waters of the State are not impacted by refinery operations.

Section 5
Regulatory Criteria

The applicable screening and cleanup levels are specified in Section VII of the Order issued by NMED on July 2, 2007. The soil cleanup levels are based on a target excess cancer risk of 10^{-5} for carcinogenic contaminants and a target hazard index of 1.0 for noncarcinogenic contaminants. The Order specifies a hierarchy of screening levels, with the screening levels based on NMED guidance taking precedence over EPA's Region VI Human Health Medium Specific Screening Levels. NMED guidance used to establish cleanup levels includes the *Technical Background Document for Development of Soil Screening Levels* and *Total Petroleum Hydrocarbon (TPH) Screening Guidelines*. For non-residential properties (e.g., the Bloomfield Refinery), the soil screening levels must be protective of commercial/industrial workers throughout the upper two feet of surface soils and construction workers throughout the upper ten feet. In addition, soils must be protective of the underlying ground water. Table 6 provides a list of the available NMED and EPA soil screening levels for commercial/industrial properties. The lowest applicable screening level is bolded. For some constituents, such as benzo(b)fluoranthene, there is more than one "lowest" applicable screening level. In this example, the screening level for industrial workers is the lowest NMED screening level but since it only applies to the upper two feet, the soil screening level for protection of ground water is also applicable and it applies to all soils below two feet. These soil screening levels are also listed in Tables 8 - 10 with their applicable depths and in addition, the residential soil screening level for direct contact is listed. Some of the constituents reported by the laboratory did not have screening levels but were all non-detect except 4-isopropyltoluene. This constituent is not classified as a carcinogen.

The ground water cleanup levels are based on New Mexico WQCC standards (20.6.2.7 WW NMAC, 20.6.2.3103, and 20.6.2.4103) unless there is a federal maximum contaminant level (MCL), in which case the lower of the two values is selected as the cleanup level. If neither a WCQQ standard nor an MCL is available, then the cleanup level is based on an EPA Region VI Human Health Medium Specific Screening Level. Table 7 presents the ground water cleanup levels, with the applicable cleanup level highlighted. In a few instances, there were no screening levels specified in any of the above sources but a "tap water" concentration, which was included in the NMED *Technical Background Document for Development of Soil Screening Levels,* was selected as the screening level.

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Section 6
Site Contamination

This section provides a description of sampling intervals and methods for detection of surface and subsurface contamination in soils and ground water.

6.1 Soil and Sediment Sampling

The soil borings were drilled using hollow-stem auguring (HSA) method or air rotary-ODEX method. The drilling equipment was decontaminated between each borehole using a high pressure potable water wash. The decontamination water was collected on a mobile decon trailer and was subsequently placed in open top 55-gallon drums, which were sealed at the end of each work day.

Soil samples were collected using split-spoon samplers. The split-spoon samplers were decontaminated between each use using a potable water rinse, an Alconox wash and then a distilled water rinse. In the event that more than one SWMU was investigated during the day a new batch of wash water and rinse would be created prior to decontamination. The decontamination water was collected in buckets and placed in open top 55-gallon drums, which were sealed at the end of each work day. Each drum was labeled. Soil cuttings were also placed in open top 55-gallon drums and were sealed when not in use.

Soil samples were collected continuously and logged by a qualified geologist. The soil sample descriptions were made in accordance with USCS nomenclature and recorded on the individual field boring logs. As seen on the boring logs the data recorded included the lithologic interval, symbol, percent recovery, and a sample description of the cuttings and core samples.

Known site features and/or site survey grid markers were used as references to locate each boring prior to surveying the location. The boring locations were measured to the nearest foot, and locations were placed on a scaled map. In addition, a hand held GPS receiver was used to record the coordinates of each soil boring. These coordinates were recorded on the boring logs. The soil boring locations were subsequently surveyed by a registered surveyor.

Samples obtained from the borings were screened in the field on 2 foot intervals for evidence of contaminants. Field screening results were recorded on the soil boring logs. Field screening results were 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 included examining the soil samples for evidence of staining caused by petroleum-related compounds or other substances that may have caused staining of natural soils such as elemental sulfur or cyanide compounds. Headspace vapor screening was conducted and involved placing a soil sample in a plastic sealable bag allowing space for ambient air. The bag was sealed, labeled and then shaken gently to expose the soil to the air trapped in the container. The sealed bag was allowed to rest for a minimum of 5 minutes while the vapors equilibrated. Vapors present within the sample bag's headspace were then measured by inserting the probe of a MiniRae 2000 in a small opening in the bag. The maximum value and the ambient air temperature were recorded on the field boring log for each sample. The screening results are presented in Table 11. The MiniRae 2000 was calibrated to 100 ppm isoButylene each day to the manufacturer's standard for instrument operation. Field screening results and any conditions that were considered to be capable of influencing the results of the field screening were recorded on the field logs.

6.1.1 SWMU No. 2 Drum Storage Area North Bone Yard

At SWMU No. 2 the following soil boring plan was completed during the field activities;

- Soil borings SWMU 2-1 and SWMU 2-2 were installed within an area used for storage of empty drums;
- Soil borings SWMU 2-3 through SWMU 2-5 were installed beneath the area where drums were formerly stored. Soil boring SWMU 2-5 was subsequently completed as monitor well MW-50;
- Soil borings SWMU 2-6 through SWMU 2-8 were installed at the area used for scrap metal storage; and
- At the direction of NMED, an additional soil boring was installed at the far western end of the North Bone Yard. This soil boring, SWMU 2-9, was completed as permanent monitor well, MW-51.

All soil borings at SWMU No. 2 were drilled to the water table (Figure 5). There were no visible indications of releases at the surface during the field activities. The soil borings were installed in the locations indicated in the work plan.

On September 25, 2008 discrete soil samples were collected from all nine soil boring locations at SWMU No. 2 for laboratory analyses from 0 to 0.5 feet below ground level (bgl) and 1.5 to 2 feet bgl. The samples were collected using HSA drilling methods and split spoon samplers. All borings were advanced to a depth of 10 feet bgl. There were no indications of contamination based on the field screening results nor were there any visual or olfactory evidence of contamination in 0 to 10 foot interval in any of the nine soil borings. Soil cuttings were placed in open top 55-gallon drums and were sealed when not in use.

On September 29, 2008 the drilling rig was mobilized back to the SWMU No. 2 area. The rig was set up on location SWMU 2-1 and continued drilling and sampling to a depth of 20 feet bgl. There were no indications of contamination based on the field screening results nor were there any visual or olfactory evidence of contamination in 10 to 20 foot interval. Since saturation was encountered at 15.5 feet bgl a soil sample was collected from the interval 15 to 15.5 feet bgl. Soil cuttings were placed in open top 55-gallon drums and labeled. Development water and decontamination water were placed in open top 55-gallon drums and labeled.

The drilling rig was moved to location SWMU 2-2 and continued drilling and sampling to a depth of 18 feet bgl. There were no indications of contamination based on the field screening results nor were there any visual or olfactory evidence of contamination in 10 to 18 foot interval. Since saturation was encountered at 15 feet bgl a soil sample was collected from the interval 14.5 to 15 feet bgl. Soil cuttings were placed in open top 55-gallon drums and labeled. Development water and decontamination water were placed in open top 55-gallon drums and labeled.

The drilling rig was moved to location SWMU 2-3 and continued drilling and sampling to a depth of 18 feet bgl. There were no indications of contamination based on the field screening results nor were there any visual or olfactory evidence of contamination in 10 to 18 foot interval. Since saturation was encountered at 14 feet bgl a soil sample was collected from the interval 13.5 to 14 feet bgl. Soil cuttings were placed in open top 55-gallon drums and labeled. Development water and decontamination water were placed in open top 55-gallon drums and labeled.

On September 30, 2008 the drilling rig was mobilized to the SWMU No. 2 area. The rig was set up on location SWMU 2-4 and drilling and sampling was continued to a depth of 19 feet bgl. There were no indications of contamination based on the field screening results nor was there any visual or olfactory evidence of contamination in 10 to 19 foot interval. Since saturation was encountered at 14.5 feet bgl a soil sample was collected from the interval 14 to 14.5 feet bgl. A duplicate soil sample was also collected from this interval. Soil cuttings were placed in open top 55-gallon drums and labeled. Development water and decontamination water were placed in open top 55-gallon drums and labeled.

The drilling rig was set up on location SWMU 2-6 and drilling and sampling was conducted to a depth of 18 feet bgl. There were no indications of contamination based on the field screening results nor was there any visual or olfactory evidence of contamination in 10 to 18 foot interval. Since saturation was encountered at 14 feet bgl a soil sample was collected from the interval 13.5 to 14 feet bgl. Soil cuttings were placed in open top 55-gallon drums and labeled. Development water and decontamination water were placed in open top 55-gallon drums and labeled.

The drilling rig was set up on location SWMU 2-7 and drilling and sampling continued to a depth of 18 feet bgl. There were no indications of contamination based on the field screening results nor was there any visual or olfactory evidence of contamination in 10 to 18 foot interval. Since saturation was encountered at 14 feet bgl a soil sample was collected from the interval 13.5 to 14 feet bgl. Soil cuttings were placed in open top 55-gallon drums and labeled. Development water and decontamination water were placed in open top 55-gallon drums and labeled.

On October 1, 2008 the drilling rig was mobilized back to the SWMU No. 2 area. The drilling rig was set up on location SWMU 2-8 and drilling and sampling continued to a depth of 18 feet bgl. There were no indications of contamination based on the field screening results nor were there any visual or olfactory evidence of contamination in 10 to 18 foot interval. Since saturation was encountered at 13.5 feet bgl a soil sample was collected from the interval 13 to 13.5 feet bgl. Soil cuttings were placed in open top 55-gallon drums and labeled. Development water and decontamination water were placed in open top 55-gallon drums and labeled.

On October 1, 2008 the drilling rig was set up on location SWMU 2-9/MW-51 and drilling and sampling continued to a depth of 20 feet bgl. There were no indications of contamination based on the field screening results nor was there any visual or olfactory evidence of contamination in 10 to 20 foot interval. Since saturation was encountered at 14 feet bgl a soil sample was collected from the interval 13.5 to 14 feet bgl. Soil cuttings were placed in open-top 55 gallon drums and were sealed when not in use.

On October 15, 2008 the drilling rig was set up on location SWMU 2-5/MW-50 and drilling and sampling was completed to a depth of 20 feet bgl using the air rotary/ODEX drilling method. There were no indications of contamination based on the field screening results nor was there any visual or olfactory evidence of contamination in 10 to 20 foot interval. Since saturation was encountered at 14 feet bgl a soil sample was collected from the interval 13 to 14 feet bgl. Soil cuttings were placed in open top 55-gallon drums and were sealed when not in use.

Copies of the field boring logs are located in Appendix B.

6.1.2 SWMU No. 8 Landfill

At SWMU No. 8 the following 11 borings were advanced to a depth of 10 feet (Figure 6):

- SWMU 8-1;
- SWMU 8-2;
- SWMU 8-3
- SWMU 8-4;
- SWMU 8-5;
- SWMU 8-6;
- SWMU 8-7;
- SWMU 8-8;
- SWMU 8-9;
- SWMU 8-10; and
- SWMU 8-11;

As directed by NMED, two soil borings (SWMU 8-6A and SWMU 8-12) were drilled to the water table and were subsequently converted to monitor wells (MW-52 and MW-53). The discussion for the installation of these soil borings/wells can be found in Section 4.4.

On September 23, 2008 discrete soil samples were collected from all soil boring locations at SWMU 8 except SWMU 8-6A for laboratory analyses from 0 to 0.5 feet bgl and 1.5 to 2 feet bgl. A portion of the sample interval was placed in pre-cleaned, laboratory-prepared sample containers for laboratory chemical analysis. The use of an Encore® Sampler or other similar device was used during collection of soil samples for VOC analysis. Since there were no indications of contamination based on the field screening results at 10 feet nor was there any evidence of waste materials or other signs of contamination, these borings were terminated at the preplanned depth of 10 feet.

On September 24, 2008 a soil sample was collected from the depth of 37 to 38.5 feet in SWMU 8-12. There were no indications of contamination based on the field screening results nor were there any visual or olfactory evidence of contamination in the interval from 10 to 41.5 feet below ground surface.

On October 14, 2008 a soil sample was collected from the interval 33 to 34 feet bgl in SWMU 8-6A. There were no indications of contamination based on the field screening results nor was there any visual or olfactory evidence of contamination in the interval from 0 to 41 feet bgl.

Copies of the field boring logs and monitor well construction logs are located in Appendix B.

6.1.3 SWMU No. 9 Landfill Pond

On September 28, 2008 the drilling rig was mobilized to the SWMU No. 9 area (Figure 6). The drilling rig was set up on location SWMU 9-1. Using the HSA drilling method and split spoon samplers the borehole was advanced to a depth of 17 feet bgl. As seen on the soil boring log the Nacimiento Formation was encountered at 15 feet bgl. Soil samples were collected at 0 to 0.5 feet and 1.5 to 2 feet bgl. In the interval from 3.5 to 7 feet trace clumps of sulfur and a fine-grained red material were observed in the core. A soil sample was collected from the 5 to 7.5 foot interval. Since saturation was encountered at 15 feet bgl a soil sample was collected from the interval 14.5 to 15 feet bgl.

A copy of the field boring log is located in Appendix B.

6.1.4 SWMU No. 18 Warehouse Yard

On September 26, 2008 discrete soil samples were collected from the four soil boring locations at SWMU No. 18 for laboratory analyses from 0 to 0.5 feet bgl and 1.5 to 2 feet bgl (Figure 9). All borings were advanced to a depth of 10 feet bgl. At the locations for SWMU 18-1 and SWMU 18-4 there were no indications of contamination based on the field screening results nor was there any visual or olfactory evidence of contamination in 0 to 10 foot interval. At the location for SWMU 18-2 there were visual observations of black staining in the upper six inches of the core. At the location for SWMU18-3 there were visual observations of black staining/coating on gravel in the 2 to 4 foot interval. A lower soil sample was collected from 7.5 to 9 feet bgl in this boring. There were no significant odors associated with the black staining/coating nor were there any elevated PID readings observed in either SWMU 18-2 or SWMU 18-3. Soil cuttings were placed in open top 55-gallon drums and labeled. Decontamination water was placed in open top 55-gallon drum and labeled.

As directed by NMED, one soil boring (SWMU 18-2) was drilled to the water table and was subsequently converted to a monitor well (MW-54). On October 15, 2008 the drilling and sampling continued at SWMU 18-2 using HSA drilling methods and split spoon sampling. Saturation was encountered at 29 feet bgl. A soil sample was collected from the interval immediately above saturation, 28 to 29 feet bgl. An additional soil sample was collected from the 18 to 20 foot interval due to the appearance of black discoloration and odor in the soil. Elevated PID readings were also observed from 18 to 30 feet bgl. A significant reading of 400 ppm was observed in the interval from 28 to 30 feet bgl, which corresponded to the occurrence of saturation.

Copies of the field boring logs and well construction logs are located in Appendix B.

6.2 Soil Sample Field Screening Results

Headspace vapor screening was conducted, which involved placing a soil sample in a plastic sealable bag allowing space for ambient air. The bag was sealed, labeled and then shaken gently to expose the soil to the air trapped in the container. The sealed bag was allowed to rest for a minimum of 5 minutes while the vapors equilibrated. Vapors present within the sample bag's headspace were then measured by inserting the probe of an organic vapor analyzer (OVA) (i.e., MiniRae 2000) in a small opening in the bag. The maximum value and the ambient air temperature were recorded on the field boring log for each sample. The MiniRae 2000 was calibrated to 100 ppm isoButylene each day to the manufacturer's standard for instrument operation. Field screening results and any conditions that were considered to be capable of influencing the results of the field screening were recorded on the field logs. A summary of the results is located in Table 11.

6.2.1 SWMU No. 2 Drum Storage Area North Bone Yard

No elevated PID readings were observed during the investigation of the SWMU No. 2. No conditions encountered during the field activities are considered to be capable of influencing the results of the field screening.

6.2.2 SWMU No. 8 Landfill

No elevated PID readings were observed during the investigation of the SWMU No. 8. No conditions observed during the field activities are considered to be capable of influencing the results of the field screening.

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6.2.3 SWMU No. 9 Landfill Pond

No elevated PID readings were observed during the investigation of the SWMU No. 9. No conditions that occurred during the field activities are considered to be capable of influencing the results of the field screening.

6.2.4 SWMU No. 18 Warehouse Yard

At the location for boring SWMU 18-2 there were visual observations of black staining in the upper six inches of the core. There were no significant odors associated with the black staining/coating nor were there any elevated PID readings. Soil boring SWMU 18-2 was drilled to the water table and was subsequently converted to a monitor well (MW-54). Saturation was encountered at 29 feet bgl. A soil sample was collected from the interval immediately above saturation, 28 to 29 feet bgl. An additional soil sample was collected from the 18 to 20 foot interval due to the appearance of black discoloration and odor in the soil. Elevated PID readings were observed from 18 to 30 feet bgl. A significant reading of 400 ppm was observed in the interval from 28 to 30 feet bgl, which corresponded to the occurrence of saturation.

At the location for boring SWMU18-3 there were visual observations of black staining/coating on gravel in the 2 to 4 foot interval. A lower soil sample was collected from 7.5 to 9 feet bgl in this boring. There were no significant odors associated with the black staining/coating nor were there any elevated PID readings observed at SWMU 18-3.

6.3 Soil Sampling Chemical Analytical Results

Soil samples were analyzed by Hall Environmental Analysis Laboratory in Albuquerque, New Mexico using the following methods for organic constituents:

- SW-846 Method 8260 volatile organic compounds;
- SW-846 Method 8270 semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline, diesel, and motor oil range petroleum hydrocarbons.

In addition, soil samples were analyzed for the following metals using the indicated analytical methods.

Analyte	Analytical Method
Antimony	SW-846 method 6010/6020
Arsenic	SW-846 method 6010/6020

Analyte	Analytical Method
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 335.3/335.2 mod
Lead	SW-846 method 6010/6020
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

The soil analytical results are presented in Table 8 (SWMU No. 2), Table 9 (SWMU No. 8) and Table 10 (SWMUs No. 9 and 18) for the individual SWMUs that were investigated during this field effort. There were no conditions observed during the sample collection efforts that are thought to have had any impact on the analytical results. The site cleanup levels, as described in Section 5 are included in each table to facilitate a comparison between the reported concentrations and the applicable cleanup levels. Concentrations that exceed the applicable cleanup levels are bolded.

There are five constituents (mercury, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, and motor oil range organics) with concentrations that exceed their cleanup levels and the maximum reported concentrations are generally not more than an order of magnitude above the cleanup level with the exception of 1-methylnaphthalene. Maps showing the distribution of detected concentrations are included as Figures 5 - 9 for each constituent that has reported concentrations exceeding the applicable cleanup level.

6.4 Ground Water Sampling

Ground water samples were collected from both temporary wells and permanent monitoring wells as described below. During the investigation of SWMU No. 2, all of the soil borings were drilled through the shallow aquifer, to the top of the Nacimiento Formation. Temporary wells were installed and ground water samples collected at locations SWMU 2-1, SWMU 2-2, and SWMU 2-3 on September 29, 2008 with the well screens extending from 15' to 20', 13' to 18', and 13 to 18' bgl, respectively. On September 30, 2008 temporary wells SWMU 2-4, SWMU 2-6, and SWMU 2-7 were completed with well screens set at 14' to 19', 13' to 18', and 13 to 18' bgl, respectively and ground water samples were collected. A temporary well was installed and ground water samples collected at SWMU 2-8 on October 1, 2008, with the screen set from 13' to 18' bgl. A temporary well was also installed at location SWMU 9-1 on September 28, 2008 with the screen set from 2' to 17' bgl. A ground water sample was collected on the same date.

Two rounds of ground water samples were collected from the permanent monitoring wells. The permanent wells installed for the Group No. 2 SWMUs include MW-50 (SWMU 2-5), MW-51 (SWMU 2-9), MW-52 (SWMU 8-6A), MW-53 (SWMU 8-12), and MW-54 (SWMU 18-2). The first round of samples were collected at the end of the initial well installation field effort on October 28, 2008 and the second (confirmation) round of samples were collected on January 8, 2009. The water samples from the permanent wells were collected using a dedicated bailer. A map showing the ground water sampling locations is included as Figure 12.

6.5 General Ground Water Chemistry

The measurement of field purging parameters included measurement of ground water pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature. A minimum of three well volumes were removed from each permanent monitoring well prior to sample collection. There were no conditions encountered during sample collection that affected field screening results. The results of the measurements are included in Table 12 and fluid levels are presented in Table 13.

6.6 Ground Water Chemical Analytical Results

The ground water samples were analyzed for organic constituents 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, diesel, and motor oil range organics.

Ground water samples were analyzed for the following metals using the indicated 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 335.3/335.2 mod
Lead	SW-846 method 6010/6020
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

In addition, ground water samples were analyzed for the following general chemistry parameters.

Analyte	Analytical Method
Bicarbonate	SW-846 method 310.1
Chloride	EPA method 300.0
Sulfate	EPA method 300.0
Calcium	SW-846 method 7140
Magnesium	SW-846 method 7450
Sodium	SW-846 method 7770
Potassium	SW-846 method 7610
Manganese	SW-846 method 6010/6020
Nitrate/nitrite	EPA method 300.0
Ferric/ferrous Iron	SW-846 method 6010/6020

The ground water analyses were completed as approved in the site investigation work plan with only a couple of exceptions. Separate analyses of nitrate and nitrite were completed for water samples collected from MW-51 and MW-52; however, a total result for nitrate plus nitrite was reported for MW-50, MW-53 and MW-54. The work plan listed analyses for ferric/ferrous iron but the lab only reported total iron. Most of the total iron results are very low or non-detect with the exception of MW-54, which is located within the drainage field of the on-site septic system.

There were no field conditions observed during sample collection that should have affected the analytical results. The analytical results and the applicable cleanup levels are presented in Table 14. The individual results that exceed the applicable cleanup levels are bolded. The results for the associated QA/QC samples are provided in Appendix F. Based on a review of the analytical results, manganese is the only widespread constituent that has concentrations exceeding the cleanup level and an isoconcentration map has been included as Figure 13. 1,2,4-trimethlybenzene, 1-methylnaphthalene, benzene, methyl tert-butyl ether (MTBE), naphthalene, and diesel range organics were detected at concentrations above the screening level at MW-54 but were not detected in ground water at other SWMUs. Some metals (e.g., arsenic, barium and lead) were detected at generally low concentrations that exceed the screening levels.

6.7 Air and Subsurface Vapor Sampling/Field Screening Results

No subsurface vapor samples were collected other than field screening soil samples with an OVA for the purpose of identifying samples for laboratory analysis, which is discussed in Section 6.2.

Section 7
Conclusions and Recommendations

An investigation of soils and ground water was conducted at the Drum Storage Area North Bone Yard (SWMU No. 2), the Landfill (SWMU No. 8), the Landfill Pond (SWMU No. 9), and the Warehouse Yard (SWMU No. 18) to determine and evaluate the presence, nature, extent, fate, and transport of contaminants. To accomplish this objective, soil borings and monitoring wells were installed at each of the aforementioned SWMUs.

All soil borings were drilled to a minimum depth of 10 feet with at least one boring at each of the individual potential source areas drilled to the top of saturation, with the exception of SWMU No. 2 where all soil borings were be drilled to the water table. One soil boring was completed as a temporary well at SWMU No. 9. Nine soil borings were installed at SWMU No. 2, with two of the borings completed as permanent wells and seven completed as temporary wells One soil boring was completed as a permanent well and three additional soil borings were completed at SWMU No. 18. Thirteen soil borings, two of which were completed as permanent wells, were installed at SWMU No. 8. Soil samples were collected continuously at all borings and logged by a qualified geologist in accordance with USCS nomenclature.

Drum Storage Area North Bone Yard (SWMU No. 2)

At the SWMU No. 2 there was only one constituent (mercury) that was present at concentrations that exceed the soil screening level of 2.09 mg/kg based on the soil-to-ground water pathway. At boring location SWMU 2-2, the mercury concentration as shown in Table 8 is 4.1 mg/kg at the land surface, 11 mg/kg in the 1.5 to 2' interval and decreasing to 2.2 mg/kg in the 13.5-14' sample interval. The boring was completed as a temporary monitoring well and the analysis of a ground water sample collected did not detect the presence of mercury at a detection limit of 0.2 ug/l vs. a screening level of 2.0 ug/l. In addition, there were no reported concentrations of mercury in ground water above the screening level in any of the other eight sampling locations within SWMU No. 2. Based on the limited occurrence of mercury above the soil-to-ground water screening level in only one soil boring location, the generally minor exceedences of the screening level (e.g., maximum concentration less than one order of magnitude above the screening level), and the fact that there are no exceedences of the ground water ingestion screening level in any of the closely spaced 9 ground water sample locations, the concentrations of mercury at soil borings SWMU 2-2 are not considered to be a threat to ground water quality.

Further evaluation of the mercury concentrations present in soil at SWMU 2-2 indicates the maximum value of 11 mg/kg is significantly below the NMED residential soil screening level of 100,000 mg/kg and the more conservative construction worker screening level of 927 mg/kg. There are no concentrations of constituents in soil at SWMU No. 2 that pose an unacceptable risk to human health or the environment.

Ground water samples were collected from 7 temporary wells and 2 permanent wells located at SWMU No. 2. There are no detections of organic constituents, including Total Petroleum Hydrocarbons, in ground water samples collected from any of the permanent or temporary wells. Low concentrations of metals were detected, including three locations with arsenic with a maximum value of 0.012 mg/l vs. a screening level of 0.01 mg/l. Similarly, lead was detected at five locations at concentrations slightly over the screening level (i.e., max concentration of 0.034 vs. 0.015 mg/l). Because the wells were purged and sampled using a bailer it is most likely that the presence of arsenic and lead above their respective screening levels is due to suspended sediment in the samples collected for "totals" analyses. There are also single occurrences of barium, beryllium, and chromium at concentrations above their respective screening levels that are attributable to entrained sediment. All of the detections of low concentrations of arsenic, barium, beryllium, chromium, and lead are believed to be an artifact of sample collection and not related to site contamination. The absence of any petroleum constituents at these same locations is a strong indicator that the low concentrations of metals are not the result of on-site refinery operations.

Manganese was detected in ground water samples collected from the two permanent monitoring wells (MW-50 and MW-51) and all but one (SWMU 2-2) of the temporary wells at concentrations above the screening level of 0.2 mg/l. A review of the facility-wide ground water sampling information reveals that manganese is widespread across the refinery property (Figure 13). There is no direct evidence to associate manganese's presence in shallow ground water beneath SWMU No. 2 with site operation or waste management activities. However, there does appear to be a correlation between the dissolved oxygen concentrations in ground water and the dissolved manganese concentrations. Figure 14 shows a plot of the dissolved oxygen concentrations and manganese concentrations measured in the new permanent monitoring wells and other existing monitoring wells located across the site. As shown in the plot, the dissolved manganese concentrations increase as the dissolved oxygen levels decrease. There are two locations (MW-54 and MW-27) that appear to be anomalous. MW-54 is located within the drainage field of a septic system, which is thought to have affected the manganese concentrations at this location. A more recent manganese analysis at MW-27 revealed a concentration of 4.6 mg/l vs. the earlier reading of 9.6; the more recent result plots within the general clustering of data shown on Figure 14 (Western Refining Southwest, Inc., 2009).

Lower dissolved oxygen concentrations may be explained by either natural degradation of petroleum hydrocarbons using oxygen as an electronic acceptor or the lower dissolved oxygen concentrations can occur under natural conditions in geologic units with reduced circulation (e.g., the Nacimiento Formation).

The sampling data for SWMU No. 2 does not indicate any threat to human health or the environment as the result of site operations. SWMU No. 2 should qualify for a Corrective Action Complete designation.

Inactive Landfill (SWMU No. 8)

Soil samples were collected from depths of 0-0.5 feet and 1.5-2 feet at 12 borings with additional deeper samples collected at 37 to 38.5 feet at SWMU 8-12 and 33 to 34 ft at SWMU 8-6A. None of the analyses resulting from soil samples collected at the borings completed at SWMU No. 8 indicate concentrations of constituents exceeding the applicable screening levels. The majority of the analyses are non-detect. The soil analytical results are summarized in Table 9.

Two soil borings were completed as permanent monitoring wells (MW-52 and MW-53). All of the organic analyses are non-detect with the single exception of chloromethane, which was detected at a concentration below the screening level on the second sampling event conducted in January 2009. Arsenic was detected in both wells at low concentrations but above the screening level and is most likely the result of entrained sediment in the ground water sample. Barium was detected at a concentration of 1.1 mg/l, which is slightly above the screening level of 1.0 mg/l in the sample collected from MW-52 on the first sampling event. All other samples, including the second sample collected from MW-52 in Jan. 2009, had concentrations of barium below the screening level. Manganese was detected at concentrations above the screening level in all samples but there is no direct evidence to associate its presence with site operations or waste management activities. Chloride and sulfate are present in concentrations above the WQCC standards but both of these are primarily attributable to naturally occurring concentrations. Isoconcentration maps for chloride and sulfate were prepared using data from the most recent facility-wide sampling event and the analytical results from the new RFI wells. These maps are included as Figures 15 and 16. As shown on the maps, the concentrations of these naturally occurring constituents are highest in the up-gradient portions of facility, although there is an area of elevated sulfate concentrations near the Sulferox Unit. The distribution of the concentrations of these constituents is clear evidence of their natural occurrence and that the concentrations of chloride and sulfate beneath SWMU No. 8 are not the result of waste management activities.

SWMU No. 18 should quality for a Corrective Action Complete designation as there are no detections of constituents in soils above the residential screening levels and the detections of manganese in ground water are not associated with any waste management activities in SWMU No. 18. The Facility-Wide Ground Water Monitoring Program will include monitoring of ground water in this area.

Landfill Pond (SWMU No. 9)

The analyses conducted on soil samples collected from beneath the location of the former "landfill pond" (i.e., soil boring SWMU 9-1) were non-detect for most constituents. The samples were collected from depths of 0 - 0.5, 1.5 - 2, 5 - 7.5, and 14.5 - 15 feet. There were low concentrations of naturally occurring metals, all of which are well below their applicable screening levels as shown in Table 10. There are a few organic constituents (1-methylnaphthalene, 2-methylnaphthalene, and naphthalene) that were detected at generally low concentrations but still above the lowest default screening level, which is based on protection of ground water.

As shown in Table 10, the maximum concentration of 1-methylnaphthalene is 1.4 mg/kg vs. a screening level of 0.015 mg/kg for ground water protection. The maximum concentration of 1.4 mg/kg is below the residential screening level of 22 mg/kg. For 2-methylnaphthalene the maximum detected concentration of 4.2 mg/kg is above the ground water protection screening level of 0.9 mg/kg but is well below the residential screening level of 310 mg/kg. Naphthalene has a maximum detected concentration of 1.3 mg/kg vs. a ground water protection screening level of 0.394 mg/kg; however, the maximum is well below the residential screening level of 79.5 mg/kg. An evaluation of the vertical distribution of these constituents reveals that the maximum concentrations appear to be in range from approximately 1.5 feet to 7.5 feet below ground surface. A deeper sample collected at 14.5 feet is non-detect for all three of these constituents indicating that they have not migrated vertically to ground water.

Re-grading of the land surface in the area of the former landfill pond has eliminated ponding of water, which lead to the original concern at this location. If the constituents detected in shallow subsurface soils did not migrate vertically to the deeper soil intervals under past conditions (e.g., ponded water), then there should be very limited potential for vertical migration under current and future conditions.

A ground water sample was collected from a temporary well installed in soil boring SWMU9-1. All of the organic analyses, including 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene were non-detect. Several of the total metals analyses contained concentrations exceeding the screening levels (i.e., cadmium, cobalt, manganese, and nickel); however, the ground water sample collected from the temporary well was turbid and the entrained sediment caused artificially high concentrations to be reported for metals. The clearest example of this effect is the reported concentration of 6 mg/l for nickel, which in its elemental form is insoluble in water. The ground water sample contained concentrations of chloride, sulfate, and nitrogen (nitrate and nitrite) above screening levels but these constituents are all naturally occurring and based on all available information appear to be unrelated to site waste management activities (i.e., background concentrations).

The soils and ground water data indicate that the former landfill pond does not present an unacceptable risk to human health or the environment and should qualify for a Corrective Action Complete designation.

<u>Spray Irrigation Area (SWMU No. 11)</u>

Additional assessment of this area was not conducted because historical site investigation data did not indicate any unacceptable threat to human health or the environment. Based on the earlier assessment information, Western believes that the Spray Irrigation Area qualifies for a Corrective Action Complete designation.

<u>Warehouse Yard (SWMU No. 18)</u>

Four soil borings were completed within the Warehouse Yard at the former drum storage location. Three of the borings were completed to depths of 10 feet (SWMU18-1, SWMU18-3, and

SWMU18-4) and one boring (SWMU18-2) was completed to a depth of 38 feet. Soil samples were collected from depths 0 - 0.5 and 1.5 – 2 feet at all four borings, with additional samples at depths of 18 - 20 and 28 - 29 feet at SWMU 18-2 and 7.5 - 9 feet at SWMU 18-3.

All of the analytical results for individual organic constituents (e.g., benzene, xylene, etc.) are below the applicable screening levels. Two samples at the SWMU 18-2 location from depths of 0-0.5 and 1.5-2 feet have concentrations of motor oil range organics above the screening level. All of the analytical results for the metals are below the applicable screening levels.

A ground water sample was collected from MW-54 (soil boring SWMU 18-2), which is located within the previously known area of ground water contamination that extends down-gradient from the refinery process area. The analytical results confirm the presence of hydrocarbons in ground water with concentrations of 1,2,4-trimethylbenzene, 1-methylnaphthalene, benzene, methyl-tert-butyl ether, naphthalene, and diesel range organics above the screening levels. In addition, there are three metals (arsenic, barium, and manganese) with concentrations over the screening level. The arsenic concentration is barely over the screening level and may have been impacted by sample collection techniques introducing entrained sediment. Chloride concentrations also exceed the screening level and may be impacted by the fact that MW-54 is located within the drainage field of an on-site septic system.

Recommendations

A Corrective Action Complete designation is recommended for SWMUs No. 2, 8, 9, and 11. Additional assessment and delineation of hydrocarbon impacted soils at soil boring SWMU 18-2 may be warranted, although the concentrations of motor oil range organics are only marginally above the commercial soil screening levels.

Ground water impacts documented during the assessment of SWMUs No. 2, 8, and 9 are detailed above but the primary constituents exceeding the screening levels across these areas are chloride, sulfate and manganese. Chloride and sulfate are naturally occurring and the distribution within the shallow ground water does not indicate an on-site source within these SWMUs. Manganese is present within ground water at all three SWMUs (i.e., No. 2, 8, and 9); however, remediation of ground water only for manganese in these areas is not warranted. The elevated dissolved manganese concentrations are thought to be associated with reducing conditions, which are related to degradation of petroleum hydrocarbons or the result of natural

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conditions in zones of low transmission. The manganese concentrations should reduce naturally in areas affected by degradation of organic constituents when the hydrocarbon source is exhausted.

Ground water contamination detected at SWMU No. 18 is currently being addressed by existing recovery wells (e.g., nearby RW-1).

Section 8 References

Groundwater Technology Inc., 1994, RCRA Facility Investigation/Corrective Measures Study Report Bloomfield Refining Company #50 County Road 4990 Bloomfield, New Mexico, p.51.

RPS JDC, 2008, Investigation Work Plan Group 2 Western Refining Southwest, Inc. Bloomfield Refinery Bloomfield New Mexico, p. 27.

Western Refining Southwest, Inc., 2009, Facility-Wide Groundwater Monitoring Report, Bloomfield Refinery Bloomfield New Mexico, p.37.

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Tables

Table 1
Historical Volatile Organic Ground Water Analytical Results Summary
SWMU Group 2 Investigation
Bloomfield Refinery - Bloomfield, New Mexico

		Parameters				
		Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)	MTBE (mg/L)
Screening Level (mg/L)		0.005	0.75	0.7	0.62	0.012
Well ID:	Date Sampled:					
MW #1	4/1/2007	<0.001	<0.001	<0.001	<0.002	<0.0025
	8/15/2006	<0.001	<0.001	<0.001	<0.003	<0.0015
	4/5/2006	<0.001	<0.001	<0.001	<0.003	<0.0025
	8/5/2005	0.0011	<0.001	<0.001	<0.001	<0.001
	4/11/2005	0.0013	<0.0005	<0.0005	0.0011	<0.0025
	8/23/2004	<0.0005	<0.0005	<0.0005	<0.0005	<0.0025
	3/3/2004	<0.0005	<0.0005	<0.0005	<0.0005	<0.0025
	8/21/2003	<0.001	<0.001	<0.001	<0.001	<0.001
	3/3/2003	<0.0005	0.00063	0.00065	0.0043	<0.0025
MW #3	4/5/2006	<0.001	<0.001	<0.001	<0.003	<0.0025
	8/5/2005	<0.001	<0.001	<0.001	<0.001	<0.001
	4/11/2005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0025
	8/21/2003	<0.001	<0.001	<0.001	<0.001	<0.001
MW #8	4/1/2007	<0.001	<0.001	<0.001	<0.002	<0.0025
	8/15/2006	<0.001	<0.001	<0.001	<0.003	<0.0015
	4/5/2006	<0.001	<0.001	<0.001	<0.003	<0.0025
	8/5/2005	<0.001	<0.001	<0.001	<0.001	<0.001
	4/11/2005	0.00053	<0.0005	<0.0005	0.0008	<0.0025
	8/23/2004	<0.0005	<0.0005	<0.0005	<0.0005	<0.0025
	8/21/2003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:
mg/L = milligram per liter
MW = monitoring well
RW = recovery well
NA = not analyzed
NE = not established
MTBE = methyl tertiary butyl ether

Table 2
Historical Total Metals Ground Water Analytical Results Summary
SWMU Group 2 Investigation
Bloomfield Refinery - Bloomfield, New Mexico

		Parameters							
		Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)	Selenium (mg/L)	Silver (mg/L)	Mercury (mg/L)
Screening Level (mg/L)		**0.01**	**1.0**	**0.005**	**0.05**	**0.015**	**0.05**	**0.05**	**0.002**
Well ID:	**Date Sampled:**								
MW #1	8/15/2006	<0.020	0.023	<0.0020	<0.0060	<0.0050	<0.050	<0.0050	<0.0002
	8/5/2005	NA	NA	NA	<0.006	<0.005	NA	NA	NA
	8/23/2004	<0.02	0.052	<0.002	<0.006	<0.005	<0.05	<0.005	<0.0002
MW #3	8/5/2005	NA	NA	NA	0.016	<0.005	NA	NA	NA
	8/21/2003	NA	NA	NA	0.029	**0.022**	NA	NA	<0.0002
MW #8	8/15/2006	<0.020	0.018	<0.002	<0.006	<0.005	<0.05	<0.005	<0.0002
	8/5/2005	NA	NA	NA	0.33	<0.005	NA	NA	NA
	8/23/2004	<0.02	0.071	<0.002	1.9	<0.005	<0.05	<0.005	<0.0002
	8/21/2003	NA	NA	NA	0.72	<0.005	NA	NA	<0.0002

Notes:
mg/L = milligram per liter
MW = monitoring well
RW = recovey well
NA= not analyzed
NE = not established

Table 3
Historical Dissolved Metals Ground Water Analytical Results Summary
SWMU Group 2 Investigation
Bloomfield Refinery- Bloomfield, New Mexico

		Parameters															
		Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silver (mg/L)	Sodium (mg/L)	Uranium (mg/L)	Zinc (mg/L)
Screening Level (mg/L)		**0.01**	**1.0**	**0.005**	**NE**	**0.05**	**1.0**	**1.0**	**0.015**	**NE**	**0.20**	**NE**	**0.05**	**0.05**	**NE**	**0.03**	**10.0**
Well ID:	**Date Sampled:**																
MW #1	8/15/2006	<0.02	0.023	<0.002	74	<0.006	<0.006	<0.02	<0.005	18	0.09	2.4	<0.05	<0.005	120	<0.1	0.047
	8/5/2005	<0.02	0.022	<0.002	68	<0.006	<0.006	0.14	<0.005	18	0.14	2.7	<0.05	<0.005	140	<0.1	<0.005
	8/23/2004	<0.02	0.025	<0.002	67	<0.006	<0.006	0.27	<0.005	18	0.13	2.1	<0.05	<0.005	110	<0.1	0.021
	8/15/2006	<0.02	0.46	<0.002	61	<0.006	<0.006	<0.005	<0.005	16	0.08	2.6	0.043	<0.005	150	<0.1	0.12
MW #3	8/5/2005	<0.02	0.018	<0.002	480	<0.006	<0.006	0.047	<0.005	130	**0.43**	7.6	<0.05	<0.005	1300	<0.1	0.018
	8/21/2003	<0.02	0.3	<0.002	490	<0.006	<0.006	0.27	<0.005	140	**0.58**	10	0.024	<0.005	1100	<0.1	0.094
MW #8	8/15/2006	<0.02	0.018	<0.002	230	<0.006	<0.006	0.033	<0.005	35	**0.42**	3.2	<0.05	<0.005	380	<0.1	0.044
	8/5/2005	<0.02	0.021	<0.002	230	<0.006	<0.006	0.078	<0.005	37	**0.65**	3.1	<0.05	<0.005	360	<0.1	0.014
	8/23/2004	<0.02	0.021	<0.002	210	<0.006	<0.006	0.059	<0.005	35	**0.57**	3	<0.05	<0.005	360	<0.1	0.022
	8/21/2003	<0.02	0.36	<0.002	200	<0.006	<0.006	0.044	<0.005	38	**0.68**	4	**0.09**	<0.005	350	<0.1	0.13

Notes:
mg/L = milligram per liter
MW = monitoring well
RW = recovery well
NE = not established
NA = Not Analyzed

Table 4
Historical General Chemistry Ground Water Analytical Results Summary
SWMU Group 2 Investigation
Bloomfield Refinery - Bloomfield, New Mexico

		Parameters										
		Fluoride (mg/L)	Chloride (mg/L)	Bromide (mg/L)	Nitrite (mg/L)	Nitrogen (mg/L)	Phosphorus (mg/L)	Sulfate (mg/L)	TDS (mg/L)	E.C. (umhos/cm)	CO_2 (mg/L)	Alk (mg/L)
Screening Level (mg/L)		**1.6**	**250**	**NE**	**1**	**10**	**NE**	**600**	**1000**	**NE**	**NE**	**NE**
Well ID:	**Date Sampled:**											
MW #1	8/15/2006	0.65	17	<0.50	1.2	NA	<0.50	190	640	940	240	270
	8/5/2005	0.68	31	<0.50	<0.10	2.1	<0.50	190	650	980	300	300
	8/23/2004	0.63	29	0.14	<0.10	1.9	<0.50	220	650	870	220	240
	8/15/2006	0.58	33	0.32	<0.10	1.6	<0.50	200	610	820	240	262
MW #8	8/15/2006	0.67	**300**	1.5	26	NA	<0.50	980	2200	3200	200	210
	8/5/2005	0.79	**260**	<2.5	<0.50	27	<0.50	740	2000	2900	260	260
	8/23/2004	0.64	250	1.2	NA	NA	<0.50	920	2100	2600	210	230
	8/21/2003	0.66	**260**	5	<0.10	14	<0.50	950	2100	2900	220	208

Notes:
Alk = alkalinity, total
CO_2 = Carbon Dioxide
E.C. = electrical conductivity
TDS = total dissolved solids
umhos/cm = micro-mhos per centimeter
mg/L = milligram per liter
NE = not established
NA = not analyzed
MW = monitoring well

Table 5
Historical Volatile Organic Soil Analytical Results Summary
SWMU No. 8 Historical Soil Data
Bloomfield Refinery - Bloomfield, New Mexico

			Parameters						
			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Phenolics (mg/kg)	Chromium III (mg/kg)	Lead (mg/kg)
	Soil Screening Levels (mg/kg):		0.02	21.7	20.2	2.06	47.4	100,000	14
Sample No.	Sample Location	Date Sampled							
51469-01	L1 & L2, 0-6" Quad. #1 - Landfill	10/16/1985	<0.5	<1.0	<1.0	<2.0	<0.1	11	10
51469-02	L3 & L4, 6-12" Quad. #1 - Landfill	10/16/1985	<0.5	<1.0	<1.0	<2.0	<0.1	8.9	9.8
51469-03	L5 & L6, 0-6" Quad. #2 - Landfill	10/16/1985	<0.5	<1.0	<1.0	<2.0	<0.1	9.9	9
51469-04	L7 & L8, 6-12" Quad. #2 -Landfill	10/16/1985	<0.5	<1.0	<1.0	<2.0	<0.1	7.6	6.7
51469-05	L9 & L10, 0-6" Quad #3 - Landfill	10/16/1985	<0.5	<1.0	<1.0	<2.0	<0.1	7.8	7.6
51469-06	L11 & L12, 6-12" Quad. #3 - Landfill	10/16/1985	<0.5	<1.0	<1.0	<2.0	<0.1	7.4	7
51469-07	L13 & L14, 0-6" Quad. #4 - Landfill	10/16/1985	<0.5	<1.0	<1.0	<2.0	<0.1	9.1	8.2
51469-08	L15 & L16, 6-12" Quad #4 - Landfill	10/16/1985	<0.5	<1.0	<1.0	<2.0	<0.1	7	7.7

TABLE 6
Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

Analyte	NMED				EPA		Cross Media Soil-to-Ground Water NMED	EPA		
	IndOccSoil_mgkg	IndOccSoil_Endpoint	ConsWork Soil_mgkg	ConsWork Soil_Endpoint	Industrial Soil_mgkg	IndSoil_key	DAF20 mgkg	GW_Risk-based SSL_mgkg	GW_MCL-based SSL_mgkg	Constituent Detected
Applicable depth interval	0-2'		0-10'		0-2'		All depths			
Acenaphthene	33500	nc	14100	nc	33000	n	**54.9**	27	-	Y
Acenaphthylene	-	-	-	-	-	-	-	-	-	**N**
Acetone	100000	max	98500	nc	610000	nms	**19.1**	4.4	-	Y
Aniline	-	-	-	-	300	c*	-	**0.0034**	-	Y
Anthracene	100000	max	86000	nc	170000	nm	**1620**	450	-	Y
Antimony	454	nc	124	nc	410	n	**13.2**	0.66	0.27	Y
Arsenic	17.7	ca	85.2	nc	1.6	c	**0.29**	0.0013	0.29	Y
Azobenzene	-	-	-	-	22	c	-	**0.00051**	-	Y
Barium	100000	max	60200	nc	190000	nm	**6030**	300	82	Y
Benz(a)anthracene	-	-	-	-	2.1	c	-	**0.014**	-	Y
Benzene	25.8	ca	174	nc	5.6	c*	**0.0201**	0.00023	0.0028	Y
Benzo(a)pyrene	**2.34**	ca	21.2	ca	0.21	c	**2.78**	0.0046	0.31	Y
Benzo(b)fluoranthene	**23.4**	ca	212	ca	2.1	c	**33.5**	0.047	-	Y
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-	-	**N**
Benzo(k)fluoranthene	**234**	ca	2120	ca	21	c	**335**	0.46	-	Y
Benzoic acid	-	-	-	-	2500000	nm	-	**33**	-	Y
Benzyl alcohol	-	-	-	-	310000	nm	-	**4.2**	-	Y
Beryllium	2250	nc	**56.2**	nc	2000	n	**1150**	58	3.2	Y
Bis(2-chloroethoxy)methane	-	-	-	-	1800	n	-	**0.023**	-	Y
Bis(2-chloroethyl)ether	7.45	ca	105	ca	0.9	c	**0.00056**	2.70E-06	-	Y
Bis(2-chloroisopropyl)ether	119	ca	453	sat	-	-	**0.0144**	-	-	Y
Bis(2-ethylhexyl)phthalate	**1370**	ca	**4660**	nc	120	c*	**21500**	1.6	2	Y
Bromobenzene	137	nc	121	nc	410	n	**0.214**	0.015	-	Y
Bromodichloromethane	37.2	ca	717	ca	46	c	**0.0118**	0.0003	-	Y
Bromoform	-	-	-	-	220	c*	-	**0.0023**	-	Y
Bromomethane	32.8	nc	28.2	nc	35	n	**0.0374**	0.0022	-	Y
4-Bromophenyl phenyl ether	-	-	-	-	-	-	-	-	-	**N**
2-Butanone	48700	sat	48700	sat	190000	nms	**25.5**	1.5	-	Y
Butyl benzyl phthalate	-	-	-	-	910	c	-	**0.67**	-	Y
Cadmium	564	nc	154	nc	-		**27.5**	1.4	0.38	Y
Carbazole	-	-	-	-	-	-	-	-	-	**N**
Carbon disulfide	460	sat	460	sat	3000	ns	**7.89**	0.27	-	Y

TABLE 6
Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED				EPA		Cross Media Soil-to-Ground Water NMED	Cross Media Soil-to-Ground Water EPA		
Analyte	IndOccSoil_mgkg	IndOccSoil_Endpoint	ConsWork Soil_mgkg	ConsWork Soil_Endpoint	Industrial Soil_mgkg	IndSoil_key	DAF20 mgkg	GW_Risk-based SSL_mgkg	GW_MCL-based SSL_mgkg	Constituent Detected
Applicable depth interval	0-2'		0-10'		0-2'		All depths			
Carbon tetrachloride	8.64	ca	180	ca	1.3	c	**0.0195**	7.90E-05	0.002	Y
Chlorobenzene	245	sat	245	sat	1500	ns	**1.1**	0.068	0.075	Y
Chloroethane	154	ca	1420	sat	-	-	**0.188**	-	-	Y
Chloroform	9.59	ca	216	ca	1.5	c	**0.00825**	5.50E-05	-	Y
Chloromethane	53.4	ca	284	nc	8.4	c*	**0.1**	0.00046	-	Y
4-Chloro-3-methylphenol	-	-	-	-	-	-	-	-	-	**N**
4-Chloroaniline	-	-	-	-	-	-	-	-	-	**N**
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	-	-	-	**N**
4-Chlorotoluene	-	-	-	-	-	-	-	-	-	**N**
2-Chloronaphthalene	-	-	-	-	82000	ns	-	**18**	-	Y
2-Chlorophenol	885	nc	586	nc	5100	n	**0.472**	0.2	-	Y
2-Chlorotoluene	-	-	-	-	-	-	-	-	-	Y
Chromium	**100000**	max	**100000**	max	1500000	nm	2E+09	99000000	-	Y
Chrysene	2310	ca	21200	ca	210	c	**348**	1.4	-	Y
cis-1,2-DCE	300	nc	254	nc	10000	ns	**0.299**	0.11	0.021	Y
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	**N**
Cobalt	20500	nc	**61**	nc	300	n	**661**	0.49	-	Y
Cyanide	13700	nc	4760	nc	20000	n	**147**	7.4	2	Y
1,1-Dichloroethane	1420	sat	1420	sat	17	c	**6.79**	0.0007	-	Y
1,1-Dichloroethene	777	nc	678	nc	-	-	**2.68**	-	-	Y
1,1-Dichloropropene	-	-	-	-	-	-	-	-	-	**N**
1,2-Dibromo-3-chloropropane	9.68	nc	6.48	nc	0.073	c	**0.00298**	1.50E-07	9.20E-05	Y
1,2-Dibromoethane (EDB)	-	-	-	-	0.17	c	-	1.90E-06	**1.50E-05**	Y
1,2-Dichlorobenzene	37.4	sat	37.4	sat	10000	ns	**0.237**	0.4	0.66	Y
3,3'-Dichlorobenzidine	42.6	ca	363	ca	-	-	**0.0371**	-	-	Y
1,2-Dichloroethane (EDC)	-	-	-	-	2.2	c	-	4.40E-05	**0.0015**	Y
1,2-Dichloropropane	14.9	ca	33.3	nc	4.7	c*	**0.00819**	0.00013	0.0017	Y
1,3-Dichlorobenzene	37.4	sat	37.4	sat	-	-	**0.0873**	-	-	Y
1,3-Dichloropropane	-	-	-	-	20000	ns	-	**0.27**	-	Y
1,4-Dichlorobenzene	103	ca	1960	ca	13	c	**0.11**	0.00046	0.081	Y
2,2-Dichloropropane	-	-	-	-	-	-	-	-	-	**N**
2,4-Dichlorophenol	2050	nc	699	nc	1800	n	**0.863**	0.18	-	Y

TABLE 6
Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

							Cross Media Soil-to-Ground Water			
	NMED				EPA		NMED	EPA		
Analyte	IndOccSoil_mgkg	IndOccSoil_Endpoint	ConsWork Soil_mgkg	ConsWork Soil_Endpoint	Industrial Soil_mgkg	IndSoil_key	DAF20 mgkg	GW_Risk-based SSL_mgkg	GW_MCL-based SSL_mgkg	Constituent Detected
Applicable depth interval	0-2'		0-10'		0-2'		All depths			
2,4-Dimethylphenol	13700	nc	4660	nc	12000	n	**7.11**	1.2	-	Y
4,6-Dinitro-2-methylphenol	-	-	-	-	-	-	-	-	-	**N**
2,4-Dinitrophenol	1370	nc	466	nc	1200	n	**1.05**	0.068	-	Y
2,4-Dinitrotoluene	1370	nc	466	nc	1200	n	**0.462**	0.068	-	Y
2,6-Dinitrotoluene	-	-	-	-	620	n	-	**0.034**	-	Y
Dibenz(a,h)anthracene	**2.34**	ca	21.2	ca	0.21	c	**10.4**	0.015	-	Y
Dibenzofuran	1620	nc	552	nc	-	-	**2.87**	-	-	Y
Dibromochloromethane	39.5	ca	716	ca	21	c	**0.00716**	0.00022	-	Y
Dibromomethane	-	-	-	-	10000	ns	-	**0.091**	-	Y
Dichlorodifluoromethane	211	sat	211	sat	780	n	**5.72**	0.61	-	Y
Diethyl phthalate	100000	max	100000	max	490000	nm	**354**	13	-	Y
Dimethyl phthalate	100000	max	100000	max	-	-	**1670**	-	-	Y
Di-n-butyl phthalate	68400	nc	23300	nc	-	-	**3720**	-	-	Y
Di-n-octyl phthalate	-	-	-	-	-	-	-	-	-	**N**
Ethylbenzene	128	sat	128	sat	29	c	**20.2**	0.0019	0.89	Y
Fluoranthene	24400	nc	8730	nc	22000	n	**4690**	210	-	Y
Fluorene	26500	nc	10200	nc	22000	n	**58.5**	33	-	Y
Hexachlorobenzene	12	ca	102	ca	1.1	c	**0.686**	0.00029	0.007	Y
Hexachlorobutadiene	-	-	-	-	22	c*	-	**0.0019**	-	Y
Hexachlorocyclopentadiene	4100	nc	**431**	nc	3700	n	**1320**	0.8	0.18	Y
Hexachloroethane	684	nc	233	nc	120	c**	**2.09**	0.0032	-	Y
2-Hexanone	-	-	-	-	-	-	-	-	-	**N**
Indeno(1,2,3-cd)pyrene	**23.4**	ca	212	ca	2.1	c	**94.6**	0.16	-	Y
Isophorone	20200	ca	46600	nc	1800	c*	**3.4**	0.022	-	Y
Isopropylbenzene (cumene)	389	sat	389	sat	-	-	**82.1**	-	-	**N**
4-Isopropyltoluene	-	-	-	-	-	-	-	-	-	Y
Lead	800	IEUBK	800	IEUBK	800	n	-	-	**14**	Y
Mercury	100000	max	927	nc	28	ns	**2.09**	0.033	0.1	Y
Methyl tert-butyl ether (MTBE)	-	-	-	-	190	c	-	**0.0027**	-	Y
Methylene chloride	490	ca	2630	sat	54	c	**0.17**	0.0012	0.0013	Y
1-Methylnaphthalene	-	-	-	-	99	c	-	**0.015**	-	Y
2-Methylnaphthalene	-	-	-	-	4100	ns	-	**0.9**	-	Y

TABLE 6
Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED				EPA		Cross Media Soil-to-Ground Water: NMED	Cross Media Soil-to-Ground Water: EPA		
Analyte	IndOccSoil_ mgkg	IndOccSoil_ Endpoint	ConsWork Soil_mgkg	ConsWork Soil_Endp oint	Industrial Soil_mgkg	IndSoil _key	DAF20 mgkg	GW_Risk-based SSL_mgkg	GW_MCL-based SSL_mgkg	Constituent Detected
Applicable depth interval	0-2'		0-10'		0-2'		All depths			
2-Methylphenol	-	-	-	-	31000	n	-	**2**	-	Y
3+4-Methylphenol	-	-	-	-	3100	n	-	**0.19**	-	Y
4-Methyl-2-pentanone	-	-	-	-	-	-	-	-	-	**N**
2-Nitroaniline	-	-	-	-	-	-	-	-	-	**N**
3-Nitroaniline	-	-	-	-	82	c**	-	**0.00097**	-	Y
4-Nitroaniline	-	-	-	-	-	-	-	-	-	**N**
2-Nitrophenol	-	-	-	-	-	-	-	-	-	**N**
4-Nitrophenol	-	-	-	-	-	-	-	-	-	**N**
Naphthalene	300	nc	262	nc	20	c*	**0.394**	0.00055	-	Y
n-Butylbenzene	62.1	sat	62.1	sat	-	-	**5.4**	-	-	Y
Nickel	22700	nc	6190	nc	20000	n	**953**	48	-	Y
Nitrobenzene	147	nc	82.8	nc	280	n	**0.0184**	0.002	-	Y
N-Nitrosodi-n-propylamine	-	-	-	-	0.25	c	-	**1.10E-05**	-	Y
N-Nitrosodiphenylamine	3910	ca	4660	nc	350	c	**5.71**	0.17	-	Y
n-Propylbenzene	62.1	sat	62.1	sat	-	-	**5.4**	-	-	Y
Pentachlorophenol	100	ca	1020	ca	9	c	**0.117**	0.0039	0.007	Y
Phenanthrene	20500	nc	6990	nc	-	-	**464**	-	-	Y
Phenol	100000	max	69900	nc	180000	nm	**47.4**	8.1	-	Y
Pyrene	30900	nc	9010	nc	17000	n	**373**	150	-	Y
Pyridine	-	-	-	-	1000	n	-	**0.0097**	-	Y
sec-Butylbenzene	60.6	sat	60.6	sat	-	-	**4.33**	-	-	Y
Selenium	5680	nc	1550	nc	5100	n	**19**	0.95	0.26	Y
Silver	5680	nc	1550	nc	5100	n	**31.3**	1.6	-	Y
Styrene	100	sat	100	sat	38000	ns	**10.5**	2	0.12	Y
1,2,3-Trichlorobenzene	-	-	-	-	400	ns	-	0.013	**0.11**	Y
1,1,1,2-Tetrachloroethane	114	ca	2110	ca	9.8	c	**0.025**	0.00021	-	Y
1,1,1-Trichloroethane	563	sat	563	sat	39000	ns	**26.5**	3.3	0.072	Y
1,1,2,2-Tetrachloroethane	14.6	ca	271	ca	2.9	c	**0.00321**	2.80E-05	-	Y
1,1,2-Trichloroethane	30.2	ca	194	nc	5.5	c	**0.00995**	8.20E-05	0.0017	Y
2,4,5-Trichlorophenol	68400	nc	23300	nc	62000	n	**143**	9.4	-	Y
2,4,6-Trichlorophenol	68.4	nc	23.3	nc	160	c**	**0.143**	0.016	-	Y
1,2,3-Trichloropropane	0.209	ca	4.57	ca	0.41	c	**0.00041**	4.40E-06	-	Y

TABLE 6
Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

							Cross Media Soil-to-Ground Water			
	NMED				EPA		NMED	EPA		
Analyte	IndOccSoil_ mgkg	IndOccSoil_ Endpoint	ConsWork Soil_mgkg	ConsWork Soil_Endp oint	Industrial Soil_mgkg	IndSoil _key	DAF20 mgkg	GW_Risk-based SSL_mgkg	GW_MCL-based SSL_mgkg	Constituent Detected
Applicable depth interval	0-2'		0-10'		0-2'		All depths			
1,2,4-Trichlorobenzene	269	nc	230	nc	-	-	**0.408**	-	-	Y
1,2,4-Trimethylbenzene	213	nc	190	nc	280	ns	**1.42**	0.024	-	Y
1,3,5-Trimethylbenzene	69.2	sat	69.2	sat	200	n	**0.355**	0.02	-	Y
tert-Butylbenzene	106	sat	106	sat	-	-	**4.3**	-	-	Y
Tetrachloroethene (PCE)	31.6	ca	134	sat	-	-	**0.0574**	-	-	Y
Toluene	252	sat	252	sat	46000	ns	**21.7**	1.7	0.76	Y
trans-1,2-DCE	429	nc	370	nc	500	n	**0.667**	0.034	0.032	Y
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	**N**
Trichloroethene (TCE)	1.56	ca	33.6	ca	14	c	**0.002**	0.00061	0.0019	Y
Trichlorofluoromethane	983	sat	983	sat	3400	ns	**22.3**	0.84	-	Y
Vanadium	1140	nc	**310**	nc	7200	n	**730**	260	-	Y
Vinyl chloride	14	ca	182	ca	1.7	c	**0.00545**	5.60E-06	0.0007	Y
Xylenes, Total	82	sat	82	sat	2600	ns	**2.06**	0.23	11	Y
Zinc	100000	max	92900	nc	310000	nm	**13600**	680	-	Y
Diesel Range Organics (DRO)	1120	-	-	-	-	-	-	-	-	Y
Gasoline Range Organics (GRO)	-	-	-	-	-	-	-	-	-	Y
Motor Oil Range Organics (MRO)	890	-	-	-	-	-	-	-	-	Y

NS - none specified
310 - Bolded values are lowest applicable screening/cleanup levels

TABLE 7
Ground Water Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED	EPA				
Analyte	New Mexico WQCC Standards_ugL	EPA Screening Levels.Tap Water_ugL	TapW_key	MCL_ugL	Constituent Detected	NMED Tap Water ug/l
Acenaphthene	-	**2200**	n	-	Y	
Acenaphthylene	-	-	-	-	**N**	
Acetone	-	**22000**	n	-	Y	
Aniline	-	**12**	c*	-	Y	
Anthracene	-	**11000**	n	-	Y	
Antimony	-	15	n	**6**	Y	
Arsenic	100	0.045	c	**10**	Y	
Azobenzene	-	**0.12**	c	-	Y	
Barium	**1000**	7300	n	2000	Y	
Benz(a)anthracene	-	**0.029**	c	-	Y	
Benzene	10	0.41	c	**5**	Y	
Benzo(a)pyrene	0.7	0.0029	c	**0.2**	Y	
Benzo(b)fluoranthene	-	**0.029**	c	-	Y	
Benzo(g,h,i)perylene	-	-	-	-	**N**	
Benzo(k)fluoranthene	-	**0.29**	c	-	Y	
Benzoic acid	-	**150000**	n	-	Y	
Benzyl alcohol	-	**18000**	n	-	Y	
Beryllium	-	73	n	**4**	Y	
Bis(2-chloroethoxy)methane	-	**110**	n	-	Y	
Bis(2-chloroethyl)ether	-	**0.012**	c	-	Y	
Bis(2-chloroisopropyl)ether	-	-	-	-	**N**	
Bis(2-ethylhexyl)phthalate	-	4.8	c	**6**	Y	
Bromobenzene	-	**20**	n	-	Y	
Bromodichloromethane	-	**1.1**	c	-	Y	
Bromoform	-	**8.5**	c*	-	Y	
Bromomethane	-	**8.7**	n	-	Y	
4-Bromophenyl phenyl ether	-	-	-	-	**N**	
Butyl benzyl phthalate	-	**35**	c	-	Y	
2-Butanone	-	**7100**	n	-	Y	
Cadmium	10	18	n	**5**	Y	
Carbazole	-	-	-	-	**N**	
Carbon disulfide	-	**1000**	n	-	Y	
Carbon tetrachloride	10	0.2	c	**5**	Y	
Chlorobenzene	-	91	n	**100**	Y	
Chloroethane	-	-	-	-	**N**	
Chloroform	**100**	0.19	c	-	Y	
Chloromethane	-	**1.8**	c	-	Y	
4-Chloro-3-methylphenol	-	-	-	-	**N**	
4-Chloroaniline	-	-	-	-	**N**	
4-Chlorophenyl phenyl ether	-	-	-	-	**N**	
4-Chlorotoluene	-	-	-	-	**N**	
2-Chloronaphthalene	-	**2900**	n	-	Y	
2-Chlorophenol	-	**180**	n	-	Y	
2-Chlorotoluene	-	-	-	-	**N**	
Chromium	**50**	55000	n	-	Y	
Chrysene	-	**2.9**	c	-	Y	

TABLE 7
Ground Water Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

Analyte	NMED	EPA				
Analyte	New Mexico WQCC Standards_ugL	EPA Screening Levels.Tap Water_ugL	TapW_key	MCL_ugL	Constituent Detected	NMED Tap Water ug/l
Cobalt	**50**	11	n	-	Y	
Cyanide	**200**	730	n	200	Y	
Dibenz(a,h)anthracene	-	**0.0029**	c	-	Y	
Dibenzofuran	-	-	-	-	**N**	
Dibromochloromethane	-	**0.8**	c	-	Y	
cis-1,2-DCE	-	370	n	**70**	Y	
trans-1,2-DCE	-	110	n	**100**	Y	
cis-1,3-Dichloropropene	-	-	-	-	**N**	
trans-1,3-Dichloropropene	-	-	-	-	**N**	
Dibromomethane	-	**370**	n	-	Y	
1,2-Dibromo-3-chloropropane	-	0.00032	c	**0.2**	Y	
1,2-Dibromoethane (EDB)	0.1	0.0065	c	**0.05**	Y	
1,2-Dichlorobenzene	-	370	n	**600**	Y	
1,3-Dichlorobenzene	-	-	-	-	**N**	
1,4-Dichlorobenzene	-	0.43	c	**75**	Y	
3,3'-Dichlorobenzidine	-	-	-	-	**N**	
Dichlorodifluoromethane	-	**390**	n	-	Y	
1,1-Dichloroethane	**25**	2.4	c	-	Y	
1,2-Dichloroethane (EDC)	10	0.15	c	**5**	Y	
1,1-Dichloroethene	-	-	-	-	**N**	
2,4-Dichlorophenol	-	**110**	n	-	Y	
1,2-Dichloropropane	-	0.39	c*	**5**	Y	
2,2-Dichloropropane	-	-	-	-	**N**	
1,3-Dichloropropane	-	730	n	**5**	Y	
1,1-Dichloropropene	-	-	-	-	**N**	
Diethyl phthalate	-	**29000**	n	-	Y	
Dimethyl phthalate	-	-	-	-	**N**	
2,4-Dimethylphenol	-	**730**	n	-	Y	
4,6-Dinitro-2-methylphenol	-	-	-	-	Y	
2,4-Dinitrophenol	-	**73**	n	-	Y	
2,4-Dinitrotoluene	-	**73**	n	-	Y	
2,6-Dinitrotoluene	-	**37**	n	-	Y	
Di-n-butyl phthalate	-	-	-	-	**N**	
Di-n-octyl phthalate	-	-	-	-	**N**	
Ethylbenzene	750	1.5	c	**700**	Y	
Fluoranthene	-	**1500**	n	-	Y	
Fluorene	-	**1500**	n	-	Y	
Hexachlorobenzene	-	0.042	c	**1**	Y	
Hexachlorobutadiene	-	**0.86**	c*	-	Y	
Hexachlorocyclopentadiene	-	220	n	**50**	Y	
Hexachloroethane	-	**4.8**	c**	-	Y	
2-Hexanone	-	-	-	-	**N**	
Indeno(1,2,3-cd)pyrene	-	**0.029**	c	-	Y	
Isophorone	-	**71**	c	-	Y	
Isopropylbenzene (Cumene)	-	**680**	I	-	Y	
4-Isopropyltoluene	-	-	-	-	**N**	

TABLE 7
Ground Water Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

Analyte	NMED	EPA				
	New Mexico WQCC Standards_ugL	EPA Screening Levels.Tap Water_ugL	TapW_key	MCL_ugL	Constituent Detected	NMED Tap Water ug/l
Lead	50	-	-	**15**	Y	
Magnesium	-	-	-	-	Y	
Manganese	**200**	880	n		Y	
Mercury	**2**	0.63	n	2	Y	
Methyl tert-butyl ether (MTBE)	-	**12**	c	-	Y	
Methylene chloride	100	4.8	c	**5**	Y	
1-Methylnaphthalene	-	**2.3**	c	-	Y	
2-Methylnaphthalene	-	**150**	n	-	Y	
2-Methylphenol	-	**1800**	n	-	Y	
3+4-Methylphenol	-	**180**	n	-	Y	
4-Methyl-2-pentanone	-	-	-	-	**N**	
Naphthalene	-	**0.14**	c*	-	Y	
n-Butylbenzene	-	-	-	-	Y	**68**
Nickel	**200**	730	n	-	Y	
2-Nitroaniline	-	-	-	-	Y	
3-Nitroaniline	-	**3.2**	c**	-	Y	
4-Nitroaniline	-	-	-	-	**N**	
2-Nitrophenol	-	-	-	-	**N**	
4-Nitrophenol	-	-	-	-	**N**	
Nitrobenzene	-	**3.4**	n	-	Y	
N-Nitrosodimethylamine	-	**0.00042**	c		Y	
N-Nitrosodi-n-propylamine	-	**0.0096**	c	-	Y	
N-Nitrosodiphenylamine	-	**14**	c	-	Y	
n-Propylbenzene	-	-	-	-	Y	**60.8**
Pentachlorophenol	-	0.56	c	**1**	Y	
Phenanthrene	-	-	-	-	**N**	
Phenol	**5**	11000	n	-	Y	
Pyrene	-	**1100**	n	-	Y	
Pyridine	-	**37**	n	-	Y	
sec-Butylbenzene	-	-	-	-	Y	**68**
Selenium	**50**	180	n	50	Y	
Silver	**50**	180	n	-	Y	
Styrene	-	1600	n	**100**	Y	
tert-Butylbenzene	-	-	-	-	**N**	
Tetrachloroethene (PCE)	20	-	-	-	Y	
1,1,1,2-Tetrachloroethane	-	**0.52**	c	-	Y	
Toluene	**750**	2300	n	1000	Y	
1,2,3-Trichlorobenzene	-	8.2	n	**70**	Y	
2,4,5-Trichlorophenol	-	**3700**	n	-	Y	
2,4,6-Trichlorophenol	-	**6.1**	c**	-	Y	
1,2,3-Trichloropropane	-	**0.0096**	c	-	Y	
1,2,4-Trichlorobenzene	-	-	-	-	**N**	
1,2,4-Trimethylbenzene	-	**15**	n	-	Y	
1,1,1-Trichloroethane	**60**	9100	n	200	Y	
1,1,2,2-Tetrachloroethane	**10**	0.067	c	-	Y	
1,1,2-Trichloroethane	**10**	0.24	c	**5**	Y	

TABLE 7
Ground Water Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED	EPA				
Analyte	New Mexico WQCC Standards_ugL	EPA Screening Levels.Tap Water_ugL	TapW_key	MCL_ugL	Constituent Detected	NMED Tap Water ug/l
Trichloroethene (TCE)	100	1.7	c	**5**	Y	
Trichlorofluoromethane	-	**1300**	n	-	Y	
1,3,5-Trimethylbenzene	-	**12**	n	-	Y	
Vanadium	-	**260**	n	-	Y	
Vinyl chloride	**1**	0.016	c	2	Y	
Xylenes, Total	**620**	200	n	10000	Y	
Zinc	**10000**	11000	n	-	Y	
General Chemistry					Y	
Alkalinity	-	-	-	-	Y	
Bicarbonate	-	-	-	-	Y	
Carbonate	-	-	-	-	Y	
Calcium	-	-	-	-	Y	
Chloride	250000				Y	
Iron	**1000**	26000	n		Y	
Nitrite	-	3700	n	**1000**	Y	
Nitrate (NO3 as N)	10000	58000	n	**10000**	Y	
Potassium	-	-	-	-	Y	
Sodium	-	-	-	-	Y	
Sulfate	600	-	-	-	Y	
Total Petroleum Hydrocarbons					Y	
Motor Oil Range Organics (MRO)	1340000	-	-	-	Y	
Diesel Range Organics (DRO)	1720000	-	-	-	Y	
Gasoline Range Organics (GRO)	-	-	-	-	Y	

TABLE 8
SWMU No. 2 Soil Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels 0-2'	Screening Levels 2-10'	Screening Levels >10'	NMED Residential Soil Screening Level	SWMU 2-1 (0-0.5')	SWMU 2-1 (1.5-2.0')	SWMU 2-1 (15-15.5')	SWMU 2-2 (0-0.5')	SWMU 2-2 (1.5-2.0')	SWMU 2-2 (13.5-14.0')	SWMU 2-3 (0-0.5')	SWMU 2-3 (1.5-2.0')	SWMU 2-3 (13.5-14.0')	SWMU 2-4 (0-0.5')	SWMU 2-4 (1.5-2.0')	SWMU 2-4 (14-14.5')	SWMU 2-5 (0-0.5')	SWMU 2-5 (1.5-2.0')	SWMU 2-5 (13.0-14.0')	SWMU 2-6 (0-0.5')	SWMU 2-6 (1.5-2.0')	SWMU 2-6 (13.5-14.0')	SWMU 2-7 (0-0.5')	SWMU 2-7 (1.5-2.0')	SWMU 2-7 (13.5-14')	SWMU 2-8 (0-0.5')	SWMU 2-8 (1.5-2.0')	SWMU 2-8 (13.0-13.5')	SWMU 2-9 (0-0.5')	SWMU 2-9 (1.5-2.0')	SWMU 2-9 (13.5-14.0')
Metals (mg/kg)																															
Antimony	13.2	13.2	13.2	31.3	<2.7	<2.7	<2.5	<2.7	<2.6	<2.8	<2.7	<2.7	<2.6	<2.7	<2.7	<2.9	<2.8	<2.7	<2.5	<2.8	<2.8	<2.8	<13	<2.7	<2.6	<2.8	<13	<2.6	<13	<14	<2.7
Arsenic	0.29	0.29	0.29	3.9	<2.7	<2.7	<2.5	<2.7	<2.6	<2.8	<2.7	<2.7	<2.6	<2.7	<2.7	<2.9	<2.8	<2.7	<2.5	<2.8	<2.8	<2.8	<13	<2.7	<2.6	<2.8	<2.7	<2.6	<13	<14	<2.7
Barium	6,030	6,030	6,030	15,600	150	96	58	110	63	240	89	96	220	140	77	110	180	140	290	310	310	310	200	210	240	240	190	190	240	180	280
Beryllium	56.2	56.2	1150	156	0.29	0.25	<0.15	0.28	0.2	0.17	0.34	0.45	0.21	0.29	0.27	<0.17	0.34	0.27	<0.15	0.43	0.39	<0.17	<0.80	0.34	<0.15	0.4	0.39	<0.15	<0.80	<0.83	0.21
Cadmium	27.5	27.5	27.5	39	<0.11	<0.11	<0.10	<0.11	<0.11	<0.11	<0.11	<0.11	<0.10	<0.11	<0.11	<0.11	<0.11	<0.11	<0.10	<0.11	<0.11	<0.11	<0.53	<0.11	<0.10	0.44	<0.11	0.64	<0.53	<0.55	<0.11
Chromium	100,000	100,000	1,000,000	100,000	3.8	3	1.3	3.7	2.4	5.7	4.5	5.9	30	6.3	3.7	5.8	4.5	4	6.5	5.4	5	3.3	6.3	4.4	8	16	5.7	8.5	6.5	6	9
Cobalt	61	61	661	1,520	2.7	2.3	0.98	2.9	1.9	2.7	3.2	3.7	5.9	3	2.6	2.2	3.3	3.1	3.4	3.9	4.3	3	4.8	3.2	3.3	4	3.4	3.1	4.5	4.3	3.3
Cyanide	147	147	147	1,220	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.50	<0.50	<0.25	<0.50	<50	<0.25	<0.50	<0.50	<0.25
Lead	400	400	400	400	3.7	2.9	1.6	3.2	2.7	1.7	4.2	4.7	1.4	7.8	4.1	2.8	5.6	3.9	1.8	4.4	4.7	1.3	5.7	4.7	1.8	6.8	4.7	1.5	14	9.3	3.3
Mercury	**2.09**	**2.09**	**2.09**	100,000	<0.035	<0.036	<0.034	**4.1**	**11**	**2.2**	<0.036	<0.036	<0.034	0.13	0.57	0.039	0.061	<0.035	<0.033	<0.037	<0.037	<0.036	0.093	<0.036	<0.034	0.61	0.31	0.22	<0.035	0.043	<0.035
Nickel	953	953	953	1,560	4.2	3.3	0.94	4	3	2.7	7.9	7	4.1	8	4.2	2.5	6	4.1	2.9	5.7	5.8	2	7.2	4.8	2.7	14	6.2	3.2	6.9	6.3	3.7
Selenium	19	19	19	391	<2.7	<2.7	<13	<2.7	<2.6	<2.8	<2.7	<2.7	<2.6	<2.7	<2.7	<2.9	<14	<2.7	<2.5	<2.8	<2.8	<2.8	<13	<2.7	<2.6	<14	<14	<2.6	<13	<14	<2.7
Silver	31.3	31.3	31.3	391	<0.27	<0.27	<0.25	<0.27	<0.26	<0.28	<0.27	<0.27	<0.26	<0.27	<0.27	<0.29	<0.28	<0.27	<0.25	<0.28	<0.28	<0.28	<1.3	<0.27	<0.26	<0.28	<0.27	<0.26	<1.3	<1.4	<0.27
Vanadium	310	310	730	78.2	11	11	5.5	12	8.3	17	12	15	15	13	10	12	14	12	17	17	18	18	20	14	15	15	14	16	19	20	17
Zinc	13,600	13,600	13,600	23,500	18	15	7	18	13	19	23	26	16	40	20	22	21	19	18	24	25	19	40	22	18	48	27	23	37	37	35
Volatile Organic Compounds - (EPA Method 8260B) mg/kg																															
1,1,1,2-Tetrachloroethane	0.025	0.025	0.025	43.2	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,1,1-Trichloroethane	26.5	26.5	26.5	563	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,1,2,2-Tetrachloroethane	0.00321	0.00321	0.00321	5.55	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,1,2-Trichloroethane	0.00995	0.00995	0.00995	11.9	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,1-Dichloroethane	6.79	6.79	6.79	1,400	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,1-Dichloroethene	2.68	2.68	2.68	206	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,1-Dichloropropene	NS	NS	NS	NS	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,2,3-Trichlorobenzene	0.11	0.11	0.11	NS	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,2,3-Trichloropropane	0.00041	0.00041	0.00041	0.0861	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,2,4-Trichlorobenzene	0.408	0.408	0.408	69.3	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,2,4-Trimethylbenzene	1.42	1.42	1.42	58	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,2-Dibromo-3-chloropropane	0.00298	0.00298	0.00298	1.84	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,2-Dibromoethane (EDB)	1.50E-05	1.50E-05	1.50E-05	0.504	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,2-Dichlorobenzene	0.237	0.237	0.237	37.4	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,2-Dichloroethane (EDC)	0.0015	0.0015	0.0015	6.08	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,2-Dichloropropane	0.00819	0.00819	0.00819	6	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,3,5-Trimethylbenzene	0.355	0.355	0.355	24.8	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,3-Dichlorobenzene	0.0873	0.0873	0.0873	32.6	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,3-Dichloropropane	0.27	0.27	0.27	NS	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1,4-Dichlorobenzene	0.11	0.11	0.11	39.5	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
1-Methylnaphthalene	0.015	0.015	0.015	22	NR	NR	<0.20	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	<0.20	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
2,2-Dichloropropane	NS	NS	NS	NS	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
2-Butanone	25.5	25.5	25.5	31,800	<0.00458	<0.00396	<0.51	<0.00435	<0.00442	<0.00396	<0.00407	<0.00381	<0.00399	<0.00422	<0.00417	<0.00368	<0.00395	<0.00383	<0.51	<0.00367	<0.00422	<0.00415	<0.00397	<0.00399	<0.00398	<0.00388	<0.00368	<0.0036	<0.00395	<0.00375	<0.00355
2-Chlorotoluene	NS	NS	NS	NS	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
2-Hexanone	NS	NS	NS	NS	<0.00458	<0.00396	<0.51	<0.00435	<0.00442	<0.00396	<0.00407	<0.00381	<0.00399	<0.00422	<0.00417	<0.00368	<0.00395	<0.00383	<0.51	<0.00367	<0.00422	<0.00415	<0.00397	<0.00399	<0.00398	<0.00388	<0.00368	<0.0036	<0.00395	<0.00375	<0.00355
2-Methylnaphthalene	0.9	0.9	0.9	310	NR	NR	<0.20	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	<0.20	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4-Chlorotoluene	NS	NS	NS	NS	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
4-Isopropyltoluene	NS	NS	NS	NS	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
4-Methyl-2-pentanone	NS	NS	NS	NS	<0.00458	<0.00396	<0.51	<0.00435	<0.00442	<0.00396	<0.00407	<0.00381	<0.00399	<0.00422	<0.00417	<0.00368	<0.00395	<0.00383	<0.51	<0.00367	<0.00422	<0.00415	<0.00397	<0.00399	<0.00398	<0.00388	<0.00368	<0.0036	<0.00395	<0.00375	<0.00355
Acetone	19.1	19.1	19.1	28,100	<0.00458	<0.00396	<0.76	<0.00435	<0.00442	<0.00396	0.00409	<0.00381	<0.00399	<0.00422	<0.00417	<0.00368	<0.00395	<0.00383	<0.76	<0.00367	<0.00422	<0.00415	<0.00397	0.00484	<0.00398	<0.00388	<0.00368	<0.0036	<0.00395	<0.00375	0.00776
Benzene	0.0201	0.0201	0.0201	10.3	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Bromobenzene	0.214	0.214	0.214	37	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Bromodichloromethane	0.0118	0.0118	0.0118	14.4	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Bromoform	0.0023	0.0023	0.0023	NS	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Bromomethane	0.0374	0.0374	0.0374	8.51	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Carbon disulfide	7.89	7.89	7.89	460	<0.00458	<0.00396	<0.51	<0.00435	<0.00442	<0.00396	<0.00407	<0.00381	<0.00399	<0.00422	<0.00417	<0.00368	<0.00395	<0.00383	<0.51	<0.00367	<0.00422	<0.00415	<0.00397	<0.00399	<0.00398	<0.00388	<0.00368	<0.0036	<0.00395	<0.00375	<0.00355
Carbon tetrachloride	0.0195	0.0195	0.0195	3.47	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Chlorobenzene	1.1	1.1	1.1	194	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Chloroethane	0.188	0.188	0.188	63.3	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Chloroform	0.00825	0.00825	0.00825	4	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Chloromethane	0.1	0.1	0.1	21.8	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
cis-1,2-DCE	0.299	0.299	0.299	76.5	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
cis-1,3-Dichloropropene	NS	NS	NS	NS	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Dibromochloromethane	0.00716	0.00716	0.00716	14.8	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Dibromomethane	0.091	0.091	0.091	NS	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Dichlorodifluoromethane	5.72	5.72	5.72	161	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Ethylbenzene	20.2	20.2	20.2	128	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Hexachlorobutadiene	0.0019	0.0019	0.0019	NS	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Isopropylbenzene	NS	NS	NS	NS	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Methyl tert-butyl ether (MTBE)	0.0027	0.0027	0.0027	NS	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Methylene chloride	0.17	0.17	0.17	182	<0.00229	<0.00198	<0.15	<0.00218	<0.00221	<0.00198	<0.00203	<0.00191	<0.002	<0.00211	<0.00208	<0.00184	<0.00198	<0.00192	<0.15	<0.00183	<0.00211	<0.00207	<0.00198	<0.002	<0.00199	<0.00194	<0.00184	<0.0018	<0.00198	<0.00188	<0.00177
Naphthalene	0.394	0.394	0.394	79.5	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
n-Butylbenzene	5.4	5.4	5.4	62.1	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
n-Propylbenzene	5.4	5.4	5.4	62.1	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
sec-Butylbenzene	4.33	4.33	4.33	60.6	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Styrene	10.5	10.5	10.5	100	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
tert-Butylbenzene	4.3	4.3	4.3	106	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Tetrachloroethene (PCE)	0.0574	0.0574	0.0574	12.5	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Toluene	21.7	21.7	21.7	252	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	0.00129	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	0.00129	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
trans-1,2-DCE	0.667	0.667	0.667	112	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
trans-1,3-Dichloropropene	NS	NS	NS	NS	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Trichloroethene (TCE)	0.002	0.002	0.002	0.638	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Trichlorofluoromethane	22.3	22.3	22.3	588	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Vinyl chloride	0.00545	0.00545	0.00545	4.37	<0.00114	<0.00099	<0.051	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.051	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Xylenes, Total	2.06	2.06	2.06	82	<0.00114	<0.00099	<0.10	<0.00109	<0.0011	<0.00099	<0.00102	<0.000954	<0.000998	<0.00106	<0.00104	<0.000919	<0.000988	<0.000958	<0.10	<0.000917	<0.00106	<0.00104	<0.000992	<0.000999	<0.000996	<0.00097	<0.00092	<0.000899	<0.000988	<0.000939	<0.000887
Semi Volatile Organics - (EPA Method 8270) mg/kg																															
1,2,4-Trichlorobenzene	0.408	0.408	0.408	69.3	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21

TABLE 8
SWMU No. 2 Soil Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels 0-2'	Screening Levels 2-10'	Screening Levels >10'	NMED Residential Soil Screening Level	SWMU 2-1 (0-0.5')	SWMU 2-1 (1.5-2.0')	SWMU 2-1 (15-15.5')	SWMU 2-2 (0-0.5')	SWMU 2-2 (1.5-2.0')	SWMU 2-2 (13.5-14.0')	SWMU 2-3 (0-0.5')	SWMU 2-3 (1.5-2.0')	SWMU 2-3 (13.5-14.0')	SWMU 2-4 (0-0.5')	SWMU 2-4 (1.5-2.0')	SWMU 2-4 (14-14.5')	SWMU 2-5 (0-0.5')	SWMU 2-5 (1.5-2.0')	SWMU 2-5 (13.0-14.0')	SWMU 2-6 (0-0.5')	SWMU 2-6 (1.5-2.0')	SWMU 2-6 (13.5-14.0')	SWMU 2-7 (0-0.5')	SWMU 2-7 (1.5-2.0')	SWMU 2-7 (13.5-14')	SWMU 2-8 (0-0.5')	SWMU 2-8 (1.5-2.0')	SWMU 2-8 (13.0-13.5')	SWMU 2-9 (0-0.5')	SWMU 2-9 (1.5-2.0')	SWMU 2-9 (13.5-14.0')
1,2-Dichlorobenzene	0.237	0.237	0.237	37.4	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
1,3-Dichlorobenzene	0.0873	0.0873	0.0873	32.6	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
1,4-Dichlorobenzene	0.11	0.11	0.11	39.5	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
2,4,5-Trichlorophenol	143	143	143	6,110	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
2,4,6-Trichlorophenol	0.143	0.143	0.143	6.11	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
2,4-Dichlorophenol	0.863	0.863	0.863	183	<0.43	<0.44	<0.41	<0.43	<0.42	<0.45	<0.43	<0.44	<0.41	<0.43	<0.43	<0.46	<0.44	<0.43	<0.40	<0.45	<0.45	<0.44	<0.43	<0.43	<0.41	<0.44	<0.44	<0.41	<0.43	<0.44	<0.43
2,4-Dimethylphenol	7.11	7.11	7.11	1,220	<0.32	<0.33	<0.31	<0.32	<0.32	<0.34	<0.32	<0.33	<0.31	<0.32	<0.33	<0.34	<0.33	<0.32	<0.30	<0.34	<0.33	<0.33	<0.32	<0.32	<0.31	<0.33	<0.33	<0.31	<0.32	<0.33	<0.32
2,4-Dinitrophenol	1.05	1.05	1.05	122	<0.43	<0.44	<0.41	<0.43	<0.42	<0.45	<0.43	<0.44	<0.41	<0.43	<0.43	<0.46	<0.44	<0.43	<0.40	<0.45	<0.45	<0.44	<0.43	<0.43	<0.41	<0.44	<0.44	<0.41	<0.43	<0.44	<0.43
2,4-Dinitrotoluene	0.462	0.462	0.462	122	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
2,6-Dinitrotoluene	0.034	0.034	0.034	NS	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
2-Chloronaphthalene	18	18	18	NS	<0.27	<0.27	<0.25	<0.27	<0.26	<0.28	<0.27	<0.27	<0.26	<0.27	<0.27	<0.29	<0.28	<0.27	<0.25	<0.28	<0.28	<0.28	<0.27	<0.27	<0.26	<0.28	<0.27	<0.26	<0.27	<0.28	<0.27
2-Chlorophenol	0.472	0.472	0.472	166	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
2-Methylnaphthalene	0.9	0.9	0.9	310	<0.27	<0.27	<0.25	<0.27	<0.26	<0.28	<0.27	<0.27	<0.26	<0.27	<0.27	<0.29	<0.28	<0.27	<0.25	<0.28	<0.28	<0.28	<0.27	<0.27	<0.26	<0.28	<0.27	<0.26	<0.27	<0.28	<0.27
2-Methylphenol	2	2	2	NS	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
2-Nitroaniline	NS	NS	NS	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
2-Nitrophenol	NS	NS	NS	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
3,3'-Dichlorobenzidine	0.0371	0.0371	0.0371	10.8	<0.27	<0.27	<0.25	<0.27	<0.26	<0.28	<0.27	<0.27	<0.26	<0.27	<0.27	<0.29	<0.28	<0.27	<0.25	<0.28	<0.28	<0.28	<0.27	<0.27	<0.26	<0.28	<0.27	<0.26	<0.27	<0.28	<0.27
3+4-Methylphenol	0.19	0.19	0.19	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
3-Nitroaniline	0.00097	0.00097	0.00097	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
4,6-Dinitro-2-methylphenol	NS	NS	NS	NS	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
4-Bromophenyl phenyl ether	NS	NS	NS	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
4-Chloro-3-methylphenol	NS	NS	NS	NS	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
4-Chloroaniline	NS	NS	NS	NS	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
4-Chlorophenyl phenyl ether	NS	NS	NS	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
4-Nitroaniline	NS	NS	NS	NS	<0.27	<0.27	<0.25	<0.27	<0.26	<0.28	<0.27	<0.27	<0.26	<0.27	<0.27	<0.29	<0.28	<0.27	<0.25	<0.28	<0.28	<0.28	<0.27	<0.27	<0.26	<0.28	<0.27	<0.26	<0.27	<0.28	<0.27
4-Nitrophenol	NS	NS	NS	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Acenaphthene	54.9	54.9	54.9	3,730	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Acenaphthylene	NS	NS	NS	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Aniline	0.0034	0.0034	0.0034	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Anthracene	1620	1620	1620	22,000	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Azobenzene	0.00051	0.00051	0.00051	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Benz(a)anthracene	0.014	0.014	0.014	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Benzo(a)pyrene	2.34	2.78	2.78	0.621	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Benzo(b)fluoranthene	23.4	33.5	33.5	6.21	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	0.27	<0.21
Benzo(g,h,i)perylene	NS	NS	NS	NS	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
Benzo(k)fluoranthene	234	335	335	62.1	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Benzoic acid	33	33	33	NS	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
Benzyl alcohol	4.2	4.2	4.2	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Bis(2-chloroethoxy)methane	0.023	0.023	0.023	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Bis(2-chloroethyl)ether	0.00056	0.00056	0.00056	2.44	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Bis(2-chloroisopropyl)ether	0.0144	0.0144	0.0144	38.7	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Bis(2-ethylhexyl)phthalate	1370	4660	21500	347	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
Butyl benzyl phthalate	0.67	0.67	0.67	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Carbazole	NS	NS	NS	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Chrysene	348	348	348	615	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Dibenz(a,h)anthracene	2.34	10.4	10.4	0.621	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Dibenzofuran	2.87	2.87	2.87	142	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Diethyl phthalate	354	354	354	48,900	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Dimethyl phthalate	1670	1670	1670	100,000	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Di-n-butyl phthalate	3720	3720	3720	6,110	<0.54	<0.54	<0.51	<0.54	<0.53	0.79	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
Di-n-octyl phthalate	NS	NS	NS	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Fluoranthene	4690	4690	4690	2,290	<0.27	<0.27	<0.25	<0.27	<0.26	<0.28	<0.27	<0.27	<0.26	<0.27	<0.27	<0.29	<0.28	<0.27	<0.25	<0.28	<0.28	<0.28	<0.27	<0.27	<0.26	<0.28	<0.27	<0.26	<0.27	0.37	<0.27
Fluorene	58.5	58.5	58.5	2,660	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
Hexachlorobenzene	0.686	0.686	0.686	3.04	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Hexachlorobutadiene	0.0019	0.0019	0.0019	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Hexachlorocyclopentadiene	431	431	1320	366	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Hexachloroethane	2.09	2.09	2.09	61.1	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Indeno(1,2,3-cd)pyrene	23.4	94.6	94.6	6.21	<0.27	<0.27	<0.25	<0.27	<0.26	<0.28	<0.27	<0.27	<0.26	<0.27	<0.27	<0.29	<0.28	<0.27	<0.25	<0.28	<0.28	<0.28	<0.27	<0.27	<0.26	<0.28	<0.27	<0.26	<0.27	<0.28	<0.27
Isophorone	3.4	3.4	3.4	5,120	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
Naphthalene	0.394	0.394	0.394	79.5	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Nitrobenzene	0.0184	0.0184	0.0184	22.8	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
N-Nitrosodi-n-propylamine	0.000011	0.000011	0.000011	NS	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
N-Nitrosodiphenylamine	5.71	5.71	5.71	993	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Pentachlorophenol	0.117	0.117	0.117	29.8	<0.43	<0.44	<0.41	<0.43	<0.42	<0.45	<0.43	<0.44	<0.41	<0.43	<0.43	<0.46	<0.44	<0.43	<0.40	<0.45	<0.45	<0.44	<0.43	<0.43	<0.41	<0.44	<0.44	<0.41	<0.43	<0.44	<0.43
Phenanthrene	464	464	464	1,830	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Phenol	47.4	47.4	47.4	18,300	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	<0.22	<0.21
Pyrene	373	373	373	2,290	<0.22	<0.22	<0.20	<0.21	<0.21	<0.22	<0.22	<0.22	<0.21	<0.22	<0.22	<0.23	<0.22	<0.22	<0.20	<0.23	<0.22	<0.22	<0.21	<0.22	<0.20	<0.22	<0.22	<0.21	<0.21	0.27	<0.21
Pyridine	0.0097	0.0097	0.0097	NS	<0.54	<0.54	<0.51	<0.54	<0.53	<0.56	<0.54	<0.55	<0.51	<0.54	<0.54	<0.57	<0.55	<0.54	<0.50	<0.56	<0.56	<0.55	<0.53	<0.54	<0.51	<0.55	<0.55	<0.52	<0.53	<0.55	<0.53
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																															
Diesel Range Organics (DRO)	1120	1120	1120	520	<11	<11	<10	<11	<11	<11	<11	<11	<10	<11	19	<11	<11	<11	<10	<11	<11	<11	<11	<11	<10	<11	<11	<10	<11	<11	<11
Gasoline Range Organics (GRO)	NS	NS	NS	NS	<5.4	<5.4	<5.1	<5.4	<5.3	<5.6	<5.4	<5.5	<5.1	<5.4	<5.4	<5.7	<5.5	<5.4	<10	<5.6	<5.6	<5.5	<5.3	<5.4	<5.1	<5.5	<5.5	<5.2	<5.3	<5.5	<5.3
Motor Oil Range Organics (MRO)	890	890	890	440	<54	<54	<51	<54	<53	57	<54	<55	<51	55	<54	<57	<55	<54	<51	<56	<56	<55	<53	<54	<51	<55	<55	<52	<53	<55	60

NR - not reported
NS- no screening level specified

TABLE 9
SWMU No. 8 Soil Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels 0-2'	Screening Levels 2-10'	Screening Levels >10'	NMED Residential Soil	SWMU 8-1 (0-0.5')	SWMU 8-1 (1.5-2.0')	SWMU 8-2 (0-0.5')	SWMU 8-2 (1.5-2.0')	SWMU 8-3 (0-0.5')	SWMU 8-3 (1.5-2.0')	SWMU 8-4 (0-0.5')	SWMU 8-4 (1.5-2.0')	SWMU 8-5 (0-0.5')	SWMU 8-5 (1.5-2.0')	SWMU 8-6 (0-0.5')	SWMU 8-6 (1.5-2.0')	SWMU 8-6a (33-34')	SWMU 8-7 (0-0.5')	SWMU 8-7 (1.5-2.0')	SWMU 8-8 (0-0.5')	SWMU 8-8 (1.5-2.0')	SWMU 8-9 (0-0.5')	SWMU 8-9 (1.5-2.0')	SWMU 8-10 (0-0.5')	SWMU 8-10 (1.5-2.0')	SWMU 8-11 (0-0.5')	SWMU 8-11 (1.5-2.0')	SWMU 8-12 (0-0.5')	SWMU 8-12 (1.5-2.0')	SWMU 8-12 (37-38.5')
Metals (mg/kg)																														
Antimony	13.2	13.2	13.2	31.3	<13	<13	<2.6	<2.6	<2.7	<2.6	<2.7	<13	<2.7	<2.7	<2.6	<2.7	< 2.9	<2.6	<2.6	<2.6	<2.6	<2.7	<13	<2.6	<2.6	<27	<2.7	<13	<2.6	<2.7
Arsenic	0.29	0.29	0.29	3.9	<13	<13	2.8	<2.6	<2.7	<2.6	<2.7	<13	4.2	<2.7	<2.6	3	< 2.9	<2.6	4	<2.6	<2.6	<2.7	<2.7	3	<2.6	<27	<2.7	<13	<2.6	7.1
Barium	6,030	6,030	6,030	15,600	190	260	300	230	230	200	370	210	230	220	210	200	130	180	180	190	180	300	250	440	350	250	210	300	280	200
Beryllium	56.2	56.2	1150	156	<0.79	<0.79	0.45	0.45	0.33	0.36	0.45	<0.80	0.48	0.48	0.43	0.44	< 0.18	0.42	0.42	0.42	0.43	0.46	0.47	0.5	0.47	<1.6	0.45	<0.80	0.47	0.54
Cadmium	27.5	27.5	27.5	39	<0.53	<0.53	<0.11	<0.11	<0.11	<0.11	<0.11	<0.53	0.14	<0.11	<0.11	<0.11	< 0.12	<0.10	<0.10	<0.11	<0.11	<0.11	<0.11	<0.11	<0.10	<1.1	<0.11	<0.54	<0.11	<0.11
Chromium	100,000	100,000	1,000,000	100,000	11	7.9	6.5	6.5	8	9.4	5.8	6.7	380	220	85	100	7.7	78	98	83	100	17	6.9	6.1	6.4	14	5.6	9.8	6.1	3.1
Cobalt	61	61	661	1,520	6.1	6.1	4.5	4.6	3.7	3.6	4.2	5.8	4.7	4.7	4.2	4.5	2.2	4.2	4.3	4.1	4	4.7	6	4.8	5.4	9.6	4.4	7.1	5	4.5
Cyanide	147	147	147	1,220	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.25
Lead	400	400	400	400	9.4	6.9	5.1	4.8	7.8	12	4.8	6.4	11	7.7	6.1	5.6	3.8	6.7	6.6	5.8	5.7	4.7	6.4	5.1	4.8	9.4	4.4	7.9	5.1	6.4
Mercury	2.09	2.09	2.09	100,000	<0.035	<0.035	<0.035	<0.035	0.14	0.25	<0.035	<0.035	0.35	0.14	0.046	0.045	< 0.039	0.039	0.048	0.044	0.053	<0.036	<0.035	<0.035	<0.035	<0.035	<0.034	<0.035	<0.035	<0.036
Nickel	953	953	953	1,560	11	9	6.9	6.8	9.1	8.4	6.7	8.3	10	8.9	8.5	7.8	2.2	8.3	9.7	7.4	7	7	8.4	7.2	7.1	15	6.2	12	7.2	3.9
Selenium	19	19	19	391	<13	<13	<2.6	<2.6	<2.7	<2.6	<2.7	<13	<27	<27	<26	<27	< 2.9	<26	<26	<26	<26	<27	<13	<26	<26	<27	<26	<13	<26	<2.7
Silver	31.3	31.3	31.3	391	<1.3	<1.3	<0.26	<0.26	<0.27	<0.26	<0.27	<1.3	<0.27	<0.27	<0.26	<0.27	< 0.29	<0.26	<0.26	<0.26	<0.26	<0.27	<0.27	<0.26	<0.26	<2.7	<0.27	<1.3	<0.26	<0.27
Vanadium	310	310	730	78.2	25	28	21	21	15	18	20	25	19	18	18	18	12	17	17	17	16	20	20	20	22	32	15	23	19	8.2
Zinc	13,600	13,600	13,600	23,500	52	43	31	30	44	45	29	38	260	170	89	88	14	83	87	84	84	34	30	32	32	61	26	45	31	15
Volatile Organic Compounds - (EPA Method 8260B) mg/kg																														
1,1,1,2-Tetrachloroethane	0.025	0.025	0.025	43.2	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,1,1-Trichloroethane	26.5	26.5	26.5	563	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,1,2,2-Tetrachloroethane	0.00321	0.00321	0.00321	5.55	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,1,2-Trichloroethane	0.00995	0.00995	0.00995	11.9	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,1-Dichloroethane	6.79	6.79	6.79	1,400	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,1-Dichloroethene	2.68	2.68	2.68	206	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,1-Dichloropropene	NS	NS	NS	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,2,3-Trichlorobenzene	0.11	0.11	0.11	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,2,3-Trichloropropane	0.00041	0.00041	0.00041	0.0861	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,2,4-Trichlorobenzene	0.408	0.408	0.408	69.3	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,2,4-Trimethylbenzene	1.42	1.42	1.42	58	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,2-Dibromo-3-chloropropane	0.00298	0.00298	0.00298	1.84	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,2-Dibromoethane (EDB)	1.50E-05	1.50E-05	1.50E-05	0.504	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,2-Dichlorobenzene	0.237	0.237	0.237	37.4	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,2-Dichloroethane (EDC)	0.0015	0.0015	0.0015	6.08	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,2-Dichloropropane	0.00819	0.00819	0.00819	6	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,3,5-Trimethylbenzene	0.355	0.355	0.355	24.8	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,3-Dichlorobenzene	0.0873	0.0873	0.0873	32.6	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1,3-Dichloropropane	0.27	0.27	0.27	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
1-Methylnaphthalene	0.015	0.015	0.015	22	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	< 0.20	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,4-Dichlorobenzene	0.11	0.11	0.11	39.5	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
2,2-Dichloropropane	NS	NS	NS	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
2-Butanone	25.5	25.5	25.5	31,800	<0.00445	<0.00452	<0.00442	<0.0043	<0.00384	<0.0047	<0.00439	<0.00424	<0.0043	<0.00434	<0.00467	<0.0045	<0.00497	<0.00415	<0.00424	<0.00449	<0.00465	<0.00424	<0.00453	<0.00475	<0.00446	<0.00478	<0.00474	<0.00421	<0.00452	<0.00398
2-Chlorotoluene	NS	NS	NS	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
2-Hexanone	NS	NS	NS	NS	<0.00445	<0.00452	<0.00442	<0.0043	<0.00384	<0.0047	<0.00439	<0.00424	<0.0043	<0.00434	<0.00467	<0.0045	<0.00497	<0.00415	<0.00424	<0.00449	<0.00465	<0.00424	<0.00453	<0.00475	<0.00446	<0.00478	<0.00474	<0.00421	<0.00452	<0.00398
2-Methylnaphthalene	0.9	0.9	0.9	310	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	< 0.20	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4-Chlorotoluene	NS	NS	NS	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
4-Isopropyltoluene	NS	NS	NS	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
4-Methyl-2-pentanone	NS	NS	NS	NS	<0.00445	<0.00452	<0.00442	<0.0043	<0.00384	<0.0047	<0.00439	<0.00424	<0.0043	<0.00434	<0.00467	<0.0045	<0.00497	<0.00415	<0.00424	<0.00449	<0.00465	<0.00424	<0.00453	<0.00475	<0.00446	<0.00478	<0.00474	<0.00421	<0.00452	<0.00398
Acetone	19.1	19.1	19.1	28,100	<0.00445	0.00538	<0.00442	<0.0043	<0.00384	<0.0047	<0.00439	<0.00424	<0.0043	0.0253	0.0669	<0.0045	<0.00497	<0.00415	0.00454	<0.00449	<0.00465	<0.00424	<0.00453	<0.00475	<0.00446	<0.00478	<0.00474	<0.00421	<0.00452	<0.00398
Benzene	0.0201	0.0201	0.0201	10.3	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Bromobenzene	0.214	0.214	0.214	37	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Bromodichloromethane	0.0118	0.0118	0.0118	14.4	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Bromoform	0.0023	0.0023	0.0023	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Bromomethane	0.0374	0.0374	0.0374	8.51	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Carbon disulfide	7.89	7.89	7.89	460	<0.00445	<0.00452	<0.00442	<0.0043	<0.00384	<0.0047	<0.00439	<0.00424	<0.0043	<0.00434	<0.00467	<0.0045	<0.00497	<0.00415	<0.00424	<0.00449	<0.00465	<0.00424	<0.00453	<0.00475	<0.00446	<0.00478	<0.00474	<0.00421	<0.00452	<0.00398
Carbon tetrachloride	0.0195	0.0195	0.0195	3.47	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Chlorobenzene	1.1	1.1	1.1	194	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Chloroethane	0.188	0.188	0.188	63.3	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Chloroform	0.00825	0.00825	0.00825	4	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Chloromethane	0.1	0.1	0.1	21.8	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
cis-1,2-DCE	0.299	0.299	0.299	76.5	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
cis-1,3-Dichloropropene	NS	NS	NS	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Dibromochloromethane	0.00716	0.00716	0.00716	14.8	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Dibromomethane	0.091	0.091	0.091	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Dichlorodifluoromethane	5.72	5.72	5.72	161	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Ethylbenzene	20.2	20.2	20.2	128	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Hexachlorobutadiene	0.0019	0.0019	0.0019	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Isopropylbenzene	NS	NS	NS	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Methyl tert-butyl ether (MTBE)	0.0027	0.0027	0.0027	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Methylene chloride	0.17	0.17	0.17	182	<0.00223	<0.00226	<0.00221	<0.00215	<0.00192	<0.00235	<0.00219	<0.00212	<0.00215	<0.00217	<0.00234	<0.00225	<0.00249	<0.00207	<0.00212	<0.00224	<0.00232	<0.00212	<0.00227	<0.00238	<0.00223	<0.00239	<0.00237	<0.00211	<0.00226	<0.00199
Naphthalene	0.394	0.394	0.394	79.5	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
n-Butylbenzene	5.4	5.4	5.4	62.1	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
n-Propylbenzene	5.4	5.4	5.4	62.1	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
sec-Butylbenzene	4.33	4.33	4.33	60.6	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Styrene	10.5	10.5	10.5	100	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
tert-Butylbenzene	4.3	4.3	4.3	106	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Tetrachloroethene (PCE)	0.0574	0.0574	0.0574	12.5	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Toluene	21.7	21.7	21.7	252	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	0.00143	<0.00108	0.0118	<0.00117	<0.00112	<0.00124	<0.00104	0.00199	<0.00112	<0.00116	0.00161	0.00146	<0.00119	<0.00112	<0.00119	<0.00119	0.00127	<0.00113	<0.000995
trans-1,2-DCE	0.667	0.667	0.667	112	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
trans-1,3-Dichloropropene	NS	NS	NS	NS	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Trichloroethene (TCE)	0.002	0.002	0.002	0.638	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Trichlorofluoromethane	22.3	22.3	22.3	588	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	0.00429	0.00214	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	0.00417	0.00205	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	0.00285	<0.00113	<0.000995
Vinyl chloride	0.00545	0.00545	0.00545	4.37	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Xylenes, Total	2.06	2.06	2.06	82	<0.00111	<0.00113	<0.0011	<0.00107	<0.00096	<0.00118	<0.0011	<0.00106	<0.00108	<0.00108	<0.00117	<0.00112	<0.00124	<0.00104	<0.00106	<0.00112	<0.00116	<0.00106	<0.00113	<0.00119	<0.00112	<0.00119	<0.00119	<0.00105	<0.00113	<0.000995
Semi Volatile Organics - (EPA Method 8270) mg/kg																														
1,2,4-Trichlorobenzene	0.408	0.408	0.408	69.3	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
1,2-Dichlorobenzene	0.237	0.237	0.237	37.4	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
1,3-Dichlorobenzene	0.0873	0.0873	0.0873	32.6	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22

TABLE 9
SWMU No. 8 Soil Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels 0-2'	Screening Levels 2-10'	Screening Levels >10'	NMED Residential Soil	SWMU 8-1 (0-0.5')	SWMU 8-1 (1.5-2.0')	SWMU 8-2 (0-0.5')	SWMU 8-2 (1.5-2.0')	SWMU 8-3 (0-0.5')	SWMU 8-3 (1.5-2.0')	SWMU 8-4 (0-0.5')	SWMU 8-4 (1.5-2.0')	SWMU 8-5 (0-0.5')	SWMU 8-5 (1.5-2.0')	SWMU 8-6 (0-0.5')	SWMU 8-6 (1.5-2.0')	SWMU 8-6a (33-34)	SWMU 8-7 (0-0.5')	SWMU 8-7 (1.5-2.0')	SWMU 8-8 (0-0.5')	SWMU 8-8 (1.5-2.0')	SWMU 8-9 (0-0.5')	SWMU 8-9 (1.5-2.0')	SWMU 8-10 (0-0.5')	SWMU 8-10 (1.5-2.0')	SWMU 8-11 (0-0.5')	SWMU 8-11 (1.5-2.0')	SWMU 8-12 (0-0.5')	SWMU 8-12 (1.5-2.0')	SWMU 8-12 (37-38.5')
1,4-Dichlorobenzene	0.11	0.11	0.11	39.5	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
2,4,5-Trichlorophenol	143	143	143	6,110	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
2,4,6-Trichlorophenol	0.143	0.143	0.143	6.11	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
2,4-Dichlorophenol	0.863	0.863	0.863	183	<0.42	<0.42	<0.42	<0.42	<2.2	<0.84	<0.43	<0.42	<2.1	<2.2	<2.1	<2.1	< 0.47	<2.1	<2.1	<2.1	<2.1	<0.44	<0.43	<0.42	<0.42	<0.43	<0.42	<0.43	<0.42	<0.44
2,4-Dimethylphenol	7.11	7.11	7.11	1,220	<0.32	<0.32	<0.32	<0.32	<1.6	<0.63	<0.32	<0.32	<1.6	<1.6	<1.6	<1.6	< 0.35	<1.6	<1.6	<1.6	<1.6	<0.33	<0.32	<0.32	<0.31	<0.32	<0.31	<0.32	<0.32	<0.33
2,4-Dinitrophenol	1.05	1.05	1.05	122	<0.42	<0.42	<0.42	<0.42	<2.2	<0.84	<0.43	<0.42	<2.1	<2.2	<2.1	<2.1	< 0.47	<2.1	<2.1	<2.1	<2.1	<0.44	<0.43	<0.42	<0.42	<0.43	<0.42	<0.43	<0.42	<0.44
2,4-Dinitrotoluene	0.462	0.462	0.462	122	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
2,6-Dinitrotoluene	0.034	0.034	0.034	NS	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
2-Chloronaphthalene	18	18	18	NS	<0.26	<0.26	<0.26	<0.26	<1.4	<0.53	<0.27	<0.27	<1.3	<1.4	<1.3	<1.3	< 0.29	<1.3	<1.3	<1.3	<1.3	<0.27	<0.27	<0.26	<0.26	<0.27	<0.26	<0.27	<0.26	<0.27
2-Chlorophenol	0.472	0.472	0.472	166	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
2-Methylnaphthalene	0.9	0.9	0.9	310	<0.26	<0.26	<0.26	<0.26	<1.4	<0.53	<0.27	<0.27	<1.3	<1.4	<1.3	<1.3	< 0.29	<1.3	<1.3	<1.3	<1.3	<0.27	<0.27	<0.26	<0.26	<0.27	<0.26	<0.27	<0.26	<0.27
2-Methylphenol	2	2	2	NS	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
2-Nitroaniline	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
2-Nitrophenol	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
3,3'-Dichlorobenzidine	0.0371	0.0371	0.0371	10.8	<0.26	<0.26	<0.26	<0.26	<1.4	<0.53	<0.27	<0.27	<1.3	<1.4	<1.3	<1.3	< 0.29	<1.3	<1.3	<1.3	<1.3	<0.27	<0.27	<0.26	<0.26	<0.27	<0.26	<0.27	<0.26	<0.27
3+4-Methylphenol	0.19	0.19	0.19	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
3-Nitroaniline	0.00097	0.00097	0.00097	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
4,6-Dinitro-2-methylphenol	NS	NS	NS	NS	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
4-Bromophenyl phenyl ether	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
4-Chloro-3-methylphenol	NS	NS	NS	NS	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
4-Chloroaniline	NS	NS	NS	NS	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
4-Chlorophenyl phenyl ether	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
4-Nitroaniline	NS	NS	NS	NS	<0.26	<0.26	<0.26	<0.26	<1.4	<0.53	<0.27	<0.27	<1.3	<1.4	<1.3	<1.3	< 0.29	<1.3	<1.3	<1.3	<1.3	<0.27	<0.27	<0.26	<0.26	<0.27	<0.26	<0.27	<0.26	<0.27
4-Nitrophenol	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Acenaphthene	54.9	54.9	54.9	3,730	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Acenaphthylene	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Aniline	0.0034	0.0034	0.0034	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Anthracene	1620	1620	1620	22,000	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Azobenzene	0.00051	0.00051	0.00051	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Benz(a)anthracene	0.014	0.014	0.014	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Benzo(a)pyrene	2.34	2.78	2.78	0.621	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Benzo(b)fluoranthene	23.4	33.5	33.5	6.21	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Benzo(g,h,i)perylene	NS	NS	NS	NS	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
Benzo(k)fluoranthene	234	335	335	62.1	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Benzoic acid	33	33	33	NS	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
Benzyl alcohol	4.2	4.2	4.2	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Bis(2-chloroethoxy)methane	0.023	0.023	0.023	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Bis(2-chloroethyl)ether	0.00056	0.00056	0.00056	2.44	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Bis(2-chloroisopropyl)ether	0.0144	0.0144	0.0144	38.7	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Bis(2-ethylhexyl)phthalate	1370	4660	21500	347	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
Butyl benzyl phthalate	0.67	0.67	0.67	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Carbazole	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Chrysene	348	348	348	615	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Dibenz(a,h)anthracene	2.34	10.4	10.4	0.621	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Dibenzofuran	2.87	2.87	2.87	142	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Diethyl phthalate	354	354	354	48,900	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Dimethyl phthalate	1670	1670	1670	100,000	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Di-n-butyl phthalate	3720	3720	3720	6,110	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
Di-n-octyl phthalate	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Fluoranthene	4690	4690	4690	2,290	<0.26	<0.26	<0.26	<0.26	<1.4	<0.53	<0.27	<0.27	<1.3	<1.4	<1.3	<1.3	< 0.29	<1.3	<1.3	<1.3	<1.3	<0.27	<0.27	<0.26	<0.26	<0.27	<0.26	<0.27	<0.26	<0.27
Fluorene	58.5	58.5	58.5	2,660	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
Hexachlorobenzene	0.686	0.686	0.686	3.04	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Hexachlorobutadiene	0.0019	0.0019	0.0019	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Hexachlorocyclopentadiene	431	431	1320	366	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Hexachloroethane	2.09	2.09	2.09	61.1	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Indeno(1,2,3-cd)pyrene	23.4	94.6	94.6	6.21	<0.26	<0.26	<0.26	<0.26	<1.4	<0.53	<0.27	<0.27	<1.3	<1.4	<1.3	<1.3	< 0.29	<1.3	<1.3	<1.3	<1.3	<0.27	<0.27	<0.26	<0.26	<0.27	<0.26	<0.27	<0.26	<0.27
Isophorone	3.4	3.4	3.4	5,120	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
Naphthalene	0.394	0.394	0.394	79.5	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Nitrobenzene	0.0184	0.0184	0.0184	22.8	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
N-Nitrosodi-n-propylamine	0.000011	0.000011	0.000011	NS	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
N-Nitrosodiphenylamine	5.71	5.71	5.71	993	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Pentachlorophenol	0.117	0.117	0.117	29.8	<0.42	<0.42	<0.42	<0.42	<2.2	<0.84	<0.43	<0.42	<2.1	<2.2	<2.1	<2.1	< 0.47	<2.1	<2.1	<2.1	<2.1	<0.44	<0.43	<0.42	<0.42	<0.43	<0.42	<0.43	<0.42	<0.44
Phenanthrene	464	464	464	1,830	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Phenol	47.4	47.4	47.4	18,300	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Pyrene	373	373	373	2,290	<0.21	<0.21	<0.21	<0.21	<1.1	<0.42	<0.21	<0.21	<1.1	<1.1	<1.1	<1.1	< 0.23	<1.0	<1.0	<1.1	<1.1	<0.22	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22
Pyridine	0.0097	0.0097	0.0097	NS	<0.53	<0.53	<0.53	<0.53	<2.7	<1.1	<0.53	<0.53	<2.7	<2.7	<2.6	<2.7	< 0.59	<2.6	<2.6	<2.6	<2.6	<0.55	<0.53	<0.53	<0.52	<0.53	<0.52	<0.54	<0.53	<0.55
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																														
Diesel Range Organics (DRO)	1120	1120	1120	520	<11	<11	<11	<11	42	43	<11	<11	120	200	93	150	21	59	130	61	92	<11	<11	<11	<10	<11	<10	<11	<11	<11
Gasoline Range Organics (GRO)	NS	NS	NS	NS	<5.3	<5.3	<5.3	<5.3	<5.4	<5.3	<5.3	<5.3	<5.0	<5.0	<5.0	<5.0	< 5.9	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.5
Motor Oil Range Organics (MRO)	890	890	890	440	<53	<53	<53	<53	180	160	<53	<53	310	520	300	500	< 59	210	420	200	270	<55	<53	<53	<52	<53	<52	<54	<53	<55

NR - not reported
NS- no screening level specified

TABLE 10
SWMUs No. 9 and 18 Soil Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels 0-2'	Screening Levels 2-10'	Screening Levels >10'	NMED Residential Soil Screening Level	SWMU 18-1 (0-0.5')	SWMU 18-1 (1.5-2.0')	SWMU 18-2 (0-0.5')	SWMU 18-2 (1.5-2.0')	SWMU 18-2 (18-20')	SWMU 18-2 (28-29')	SWMU 18-3 (0-0.5')	SWMU 18-3 (1.5-2.0')	SWMU 18-3 (7.5-9.0')	SWMU 18-4 (0-0.5')	SWMU 18-4 (1.5-2.0')	SWMU 9-1 (0-0.5')	SWMU 9-1 (1.5-2.0')	SWMU 9-1 (14.5-15.0')	SWMU 9-1 (6-7.5')
Metals (mg/kg)																			
Antimony	13.2	13.2	13.2	31.3	<2.7	<2.7	<2.6	<2.7	<2.7	<2.6	<13	<14	<14	<13	<13	<2.6	<2.8	<2.8	<3.1
Arsenic	0.29	0.29	0.29	3.9	<2.7	<2.7	<2.6	<2.7	<2.7	<2.6	<13	<14	<14	<13	<13	<2.6	16	3.2	5
Barium	6,030	6,030	6,030	15,600	140	180	240	200	93	200	160	180	210	120	110	130	170	85	50
Beryllium	56.2	56.2	1150	156	0.29	0.28	0.22	0.3	0.2	<0.15	<0.81	<0.82	<0.84	<0.80	<0.81	0.4	0.32	0.36	<0.19
Cadmium	27.5	27.5	27.5	39	<0.11	<0.11	0.83	0.19	<0.11	<0.10	<0.54	<0.55	<0.56	<0.53	<0.54	<0.10	<0.11	<0.11	<0.12
Chromium	100,000	100,000	1,000,000	100,000	4.7	3.8	11	6.5	2.3	7.8	5.7	6	6.6	7.1	4.5	4.1	30	6.9	6.6
Cobalt	61	61	661	1,520	3.1	2.4	3.1	3.8	1.9	1.8	3.8	3.9	4.6	3.5	2.9	2.6	3.6	2.1	0.75
Cyanide	147	147	147	1,220	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<0.25	<0.25
Lead	400	400	400	400	8.5	3.5	22	7	2.3	1.1	13	7.4	7	4.7	4.9	4	12	1.4	22
Mercury	2.09	2.09	2.09	100,000	0.058	<0.035	0.31	0.06	<0.035	<0.034	0.11	<0.036	<0.037	<0.035	<0.036	<0.034	0.059	<0.037	<0.041
Nickel	953	953	953	1,560	10	4.1	8	5.3	2.8	2.9	5.7	6.5	6.8	4.8	4.8	4.9	84	10	32
Selenium	19	19	19	391	<13	<2.7	<2.6	<2.7	<13	<13	<13	<14	<14	<13	<13	<2.6	<2.8	<2.8	<16
Silver	31.3	31.3	31.3	391	<0.27	<0.27	<0.26	<0.27	<0.27	<0.26	<1.3	<1.4	<1.4	<1.3	<1.3	<0.26	<0.28	<0.28	<0.31
Vanadium	310	310	730	78.2	12	11	13	14	9.1	10	16	19	18	14	<13	13	250	28	59
Zinc	13,600	13,600	13,600	23,500	33	18	270	74	14	13	42	33	34	26	24	25	560	51	120
Volatile Organic Compounds - (EPA Method 8260B) mg/kg																			
1,1,1,2-Tetrachloroethane	0.025	0.025	0.025	43.2	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1,1,1-Trichloroethane	26.5	26.5	26.5	563	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1,1,2,2-Tetrachloroethane	0.00321	0.00321	0.00321	5.55	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1,1,2-Trichloroethane	0.00995	0.00995	0.00995	11.9	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1,1-Dichloroethane	6.79	6.79	6.79	1,400	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	<0.10	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	<0.11	<0.11	<0.12
1,1-Dichloroethene	2.68	2.68	2.68	206	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1,1-Dichloropropene	NS	NS	NS	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	<0.10	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	<0.11	<0.11	<0.12
1,2,3-Trichlorobenzene	0.11	0.11	0.11	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	<0.10	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	<0.11	<0.11	<0.12
1,2,3-Trichloropropane	0.00041	0.00041	0.00041	0.0861	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	<0.10	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	<0.11	<0.11	<0.12
1,2,4-Trichlorobenzene	0.408	0.408	0.408	69.3	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1,2,4-Trimethylbenzene	1.42	1.42	1.42	58	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	0.47	<0.057	1.1
1,2-Dibromo-3-chloropropane	0.00298	0.00298	0.00298	1.84	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	<0.10	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	<0.11	<0.11	<0.12
1,2-Dibromoethane (EDB)	1.50E-05	1.50E-05	1.50E-05	0.504	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1,2-Dichlorobenzene	0.237	0.237	0.237	37.4	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1,2-Dichloroethane (EDC)	0.0015	0.0015	0.0015	6.08	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1,2-Dichloropropane	0.00819	0.00819	0.00819	6	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1,3,5-Trimethylbenzene	0.355	0.355	0.355	24.8	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	0.13	<0.057	0.23
1,3-Dichlorobenzene	0.0873	0.0873	0.0873	32.6	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1,3-Dichloropropane	0.27	0.27	0.27	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1,4-Dichlorobenzene	0.11	0.11	0.11	39.5	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
1-Methylnaphthalene	0.015	0.015	0.015	22 [1]	NR	NR	NR	NR	<0.20	<0.20	NR	NR	NR	NR	NR	<0.21	**1.3**	<0.23	**1.4**
2,2-Dichloropropane	NS	NS	NS	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	<0.10	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	<0.11	<0.11	<0.12
2-Butanone	25.5	25.5	25.5	31,800	0.00663	<0.00422	<0.00385	<0.00434	<0.50	<0.50	<0.00413	0.00754	<0.00426	<0.0039	0.00418	<0.52	<0.57	<0.57	<0.62
2-Chlorotoluene	NS	NS	NS	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
2-Hexanone	NS	NS	NS	NS	<0.00386	<0.00422	<0.00385	<0.00434	<0.50	<0.50	<0.00413	<0.00417	<0.00426	<0.0039	<0.0037	<0.52	<0.57	<0.57	<0.62
2-Methylnaphthalene	0.9	0.9	0.9	310 [1]	NR	NR	NR	NR	<0.20	<0.20	NR	NR	NR	NR	NR	<0.21	**1.9**	<0.23	**3.5**
4-Chlorotoluene	NS	NS	NS	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
4-Isopropyltoluene	NS	NS	NS	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	0.11
4-Methyl-2-pentanone	NS	NS	NS	NS	<0.00386	<0.00422	<0.00385	<0.00434	<0.50	<0.50	<0.00413	<0.00417	<0.00426	<0.0039	<0.0037	<0.52	<0.57	<0.57	<0.62
Acetone	19.1	19.1	19.1	28,100	0.0466	0.0197	<0.00385	0.0146	<0.75	<0.75	0.0468	0.071	<0.00426	<0.0039	0.0373	<0.78	<0.85	<0.85	<0.93
Benzene	0.0201	0.0201	0.0201	10.3	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	0.14	<0.057	<0.062
Bromobenzene	0.214	0.214	0.214	37	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Bromodichloromethane	0.0118	0.0118	0.0118	14.4	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Bromoform	0.0023	0.0023	0.0023	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Bromomethane	0.0374	0.0374	0.0374	8.51	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	<0.10	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	<0.11	<0.11	<0.12
Carbon disulfide	7.89	7.89	7.89	460	<0.00386	<0.00422	<0.00385	<0.00434	<0.50	<0.50	<0.00413	<0.00417	<0.00426	<0.0039	<0.0037	<0.52	<0.57	<0.57	<0.62
Carbon tetrachloride	0.0195	0.0195	0.0195	3.47	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	<0.10	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	<0.11	<0.11	<0.12
Chlorobenzene	1.1	1.1	1.1	194	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Chloroethane	0.188	0.188	0.188	63.3	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	<0.10	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	<0.11	<0.11	<0.12
Chloroform	0.00825	0.00825	0.00825	4	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Chloromethane	0.1	0.1	0.1	21.8	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
cis-1,2-DCE	0.299	0.299	0.299	76.5	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
cis-1,3-Dichloropropene	NS	NS	NS	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Dibromochloromethane	0.00716	0.00716	0.00716	14.8	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Dibromomethane	0.091	0.091	0.091	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	<0.10	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	<0.11	<0.11	<0.12
Dichlorodifluoromethane	5.72	5.72	5.72	161	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Ethylbenzene	20.2	20.2	20.2	128	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	0.23	<0.057	0.096
Hexachlorobutadiene	0.0019	0.0019	0.0019	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	<0.10	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	<0.11	<0.11	<0.12
Isopropylbenzene	NS	NS	NS	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Methyl tert-butyl ether (MTBE)	0.0027	0.0027	0.0027	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Methylene chloride	0.17	0.17	0.17	182	<0.00193	<0.00211	<0.00193	<0.00217	<0.15	<0.15	<0.00206	<0.00209	<0.00213	<0.00195	<0.00185	<0.16	<0.17	<0.17	<0.19
Naphthalene	0.394	0.394	0.394	79.5	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	0.00113	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	**1.2**	<0.11	**1.3**
n-Butylbenzene	5.4	5.4	5.4	62.1	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	0.071
n-Propylbenzene	5.4	5.4	5.4	62.1	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
sec-Butylbenzene	4.33	4.33	4.33	60.6	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Styrene	10.5	10.5	10.5	100	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
tert-Butylbenzene	4.3	4.3	4.3	106	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Tetrachloroethene (PCE)	0.0574	0.0574	0.0574	12.5	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Toluene	21.7	21.7	21.7	252	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	0.96	<0.057	0.23
trans-1,2-DCE	0.667	0.667	0.667	112	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
trans-1,3-Dichloropropene	NS	NS	NS	NS	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Trichloroethene (TCE)	0.002	0.002	0.002	0.638	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Trichlorofluoromethane	22.3	22.3	22.3	588	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Vinyl chloride	0.00545	0.00545	0.00545	4.37	<0.000965	<0.00105	<0.000963	<0.00108	<0.050	<0.050	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.052	<0.057	<0.057	<0.062
Xylenes, Total	2.06	2.06	2.06	82	<0.000965	<0.00105	<0.000963	<0.00108	<0.10	<0.10	<0.00103	<0.00104	<0.00107	<0.000974	<0.000925	<0.10	0.76	<0.11	1

TABLE 10
SWMUs No. 9 and 18 Soil Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels 0-2'	Screening Levels 2-10'	Screening Levels >10'	NMED Residential Soil Screening Level	SWMU 18-1 (0-0.5')	SWMU 18-1 (1.5-2.0')	SWMU 18-2 (0-0.5')	SWMU 18-2 (1.5-2.0')	SWMU 18-2 (18-20')	SWMU 18-2 (28-29')	SWMU 18-3 (0-0.5')	SWMU 18-3 (1.5-2.0')	SWMU 18-3 (7.5-9.0')	SWMU 18-4 (0-0.5')	SWMU 18-4 (1.5-2.0')	SWMU 9-1 (0-0.5')	SWMU 9-1 (1.5-2.0')	SWMU 9-1 (14.5-15.0')	SWMU 9-1 (5-7.5')
Semi Volatile Organics - (EPA Method 8270) mg/kg																			
1,2,4-Trichlorobenzene	0.408	0.408	0.408	69.3	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
1,2-Dichlorobenzene	0.237	0.237	0.237	37.4	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
1,3-Dichlorobenzene	0.0873	0.0873	0.0873	32.6	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
1,4-Dichlorobenzene	0.11	0.11	0.11	39.5	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
2,4,5-Trichlorophenol	143	143	143	6,110	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
2,4,6-Trichlorophenol	0.143	0.143	0.143	6.11	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
2,4-Dichlorophenol	0.863	0.863	0.863	183	<0.43	<0.43	<0.41	<0.42	<0.43	<0.41	<0.43	<0.44	<0.45	<0.42	<0.43	<0.42	<2.3	<0.45	<2.5
2,4-Dimethylphenol	7.11	7.11	7.11	1,220	<0.32	<0.32	<0.31	<0.32	<0.32	<0.31	<0.32	<0.33	<0.34	<0.32	<0.32	<0.31	<1.7	<0.34	<1.9
2,4-Dinitrophenol	1.05	1.05	1.05	122	<0.43	<0.43	<0.41	<0.42	<0.43	<0.41	<0.43	<0.44	<0.45	<0.42	<0.43	<0.42	<2.3	<0.45	<2.5
2,4-Dinitrotoluene	0.462	0.462	0.462	122	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
2,6-Dinitrotoluene	0.034	0.034	0.034	NS	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
2-Chloronaphthalene	18	18	18	NS	<0.27	<0.27	<0.26	<0.27	<0.27	<0.26	<0.27	<0.27	<0.28	<0.27	<0.27	<0.26	<1.4	<0.28	<1.6
2-Chlorophenol	0.472	0.472	0.472	166	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
2-Methylnaphthalene	0.9	0.9	0.9	310 [1]	<0.27	<0.27	<0.26	<0.27	<0.27	<0.26	<0.27	<0.27	<0.28	<0.27	<0.27	<0.26	**4.2**	<0.28	**2.9**
2-Methylphenol	2	2	2	NS	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
2-Nitroaniline	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
2-Nitrophenol	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
3,3'-Dichlorobenzidine	0.0371	0.0371	0.0371	10.8	<0.27	<0.27	<0.26	<0.27	<0.27	<0.26	<0.27	<0.27	<0.28	<0.27	<0.27	<0.26	<1.4	<0.28	<1.6
3+4-Methylphenol	0.19	0.19	0.19	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
3-Nitroaniline	0.00097	0.00097	0.00097	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
4,6-Dinitro-2-methylphenol	NS	NS	NS	NS	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
4-Bromophenyl phenyl ether	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
4-Chloro-3-methylphenol	NS	NS	NS	NS	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
4-Chloroaniline	NS	NS	NS	NS	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
4-Chlorophenyl phenyl ether	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
4-Nitroaniline	NS	NS	NS	NS	<0.27	<0.27	<0.26	<0.27	<0.27	<0.26	<0.27	<0.27	<0.28	<0.27	<0.27	<0.26	<1.4	<0.28	<1.6
4-Nitrophenol	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Acenaphthene	54.9	54.9	54.9	3,730	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Acenaphthylene	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Aniline	0.0034	0.0034	0.0034	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Anthracene	1620	1620	1620	22,000	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Azobenzene	0.00051	0.00051	0.00051	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Benz(a)anthracene	0.014	0.014	0.014	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Benzo(a)pyrene	2.34	2.78	2.78	0.621	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Benzo(b)fluoranthene	23.4	33.5	33.5	6.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Benzo(g,h,i)perylene	NS	NS	NS	NS	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
Benzo(k)fluoranthene	234	335	335	62.1	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Benzoic acid	33	33	33	NS	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
Benzyl alcohol	4.2	4.2	4.2	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Bis(2-chloroethoxy)methane	0.023	0.023	0.023	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Bis(2-chloroethyl)ether	0.00056	0.00056	0.00056	2.44	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Bis(2-chloroisopropyl)ether	0.0144	0.0144	0.0144	38.7	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Bis(2-ethylhexyl)phthalate	1370	4660	21500	347	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
Butyl benzyl phthalate	0.67	0.67	0.67	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Carbazole	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Chrysene	348	348	348	615	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Dibenz(a,h)anthracene	2.34	10.4	10.4	0.621	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Dibenzofuran	2.87	2.87	2.87	142	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Diethyl phthalate	354	354	354	48,900	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Dimethyl phthalate	1670	1670	1670	100,000	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Di-n-butyl phthalate	3720	3720	3720	6,110	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
Di-n-octyl phthalate	NS	NS	NS	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Fluoranthene	4690	4690	4690	2,290	<0.27	<0.27	<0.26	<0.27	<0.27	<0.26	<0.27	<0.27	<0.28	<0.27	<0.27	<0.26	<1.4	<0.28	<1.6
Fluorene	58.5	58.5	58.5	2,660	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
Hexachlorobenzene	0.686	0.686	0.686	3.04	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Hexachlorobutadiene	0.0019	0.0019	0.0019	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Hexachlorocyclopentadiene	431	431	1320	366	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Hexachloroethane	2.09	2.09	2.09	61.1	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Indeno(1,2,3-cd)pyrene	23.4	94.6	94.6	6.21	<0.27	<0.27	<0.26	<0.27	<0.27	<0.26	<0.27	<0.27	<0.28	<0.27	<0.27	<0.26	<1.4	<0.28	<1.6
Isophorone	3.4	3.4	3.4	5,120	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
Naphthalene	0.394	0.394	0.394	79.5	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	**2.7**	<0.23	**1.7**
Nitrobenzene	0.0184	0.0184	0.0184	22.8	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
N-Nitrosodi-n-propylamine	0.000011	0.000011	0.000011	NS	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
N-Nitrosodiphenylamine	5.71	5.71	5.71	993	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Pentachlorophenol	0.117	0.117	0.117	29.8	<0.43	<0.43	<0.41	<0.42	<0.43	<0.41	<0.43	<0.44	<0.45	<0.42	<0.43	<0.42	<2.3	<0.45	<2.5
Phenanthrene	464	464	464	1,830	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Phenol	47.4	47.4	47.4	18,300	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Pyrene	373	373	373	2,290	<0.21	<0.21	<0.21	<0.21	<0.21	<0.20	<0.22	<0.22	<0.22	<0.21	<0.22	<0.21	<1.1	<0.23	<1.2
Pyridine	0.0097	0.0097	0.0097	NS	<0.53	<0.54	<0.52	<0.53	<0.54	<0.51	<0.54	<0.55	<0.56	<0.53	<0.54	<0.52	<2.8	<0.57	<3.1
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																			
Diesel Range Organics (DRO)	1120	1120	1120	520	480	<11	450	310	<11	56	48	46	<11	170	<11	<10	23	<11	94
Gasoline Range Organics (GRO)	NS	NS	NS	NS	<5.3	<5.4	7.1	23	<11	<10	<5.4	<5.5	<5.6	<5.3	<5.4	<5.2	<11	<5.7	<12
Motor Oil Range Organics (MRO)	890	890	890	440	860	76	**1300**	**1200**	<54	65	170	170	62	580	59	<52	82	<57	280

NR - not reported
NS- no screening level specified

I:\Projects\Western Refining Company\GIANT\Bloomfield\NMED July 2007 OrderGroup 2\Inv. Report\Gp #2 Inv Rpt tables

TABLE 11
Soil Sample Vapor Screening Results
Bloomfield Refinery - Bloomfield, New Mexico

Sample Interval Depth	SWMU 2-1	SWMU 2-2	SWMU 2-3	SWMU 2-4	SWMU 2-5	SWMU 2-6	SWMU 2-7	SWMU 2-8	SWMU 2-9	SWMU 8-1	SWMU 8-2	SWMU 8-3	SWMU 8-4	SWMU 8-5	SWMU 8-6	SWMU 8-6A (MW-52)	SWMU 8-7	SWMU 8-8	SWMU 8-9	SWMU 8-10	SWMU 8-11	SWMU 8-12 (MW-53)	SWMU 9-1	SWMU 18-1	SWMU 18-2 (MW-54)	SWMU 18-3	SWMU 18-4
0 – 2'	0	0.1	0.3	0.4	0.4	0.3	0.1	0.1	0.1	0.3	0.6	0.6	0.7	0.6	0.7		0.6	0.3	0.6	0.5	0.5	0.5	0.3/0.3	0.1	0.4	0.5	0.5/0.6
2 – 4'	0	0.1	0.3	0.5	0.3	0.2	0.2	0.1	0.2	0.3	0.5	0.7	0.8	0.6	0.6		0.6	0.5	0.6	0.5	0.5	0.5	0	0.1	0.4	0	0.6
4 – 6'	0	0.3	0.3	0.5	0.4	0.2	0.1	0.1	0.2	0.5	0.7	0.6	0.7	0.7	0.3		0.7	0.5	0.6	0.5	0.4	0.5	0.5	0.1	0.3	0.6	0.6/0.6
6 – 8'	0	0.3	0.4	0.5	0.3	0.3	0.1	0.2	0.3	0.6	0.6	0.7	0.7	0.6	0.5		0.7	0.5	0.5	0.5	0.5	0.4	0.3	0.1	0.4	0.7/0.8	0.7/0.6
8 –10'	0	0.3	0.4	0.5	0.5	0.3	0.2	0.3	0.3	0.6	0.7	0.7	0.7	0.5	0.5		0.6	0.3	0.5	0.6	0.5	0.5	0.2	0.1	0.5	0.7/0.6	0.7/0.6
10 -12'	0.2	0.1	0.1	0.4	0.8		0.3	0.3	0.3							0.3						0.1	0.3		0.3		
12 -14'	0.3	0.1	0.1	0.3	0.8		0.3	0.3	0.3							0.4						0	0.4		0.3		
14 – 16'	0.3			0.3												0.5						0			0.3		
16 – 18'																0.4						0.1			0.3		
18 – 20'																0.5						0			15.5		
20 – 22'																						0.1			8.5		
22 – 24'																						0.1			12.9		
24 – 26'																						0.1			16.1		
26 – 28'																						0.1			58.5		
28 – 30'																						0.1			400		
30 – 32'																						0.1					
32 – 34'																						0.1					
34 – 36'																						0.1					
36 – 38'																						0.1					
38 – 40'																						0.1					
40 – 42'																											

Units - ppm

TABLE 12
General Ground Water Chemistry Parameters
Bloomfield Refinery - Bloomfield, New Mexico

Well	Date	Well Volume	Temp (degrees C)	Specific Conductivity	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	pH	ORP
MW-50	10/28/2008	1	14.17	0.594	1.6	15.6	7.62	1115.5
		2	14.36	0.535	2.69	25.9	7.7	104.2
		3	14.52	0.516	2.03	20	7.67	94.9
	1/8/2009	0	13.24	0.634	0.46	4.5	7.78	-45.9
		1	13.83	0.527	0.27	2.6	7.71	-36.9
		2	13.89	0.498	0.15	1.5	7.71	-40.4
		3	13.94	0.498	0.16	1.5	7.75	-42.4
MW-51	10/28/2008	0	14.47	1.124	1.53	15	7.58	116.3
		1	13.87	1.091	1.87	18.2	7.6	99.6
		2	13.89	0.889	2.21	21.5	7.61	91.6
		3	14.52	0.77	2.62	26.2	7.54	99.3
	1/8/2009	0	13.66	0.74	3.56	25.4	7.44	44.5
		1	13.87	0.709	0.29	2.8	7.49	41.1
		2	13.72	0.695	0.3	2.9	7.5	40.3
		3	13.74	0.692	0.31	2.9	7.49	98.3
MW-52	10/28/2008	0	12.56	3.745	31.4	3.38	7.17	33.3
		1	13.49	3.384	2.21	20.8	7.27	-29.3
		2	14.13	3.408	1.86	17.3	7.41	-33.2
		3	13.75	3.395	2.01	16.8	7.39	-32.9
	1/8/2009	0	14.7	3.839	2	19.6	7.18	-107.4
		1	14.73	3.836	1.76	17.7	7.11	-81.8
		2	14.72	3.835	1.62	16.2	7.07	-66.2
		3	14.72	3.745	1.82	18.2	7.15	-72.8
MW-53	10/28/2008	0	15.77	4.412	4.68	47.9	7.74	64.8
		1	15.57	4.423	4.68	47.6	7.75	67
		2	15.17	4.449	4.45	44.9	7.72	69.5
		3	15.36	4.441	4.42	44.1	7.73	67.9
	1/8/2009	1	13.8	4.41	2.46	24.2	7.42	33.6
		2	13.69	4.42	2.83	27.7	17.4	40
		3	12.85	4.42	7.7	72.3	7.41	60.8
		4	13.55	4.44	4.75	47.1	7.51	59.3
MW-54	10/28/2008	0	17.02	11.17	0.9	9.7	7.04	-18.8
		1	16.86	11.48	1.01	9.1	7.15	-15.3
		2	16.56	11.67	1.36	12.9	7.05	-13.1
		3	16.69	11.47	1.3	13.3	7.01	-10.2
	1/8/2009	0	13.32	11.51	1	14.5	7.01	-26.9
		1	13.45	12.1	3.03	15.3	7.06	-37.7
		2	13.46	11.98	2.71	15.9	7.07	-35.2
		3	13.62	11.96	2.9	17.1	7.03	-36.4

TABLE 13
Water Level Measurements
Bloomfield Refinery - Bloomfield, New Mexico

Well	Date	Top of Casing	Depth to Bottom (ft)	Depth to Water (ft)	Groundwater Elevation (ft/msl)
MW-50	10/28/2008	5518.794	22.14	16.65	5502.144
	1/8/2009	5518.794	22.13	17.17	5501.624
MW-51	10/28/2008	5515.583	22.18	14.58	5501.003
	1/8/2009	5515.583	22.19	14.93	5500.653
MW-52	10/28/2008	5538.626	41.73	36.03	5502.596
	1/8/2009	5538.626	41.71	36.32	5502.306
MW-53	10/28/2009	5541.322	43.58	38.67	5502.652
	1/8/2009	5541.322	43.6	38.88	5502.442
MW-54	12/28/2009	5530.077	41.34	32.49	5497.587
	1/8/2009	5530.077	41.35	32.37	5497.707

TABLE 14
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Units	MW-50		MW-51		MW-52		MW-53		MW-54		SWMU 2-1 GW	SWMU 2-2 GW	SWMU 2-3 GW	SWMU 2-4 GW	SWMU 2-6 GW	SWMU 2-7 GW	SWMU 2-8 GW	SWMU 9-1 GW
Metals (mg/L)			10/28/2008	1/8/2009	10/28/2008	1/8/2009	10/28/2008	1/8/2009	10/28/2008	1/8/2009	10/28/2008	1/8/2009	9/29/2008	9/29/2008	9/29/2008	9/30/2008	9/30/2008	9/30/2008	10/1/2008	9/28/2008
Antimony	0.006	mg/l	<0.001	< 0.0010	<0.001	< 0.0010	< 0.001	< 0.0010	<0.001	< 0.0010	0.003	0.0011	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Arsenic	0.01	mg/l	**0.012**	0.0039	**0.012**	0.0028	**0.043**	**0.075**	**0.018**	**0.011**	**0.018**	**0.02**	**0.012**	<0.0010	0.0028	0.005	0.0039	0.0091	0.0034	0.0086
Barium	1	mg/l	0.8	0.12	0.2	0.046	**1.1**	0.099	0.6	0.026	**8.8**	**13**	**1.5**	0.22	0.24	0.2	0.53	0.5	0.29	0.18
Beryllium	0.004	mg/L	0.001	< 0.0030	<0.001	< 0.0030	0.002	< 0.0030	0.001	< 0.0030	< 0.001	< 0.0030	0.0024	<0.0020	<0.0020	<0.0020	0.0021	**0.0076**	0.0021	<0.0020
Cadmium	0.005	mg/l	<0.001	< 0.0020	<0.001	< 0.0020	< 0.001	< 0.0020	< 0.001	< 0.0020	< 0.001	< 0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.01**
Calcium	-	mg/L	55	44	102	69	258	220	334	300	589	530	86	85	48	59	65	55	63	550
Chromium	0.05	mg/l	0.02	< 0.0060	<0.01	< 0.0060	0.03	< 0.0060	0.02	< 0.0060	0.02	< 0.0060	**0.46**	<0.010	<0.010	<0.010	0.033	0.023	0.028	0.013
Cobalt	0.05	mg/l	0.01	< 0.0060	<0.01	< 0.0060	0.05	0.028	0.02	0.013	< 0.01	< 0.0060	0.032	<0.010	<0.010	<0.010	0.017	0.058	0.019	**0.47**
Cyanide, Total	0.2	mg/L	<0.005	< 0.0050	<0.005	< 0.0050	< 0.005	< 0.0050	< 0.005	< 0.0050	< 0.005	< 0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.027
Iron	-	mg/L	<0.03	0.075	<0.03	< 0.020	0.54	4.7	0.05	0.02	7.35	36	<0.020	<0.020	<0.020	<0.020	<0.020	0.036	0.2	0.39
Iron, Total	-	mg/L		0.83		0.12		41		0.068		67								
Lead	0.015	mg/l	0.02	< 0.0050	<0.01	< 0.0050	0.02	< 0.0050	0.02	< 0.0050	0.1	0.0081	**0.034**	<0.0050	<0.0050	<0.0050	**0.022**	**0.033**	**0.017**	**0.02**
Magnesium	-	mg/L	14	11	20	14	69	56	49	41	264	210	17	17	12	16	15	14	14	140
Manganese	0.2	mg/L	**1.72**	**1.1**	**1.89**	**1.6**	**4.86**	**6.1**	**1.94**	**1.6**	**13**	**12**	**2.4**	0.18	**1.4**	**1.6**	**1.1**	**0.51**	**0.33**	**1.9**
Mercury	0.002	mg/l	<0.001	< 0.00020	<0.001	< 0.00020	< 0.001	< 0.00020	< 0.001	< 0.00020	< 0.001	< 0.00020	<0.00020	<0.00020	<0.00020	<0.0020	0.00021	0.00052	<0.00020	<0.00020
Nickel	0.2	mg/l	0.03	< 0.010	0.01	< 0.010	0.12	0.074	0.06	0.036	0.03	0.011	0.097	<0.020	<0.020	<0.020	<0.020	0.046	0.025	**6**
Potassium	-	mg/L	2	1.8	3	2	6	4.2	6	4.4	16	12	2.5	2.5	2.7	4.6	3.1	2.5	3.7	18
Selenium	0.05	mg/l	0.001	< 0.0010	<0.001	< 0.0010	0.038	0.0095	0.005	0.0031	< 0.001	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0019	0.001	0.009
Silver	0.05	mg/l	<0.005	< 0.0050	<0.005	< 0.0050	< 0.005	< 0.0050	< 0.005	< 0.0050	< 0.005	< 0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium	-	mg/L	41	35	53	43	577	490	785	630	1970	1500	50	55	40	64	72	63	150	2200
Vanadium	0.26	mg/l	<0.1	< 0.050	<0.1	< 0.050	< 0.1	< 0.050	< 0.1	< 0.050	< 0.1	< 0.050	0.044	<0.010	<0.010	<0.010	0.04	0.035	0.017	0.019
Zinc	10	mg/l	0.12	< 0.020	0.05	< 0.020	0.18	< 0.020	0.06	< 0.020	0.12	0.16	1.6	1.2	1.4	0.55	0.14	0.18	0.15	6.6
Volatile Organic Compounds - (EPA Method 8260W) µg/L																				
1,1,1,2-Tetrachloroethane	0.52	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	60	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	10	µg/L	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 20	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1,2-Trichloroethane	10	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	25	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	-	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloropropene	-	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichlorobenzene	70	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichloropropane	0.0096	µg/L	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 20	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4-Trichlorobenzene	-	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene	15	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**44**	**67**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	0.2	µg/L	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 20	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dibromoethane (EDB)	0.05	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	600	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane (EDC)	5	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	5	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	12	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	5.6	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	-	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichloropropane	5	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	75	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1-Methylnaphthalene	2.3	µg/L	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	**53**	**82**	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
2,2-Dichloropropane	-	µg/L	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 20	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
2-Butanone	7100	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 100	<10	<10	<10	<10	<10	<10	<10	<10
2-Chlorotoluene	-	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Hexanone	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 100	<10	<10	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	150	µg/L	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	73	93	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
4-Chlorotoluene	-	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-Isopropyltoluene	-	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-Methyl-2-pentanone	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 100	<10	<10	<10	<10	<10	<10	<10	<10
Acetone	22000	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	17	< 100	<10	<10	<10	<10	<10	<10	<10	<10
Benzene	5	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**1600**	**1100**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromobenzene	20	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	1.1	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	8.5	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	8.7	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon disulfide	1000	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 100	<10	<10	<10	<10	<10	<10	<10	<10

TABLE 14
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

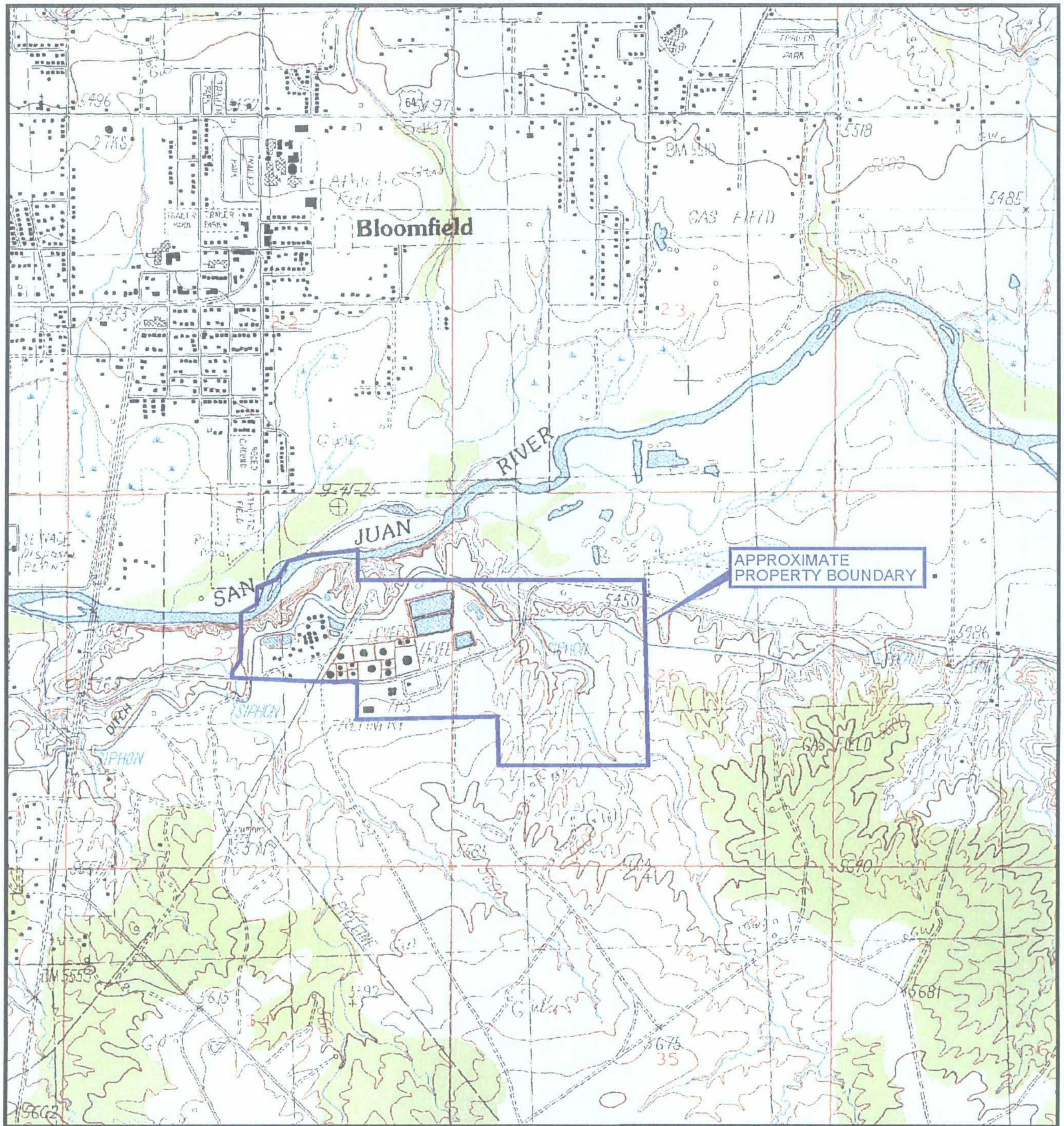
Analytes	Screening Levels	Units	MW-50		MW-51		MW-52		MW-53		MW-54		SWMU 2-1 GW	SWMU 2-2 GW	SWMU 2-3 GW	SWMU 2-4 GW	SWMU 2-6 GW	SWMU 2-7 GW	SWMU 2-8 GW	SWMU 9-1 GW
Carbon Tetrachloride	5	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	100	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	-	µg/L	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 20	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chloroform	100	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	1.8	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.7	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-DCE	70	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	-	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	0.8	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromomethane	370	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	390	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	78	200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hexachlorobutadiene	0.86	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene (Cumene)	680	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	18	34	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl tert-butyl ether (MTBE)	12	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**150**	**160**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	5	µg/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 30	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Naphthalene	0.14	µg/L	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	**240**	**160**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	68	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.3	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	60.8	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	15	39	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
sec-Butylbenzene	68	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.6	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	100	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
tert-Butylbenzene	-	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene (PCE)	20	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	750	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-DCE	100	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	-	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	5	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	1300	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	1	µg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes, Total	620	µg/L	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	17	24	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Semi Volatile Organics - (EPA Method 8270W)		**µg/L**																		
1,2,4-Trichlorobenzene	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
1,2-Dichlorobenzene	600	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	75	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
2,4,5-Trichlorophenol	3700	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
2,4,6-Trichlorophenol	6.1	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dichlorophenol	110	µg/L	< 20	< 20	< 20	< 21	< 20	< 20	< 20	< 20	< 20	< 20	<20	<20	<20	<20	<20	<20	<20	<20
2,4-Dimethylphenol	730	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dinitrophenol	73	µg/L	< 20	< 20	< 20	< 21	< 20	< 20	< 20	< 20	< 20	< 20	<20	<20	<20	<20	<20	<20	<20	<20
2,4-Dinitrotoluene	73	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	37	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
2-Chloronaphthalene	2900	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
2-Chlorophenol	180	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	150	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	39	49	<10	<10	<10	<10	<10	<10	<10	<10
2-Methylphenol	1800	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
2-Nitroaniline	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
2-Nitrophenol	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
3+4-Methylphenol	180	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
3-Nitroaniline	3.2	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
4,6-Dinitro-2-methylphenol	-	µg/L	< 20	< 20	< 20	< 21	< 20	< 20	< 20	< 20	< 20	< 20	<20	<20	<20	<20	<20	<20	<20	<20
4-Bromophenyl phenyl ether	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
4-Chloro-3-methylphenol	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
4-Chloroaniline	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
4-Chlorophenyl phenyl ether	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
4-Nitroaniline	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
4-Nitrophenol	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Acenaphthene	2200	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Acenaphthylene	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Aniline	12	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10

TABLE 14
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Units	MW-50		MW-51		MW-52		MW-53		MW-54		SWMU 2-1 GW	SWMU 2-2 GW	SWMU 2-3 GW	SWMU 2-4 GW	SWMU 2-6 GW	SWMU 2-7 GW	SWMU 2-8 GW	SWMU 9-1 GW
Anthracene	11000	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Azobenzene	0.12	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Benz(a)anthracene	0.029	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene	0.2	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	0.029	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(k)fluoranthene	0.29	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Benzoic acid	150000	µg/L	< 20	< 20	< 20	< 21	< 20	< 20	< 20	< 20	< 20	< 20	<20	<20	<20	<20	<20	<20	<20	<20
Benzyl alcohol	18000	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Bis(2-chloroethoxy)methane	110	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Bis(2-chloroethyl)ether	0.012	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Bis(2-chloroisopropyl)ether	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Bis(2-ethylhexyl)phthalate	6	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Butyl benzyl phthalate	35	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Carbazole	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Chrysene	2.9	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Dibenz(a,h)anthracene	0.0029	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Dibenzofuran	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Diethyl phthalate	29000	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Dimethyl phthalate	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Di-n-butyl phthalate	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Di-n-octyl phthalate	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Fluoranthene	1500	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Fluorene	1500	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachlorobenzene	1	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachlorobutadiene	0.86	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachlorocyclopentadiene	50	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachloroethane	4.8	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene	0.029	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Isophorone	71	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Naphthalene	0.14	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	**60**	**82**	<10	<10	<10	<10	<10	<10	<10	<10
Nitrobenzene	3.4	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
N-Nitrosodimethylamine	0.00042	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
N-Nitrosodi-n-propylamine	0.0096	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
N-Nitrosodiphenylamine	14	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Pentachlorophenol	1	µg/L	< 20	< 20	< 20	< 21	< 20	< 20	< 20	< 20	< 20	< 20	<20	<20	<20	<20	<20	<20	<20	<20
Phenanthrene	-	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Phenol	5	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Pyrene	1100	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Pyridine	37	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10
Chloride	250	mg/L	9.9	9.7	12	9.1	**450**	**580**	**820**	**920**	**4100**	**4200**	10	10	12	16	13	11	25	**400**
Nitrate (As N)+Nitrite (As N)	-	mg/L	< 1.0						7.1		< 10	< 10		1.3	<1.0	3.8	6.3	<1.0	3	
Nitrogen, Nitrate (As N)	10	mg/L		0.17	0.68	0.82	2.1	2.2		10			1.5	-	-	-	-	-	-	**380**
Nitrogen, Nitrite (As N)	1	mg/L		< 0.10	< 0.10	< 0.10	**2.2**	< 5.0		< 1.0			<0.10	-	-	-	-	-	-	**2.8**
Sulfate	600	mg/L	29	39	150	100	**1000**	**760**	**970**	**1100**	31	2.8	31	86	25	130	130	97	300	**3600**
Alkalinity, Total (As CaCO3)	-	ng/L CaCO	240	220	280	240	260	500	290	300	710	820	370	330	240	230	240	240	250	1300
Bicarbonate	-	ng/L CaCO	240	220	280	240	260	500	290	300	710	820	370	330	240	230	240	240	250	1300
Carbonate	-	ng/L CaCO	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<4.0
Diesel Range Organics (DRO)	1.72	mg/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**7.3**	7.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Motor Oil Range Organics (MRO)	1.34	mg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Gasoline Range Organics (GRO)	-	mg/L	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	2.4	3.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

450 - bolded value exceeds screening level

Figures



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

N

0 2000
SCALE IN FEET

QUADRANGLE LOCATION

Western Refining

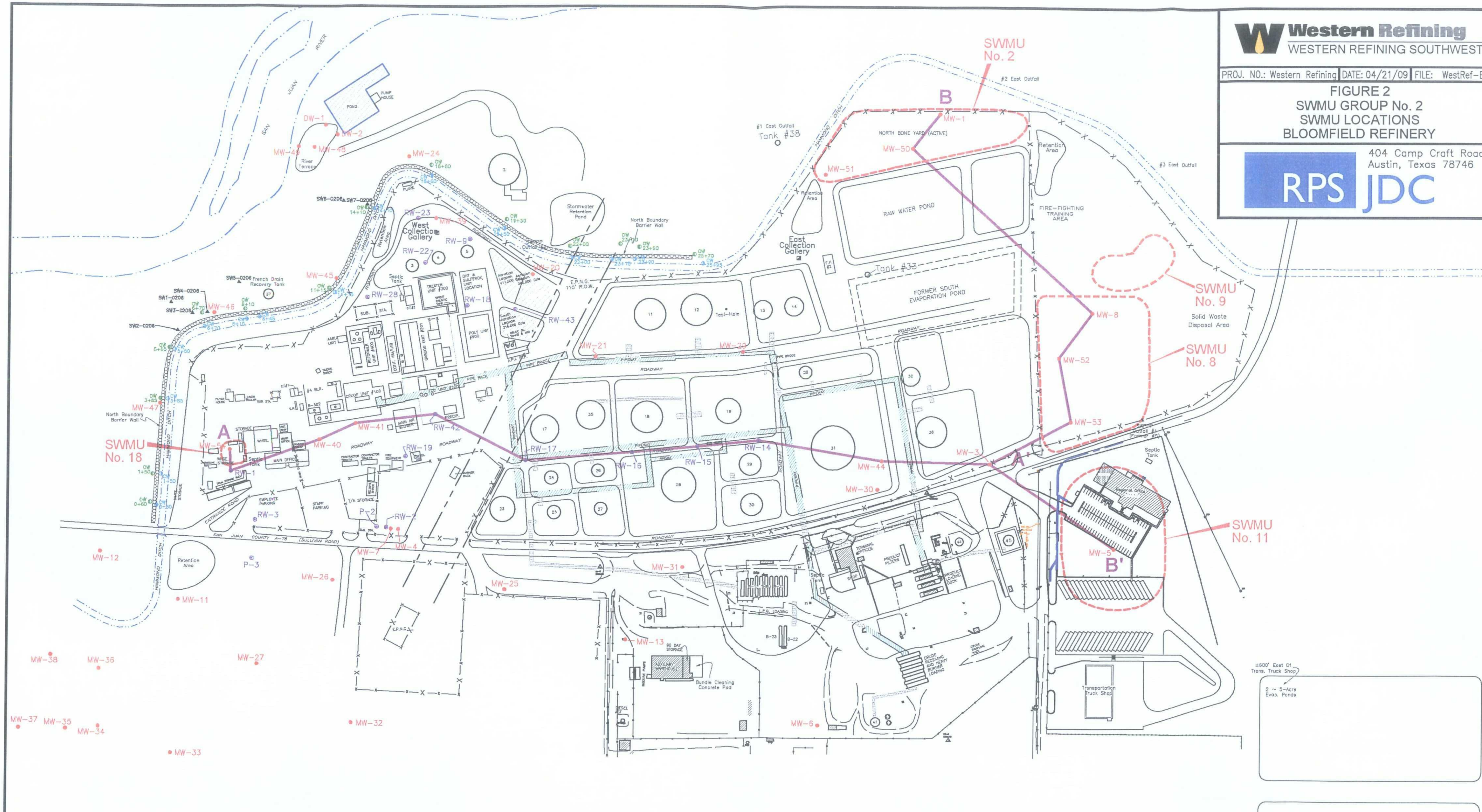
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 6/19/08	FILE: WestRef-A25

FIGURE 1
SITE LOCATION MAP
BLOOMFIELD REFINERY

404 Camp Craft Road
Austin, Texas 78746

RPS JDC



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/21/09 | FILE: WestRef-B26

FIGURE 2
SWMU GROUP No. 2
SWMU LOCATIONS
BLOOMFIELD REFINERY

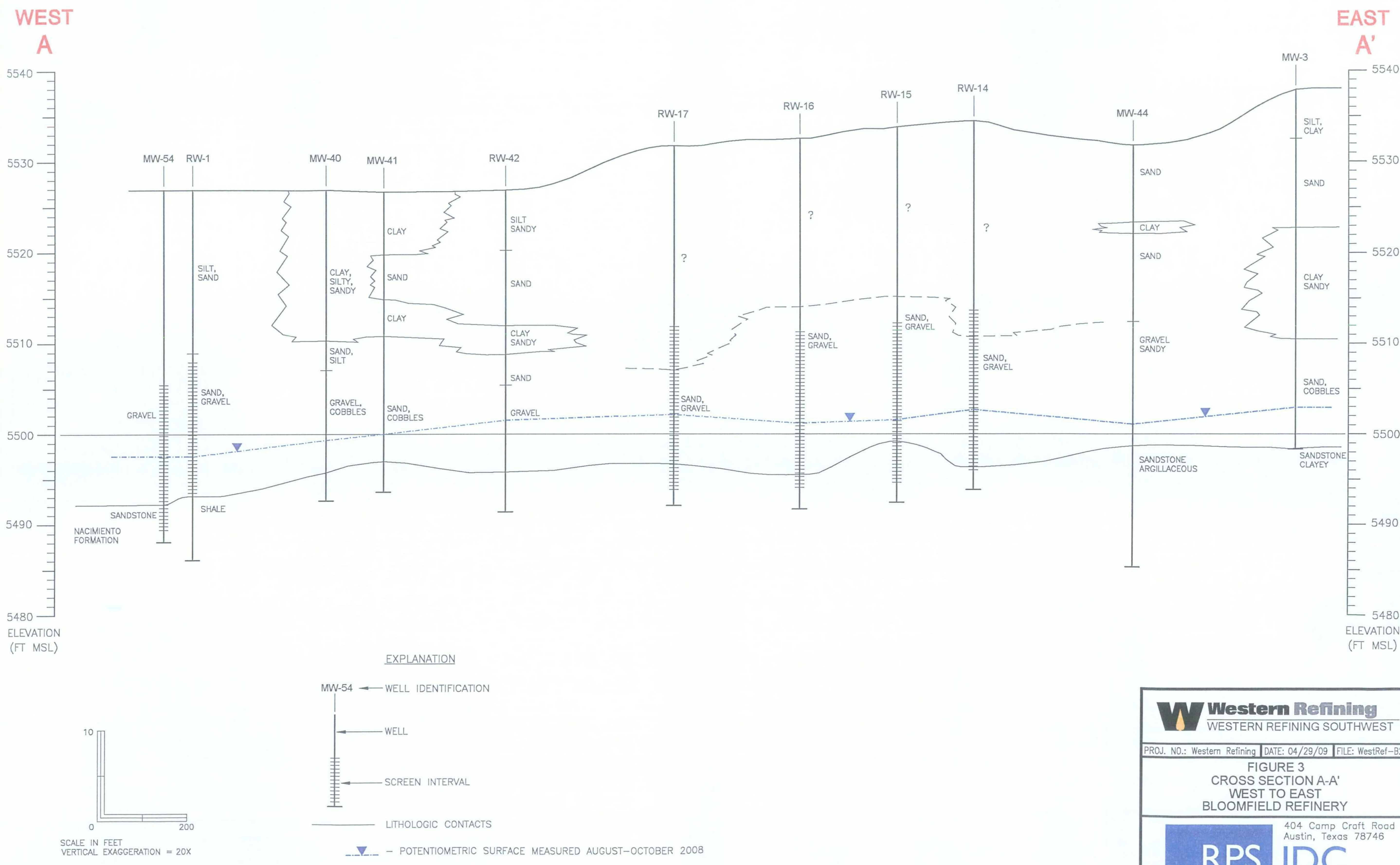
RPS JDC
404 Camp Craft Road
Austin, Texas 78746

LEGEND

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
A — A' CROSS SECTION LINE

0 300
SCALE IN FEET

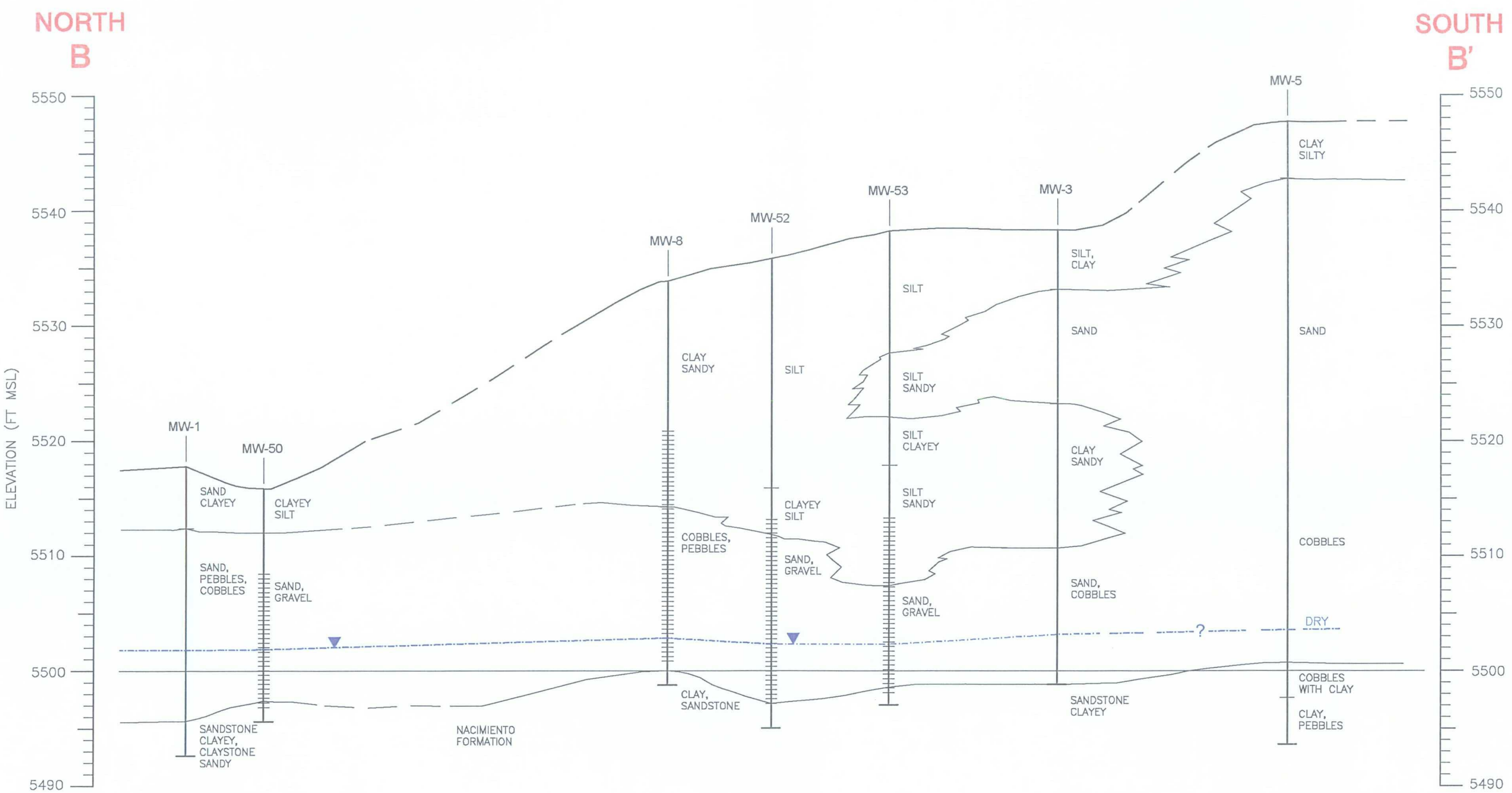


Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/29/09 | FILE: WestRef–B28

FIGURE 3
CROSS SECTION A-A'
WEST TO EAST
BLOOMFIELD REFINERY

RPS JDC
404 Camp Craft Road
Austin, Texas 78746



EXPLANATION

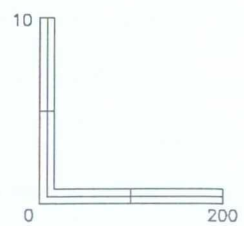
MW-8 ← WELL IDENTIFICATION

← WELL

← SCREEN INTERVAL

LITHOLOGIC CONTACTS

— POTENTIOMETRIC SURFACE MEASURED AUGUST–OCTOBER 2008



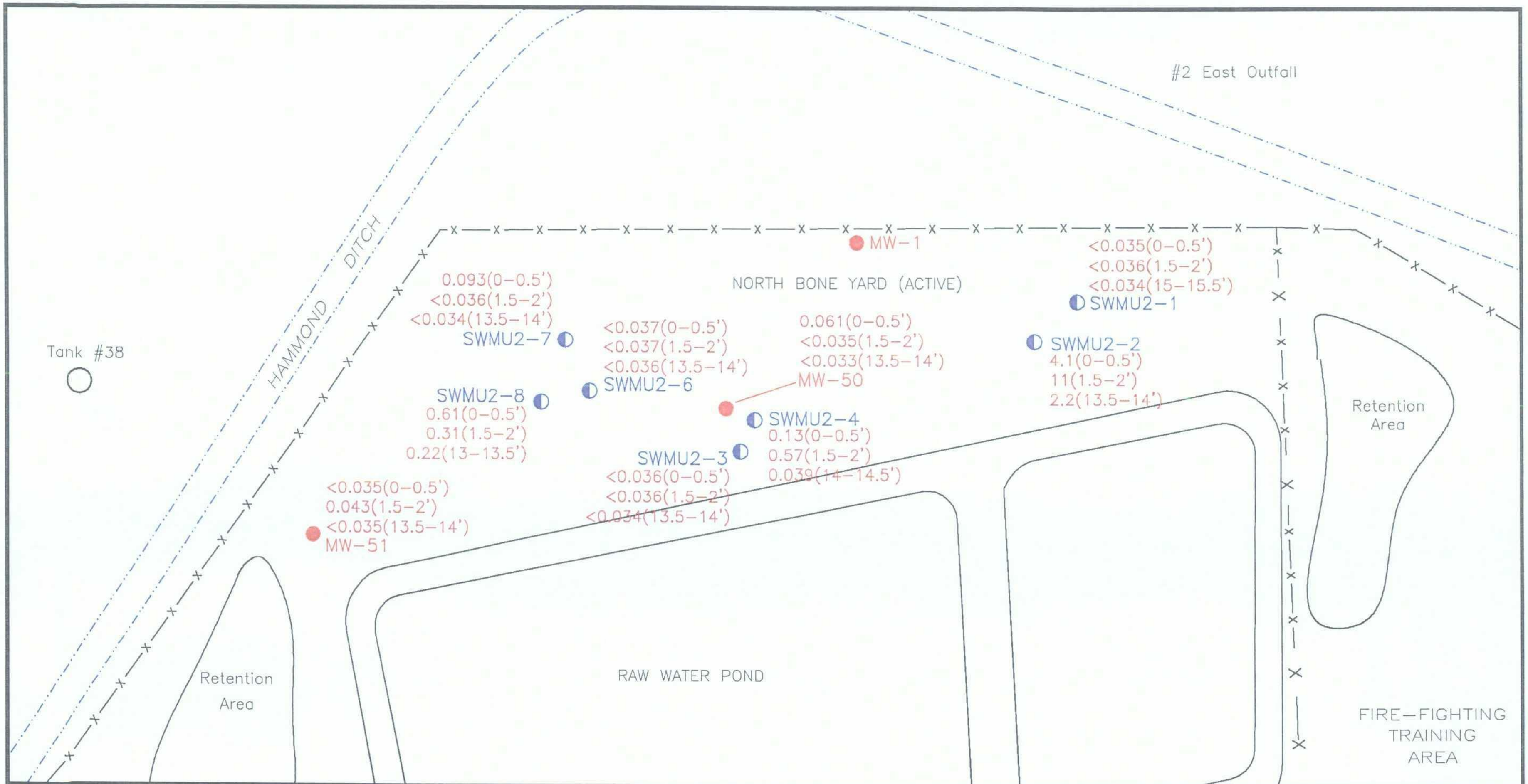
SCALE IN FEET
VERTICAL EXAGGERATION = 20X

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/29/09	FILE: WestRef-B29

FIGURE 4
CROSS SECTION B-B'
NORTH TO SOUTH
BLOOMFIELD REFINERY

404 Camp Craft Road
Austin, Texas 78746
RPS JDC



Western Refining

WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining	DATE:04/21/09	FILE: WestRef-A28

FIGURE 5
SWMU No. 2
MERCURY - SOILS MAP
BLOOMFIELD REFINERY

404 Camp Craft Road
Austin, Texas 78746

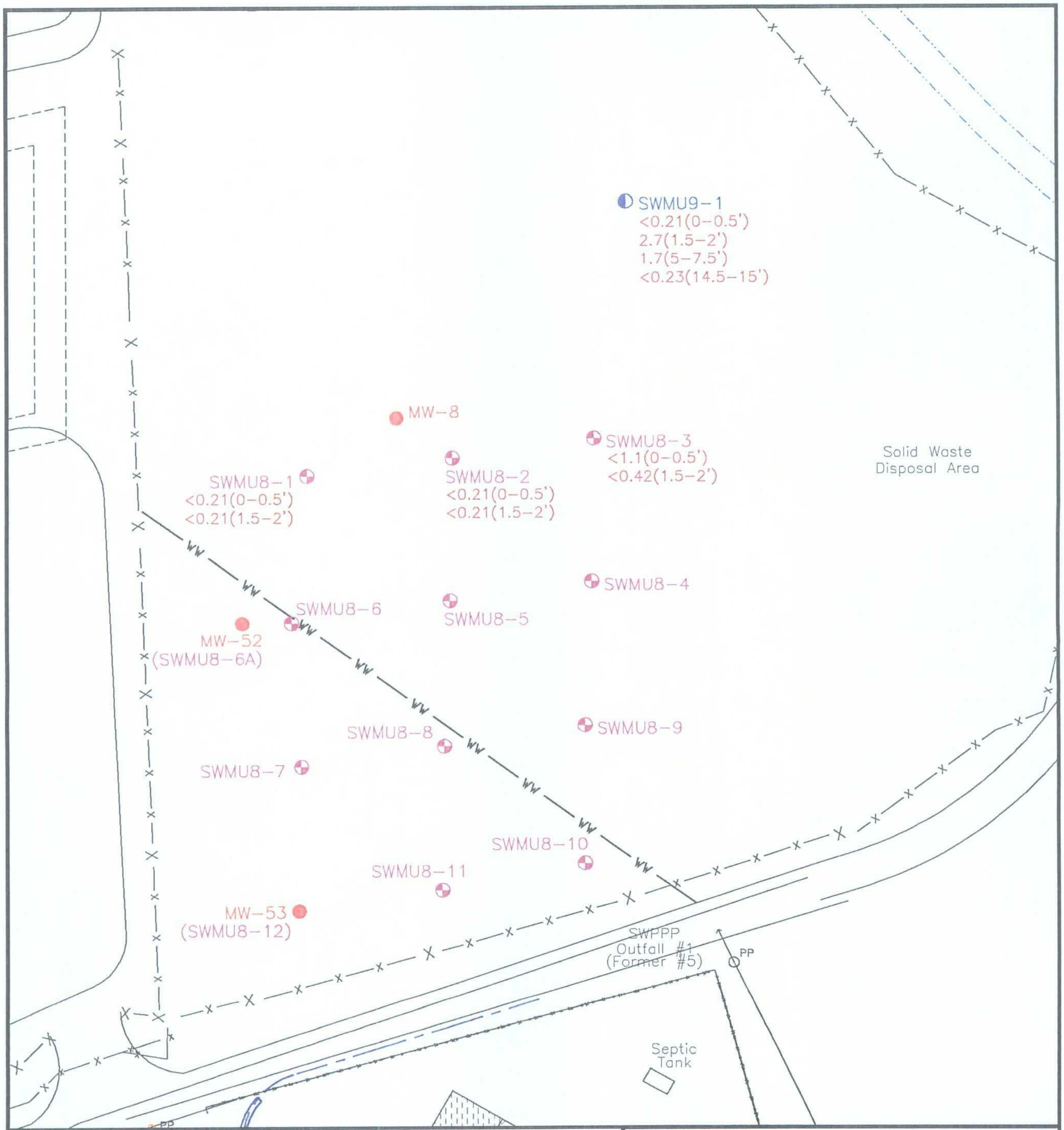
RPS JDC

LEGEND

MW-1 — MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

SWMU2-1 — TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

<0.035(0-0.5') — MERCURY CONCENTRATION, mg/kg (SAMPLE DEPTH, FT)



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining	DATE:04/21/09	FILE: WestRef-A2B

FIGURE 6
SWMUs No. 8 & 9
NAPHTHALENE - SOILS MAP
BLOOMFIELD REFINERY

404 Camp Craft Road
Austin, Texas 78746

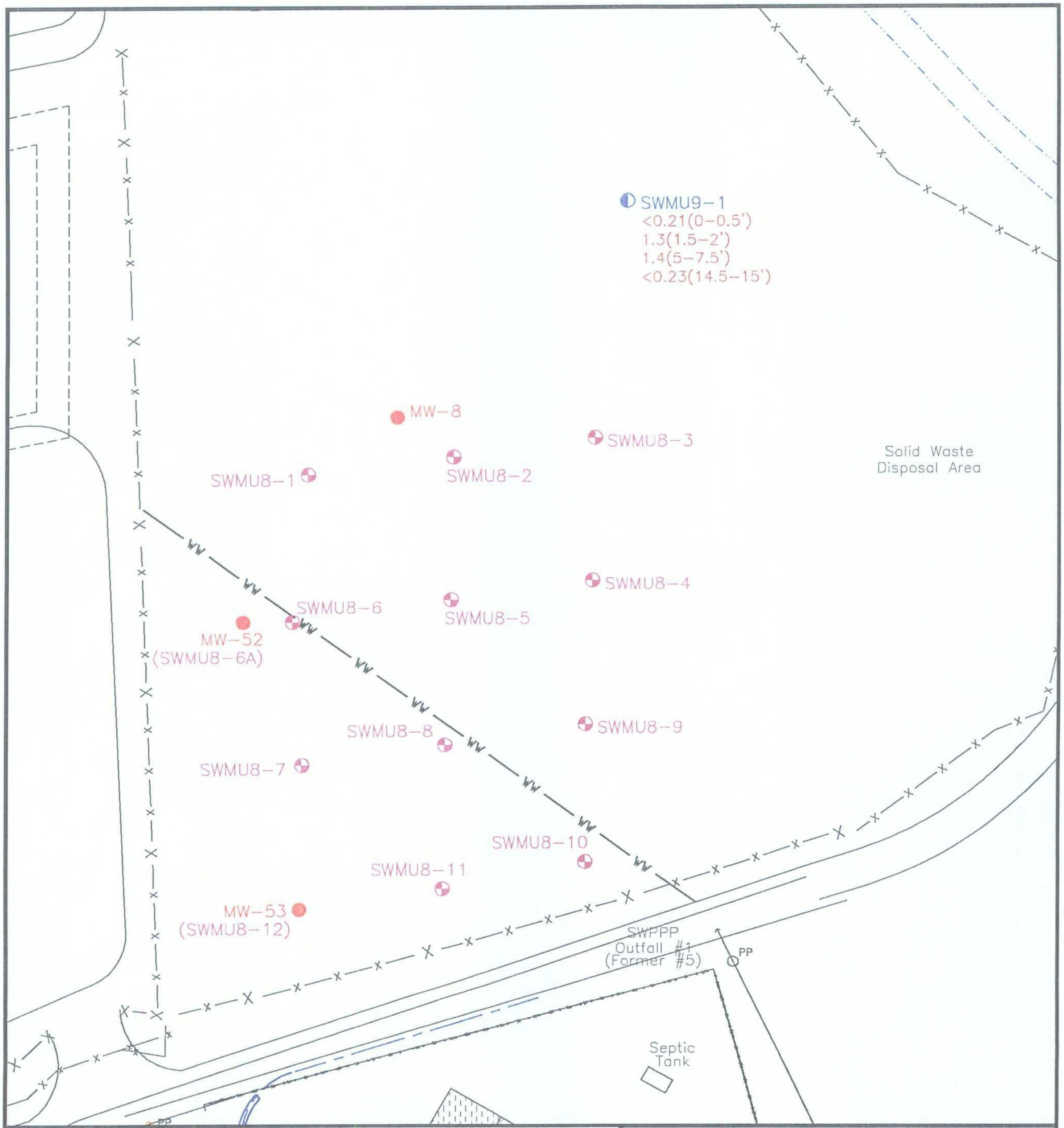
RPS JDC

LEGEND

MW-8	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
SWMU9-1	TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
SWMU8-1	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
<0.035(0-0.5')	NAPHTHALENE CONCENTRATION, mg/kg (*SAMPLE DEPTH, FT*)
—— WW ——	WASTEWATER PIPELINE

N

0 100
SCALE IN FEET



LEGEND

MW-8 — MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

SWMU9-1 — TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

SWMU8-1 — SOIL BORING LOCATION AND IDENTIFICATION NUMBER

<0.035(0-0.5') — 1-METHYLNAPHTHALENE CONCENTRATION, mg/kg (SAMPLE DEPTH, FT)

—— WW —— WASTEWATER PIPELINE

0 100
SCALE IN FEET

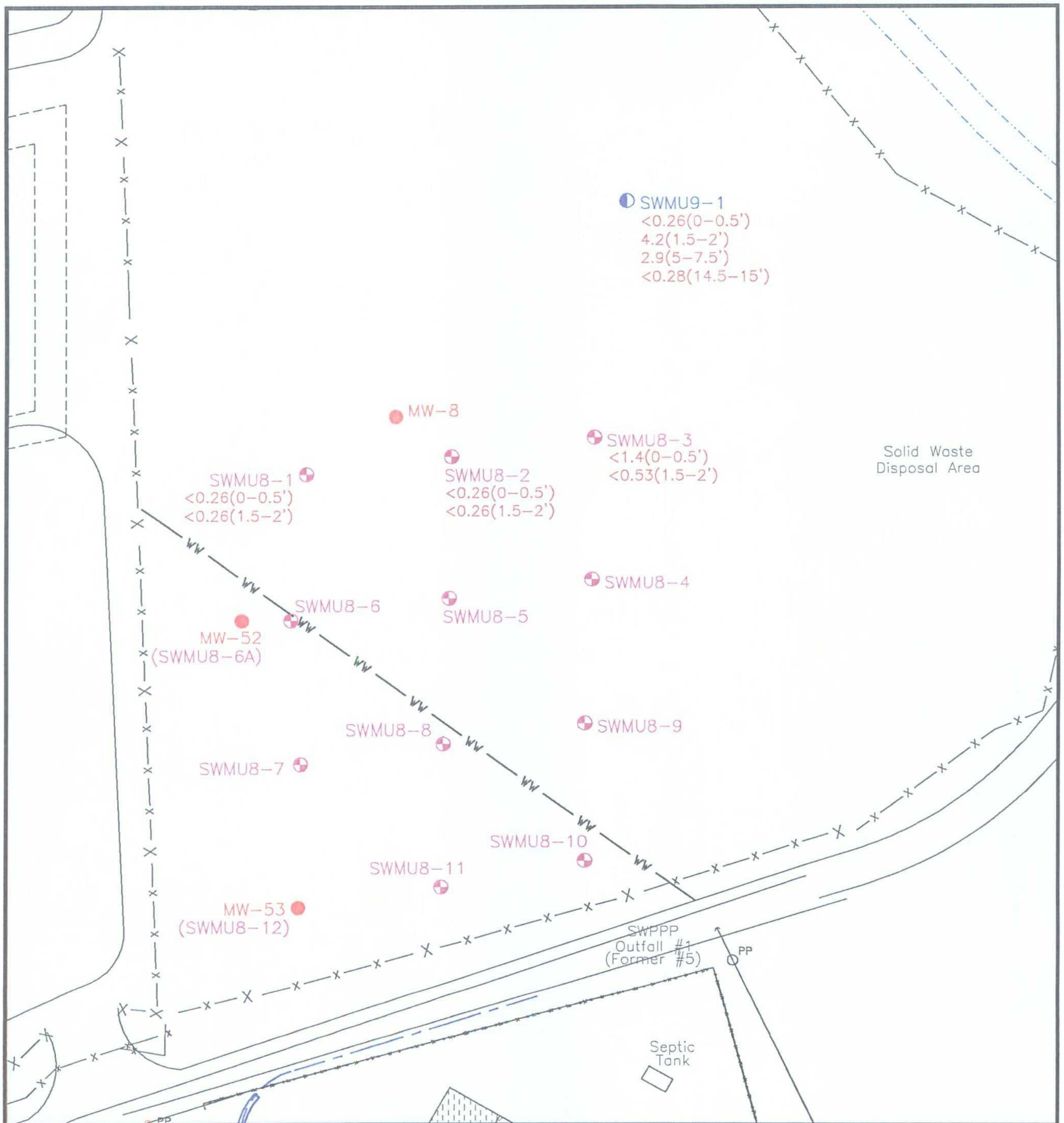
N

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining	DATE:04/21/09	FILE: WestRef-A28

FIGURE 7
SWMUs No. 8 & 9
1-METHYLNAPHTHALENE - SOILS MAP
BLOOMFIELD REFINERY

RPS JDC
404 Camp Craft Road
Austin, Texas 78746



LEGEND

MW-8 — MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

SWMU9-1 — TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

SWMU8-1 — SOIL BORING LOCATION AND IDENTIFICATION NUMBER

<0.035(0-0.5') — 2-METHYLNAPHTHALENE CONCENTRATION, mg/kg (*SAMPLE DEPTH, FT*)

WW — WASTEWATER PIPELINE

N

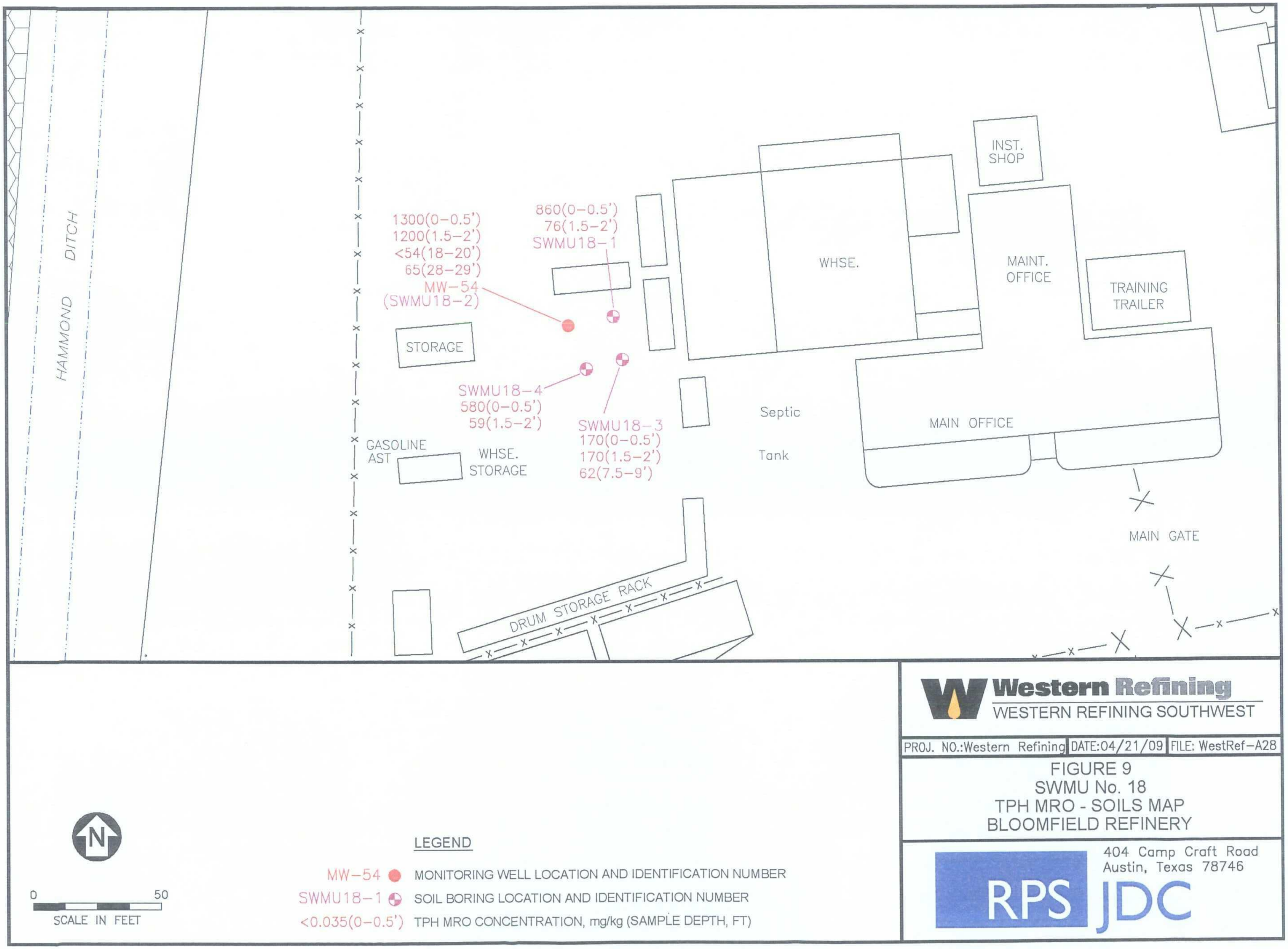
0 100
SCALE IN FEET

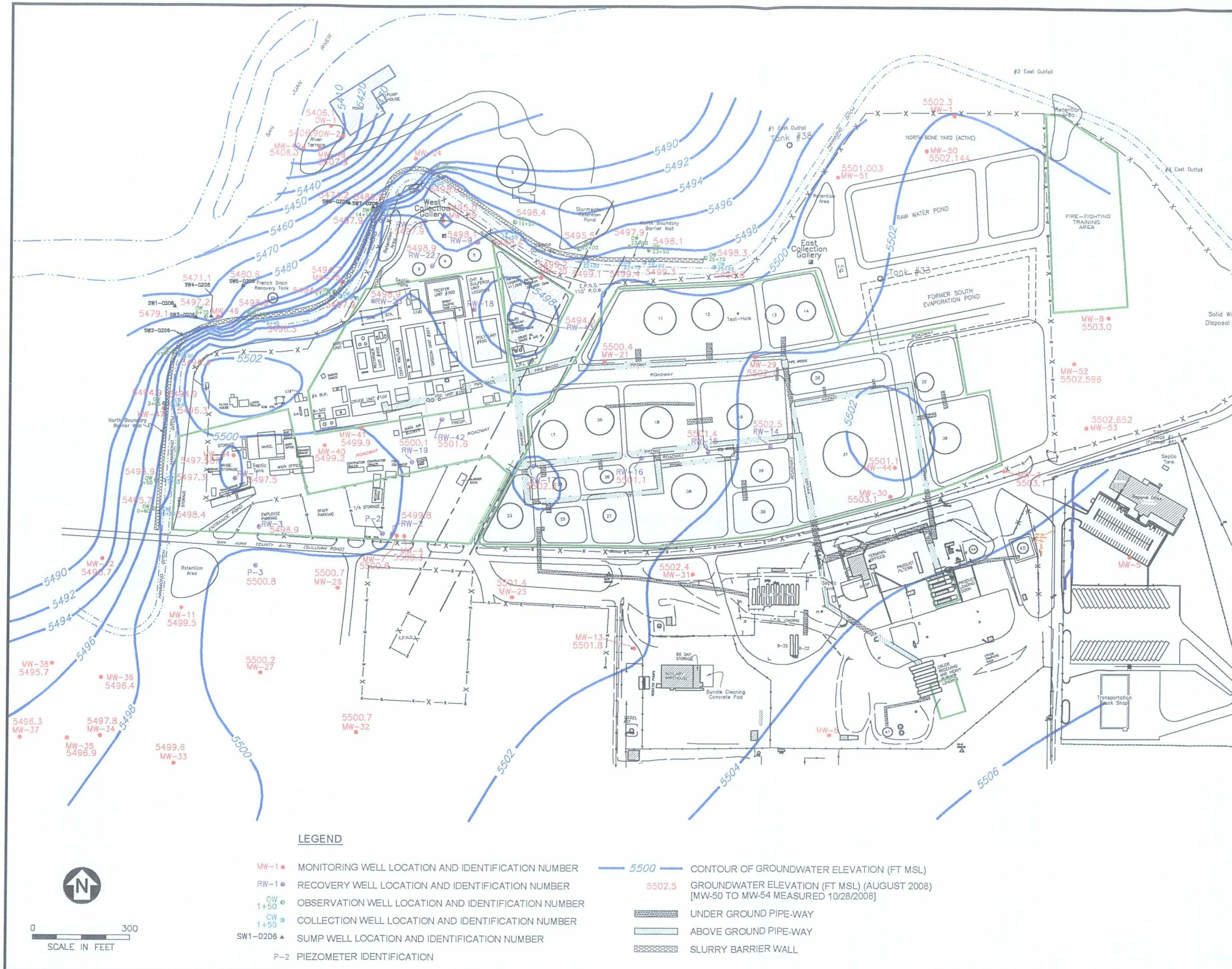
Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.:Western Refining | DATE:04/21/09 | FILE: WestRef-A2B

FIGURE 8
SWMUs No. 8 & 9
2-METHYLNAPHTHALENE - SOILS MAP
BLOOMFIELD REFINERY

RPS JDC
404 Camp Craft Road
Austin, Texas 78746


HAMMOND DITCH
1300(0–0.5')
1200(1.5–2')
<54(18–20')
65(28–29')
MW–54
(SWMU18–2)
860(0–0.5')
76(1.5–2')
SWMU18–1
STORAGE
SWMU18–4
580(0–0.5')
59(1.5–2')
SWMU18–3
170(0–0.5')
170(1.5–2')
62(7.5–9')
GASOLINE AST
WHSE. STORAGE
WHSE.
INST. SHOP
MAINT. OFFICE
TRAINING TRAILER
MAIN OFFICE
Septic Tank
MAIN GATE
DRUM STORAGE RACK
N
0
50
SCALE IN FEET
LEGEND
MW–54 MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
SWMU18–1 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
<0.035(0–0.5') TPH MRO CONCENTRATION, mg/kg (SAMPLE DEPTH, FT)
Western Refining
WESTERN REFINING SOUTHWEST
PROJ. NO.:Western Refining
DATE:04/21/09
FILE: WestRef–A28
FIGURE 9
SWMU No. 18
TPH MRO - SOILS MAP
BLOOMFIELD REFINERY
404 Camp Craft Road
Austin, Texas 78746
RPS JDC



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 02/08/09	FILE: WestRef-B19

FIGURE 10
POTENTIOMETRIC SURFACE MAP
AUGUST 2008
BLOOMFIELD REFINERY

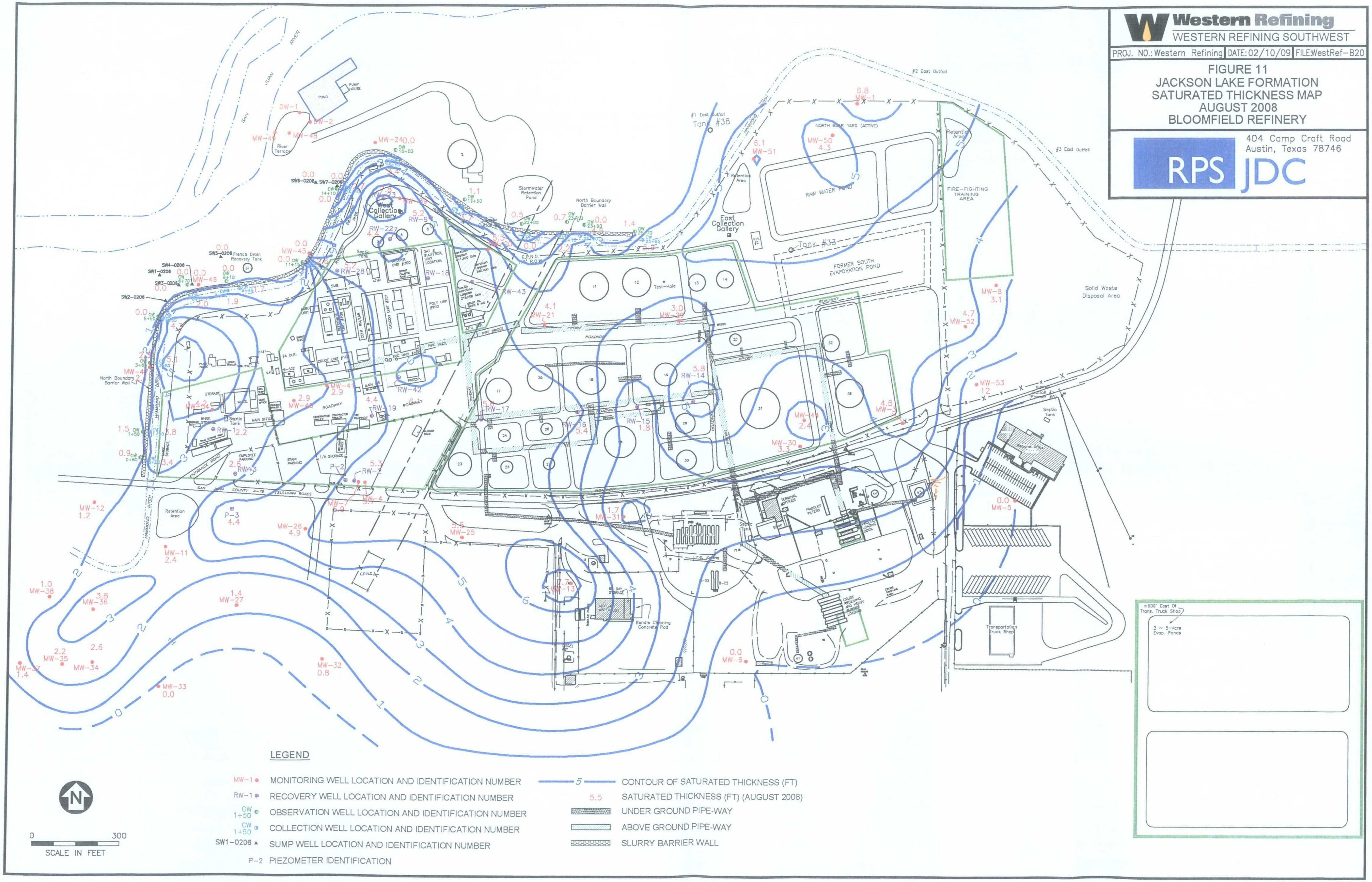
RPS JDC
404 Camp Craft Road
Austin, Texas 78746

LEGEND

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

5500 CONTOUR OF GROUNDWATER ELEVATION (FT MSL)
5502.5 GROUNDWATER ELEVATION (FT MSL) (AUGUST 2008) [MW-50 TO MW-54 MEASURED 10/28/2008]
UNDER GROUND PIPE-WAY
ABOVE GROUND PIPE-WAY
SLURRY BARRIER WALL

0 300
SCALE IN FEET



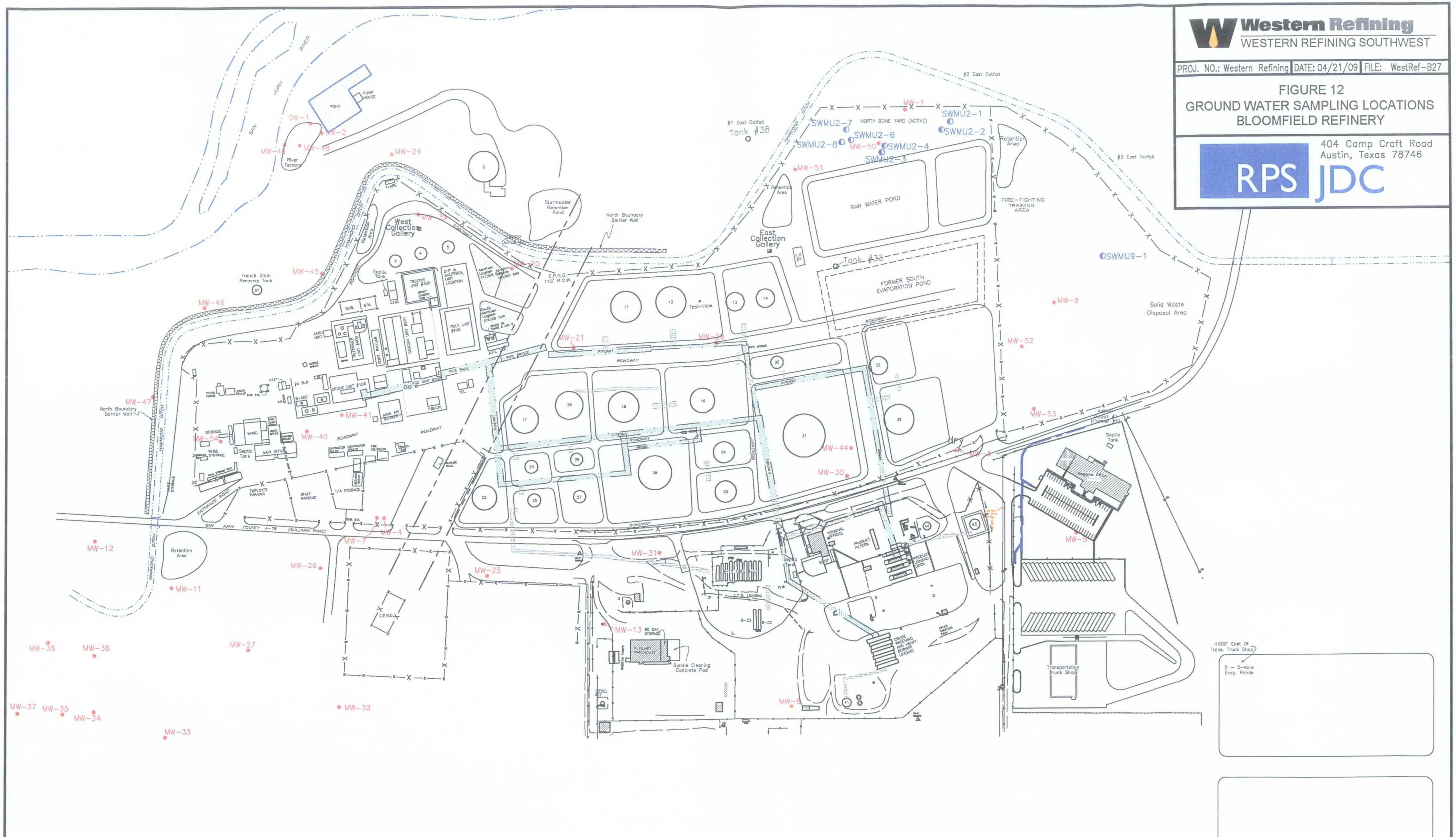
Western Refining
WESTERN REFINING SOUTHWEST
PROJ. NO.: Western Refining
DATE: 02/10/09
FILE: WestRef-B20
FIGURE 11
JACKSON LAKE FORMATION
SATURATED THICKNESS MAP
AUGUST 2008
BLOOMFIELD REFINERY
404 Camp Craft Road
Austin, Texas 78746
RPS JDC
LEGEND
MW-1 MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
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
5 CONTOUR OF SATURATED THICKNESS (FT)
5.5 SATURATED THICKNESS (FT) (AUGUST 2008)
UNDER GROUND PIPE-WAY
ABOVE GROUND PIPE-WAY
SLURRY BARRIER WALL
0
300
SCALE IN FEET
N

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/21/09 | FILE: WestRef-B27

FIGURE 12
GROUND WATER SAMPLING LOCATIONS
BLOOMFIELD REFINERY

RPS JDC
404 Camp Craft Road
Austin, Texas 78746



N

0 300
SCALE IN FEET

LEGEND

MW-1 ● MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

SWMU2-1 ◐ TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

UNDER GROUND PIPE-WAY

ABOVE GROUND PIPE-WAY

SLURRY BARRIER WALL

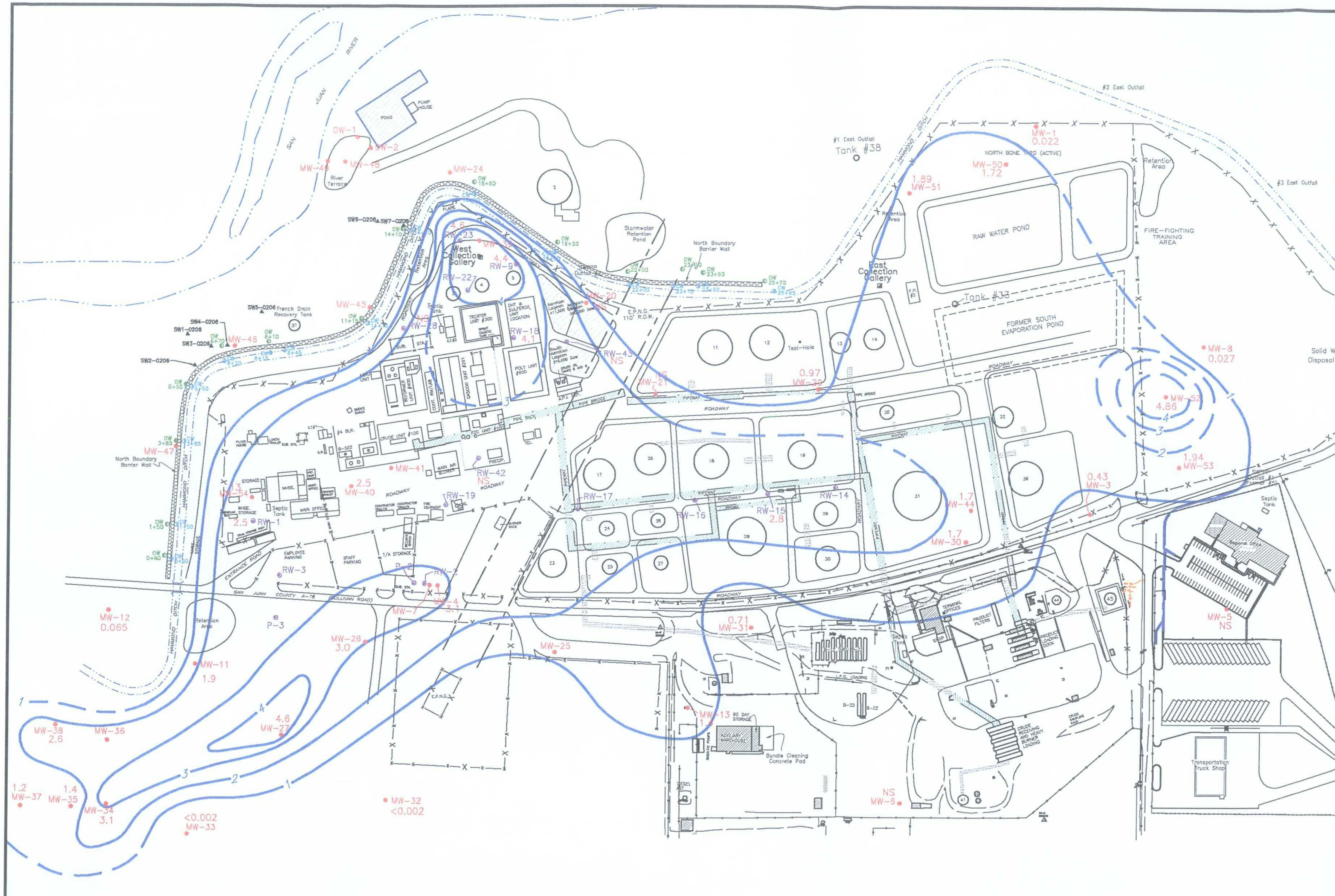


FIGURE 13
MANGANESE MAP
AUGUST - OCTOBER 2008
BLOOMFIELD REFINERY

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 03/31/09 | FILE: WestRef-B23

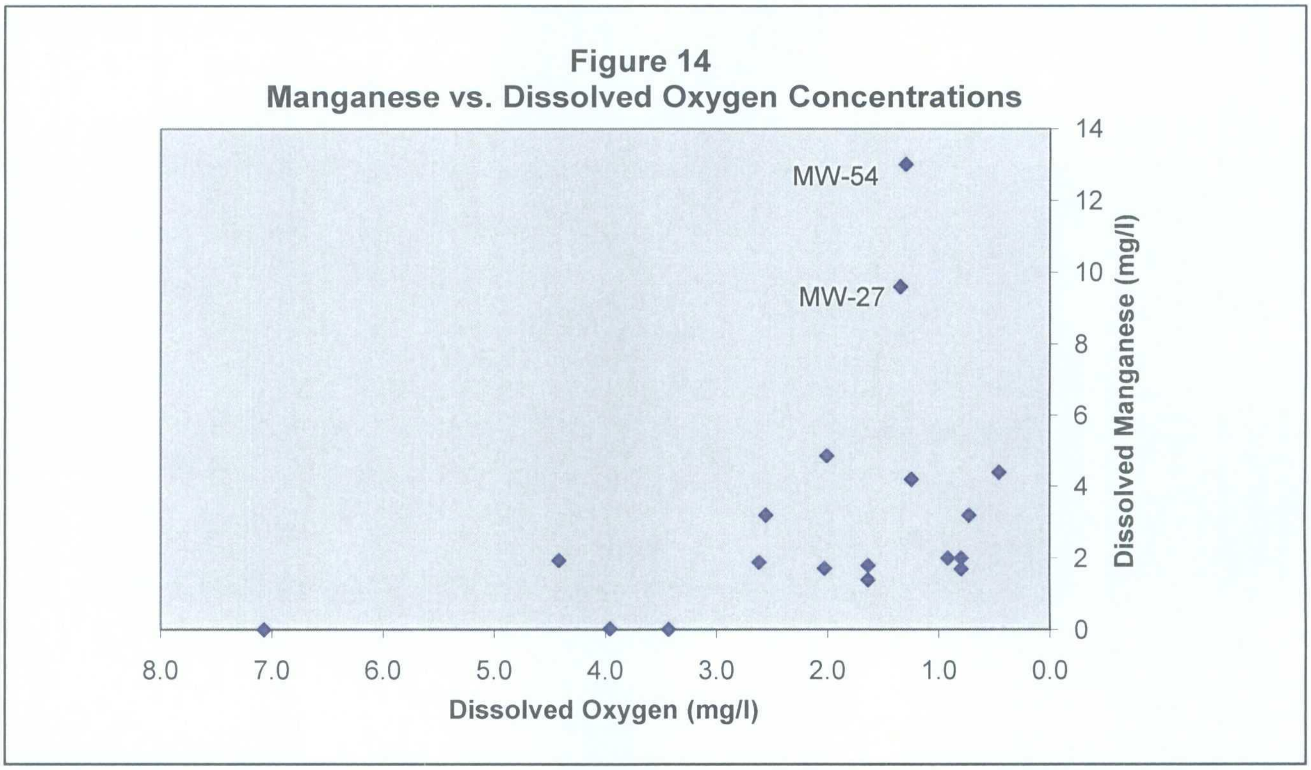
RPS JDC
404 Camp Craft Road
Austin, Texas 78746

0 — 300
SCALE IN FEET

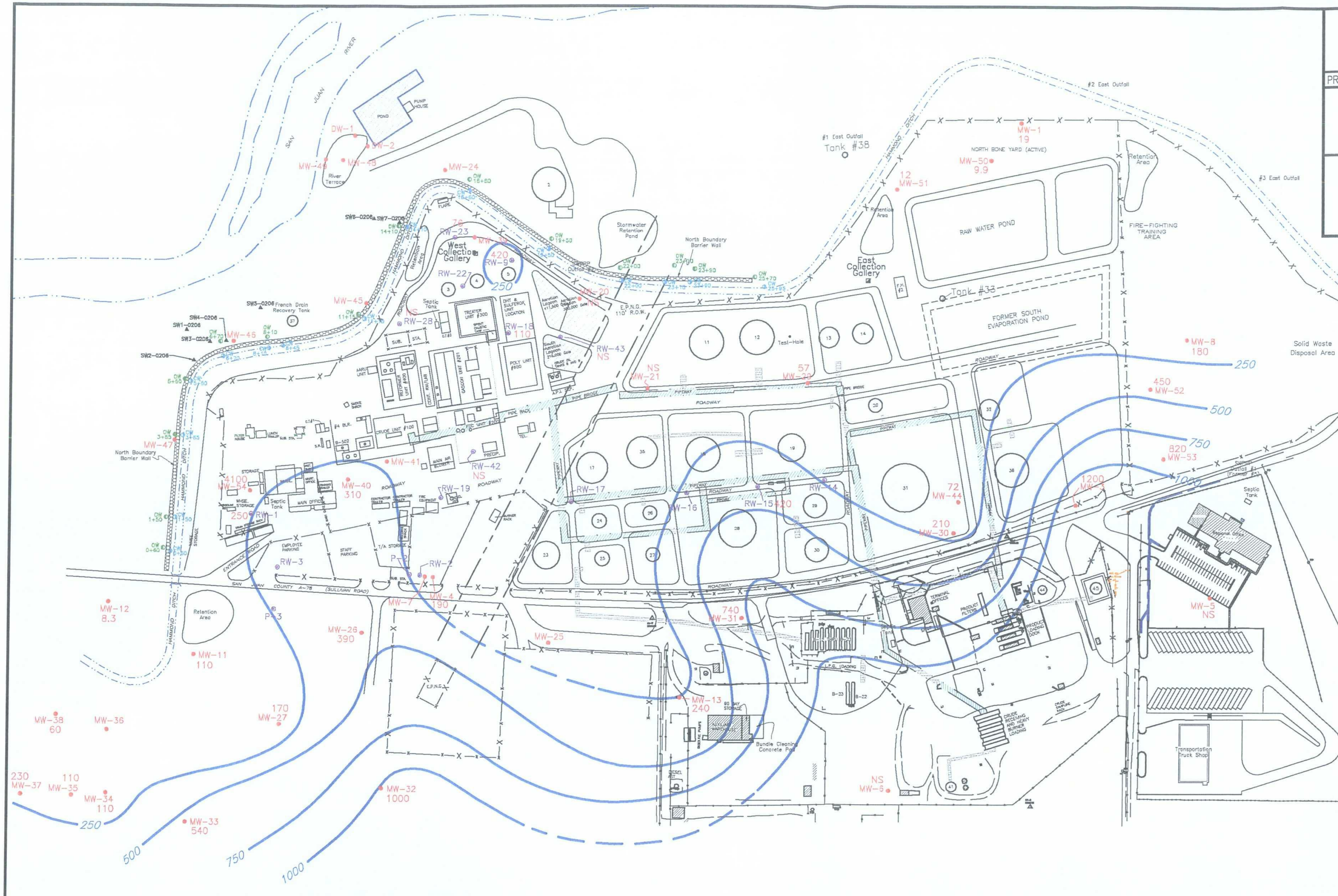
LEGEND

- 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
- 1 CONTOUR OF MANGANESE CONCENTRATION (mg/l) CONTOUR INTERVAL = 1.0 mg/l
- 1.7 MANGANESE CONCENTRATION (mg/l) (AUGUST - OCTOBER 2008 DATA WHERE AVAILABLE, OTHERWISE HISTORIC DATA)
- NS NOT SAMPLED
- UNDER GROUND PIPE-WAY
- ABOVE GROUND PIPE-WAY
- SLURRY BARRIER WALL

NOTE:
MW-54 NOT INCLUDED IN CONTOURS



Sample Location	Date	D.O. (mg/L)	Mn (mg/l)
MW #1	Aug-07	4.0	0.027
MW #13	Aug-07	1.6	1.4
MW #26	Aug-07	2.6	3.2
MW #27	Aug-07	1.4	9.6
MW #30	Aug-07	1.6	1.8
MW #32	Aug-07	7.1	0.002
MW #33	Aug-07	3.4	0.009
MW #34	Aug-07	0.8	2
MW #35	Aug-07	0.8	1.7
MW #38	Aug-07	0.9	2
RW #1	Aug-07	1.3	4.2
RW #9	Aug-07	0.5	4.4
RW #15	Aug-07	0.7	3.2
MW-50	Oct-08	2.0	1.72
MW-51	Oct-08	2.6	1.89
MW-52	Oct-08	2.0	4.86
MW-53	Oct-08	4.4	1.94
MW-54	Oct-08	1.3	13



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 03/31/09 | FILE: WestRef-B25

FIGURE 15
CHLORIDE MAP
AUGUST - OCTOBER 2008
BLOOMFIELD REFINERY

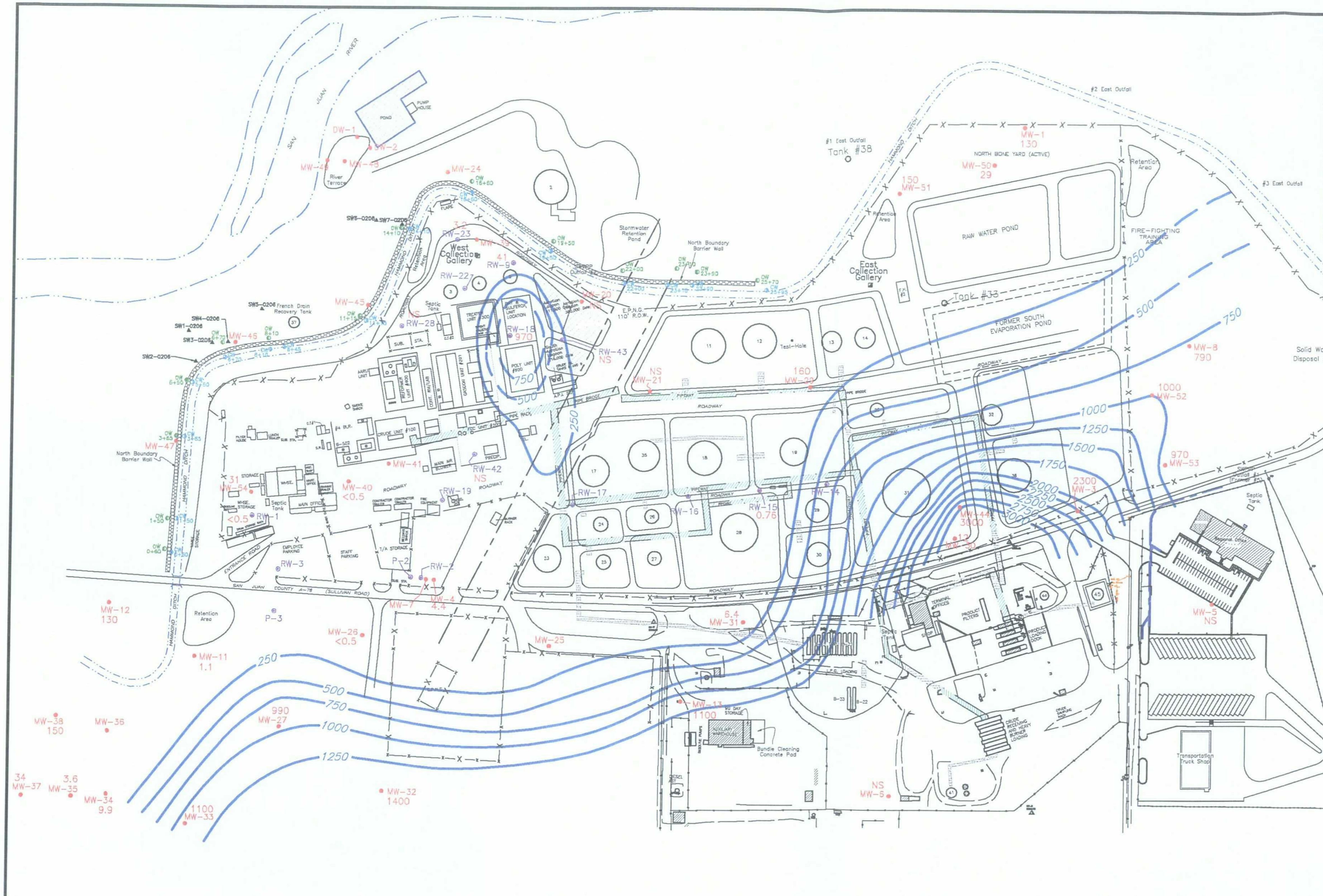
RPS JDC
404 Camp Craft Road
Austin, Texas 78746

LEGEND

- 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
- 250 CONTOUR OF CHLORIDE CONCENTRATION (mg/l) CONTOUR INTERVAL = 250 mg/l
- 60 CHLORIDE CONCENTRATION (mg/l) (AUGUST - OCTOBER 2008 DATA WHERE AVAILABLE, OTHERWISE HISTORIC DATA)
- NS NOT SAMPLED
- UNDER GROUND PIPE-WAY
- ABOVE GROUND PIPE-WAY
- SLURRY BARRIER WALL

0 300
SCALE IN FEET

NOTE:
MW-54 NOT INCLUDED IN CONTOURS



Western Refining	WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 03/31/09 | FILE: WestRef-B24

FIGURE 16
SULFATE MAP
AUGUST - OCTOBER 2008
BLOOMFIELD REFINERY

RPS JDC
404 Camp Craft Road
Austin, Texas 78746

LEGEND

- 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
- 250 CONTOUR OF SULFATE CONCENTRATION (mg/l) CONTOUR INTERVAL = 250 mg/l
- 4.4 SULFATE CONCENTRATION (mg/l) (AUGUST - OCTOBER 2008 DATA WHERE AVAILABLE, OTHERWISE HISTORIC DATA)
- NS NOT SAMPLED
- UNDER GROUND PIPE-WAY
- ABOVE GROUND PIPE-WAY
- SLURRY BARRIER WALL

0 300
SCALE IN FEET

RPS JDC

Appendix A

Field Methods

Appendix A
Field Methods

Pursuant to Section IV of the Order, an investigation of soils and ground water was conducted to determine and evaluate the presence, nature, extent, fate, and transport of contaminants. To accomplish this objective, soil borings and monitoring wells were installed at the North Bone yard (SWMUs No. 2), the Landfill (SWMU No. 8), the Landfill Pond (SWMU No. 9), and the Warehouse Yard (SWMU No. 18).

The soil borings were drilled using hollow-stem auguring (HSA) method or air rotary-ODEX method. The drilling equipment was decontaminated between each borehole using a high pressure potable water wash. All soil borings were drilled to a minimum depth of 10 feet with at least one boring at each of the individual potential source areas drilled to the top of saturation, with the exception of SWMU No. 2 where all soil borings were drilled to the water table. Soil samples were collected continuously and logged by a qualified geologist in accordance with USCS nomenclature. As seen on the boring logs the data recorded included the lithologic interval, symbol, percent recovery and a sample description of the cuttings and core samples, and field screening results. Samples obtained from the borings were screened in the field on 2 foot intervals for evidence of contaminants. Field screening results were 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. The headspace vapor screening was conducted using a MiniRae 2000 portable VOC monitor PGM-7600. The instrument was calibrated at the beginning of each work day to a concentration of 100 ppm isobutylene.

Soil samples were collected using split-spoon samplers. The split-spoon samplers were decontaminated between each use using a potable water rinse, an Alconox wash and then a distilled water rinse. In the event that more than one SWMU was investigated during the day a new batch of wash water and rinse water was prepared prior to decontamination. The decontamination water was collected in buckets and placed in open top 55-gallon drums, which were sealed at the end of each work day. Each drum was labeled. Soil cuttings were also placed in open top 55-gallon drums and were sealed when not in use.

Soil borings completed as permanent monitoring wells were drilled to the top of bedrock (Nacimiento Formation). The depth to separate phase hydrocarbon, if present, and ground water was measured prior to purging the wells of potentially stagnant ground water. Monitoring wells were purged of a minimum of three well volumes prior to sample collection. Field measurements of ground water stabilization parameters included pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature. Ground water samples were collected with disposable bailers and immediately poured directly into clean laboratory supplied sample containers.

The instrument used to measured ground water stabilization parameters was a YSI 556 multi-meter flow-through cell. The calibration solutions used at the beginning of each day are as follows:

- 4.0 pH solution
- 7.0 pH solution
- 10.0 pH solution
- 1.413 mS/cm conductivity solution
- 220 for ORP

There were no field conditions encountered during the sampling event that affected procedural or sample testing results.

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Appendix B

Boring Logs

RPS JDC

LOG OF BORING

Boring No.: SWMU2-1
Start Date: 9/25 & 9/29/2008
Finish Date: 9/25 & 9/29/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon

Total Depth: 20' bgl
Ground Water: Saturated 16' bgl
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5517.312
Site Coordinates: N 50554.408
E 52608.080

Comments: 0-10 Interval (9/25/08, 65°F); 10-20 Interval (9/29/08 78°F). Temporary well set from 15-20' bgl

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
0								Ground Surface	0
0-2	0-0.5' 1.5-2'	0815 0830	G/2V/2E/2J G/2V/2E/2J		0.0	ML	90	**Silt (ML)** Very fine grain, compact, dry, brown	
2-4					0.0	SM	60	**Silty Sand (SM)** Very fine to fine grain, loose, damp, brown	2
4-6					0.0	SM	70	**Silty Sand (SM)** Similar to above, gravel present	4
6-8					0.0	SM	80	**Silty Sand (SM)** Similar to above	6
8-10					0.0	SM	80	**Silty Sand (SM)** Similar to above	8
10-12					0.2	SW	90	**Gravelly Sand (SW)** Fine grain, loose, damp, brown, gravel throughout	10
12-14					0.3	SP	60	**Sand (SP)** Fine grain, loose, damp, very light brown	12
14-16	15-15.5'	1130	G/2V/2E/3J	16'	0.3	SP / SW	60	**Sand (SP)** Similar to above, damp to moist **Gravelly Sand (SW)** Fine to medium grain, loose, moist to saturated, gravel present	14
16-18						SW	60	**Gravelly Sand (SW)** Similar to above, saturated	16
18-20	GW Sample EBW092908 EBS092908	1145 1230 1245				SP	80	**Sand (SP)** Fine to medium grain, loose, saturated, brown	18
20								Total Depth = 20' BGL	20
22									22

RPS JDC, Inc.
3833 S. Staples, Suite N-229
Corpus Christi, TX 78411

361/855-7335
361/855-7410 fax

RPS JDC

LOG OF BORING

Boring No.: SWMU2-2
Start Date: 9/25 & 9/29/2008
Finish Date: 9/25 & 9/29/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon

Total Depth: 18' bgl
Ground Water: Saturated 14' bgl
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5517.726
Site Coordinates: N 50528.330
E 52580.323

Comments: 0-10 Interval (9/25/08, 62°F); 10-20 Interval (9/29/08 80°F). Temporary well set from 13-18' bgl

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
0								Ground Surface	0
0–2	0-0.5' 1.5-2'	0845 0900	G/2V/2E/2J G/2V/2E/2J		0.1		90	**Silty Sand/Silt (SM/ML)** Very fine grain, compact to loose, damp, brown	
2–4					0.1		90	**Silty Sand (SM)** Very fine grain, loose, damp, brown/gray	2
4–6					0.3		90	**Silty Sand (SM)** Similar to above, grayish brown, gravel present	4
6–8					0.3		60	**Silty Sand (SM)** Similar to above, gravel	6
8–10					0.3		80	**Silty Sand (SM)** Similar to above, gravel	8
10–12					0.1		100	**Silt (ML)** Very fine grain, loose, brown, damp **Gravelly Sand (SW)** Fine to medium grain, loose, dry to damp, gravel present	10
12–14				14'	0.1		60	**Gravelly Sand (SW)** Similar to above, fine to coarse grain	12
14–16	14.5-15'	1415	G/2V/2E/3J				30	**Gravelly Sand (SW)** Similar to above, saturated	14
16–18							30	**Gravelly Sand (SW)** Similar to above	16
18	GW Sample SWMU2-2GW	1445						Total Depth = 18' BGL	18
20									20
22									22

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Corpus Christi, TX 78411

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LOG OF BORING

Boring No.: SWMU2-3
Start Date: 9/25 & 9/29/2008
Finish Date: 9/25 & 9/29/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon

Total Depth: 18' bgl
Ground Water: Saturated 14' bgl
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5516.521
Site Coordinates: N 50455.987
E 52386.490

Comments: 0-10 Interval (9/25/08, 65°F); 10-20 Interval (9/29/08 85°F). Temporary well set from 13-18' bgl

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
0								Ground Surface
0-2	0-0.5' &Dup 1.5-2'	0930 0945	G/2V/2E/2J G/2V/2E/2J		0.3		90	**Silt (ML)** Very fine grain, loose, damp, brown **Silty Clay (CL)** Moderate plasticity, firm, damp, brown
2-4					0.3		80	**Sandy Silt (ML)** Similar to above, trace sand
4-6					0.3		90	**Gravelly Sand (SW)** Fine to medium grain, loose, dry, brownish gray
6-8					0.4		80	**Gravelly Sand (SW)** Similar to above
8-10					0.4		90	**Gravelly Sand (SW)** Similar to above
10-11					0.1		60	**Silt (ML)** Very fine grain, compact, damp, brown
11-12							0	**Gravelly Sand (SW)** Very fine to medium grain, loose, dry to damp, gravel present No Recovery
12-14	13.5-14'	1615	G/2V/2E/3J	14'	0.1		60	**Gravelly Sand (SW)** Similar to above
14-16							20	**Gravelly Sand (SW)** Saturated, trace reddish brown clay, medium to coarse, loose
16-18							70	**Gravelly Sand (SW)** Similar to above
18								Total Depth = 18' BGL
19	GW Sample	1645						

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LOG OF BORING

Boring No.: SWMU2-4

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon

Total Depth: 19' bgl
Ground Water: Saturated 14.5' bgl
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5516.492
Site Coordinates: N 50476.757
E 52395.980

Start Date: 9/25 & 9/30/2008
Finish Date: 9/25 & 9/30/2008

Comments: 0-10 Interval (9/25/08, 75°F); 10-20 Interval (9/30/08 72°F). Temporary well set from 14-19' bgl

Depth (ft.)	Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0–2	0-0.5'; 1.5-2'	1000; 1015	G/2V/2E/2J; G/2V/2E/2J		0.4		90	**Silt (ML)** Very fine grain, loose to compact, damp, brown, trace clay	0–2
2–4					0.5		90	**Clayey Silt (CL)** Similar to above with clay	2–4
4–6					0.5		80	**Sand (SP)** Fine to medium grain, loose, dry, brownish gray, trace gravel	4–6
6–8					0.5		80	**Gravelly Sand (SW)** Similar to above with gravel	6–8
8–10					0.5		80	**Gravelly Sand (SW)** Similar to above	8–10
10–12					0.4		60	**Gravelly Sand (SW)** Medium to coarse grain, loose, damp, brown, gravel present	10–12
12–13					0.3		60	**Gravelly Sand (SW)** Similar to above	12–13
13–15	14-14.5' &Dup	0900	G/2V/2E/3J	14.5'	0.3		50	**Gravelly Sand (SW)** Similar to above, saturated at 14.5' bgl	13–15
15–17							70	**Gravelly Silty Sand (SW)** Similar to above, silty/clayey, saturated	15–17
17–19							60	**Gravelly Sand (SW)** Similar to above, saturated	17–19
19	GW Sample	1000						Total Depth = 19' BGL	19

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WELL CONSTRUCTION

Well No.: MW-50 (SWMU2-5)
Start Date: 9/25 & 10/15/2008
Finish Date: 9/25 & 10/15/2008

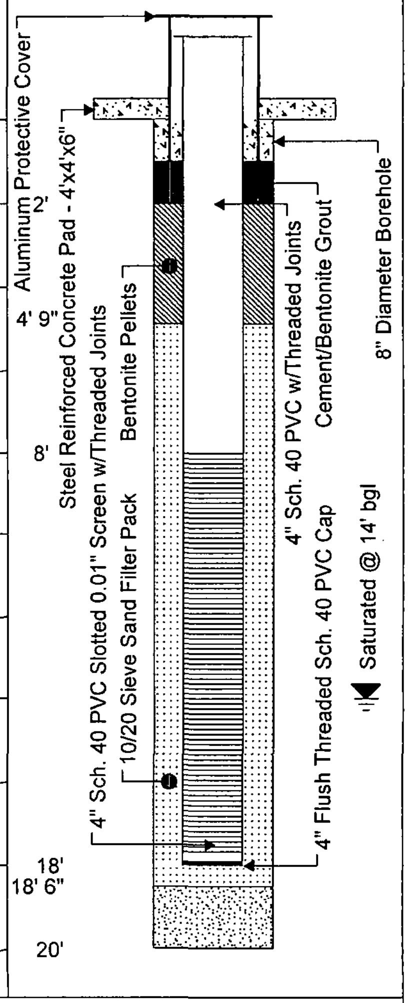
Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon

Total Depth: 20 bgl
Ground Water: Saturated 14' bgl
Elev., TOC (ft. msl): 5518.794
Elev., PAD (ft. msl): 5516.157
Elev., GL (ft. msl): 5515.872
Site Coordinates:
N 50484.517 E 52377.344

Comments: 0-10 Interval (9/25/08, 81°F (0-6), 82°F (6-10)); 10-20 Interval (10/15/08 44°F).

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
-3 to 0								Ground Surface
0-2	0-0.5'	1030	G/2V/2E/2J		0.4		90	**Silty Clay/Clayey Silt (CL/ML)** Low plasticity, firm, damp, brown
2-4	1.5-2'	1045	G/2V/2E/2J		0.3		20	**Clayey Silt (ML)** Similar to above
4-6					0.4		60	**Gravelly Sand (SW)** Fine to medium grain, loose, dry, brownish gray, gravel present throughout
6-8					0.3		80	**Gravelly Sand (SW)** Similar to above
8-10					0.5		80	**Gravelly Sand (SW)** Similar to above
10-12					0.8		60	**Gravelly Sand (SW)** Fine to medium grain, loose, dry, brownish gray, gravel present throughout
12-14	13-14'	1015	G/2V/2E/3J	14'	0.8		80	**Gravelly Sand (SW)** Similar to above, damp to moist
14-16							50	**Gravelly Sand (SW)** Similar to above, saturated, trace clay, medium to coarse grain sand
16-18							90	**Gravelly Sand (SW)** Similar to above, saturated, dark brown
18-20	FB101508 / EB101508	1115 / 1130					60	**Sand/Sandstone (SP/SS)** Fine grain, compact, damp, light brown to tan
								Total Depth = 20' BGL

Completion Results



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LOG OF BORING

Boring No.: SWMU2-6

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon

Total Depth: 18' bgl
Ground Water: Saturated @ 14' bgl
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5514.622
Site Coordinates: N 50495.442
E 52287.081

Start Date: 9/25 & 9/30/2008
Finish Date: 9/25 & 9/30/2008

Comments: 0-10 Interval (9/25/08, 84°F); 10-18 Interval (9/30/08, 83°F). Temporary well set from 13-18' bgl

Depth (ft.)	Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1130	G/2V/ 2E/2J		0.3		90	**Silty Clay (CL)** Low plasticity, firm, damp, brown	0
2	1.5-2'	1145	G/2V/ 2E/2J		0.2		90	**Gravelly Sand (SW)** Fine to medium grain, loose, dry to damp, light brown	2
4					0.2		90	**Gravelly Sand (SW)** Similar to above	4
6					0.3		90	**Gravelly Sand (SW)** Similar to above	6
8					0.3		90	**Gravelly Sand (SW)** Similar to above	8
10					0.0		30	**Gravelly Sand (SW)** Fine to medium grain, loose, dry, brown, gravel present	10
12	13.5-14'	1315	G/2V/ 2E/3J	14'	0.0		40	**Gravelly Sand (SW)** Medium to coarse, loose to compact, damp to saturated at 14' bgl	12
14							30	**Gravelly Sand (SW)** Similar to above, saturated, low plastic brown clay present	14
16	GW Sample						40	**Gravelly Sand (SW)** Similar to above, clay not present, saturated	16
18	EBW093008	1430						Total Depth = 18' BGL	18
	FB093008	1515							
20	EBS093008	1530							20
		1545							
22									22

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LOG OF BORING

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Boring No.: SWMU2-7
Start Date: 9/25 & 9/30/2008
Finish Date: 9/25 & 9/30/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon

Total Depth: 18' bgl
Ground Water: Saturated 14' bgl
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5514.622
Site Coordinates: N 50528.780
E 52271.003

Comments: 0-10 Interval (9/25/08, 85°F); 10-20 Interval (9/30/08 82°F). Temporary well set from 13-18' bgl

Depth (ft.)	Sampling: Sample Depth	Sampling: Time	Sampling: Sample Type/ Containe/No.	Sampling: Saturation	Sampling: Organic Vapor (ppm)	Sampling: USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0–2	0-0.5'; 1.5-2'	1345; 1400	G/2V/2E/2J; G/2V/2E/2J		0.1	ML	90	**Silt (ML)** Very fine grain, compact, dry, brown	0–2
2–4					0.2	SW	90	**Gravelly Sand (SW)** Fine to medium grain, loose, dry, brown	2–4
4–6					0.1	SW	90	**Gravelly Sand (SW)** Similar to above	4–6
6–8					0.1	SW	90	**Gravelly Sand (SW)** Similar to above	6–8
8–10					0.2	SW	90	**Gravelly Sand (SW)** Similar to above	8–10
10–12					0.3	SW	70	**Gravelly Sand (SW)** Fine to medium grain, loose, brown, gravel throughout	10–12
12–14	13.5-14'	1630	G/2V/2E/3J	14'	0.3	SW	70	**Gravelly Sand (SW)** Similar to above	12–14
14–16				saturated		SW	20	**Gravelly Sand (SW)** Coarse, loose, saturated, dark brown	14–16
16–18				saturated		SW	40	**Gravelly Sand (SW)** Similar to above	16–18
18								Total Depth = 18' BGL	18
20	GW Sample SWMU2-7GW	1715							20
22									22

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LOG OF BORING

RPS JDC

Boring No.: SWMU2-8
Start Date: 9/25 & 10/1/2008
Finish Date: 9/25 & 10/1/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon

Total Depth: 18' bgl
Ground Water: Saturated 13.5' bgl
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5514.053
Site Coordinates: N 50488.340
E 52255.081

Comments: 0-10 Interval (9/25/08, 85°F); 10-20 Interval (10/1/08 52°F). Temporary well set from 13-18' bgl

Depth (ft.)	Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0–2	0-0.5' &Dup; 1.5-2'	1430; 1445	G/2V/ 2E/2J; G/2V/ 2E/2J		0.1	ML	90	**Clayey Silt (ML)** Very fine grained, compact, dry to damp, brown, trace discoloration - black/rusty brown, no odor	0–2
2–4					0.1	ML	70	**Clayey Silt (ML)** Similar to above	2–4
4–6					0.1	SW	20	**Gravelly Sand (SW)** Fine to medium grain, loose, dry, brown, gravel throughout	4–6
6–8					0.2	SW	70	**Gravelly Sand (SW)** Similar to above	6–8
8–10					0.3	SW	80	**Gravelly Sand (SW)** Similar to above, except brown to dark brown	8–10
10–12					0.3	SW	60	**Gravelly Sand (SW)** Fine to medium grained, loose, brown, damp, gravel throughout	10–12
12–14	13-13.5'	0815	G/2V/ 2E/3J	13.5'	0.3	SW	30	**Gravelly Sand (SW)** Similar to above, saturated at 13.5' bgl	12–14
14–16						SW	20	**Gravelly Sand (SW)** Similar to above, saturated, trace clay	14–16
16–18						SW; SP/SS	100	**Gravelly Sand (SW)** Similar to above, saturated; **Sand/Weathered Sandstone (SP/SS)** Fine grained, compact/dense, damp, light grayish brown to greenish gray	16–18
18–20	GW Sample SWMU2-8GW	0915						Total Depth = 18' BGL	18–20
22									22

WELL CONSTRUCTION

RPS JDC

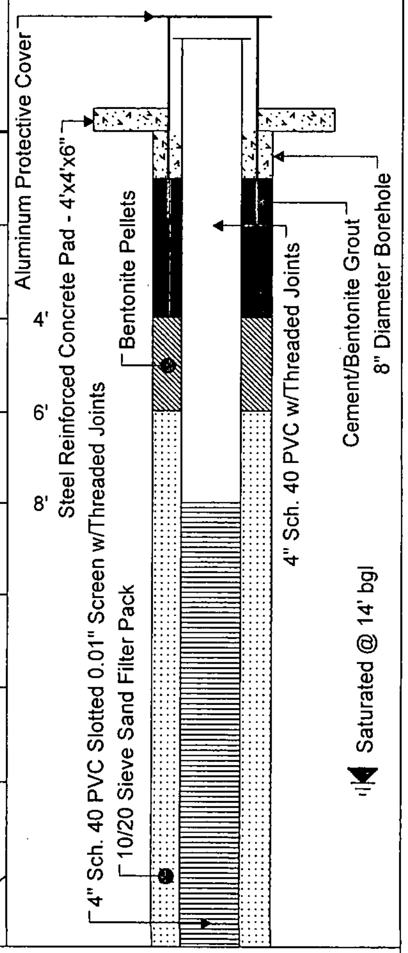
Well No.: MW-51 (SWMU2-9)
Start Date: 9/25 & 10/1/2008
Finish Date: 9/25 & 10/1/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: 0-10 Interval (9/25/08, 85°F); 10-20 Interval (10/1/08 80°F).

Total Depth: 20 bgl
Ground Water: Saturated 14' bgl
Elev., TOC (ft. msl): 5515.583
Elev., PAD (ft. msl): 5513.098
Elev., GL (ft. msl): 5512.877
Site Coordinates:
N 50401.208 E 52102.539

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
-4 to 0								Ground Surface
0–2	0-0.5'	1530	G/2V/2E/2J		0.1	ML	60	**Clayey Silt (ML)** Very fine grain, compact, dry, brown
2–4	1.5-2'	1545	G/2V/2E/2J		0.2		--	No Recovery
4–6					0.2	SW	60	**Gravelly Sand (SW)** Very fine to medium grain, loose, dry, brown, gravel present
6–8					0.3	SW	60	**Gravelly Sand (SW)** Similar to above
8–10					0.3	SW	80	**Gravelly Sand (SW)** Similar to above, damp to moist at base
10–12					0.3	SW	30	**Gravelly Sand (SW)** Medium grained, loose, dry to damp, brown, gravel throughout
12–14	13.5-14'	1115	G/2V/2E/3J	14'	0.3	SW	30	**Gravelly Sand (SW)** Similar to above, saturated at 14' bgl
14–16						SP	80	**Sand (SP)** Medium to coarse grain, loose, grayish brown, saturated, trace gravel and trace clay nodules, clayey sand at base
16–						SW	20	

Completion Results



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WELL CONSTRUCTION

Well No.: MW-51 (SWMU2-9)

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: 0-10 Interval (9/25/08, 85°F); 10-20 Interval (10/1/08 80°F).

Total Depth: 20 bgl
Ground Water: Saturated 14' bgl
Elev., TOC (ft. msl): 5515.583
Elev., PAD (ft. msl): 5513.098
Elev., GL (ft. msl): 5512.877
Site Coordinates:
N 50401.208 **E** 52102.539

Start Date: 9/25 & 10/1/2008
Finish Date: 9/25 & 10/1/2008

Depth (ft.)	Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Completion Results
19							90	**Gravelly Sand (SW)** Medium to coarse grain, compact, brownish gray, saturated, clayey from 16-16.5' bgl	18' 18' 6"
21								**Sand/Weathered Sandstone (SP/SS)** *Fine grained, compact to dense, damp, greenish gray to light brown*	20'
								Total Depth = 20' BGL	
23									
25									
27									
29									
31									
33									
35									
37									

4" Sch. 40 PVC Slotted 0.01" Screen w/Threaded Joints

4" Flush Threaded Sch. 40 PVC Cap

10/20 Sieve Sand Filter Pack

LOG OF BORING

RPS JDC

Boring No.: SWMU8-1
Start Date: 9/23/2008
Finish Date: 9/23/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-10 Interval (9/23/08, 60°F)

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5534.094
Site Coordinates: N 49930.673
E 52884.130

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	0815	G/2V/ 2E/2J		0.3		90	**Silt (ML)** Fine grain, loose to compact, dry, brown	0
2	1.5-2'	0830	G/2V/ 2E/2J		0.3		90	**Silt (ML)** Similar to above	2
4					0.5		90	**Silt (ML)** Similar to above, damp	4
6					0.6		100	**Silt (ML)** Similar to above, damp	6
8					0.6		100	**Clayey Silt (ML)** Fine grain, compact, damp brown	8
10								Total Depth = 10' BGL	10
12									12
14									14
16									16
18									18
20									20
22									22

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LOG OF BORING

Boring No.: SWMU8-2
Start Date: 9/23/2008
Finish Date: 9/23/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-10 Interval (9/23/08, 61°F)

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5534.065
Site Coordinates: N 49943.130
E 52984.200

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	0915	G/2V/ 2E/2J		0.6		80	**Silt (ML)** Fine grain, loose, dry, light brown	0
	1.5-2'	0930	G/2V/ 2E/2J						
2					0.5		80	**Silt (ML)** Similar to above	2
4					0.7		90	**Silt (ML)** Similar to above	4
6					0.6		90	**Silt (ML)** Similar to above, damp, trace fine grain sand	6
8					0.7		90	**Silt (ML)** Similar to above	8
10								Total Depth = 10' BGL	10
12									12
14									14
16									16
18									18
20									20
22									22

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LOG OF BORING

RPS JDC

Boring No.: SWMU8-3
Start Date: 9/23/2008
Finish Date: 9/23/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-4 Interval (9/23/08, 62°F); 4-10 Interval (9/23/08, 63°F)

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5534.012
Site Coordinates: N 49956.262
E 53082.989

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	0945	G/2V/ 2E/2J		0.6		70	**Fill** Gravel, clay, sand/silt	0
	1.5-2'	1000	G/2V/ 2E/2J						
2					0.7		10	**Fill** Similar to above	2
4					0.6		60	**Fill** Sand/silt, very fine grain, loose, damp, orangish brown	4
6					0.7		80	**Silt (ML)** Fine grain, compact, damp, brown	6
8					0.7		80	**Clayey Silt (ML)** Fine grain, compact, damp, brown	8
10								Total Depth = 10' BGL	10
12									12
14									14
16									16
18									18
20									20
22									22

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LOG OF BORING

Boring No.: SWMU8-4
Start Date: 9/23/2008
Finish Date: 9/23/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-8 Interval (9/23/08, 72°F); 8-10 Interval (9/23/08, 73°F)

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5536.192
Site Coordinates: N 49858.545
E 53079.734

Depth (ft.)	Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1015	G/2V/2E/2J		0.7		90	**Silt (ML)** Fine grain, loose, dry, brown	0
2	1.5-2'	1030	G/2V/2E/2J		0.8		90	**Silt (ML)** Similar to above	2
4					0.7		90	**Silt (ML)** Similar to above	4
6					0.7		80	**Silt (ML)** Similar to above, damp	6
8					0.7		80	**Silt (ML)** Similar to above, damp, trace clayey silt	8
10								Total Depth = 10' BGL	10
12									12
14									14
16									16
18									18
20									20
22									22

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LOG OF BORING

Boring No.: SWMU8-5
Start Date: 9/23/2008
Finish Date: 9/23/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-10 Interval (9/23/08, 75°F)

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5535.872
Site Coordinates: N 49843.523
E 52982.291

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1100	G/2V/2E/2J		0.6		80	**Silt (ML)** Fine grain, loose, dry, brown, gravelly	0
2	1.5-2'	1115	G/2V/2E/2J		0.6		90	**Silt (ML)** Similar to above, trace gravel	2
4					0.7		90	**Silt (ML)** Fine grain, compact, dry to damp, brown	4
6					0.6		90	**Silt (ML)** Similar to above	6
8					0.5		90	**Silt (ML)** Similar to above, trace clayey silt	8
10								Total Depth = 10' BGL	10
12									12
14									14
16									16
18									18
20									20
22									22

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LOG OF BORING

Boring No.: SWMU8-6
Start Date: 9/23/2008
Finish Date: 9/23/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5535.908
Site Coordinates: N 49828.227
E 52839.886

Comments: 0-10 Interval (9/23/08, 80ºF). SWMU8-6A is 42' W 10º of SWMU 8-6

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0–2	0-0.5' &Dup; 1.5-2'	1145; 1215	G/2V/ 2E/2J; G/2V/ 2E/2J		0.7		90	**Silt (ML)** Fine grain, loose, dry, brown, trace gravel	0–2
2–4					0.6		60	**Silt (ML)** Similar to above	2–4
4–6					0.3		40	**Silt (ML)** Similar to above	4–6
6–8					0.5		80	**Silt (ML)** Similar to above	6–8
8–10					0.5		90	**Silt (ML)** Fine grain, compact, dry, brown	8–10
								Total Depth = 10' BGL	

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22

WELL CONSTRUCTION

RPS JDC

Well No.: MW-52 (SWMU8-6A)

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon

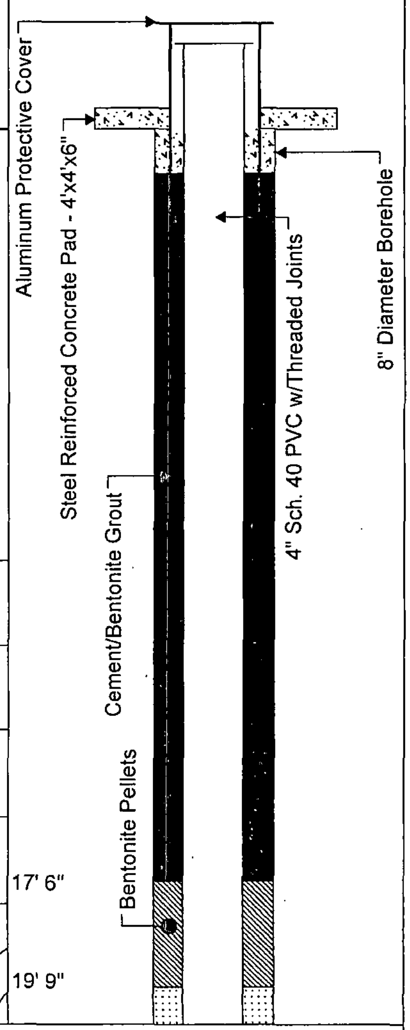
Total Depth: 41' bgl
Ground Water: Saturated 34' bgl
Elev., TOC (ft. msl): 5538.626
Elev., PAD (ft. msl): 5536.148
Elev., GL (ft. msl): 5535.908
Site Coordinates:
N 49828.227 **E** 52839.886

Start Date: 10/13/2008
Finish Date: 10/14/2008

Comments: 0-10 Interval (10/13/08, 40°F); 10-41 Interval (10/14/08, 40°F-42°F). SWMU8-6A is 42'W 10°S of SWMU8-6.

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
-2								
0								Ground Surface
0							–	**Silt (ML)** Fine grain, loose, dry, brown
10					0.3		80	**Silt (ML)** Fine grain, loose, dry to damp, brown
12					0.4		100	**Silt (ML)** Similar to above
14					0.5		100	**Silt (ML)** Similar to above
16					0.4		100	**Silt (ML)** Similar to above
18					0.5		100	**Silt (ML)** Similar to above
20								**Clayey Silt/Silty Clay (ML/CL)** Low plasticity, soft, damp, brown

Completion Results



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WELL CONSTRUCTION

Well No.: MW-52 (SWMU8-6A)

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon

Total Depth: 41' bgl
Ground Water: Saturated 34' bgl
Elev., TOC (ft. msl): 5538.626
Elev., PAD (ft. msl): 5536.148
Elev., GL (ft. msl): 5535.908
Site Coordinates:
N 49828.227 **E** 52839.886

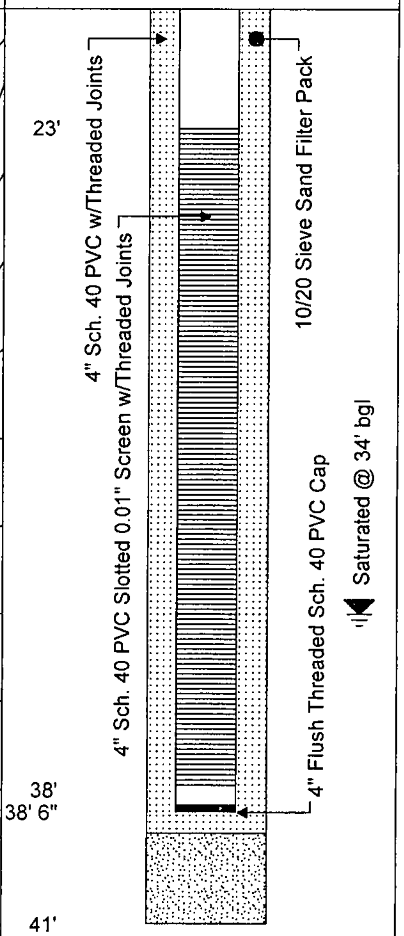
Start Date: 10/13/2008
Finish Date: 10/14/2008

Comments: 0-10 Interval (10/13/08, 40°F); 10-41 Interval (10/14/08, 40°F-42°F). SWMU8-6A is 42'W 10°S of SWMU8-6.

Depth (ft.)	Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
21–22					0.4		100	**Clayey Silt/Silty Clay (ML)** Similar to above
22–24					0.5		100	**Clayey Silt/Silt (ML)** Similar to above, except decrease in clay content
24–26					0.4		60	**Clayey Silt/Silt (ML)** Similar to above; **Gravelly Sand (SW)** Fine grain, loose, damp, brown, gravel throughout
26–28					0.5		70	**Gravelly Sand (SW)** Similar to above
28–30					0.4		70	**Gravelly Sand (SW)** Similar to above
30–32					0.5		70	**Gravelly Sand (SW)** Similar to above
32–34	33'-34'	0915	G/2V/2E/3J	34'	0.5		60	**Gravelly Sand (SW)** Similar to above, moist to saturated at base
34–36							60	**Gravelly Sand (SW)** Fine to medium grain, loose to compact, saturated, brown
36–38							60	**Gravelly Sand (SW)** Similar to above, trace sandstone at base, very light reddish brown to tan
38–39							--	**Sand/Sandstone (SP/SS)** Fine grain, compact, moist to saturated at base, yellowish brown
39–41							--	**Sand/Sandstone (SP/SS)** Similar to above

Total Depth = 41' BGL

Completion Results



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LOG OF BORING

Boring No.: SWMU8-7
Start Date: 9/23/2008
Finish Date: 9/23/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-10 Interval (9/23/08, 81°F)

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5536.338
Site Coordinates: N 49728.414
E 52880.733

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1315	G/2V/ 2E/2J		0.6		60	**Silt (ML)** Fine grain, loose, dry, brown	0
2	1.5-2'	1330	G/2V/ 2E/2J		0.6		80	**Silt (ML)** Similar to above	2
4					0.7		80	**Silt (ML)** Similar to above, dry to damp	4
6					0.7		80	**Silt (ML)** Similar to above	6
8					0.6		80	**Silt (ML)** Fine grain, loose, damp, brown, trace sand	8
10								Total Depth = 10' BGL	10
12									12
14									14
16									16
18									18
20									20
22									22

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LOG OF BORING

Boring No.: SWMU8-8
Start Date: 9/23/2008
Finish Date: 9/23/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-10 Interval (9/23/08, 80°F)

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5536.768
Site Coordinates: N 49742.785
E 52978.830

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0–2	0-0.5' 1.5-2'	1400 1415	G/2V/2E/2J G/2V/2E/2J		0.3		60	**Silt (ML)** Fine grain, loose, dry, brown	0–2
2–4					0.5		50	**Silt (ML)** Similar to above	2–4
4–6					0.5		50	**Silt (ML)** Similar to above	4–6
6–8					0.5		60	**Silt (ML)** Similar to above	6–8
8–10					0.3		80	**Sandy Silt (ML)** Fine grain, compact, dry, brown, very fine grain sand	8–10
								Total Depth = 10' BGL	
18–20	EB092308 FB092308	1430 1445							18–20

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LOG OF BORING

Boring No.: SWMU8-9
Start Date: 9/23/2008
Finish Date: 9/23/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-10 Interval (9/23/08, 80°F)

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5537.239
Site Coordinates: N 49756.679
E 53076.412

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0–2	0-0.5' &Dup; 1.5-2'	1515; 1530	G/2V/2E/2J; G/2V/2E/2J		0.6		90	**Silt (ML)** Very fine grain, loose to compact, dry, brown	0–2
2–4					0.6		80	**Silt (ML)** Similar to above	2–4
4–6					0.6		80	**Silt (ML)** Similar to above	4–6
6–8					0.5		80	**Silt (ML)** Similar to above	6–8
8–10					0.5		80	**Clayey Silt (ML)** Very fine grain, compact, damp, brown	8–10
								Total Depth = 10' BGL	

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LOG OF BORING

Boring No.: SWMU8-10
Start Date: 9/23/2008
Finish Date: 9/23/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-10 Interval (9/23/08, 80ºF)

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5538.615
Site Coordinates: N 49661.599
E 53076.420

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1545	G/2V/ 2E/2J		0.5		90	**Silt (ML)** Very fine grain, compact, dry, brown	0
2	1.5-2'	1600	G/2V/ 2E/2J		0.5		90	**Silt (ML)** Similar to above, trace fine grain sand at base	2
4					0.5		90	**Silt (ML)** Similar to above	4
6					0.5		90	**Silt (ML)** Similar to above, damp	6
8					0.6		90	**Silt (ML)** Similar to above, trace calcareous	8
10								Total Depth = 10' BGL	10
12									12
14									14
16									16
18									18
20									20
22									22

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LOG OF BORING

Boring No.: SWMU8-11
Start Date: 9/23/2008
Finish Date: 9/23/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-10 Interval (9/23/08, 80°F)

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5538.954
Site Coordinates: N 49642.993
E 52977.706

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1610	G/2V/ 2E/2J		0.5		90	**Silt (ML)** Very fine grain, compact, dry, brown	0
	1.5-2'	1620	G/2V/ 2E/2J						
2					0.5		90	**Silt (ML)** Similar to above, quartz grains random throughout at base	2
4					0.4		90	**Silt (ML)** Similar to above	4
6					0.5		90	**Silt (ML)** Similar to above	6
8					0.5		90	**Silt (ML)** Similar to above	8
10								Total Depth = 10' BGL	10
12									12
14									14
16									16
18									18
20									20
22									22

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WELL CONSTRUCTION

Well No.: MW-53 (SWMU8-12)

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon

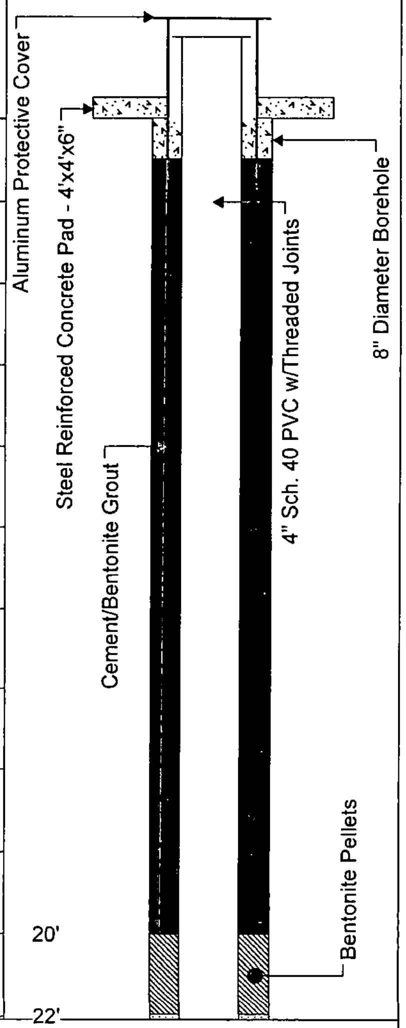
Total Depth: 41.5' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): 5541.322
Elev., PAD (ft. msl): 5538.7
Elev., GL (ft. msl): 5538.46
Site Coordinates:
N 49628.129 E 52879.301

Start Date: 9/23/2008
Finish Date: 9/24/2008

Comments: 0-10 Interval (9/23/08, 80°F); 10-41.5 Interval (9/24/08, (10-28) 60°F, (28-30) 66°F, (30-39) 70°F).

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
-2								
0	0-0.5'	1630	G/2V/2E/2J					Ground Surface
0-2	1.5-2'	1645	G/2V/2E/2J		0.5		70	**Silt (ML)** Very fine grain, compact, dry, brown
2-4					0.5		70	**Silt (ML)** Similar to above
4-6					0.5		70	**Silt (ML)** Similar to above
6-8					0.4		90	**Silt (ML)** Similar to above, damp, trace quartz sand
8-10					0.5		90	**Silt (ML)** Similar to above
10-12					0.1		90	**Sandy Silt (ML)** Very fine grain, compact, dry, brown, with fine grain sand
12-14					0.0		90	**Sandy Silt (ML)** Similar to above
14-16					0.0		90	**Sandy Silt (ML)** Similar to above
16-18					0.1		90	**Clayey Silt (ML)** Very fine grain, compact, dry, brown, calcareous
18-20					0.0		90	**Clayey Silt (ML)** Similar to above
20-22					0.1		100	**Sandy Silt (ML)** Very fine grain, compact to loose, dry, brown, with fine grain sand

Completion Results



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WELL CONSTRUCTION

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Well No.: MW-53 (SWMU8-12)

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon

Total Depth: 41.5' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): 5541.322
Elev., PAD (ft. msl): 5538.7
Elev., GL (ft. msl): 5538.46
Site Coordinates:
N 49628.129 E 52879.301

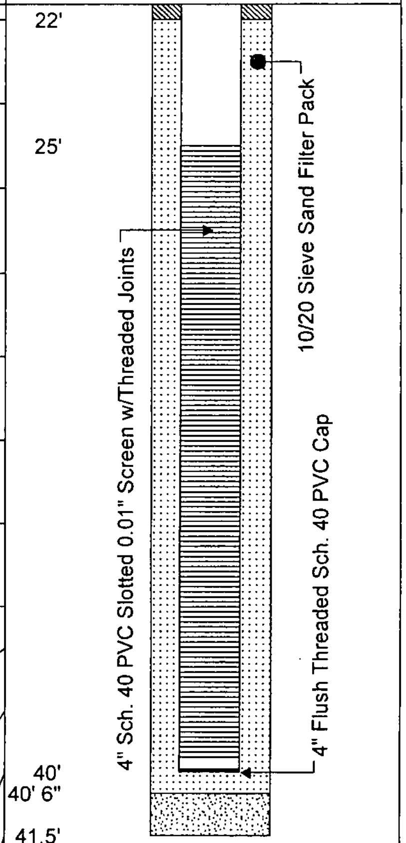
Start Date: 9/23/2008
Finish Date: 9/24/2008

Comments: 0-10 Interval (9/23/08, 80°F); 10-41.5 Interval (9/24/08, (10-28) 60°F, (28-30) 66°F, (30-39) 70°F).

Depth (ft.)	Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
23					0.1		100	**Sandy Silt (ML)** Similar to above
25					0.1		100	**Sandy Silt (ML)** Similar to above, damp, calcareous
27					0.1		70	**Silty Sand/Gravelly Sand (SM/SW)** Fine grain, loose, dry, light brown to brown, gravelly at base
29					0.1		60	**Gravelly Sand (SW)** Similar to above
31					0.1		50	**Gravelly Sand/Sandy Gravel (SW)** Similar to above, cobble size
33					0.1		60	**Gravelly Sand/Sandy Gravel (SW)** Similar to above
35					0.1		10	**Gravelly Sand/Sandy Gravel (SW)** Similar to above
37					0.1		20	**Gravelly Sand (SW)** Similar to above
37-38.5	37-38.5'	1430	G/2V/2E/2J		0.1		90	**Clayey Sand (SC)** Fine to medium grain, compact, moist to very moist, yellowish brown
39							90	**Sand/Sandstone (SP/SS)** Fine grain, very dense, dry, light brown to reddish brown
41							90	**Clayey Sand (SC)** Fine grained, very dense, damp, greenish gray
43								
45								

Total Depth = 41.5' BGL

Completion Results



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LOG OF BORING

RPS JDC

Boring No.: SWMU9-1
Start Date: 9/28/2008
Finish Date: 9/28/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon

Total Depth: 17' bgl
Ground Water: Saturated @ 15' bgl
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5516.780
Site Coordinates: N 50121.100
E 53104.268

Comments: 0-17 Interval (9/28/08, 83°F). Temporary well set from 12' to 17' bgl.

Depth (ft.)	Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
0								Ground Surface	0
	0-0.5'	1545	G/2V/ 2E/2J		0.3		100	**Silt (ML)** Very fine grain, compact to loose, dry, brown	
2	1.5-2'	1600	G/2V/ 2E/2J		0.3		100	**Silt (ML)** Similar to above	2
4							100	**Silt (ML)** Similar to above, damp, trace clumps of sulphur, odor	4
					0.5		60	**Silt (ML)** Similar to above, trace clumps of sulphur and fine grain red material, odor	
6	5-7.5'	1645	G/2V/ 2E/2J		0.3		60	**Silt (ML)** Very fine grain, loose to compact, sulphur clumps present, damp, odor	6
8					0.2		60	**Silt (ML)** Very fine grain, compact, damp, brown, no odor	8
10					0.3		70	**Silt (ML)** Similar to above	10
12					0.4		70	**Silt (ML)** Similar to above, trace fine grain sand, damp to moist	12
14	14.5-15'	1700	G/2V/ 2E/2J	15'					14
16							90	**Sandstone (SS)** Friable, damp to moist, no odor, greenish gray, trace sand and gravel at the top	16
18								Total Depth = 17' BGL	18
20									20
22									22

RPS JDC, Inc.
3833 S. Staples, Suite N-229
Corpus Christi, TX 78411

361/855-7335
361/855-7410 fax

LOG OF BORING

RPS JDC

Boring No.: SWMU18-1
Start Date: 9/26/2008
Finish Date: 9/26/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-10 Interval (9/26/08, 66°F)

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5527.534
Site Coordinates: N 49534.029
E 50237.472

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	0800	G/2V/ 2E/2J		0.1		80	**Clayey Silt/Gravel (ML)** Very fine grain, compact, dry, brown	0
2	1.5-2'	0815	G/2V/ 2E/2J		0.1		50	**Silt (ML)** Very fine grain, compact, damp, brown	2
4					0.1		60	**Silt (ML)** Similar to above	4
6					0.1		80	**Silt (ML)** Similar to above, except trace of very fine grain sand	6
8					0.1		90	**Sandy Silt (ML)** Very fine grain, compact, damp, brown	8
10								Total Depth = 10' BGL	10
12									12
14									14
16									16
18									18
20									20
22									22

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Corpus Christi, TX 78411

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361/855-7410 fax

RPS JDC

WELL CONSTRUCTION

Well No.: MW-54 (SWMU18-2)

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon

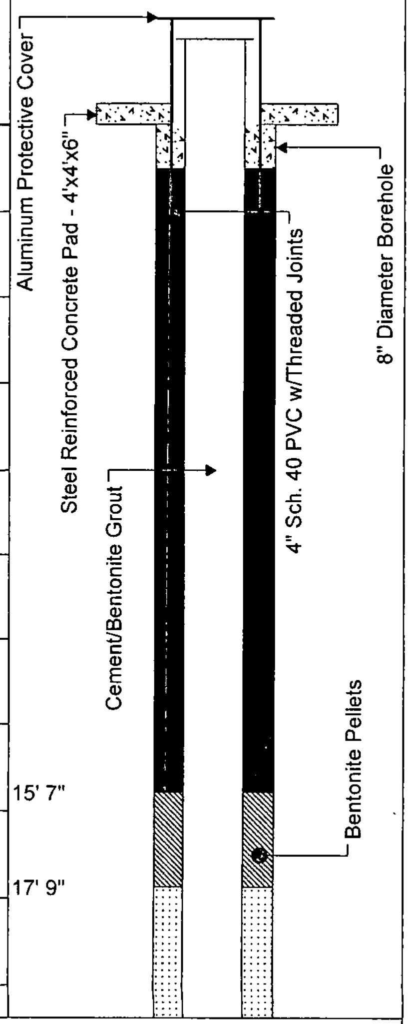
Total Depth: 38' bgl
Ground Water: Saturated @ 30' bgl
Elev., TOC (ft. msl): 5530.077
Elev., PAD (ft. msl): 5527.564
Elev., GL (ft. msl): 5527.346
Site Coordinates:
N 49528.406 **E** 50218.954

Start Date: 9/26 & 10/15/2008
Finish Date: 9/26 & 10/17/2008

Comments: 0-10 Interval (9/26/08, 62°F); 10-38 Interval (10/15/08, (10-22) 65°F, (22-38) 62°F).

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
-2								
0	0-0.5' 1.5-2'	0830 0845	G/2V/2E/2J G/2V/2E/2J		0.4		60	Ground Surface **Clayey Silt/Gravel (ML)** Very fine grain, compact, dry, brown, slight black staining at 0-0.5' bgl, faint odor
2					0.4		60	**Silt (ML)** Very fine grain, compact, damp, brown
4					0.3		70	**Silt (ML)** Similar to above
6					0.4		80	**Silt (ML)** Similar to above, except trace of very fine grain sand
8					0.5		80	**Sandy Silt (ML)** Very fine grain, compact, damp, brown
10					0.3		90	**Sandy Silt/Silty Sand (ML/SM)** Similar to above, damp
12					0.3		90	**Silty Sand (SM)** Very fine grain, loose, damp, brown
14					0.3		90	**Silty Sand (SM)** Similar to above
16					0.3		80	**Silty Sand (SM)** Similar to above
18	18-20'	1630	G/2V/2E/3J		15.5		80	**Silty Sand (SM)** Similar to above, damp, black discoloration, odor
20								

Completion Results



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Corpus Christi, Texas 78411

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WELL CONSTRUCTION

Well No.: MW-54 (SWMU18-2)

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon

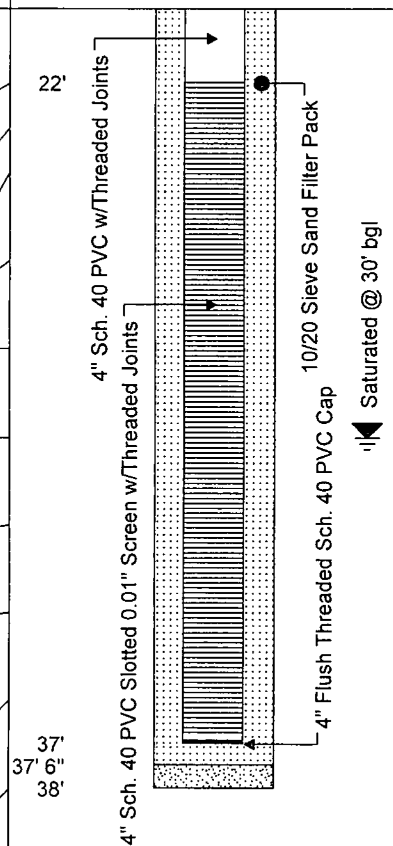
Total Depth: 38' bgl
Ground Water: Saturated @ 30' bgl
Elev., TOC (ft. msl): 5530.077
Elev., PAD (ft. msl): 5527.564
Elev., GL (ft. msl): 5527.346
Site Coordinates:
N 49528.406 E 50218.954

Start Date: 9/26 & 10/15/2008
Finish Date: 9/26 & 10/17/2008

Comments: 0-10 Interval (9/26/08, 62°F); 10-38 Interval (10/15/08, (10-22) 65°F, (22-38) 62°F).

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
					8.5		60	**Gravelly Sand (SW)** Fine to medium grain, loose, damp, gray, faint odor, gravel present throughout
22					12.9		20	**Gravelly Sand (SW)** Similar to above
24							--	**Gravelly Sand (SW)** Similar to above
					16.1		40	**Gravelly Sand (SW)** Similar to above
26								**Gravelly Sand (SW)** Similar to above
					58.5		40	**Gravelly Sand (SW)** Similar to above
28	28-29'	1645	G/2V/2E/3J	30'	400		50	**Gravelly Sand (SW)** Similar to above, moist to very moist at 29' bgl, hydrocarbon odor
30							40	**Gravelly Sand (SW)** Medium to coarse grain, loose, saturated, hydrocarbon odor, black
32							50	**Gravelly Sand (SW)** Similar to above, saturated, black, hydrocarbon odor
34							60	**Sand/Sandstone (SP/SS)** Fine grain, compact, dense, moist to saturated, hydrocarbon odor, dark gray to black
36							40	**Sand/Sandstone (SP/SS)** Similar to above, becomes very dense, damp
38								Total Depth = 38' BGL
40								
42								

Completion Results



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Corpus Christi, Texas 78411

361/855-7335
361/855-7410 fax

RPS JDC

LOG OF BORING

Boring No.: SWMU18-3
Start Date: 9/26/2008
Finish Date: 9/26/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-4 Interval (9/26/08, 62°F); 4-10 Interval (9/26/08, 66°F)

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5527.678
Site Coordinates: N 49515.333
E 50239.867

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	0900	G/2V/2E/2J		0.5		60	**Clayey Silt/Gravel (ML)** Very fine grain, compact, brown to dark brown, faint odor	0
2	1.5-2'	0915	G/2V/2E/2J				80	**Clayey Silt/Gravel (ML)** Similar to above, gray, trace sand, faint odor, gravelly, black coating on gravel	2
4					0.6		100	**Clayey Silt (ML)** Similar to above, gray grading to brown, no odor	4
6					0.7		100	**Clayey Silt (ML)** Very fine grain, compact, brown, damp, no odor	6
					0.8		100	**Silt (ML)** Similar to above, no odor	
8	7.5-9' &Dup	1015	G/2V/2E/2J		0.7		100	**Silt (ML)** Similar to above, no odor	8
					0.6		100	**Silt (ML)** Similar to above, no odor	
10								Total Depth = 10' BGL	10
12									12
14									14
16									16
18									18
20									20
22									22

LOG OF BORING

RPS JDC

Boring No.: SWMU18-4
Start Date: 9/26/2008
Finish Date: 9/26/2008

Client: Western Refining Southwest, Inc.
Site: SWMU Group #2, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: 0-10.5 Interval (9/26/08, 75ºF)

Total Depth: 10.5' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5527.457
Site Coordinates: **N** 49511.634
E 50225.886

Depth (ft.)	Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1100	G/2V/ 2E/2J		0.5		100	**Clayey Silt/Gravel (ML)** Very fine grain, compact, dry, brown, no odor	0
	1.5-2'	1115	G/2V/ 2E/2J		0.6		100	**Clayey Silt (ML)** Similar to above, damp	
2					0.6		100	**Clayey Silt (ML)** Similar to above	2
4					0.6		100	**Clayey Silt (ML)** Similar to above	4
					0.6		100	**Silt (ML)** Very fine grain, compact to loose, damp, brown	
6					0.7		100	**Silt (ML)** Similar to above	6
8					0.6		100	**Silt (ML)** Similar to above	8
					0.7		100	**Silt (ML)** Similar to above	
10					0.6		100	**Silt (ML)** Similar to above	10
12								Total Depth = 10.5' BGL	12
14									14
16									16
18									18
20									20
22									22

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Appendix C

Landfill (SWMU No. 8) and Landfill Pond (SWMU No. 9) Historical Documentation

GARDERE & WYNNE
ATTORNEYS AND COUNSELORS

1500 DIAMOND SHAMROCK TOWER
DALLAS, TEXAS 75201

214·979·4500

WRITER'S DIRECT DIAL NUMBER

TELECOPIER 214 979 4667
CABLE: GARWYN
TELEX 73-0197

(214) 979-4569

June 4, 1986

James L. Turner, Esq.
Assistant Regional Counsel
U.S. Environmental Protection Agency
Region VI
InterFirst Two Building
1201 Elm Street
Dallas, Texas 75270

Re: Bloomfield Refining Company
RCRA Docket No. VI-501-H;
<u>Consent Agreement and Final Order</u>

Dear Jim:

On May 20, 1986, I received your letter dated May 19, 1986 which requested certain information on sampling results submitted to you and the New Mexico Environmental Improvement Division (NMEID) on February 13, 1986. You also requested a status report on performance items in paragraphs 1 through 3 (including subparagraphs) of the above-referenced order. The purpose of this letter is to respond to both requests.

In connection with your questions about the sampling results, I am submitting the attached letter from Mr. James E. Rumbo of Engineering-Science, the Company's technical consultant. This letter responds to all five items listed in your information request.

I now turn to the requested status report, based on information provided to me by the Company. Our response focuses on those items which contemplate affirmative performance on the part of the Respondent.

<u>Paragraph 1</u>

The civil penalty of $5,700 has been paid.

Paragraph 2C

The API separator was thoroughly cleaned in November 1985. The material removed was handled and manifested as a hazardous waste. It was transported to U.S. Pollution Control, Inc.'s Grassy Mountain facility near Clive, Utah. On May 23, 1986, the sludge level was 0.5 feet.

Paragraph 2D

The prescribed documentation is available at the facility.

Paragraph 2E

Spent caustic is removed from the existing spent caustic tank in less than 90 days, and the standards established under 40 C.F.R. 262.34, and its New Mexico equivalent are being observed. However, an entirely new spent caustic tank system has been installed to further comply with the repair and maintenance obligations of this paragraph. It includes a substantial concrete slab, containment dike, and new piping to insure that no discharge of caustic can occur. This system is scheduled to be operational by June 13, 1986. The existing system will then be closed in accordance with 40 C.F.R. § 265.197 and its New Mexico equivalent.

Paragraph 2F

All of the material removed from the SOWP and NOWP in October 1985 was properly handled as a hazardous waste. The required engineering certification of removal will be submitted in conjunction with the final closure plan.

Paragraph 3

The activities specified in "A Sampling and Closure Proposal for the API Wastewater Ponds, Landfill, and Landfill Pond at the Bloomfield Refinery," attached to the above-referenced order as Exhibit B, have been completed. In accordance with the order, the Company submitted a closure plan and proof of financial responsibility on November 22, 1985. On February 13, 1986, the Company provided to EPA and NMEID copies of analytical results and analysis, as contemplated in Exhibit B and to supplement the November 22, 1985 closure plan. Following consultation with NMEID on the plan now before that agency, the Company expects to finalize the closure plan and move forward, as appropriate, on implementation.

If you have any questions or would like additional information, please contact me at your convenience.

Sincerely,

Joseph F. Guida

JFG:ta
8711S

Enclosures

cc: Ms. Denise Fort
Mr. Jack Ellvinger

bcc: Mr. Harry F. Mason
Mr. Chris Hawley

ENGINEERING-SCIENCE

2901 NORTH INTERREGIONAL • AUSTIN. TEXAS 78722 • 512/477-9901

CABLE ADDRESS: ENGINSCI
TELEX: 77-6442

June 2, 1986

Mr. James L. Turner
Assistant Regional Counsel
U.S. EPA, Region VI
Interfirst Two Building
1201 Elm Street
Dallas, TX 75270

Re: Bloomfield Refining Company, Inc.
Gary Refining Corp.
RCRA Docket No. VI-501-H; Consent Agreement and Final Order

Dear Mr. Turner:

Submitted herewith is a response to your letter dated 19 May 1986 to Joe Guida. The subject of your letter was the results obtained from a sampling effort performed by ES personnel at the Bloomfield Refinery pursuant to meeting mutually agreed on stipulations of the consent agreement. You noted concerns expressed by the NMEID director about the validity of sampling results and submitted a list of five requests for additional data which has been reproduced here for convenience:

(1) A list of the detection limits set for samples 51469-01 through 29, "Inorganic Parameters for Phenolics."

(2) A description of the protocol used to conduct sample analysis in all samples.

(3) A comprehensive description of the QA/QC for obtaining all samples and conducting the laboratory analysis of them.

(4) An explanation of how the detection limits were established for the "Skinner Base/Neutral Organics" and why these fluctuate from 400 to 4,000 ug/kg in some cases.

(5) A facility map detail of the landfill, landfill pond, and north and south API pond areas, showing all sample locations.

The field sampling effort was designed, planned, and executed carefully to provide representative samples from the areas of interest. The laboratory employed on the project performed state-of-the-art analyses of the samples and reported results in report form. Any "absence of compounds that would normally be present at a refinery" is likely to represent a lack of compounds in the material that was sampled rather than deficient sampling or laboratory technique.

A revised report submitted by the contract laboratory is included in this submittal and should adequately address the first two requests for information. Pages 7 and 8 of the report should satisfy request number 1. The analytical methodology section (pages 18-20) should satisfy request number 2.

QA/QC procedures for the sampling effort were followed for both the local sampling sites and sampling equipment. Transport of samples to the laboratory was made in a timely and secure manner. In the case of the API ponds, the sampling locations within each pond were first cleaned with a series of washes consisting of (in chronological order) alconox soap solution, deionized water, methanol, and deionized water. Clean sampling equipment was utilized to extract and store samples. After each sample collection in all sampling areas, equipment was washed thoroughly using the same series of washes mentioned above. Samples were placed in the appropriate containers and individually enclosed in Zip-loc bags and stored in ice in a cooler. The cooler was sent to the contract laboratory via Federal Express utilizing standard chain-of-custody procedures.

Quality control measures utilized by the laboratory have been enumerated in previously submitted information but have been reiterated here for completeness:

> "A method blank was analyzed daily to determine any interferences in the system. Four samples were spiked with known amounts of the targeted compounds to determine the percent recovery. One of the samples was run in duplicate. All the results of the above were satisfactory.
>
> In addition to the above controls, all standards, samples, and blanks were analyzed with an internal standard present to ensure consistency in the system."

With regard to request number 4, detection limits are obviously based on a laboratory's ability to detect concentrations of a substance of interest using a selected laboratory technique. Some compounds are harder to detect than others due to the compound's inherent characteristics (e.g., molecular weight, polarity) and the relative degree to which other compounds interfere with interpretation of results (in the case of GC/MS). For example, in the laboratory report submitted for BRC, the detection limit for benzidine is listed to be 4,000 ug/kg compared with anthracene having a detection limit of 400 ug/kg. In this example, benzidine is harder to detect than anthracene, and the detection limit for benzidine is therefore higher than the detection limit for anthracene. It should also be noted that the detection limits utilized for analysis are typical of the analytical methods specified and are comparable to the analytical detection limits for the same and similar compounds in soils analyzed under EPA's Contract Laboratory Program.

Figures 1 through 4 depict a facility map with details of sampling areas as solicited in request number 5. The specific sampling sites within the landfill area were not defined, however, due to the lack of a specific area with which to reference the sample locations. During the sampling effort, the area of the landfill observed to be contaminated was irregularly shaped and inconsistent in areal extent with the land area depicted on earlier facility plans. For this reason, that portion of the landfill area appearing to have some contamination was selected for sampling and divided into quadrants. The midpoint of each quadrant (selected by eye) was then sampled. Distances between sampling sites were measured with a tape and ranged from 25 to 65 feet. An approximation of the sampling area within the landfill has been shown on Figure 1.

I trust that the above information is sufficient to answer any questions you may have. If you have any additional questions, please do not hesitate to call.

Sincerely,

James E. Rumbo

James E. Rumbo, P.E.
Project Engineer

Enclosures

dg

ES ENGINEERING-SCIENCE

FIGURE 1
BLOOMFIELD REFINERY FACILITY MAP

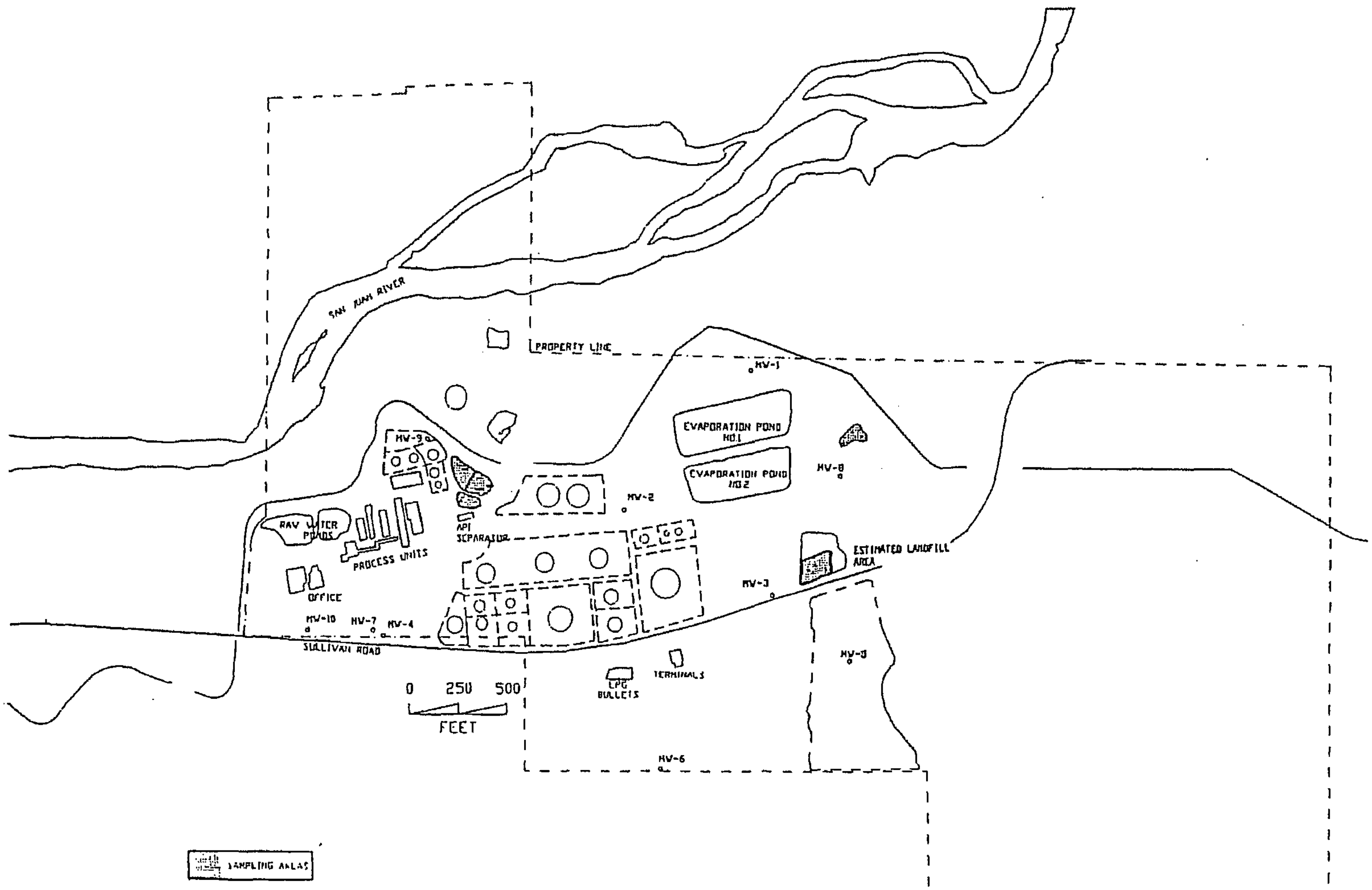


FIGURE 2
NORTH API POND

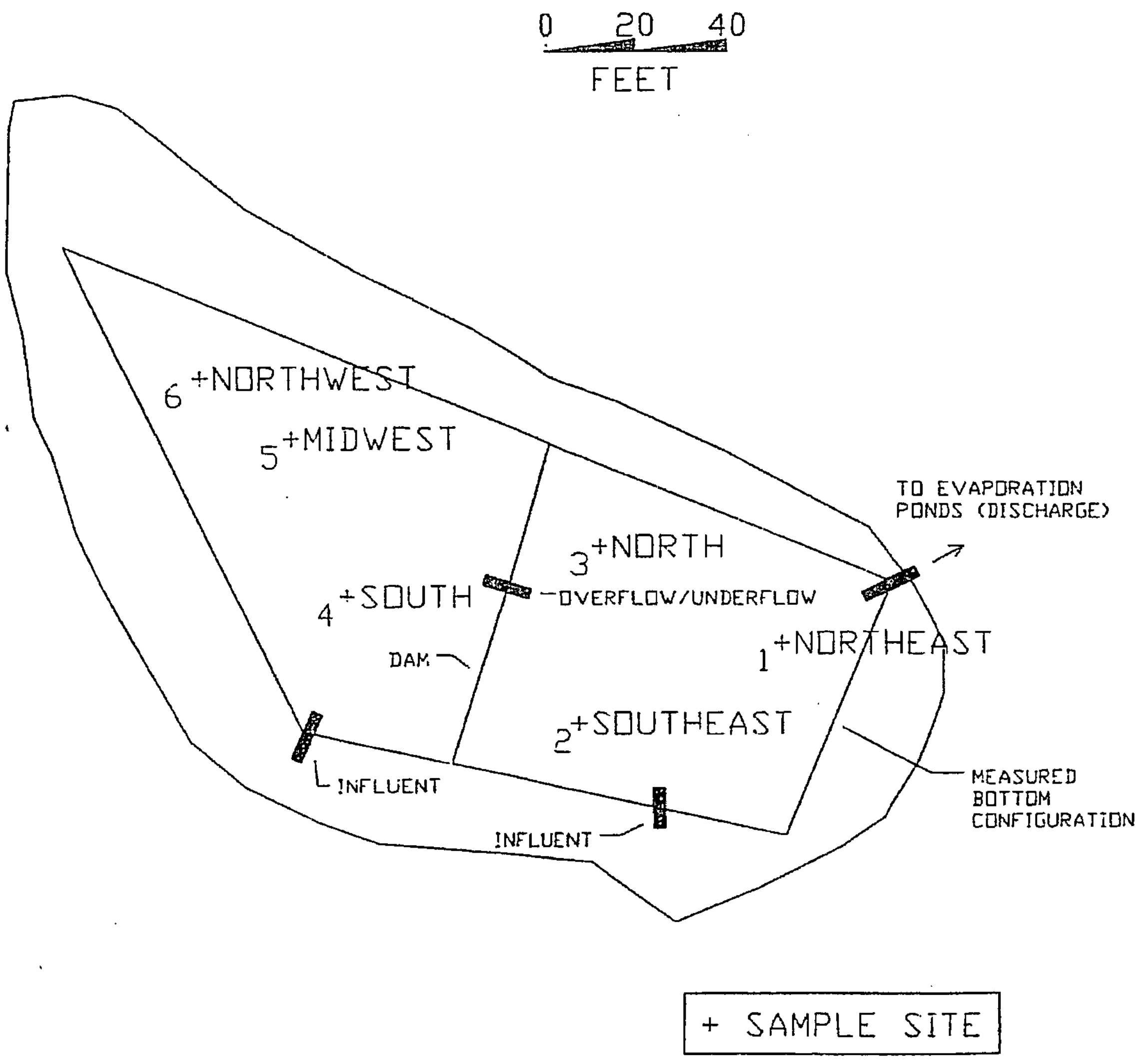


FIGURE 3
SOUTH API POND

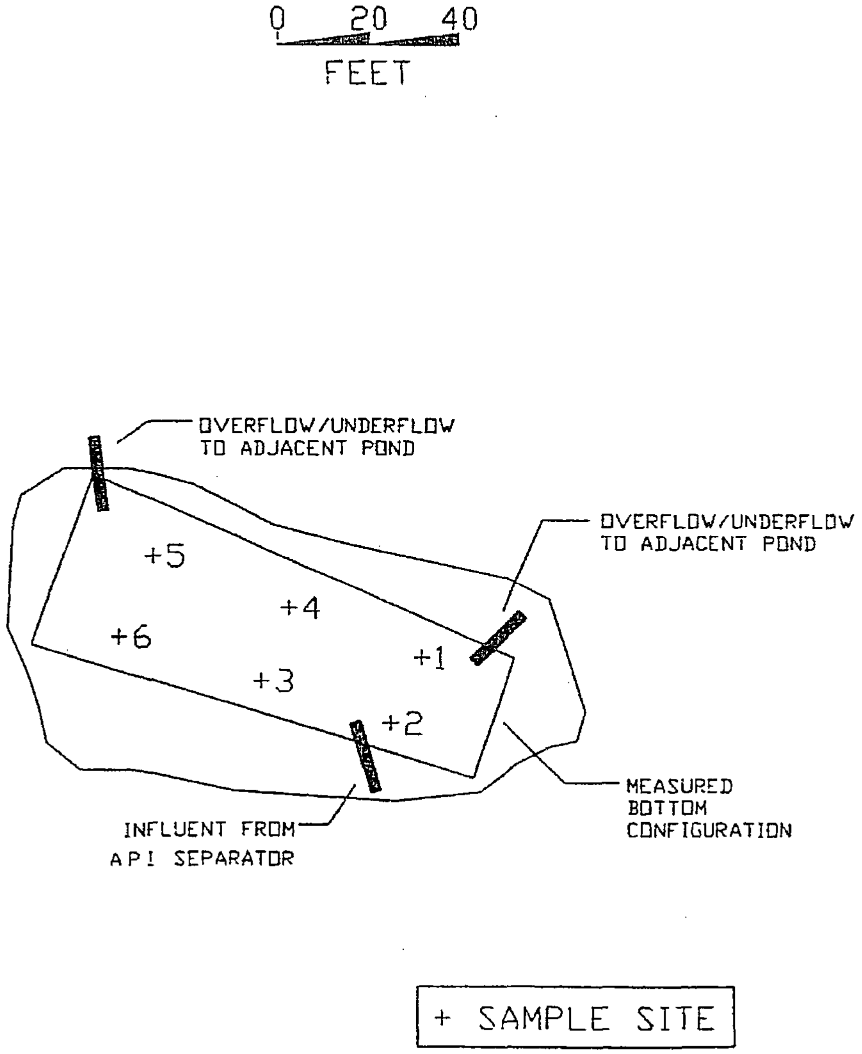
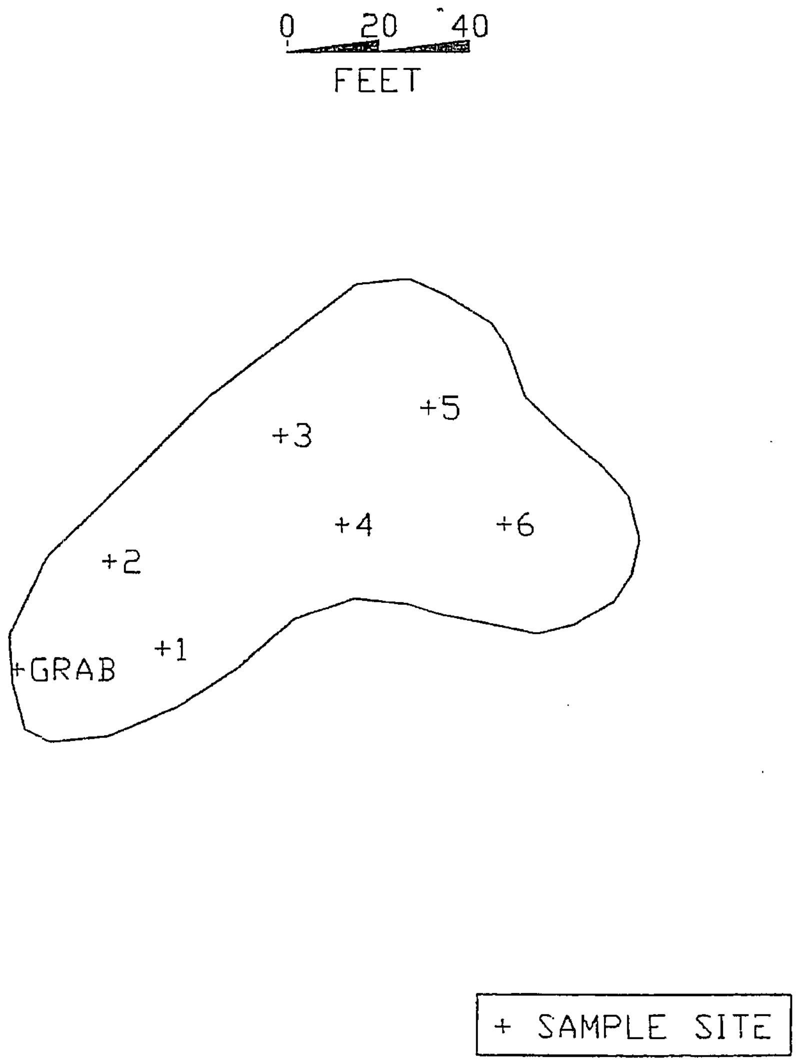


FIGURE 4
LANDFILL POND



REPORT OF ANALYTICAL RESULTS

FOR

ENGINEERING SCIENCE
BLOOMFIELD REFINING COMPANY

Prepared By:

Rocky Mountain Analytical Laboratory
5530 Marshall Street
Arvada, CO 80004

May 28, 1986

I. INTRODUCTION

On October 19, 1985 Rocky Mountain Analytical Laboratory received 29 soil samples from Bloomfield Refining Company, collected by Engineering Science. The analyses performed on these samples have been categorized as follows:

- o Analyses for Appendix VIII organic constituents, and
- o Analyses for selected constituents and phenolics.

Appendix VIII Constituents

The analytical parameters selected were based on recent communication with EPA concerning RCRA monitoring requirements for petroleum companies. The parameters selected were based on a subset of Appendix VIII hazardous constituents commonly referred to as the "Skinner" list. Communications from EPA in late 1984 contained various versions of this list. During this time RMAL, under contract to the American Petroleum Institute, performed several studies evaluating analytical methods proposed for measuring the constituents in these various lists. Due in part to efforts by RMAL and others, the EPA in early 1985 revised this list. The documents which were used by RMAL in defining the analytical parameters are listed in a bibliography at the end of this report. This list, as revised, contains 46 organic compounds and is presented in Table 1. The organic compounds are further subdivided into volatile and semivolatile (extractable) compounds.

Additional Tests

In addition to the tests for the full "Skinner" list, some samples were analyzed only for a specific subset of this list. The subset was benzene, toluene, xylene, lead, chromium and total phenolics.

All samples were shipped by air freight to RMAL's Denver, Colorado laboratory. Each sample was assigned a unique RMAL sample number as shown in the enclosed Sample Description Information sheet. These sample numbers were used throughout the project to track and control the analytical work and are used in this document for reporting the results from each analyses.

SAMPLE DESCRIPTION INFORMATION

for

Engineering Science - Bloomfield Refining Company

RMA Sample No.	Sample Description	Sample Type	Date Sampled	Date Received
51469-01	L1 & L2, 0-6" Quadrant #1 - Landfill	Soil	10/16/85	10/19/85
51469-02	L3 & L4, 6-12" Quadrant #1 - Landfill	Soil	10/16/85	10/19/85
51469-03	L5 & L6, 0-6" Quadrant #2 - Landfill	Soil	10/16/85	10/19/85
51469-04	L7 & L8, 6-12" Quadrant #2 - Landfill	Soil	10/16/85	10/19/85
51469-05	L9 & L10, 0-6" Quadrant #3 - Landfill	Soil	10/16/85	10/19/85
51469-06	L11 & L12, 6-12" Quadrant #3 - Landfill	Soil	10/16/85	10/19/85
51469-07	L13 & L14, 0-6" Quadrant #4 - Landfill	Soil	10/16/85	10/19/85
51469-08	L15 & L16, 6-12" Quadrant #4 - Landfill	Soil	10/16/85	10/19/85
51469-09	LP1 & LP2, 0-6" Points 1 & 2 @ Landfill Pond	Soil	10/16/85	10/19/85
51469-10	LP3 & LP4, 6-12" Points 1 & 2 @ Landfill Pond	Soil	10/16/85	10/19/85
51469-11	LP5 & LP6, 0-6" Points 3 & 4 @ Landfill Pond	Soil	10/16/85	10/19/85
51469-12	LP7 & LP8, 6-12" Points 3 & 4 @ Landfill Pond	Soil	10/16/85	10/19/85
51469-13	LP9 & LP10, 0-6" Points 5 & 6 @ Landfill Pond	Soil	10/16/85	10/19/85
51469-14	LP11 & LP12, 6-12" Points 5 & 6 @ Landfill Pond	Soil	10/16/85	10/19/85
51469-15	LP13 & LP14, 0-6" S. Evaporation Pond - Landfill Pond	Soil	10/16/85	10/19/85
51469-16	MS1 & MS2, Mystery Sample	Soil	10/16/85	10/19/85
51469-17	APS1 & APS2, 0-6" NE & SE of South API Pond	Soil	10/15/85	10/19/85
51469-18	APS3 & APS4, 6-12" NE & SE of South API Pond	Soil	10/15/85	10/19/85
51469-19	APS5 & APS6, 0-6" N & S of South API Pond	Soil	10/15/85	10/19/85
51469-20	APS7 & APS8, 6-12" N & S of South API Pond	Soil	10/15/85	10/19/85

SAMPLE DESCRIPTION INFORMATION

for

Engineering Science - Bloomfield Refining Company

(Continued)

RMA Sample No.	Sample Description	Sample Type	Date Sampled	Date Received
51469-21	APS9 & APS10, 0-6" NW & SW of South API Pond	Soil	10/15/85	10/19/85
51469-22	APS11 & APS12, 6-12" NW & SW of South API Pond	Soil	10/15/85	10/19/85
51469-23	APS13, 0-6" SE near influent S. API Pond	Soil	10/15/85	10/19/85
51469-24	APN1 & APN2, 0-6" NE & SE of North API Pond	Soil	10/15/85	10/19/85
51469-25	APN3 & APN4, 6-12" NE & SE of North API Pond	Soil	10/15/85	10/19/85
51469-26	APN5 & APN6, 0-6" N & S of North API Pond	Soil	10/15/85	10/19/85
51469-27	APN7 & APN8, 6-12" N & S of North API Pond	Soil	10/15/85	10/19/85
51469-28	APN9 & APN10, 0-6" NW & SW of North API Pond	Soil	10/15/85	10/19/85
51469-29	APN11 & APN12, 6-12" NW & SW of North API Pond	Soil	10/15/85	10/19/85

May 28, 1986

TABLE 1. APPENDIX VIII HAZARDOUS CONSTITUENT SUBSET FOR PETROLEUM REFINERY STUDIES*

Volatile Organics

Benzene
Carbon Disulfide
Chlorobenzene
Chloroform
1,2-Dibromoethane
1,2-Dichloroethane
1,4-Dioxane
Methyl ethyl ketone
Styrene
Ethyl Benzene
Toluene
Xylenes
  Xylenes, m
  Xylenes, o & p

Base/Neutral Organics

Anthracene
Benz(a)anthracene
Benzo(b)fluoranthene
Benzo(j)fluoranthene
Benzo(k)fluoranthene
Benzo(a)pyrene
Bis(2-ethylhexyl)phthalate
Butyl benzyl phthalate
Chrysene
Dibenz(a,h)acridine
Dibenz(a,h)anthracene
Di-n-butyl phthalate

Base/Neutral Organics (Cont.)

Dichlorobenzenes
  o-Dichlorobenzene
  m-Dichlorobenzene
  p-Dichlorobenzene
Diethyl phthalate
7,12-Dimethylbenz(a)anthracene
Dimethyl phthalate
Di-n-octyl phthalate
Fluoranthene
Indene
Methyl chrysene
1-Methylnaphthalene
Naphthalene
Phenanthrene
Pyrene
Pyridine
Quinoline

Acid Organics

Benzenethiol
Cresols
  o-Cresol
  p&m-Cresol
2,4-Dimethylphenol
2,4-Dinitrophenol
4-Nitrophenol
Phenol

*"Petitions to Delist Hazardous Wastes, A Guidance Manual," EPA/530-SW-85-003, April, 1985.

II. RESULTS

The analytical results are presented in the data tables in this section. The data are organized into the tables described below:

- o Phenolics,
- o Total Chromium and Lead,
- o Skinner Volatile Organics,
- o Skinner Base/Neutral Organics,
- o Skinner Acid Organics, and
- o Volatile Aromatics.

For each of the parameters in the phenolics and the metals tables, the result and detection limit is present for each sample. The term ND is used to indicate the parameter was not detected at the detection limit shown.

The term BDL (Below Detection Limit) is used in the skinner organic results tables to indicate that the compound is not present at the detection limit shown. The detection limits for the Appendix VIII organic compounds were obtained from a study of the analytical methods performed by RMAL under contract to the American Petroleum Institute (API)[1]. Analytical standards are not available for three compounds. These compounds cannot be measured; they have been listed in the results tables and have been footnoted to show that standards were not available.

As explained in more detail in the analytical methodology section, the samples were screened prior to analysis in order to optimize the detection limit for each sample and minimize instrumental problems associated with analyzing samples containing

[1]"Recovery and Detection Limits of Organic Compounds in Petroleum Refinery Wastes", January 25, 1985.

relatively high concentrations. This process resulted in high dilutions for several samples containing high concentrations of the target compounds. For these samples, the detection limits for compounds not detected are proportionately high. Also, the compounds which were reported close to (less than two times) the detection limits may be suspect.

ANALYTICAL RESULTS

for

Engineering Science - Bloomfield Refining Company

PHENOLICS

Parameter	Units	51469-01	51469-02	51469-03	51469-04
Phenolics	mg/kg	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Parameter	Units	51469-05	51469-06	51469-07	51469-08
Phenolics	mg/kg	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Parameter	Units	51469-09	51469-10	51469-11	51469-12
Phenolics	mg/kg	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Parameter	Units	51469-13	51469-14	51469-15	51469-16
Phenolics	mg/kg	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Parameter	Units	51469-17	51469-18	51469-19	51469-20
Phenolics	mg/kg	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Parameter	Units	51469-21	51469-22	51469-23	51469-24
Phenolics	mg/kg	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)

ND = Not detected.

ANALYTICAL RESULTS

for

Engineering-Science - Bloomfield Refining Company

PHENOLICS (Continued)

Parameter	Units	51469-25		51469-26		51469-27		51469-28	
Phenolics	mg/kg	ND	(0.1)	ND	(0.1)	ND	(0.1)	ND	(0.1)

Parameter	Units	51469-29	
Phenolics	mg/kg	ND	(0.1)

ND = Not detected.

ANALYTICAL RESULTS

for

Engineering Science - Bloomfield Refining Company

CHROMIUN AND LEAD

Parameter	Units	51469-01	51469-02	51469-03	51469-04
Chromium	mg/kg	11 (0.5)	8.9 (0.5)	9.9 (0.5)	7.6 (0.5)
Lead	mg/kg	10 (2.5)	9.8 (2.5)	9.0 (2.5)	6.7 (2.5)

Parameter	Units	51469-05	51469-06	51469-07	51469-08
Chromium	mg/kg	7.8 (0.5)	7.4 (0.5)	9.1 (0.5)	7.0 (0.5)
Lead	mg/kg	7.6 (2.5)	7.0 (2.5)	8.2 (2.5)	7.7 (2.5)

Parameter	Units	51469-09	51469-10	51469-11	51469-12
Chromium	mg/kg	6.2 (0.5)	8.1 (0.5)	7.8 (0.5)	10 (0.5)
Lead	mg/kg	9.0 (2.5)	8.5 (2.5)	8.9 (2.5)	12 (2.5)

Parameter	Units	51469-13	51469-14	51469-15	51469-16
Chromium	mg/kg	8.0 (0.5)	7.8 (0.5)	2.3 (0.5)	2.4 (0.5)
Lead	mg/kg	12 (2.5)	13 (2.5)	4 (2.5)	4 (2.5)

Parameter	Units	51469-17	51469-18	51469-19	51469-20
Chromium	mg/kg	4.4 (0.5)	5.3 (0.5)	5.5 (0.5)	14 (0.5)
Lead	mg/kg	5 (2.5)	5 (2.5)	5 (2.5)	4 (2.5)

Detection limits in parentheses.

ANALYTICAL RESULTS

for

Engineering Science - Bloomfield Refining Company

CHROMIUM AND LEAD (Cont.)

Parameter	Units	51469-21		51469-22		51469-23		51469-24	
Chromium	mg/kg	6.8	(0.5)	27	(0.5)	4.9	(0.5)	7.8	(0.5)
Lead	mg/kg	5.1	(2.5)	5.9	(2.5)	6.0	(2.5)	4	(2.5)

Parameter	Units	51469-25		51469-26		51469-27		51469-28	
Chromium	mg/kg	3.2	(0.5)	3.6	(0.5)	2.3	(0.5)	2.9	(0.5)
Lead	mg/kg	3	(2.5)	5	(2.5)	3	(2.5)	3	(2.5)

Parameter	Units	51469-29	
Chromium	mg/kg	12	(0.5)
Lead	mg/kg	4	(2.5)

Detection limits in parentheses.

ANALYTICAL RESULTS

for

Engineering Science - Bloomfield Refining Company

VOLATILE AROMATICS - GC/PID

Parameter	Units	51469-01		51469-02		51469-03		51469-04	
Benzene	ug/kg	ND	(0.5)	ND	(0.5)	ND	(0.5)	ND	(0.5)
Ethylbenzene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Toluene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Xylene, m	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Xylenes, o & p	ug/kg	ND	(2.0)	ND	(2.0)	ND	(2.0)	ND	(2.0)

Parameter	Units	51469-05		51469-06		51469-07		51469-08	
Benzene	ug/kg	ND	(0.5)	ND	(0.5)	ND	(0.5)	ND	(0.5)
Ethylbenzene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Toluene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Xylene, m	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Xylenes, o & p	ug/kg	ND	(2.0)	ND	(2.0)	ND	(2.0)	ND	(2.0)

Parameter	Units	51469-09		51469-10		51469-11		51469-12	
Benzene	ug/kg	ND	(0.5)	ND	(0.5)	ND	(0.5)	ND	(0.5)
Ethylbenzene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Toluene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Xylene, m	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Xylenes, o & p	ug/kg	ND	(2.0)	ND	(2.0)	ND	(2.0)	ND	(2.0)

Parameter	Units	51469-13		51469-14		51469-15		51469-16	
Benzene	ug/kg	1.3	(0.5)	ND	(0.5)	ND	(0.5)	ND	(0.5)
Ethylbenzene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Toluene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Xylene, m	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Xylenes, o & p	ug/kg	ND	(2.0)	ND	(2.0)	ND	(2.0)	ND	(2.0)

ND = Not detected. Detection limits in parentheses.

ANALYTICAL RESULTS

for

Engineering Science - Bloomfield Refining Company

(Continued)

VOLATILE AROMATICS - GC/PID

Parameter	Units	51469-17		51469-18		51469-19		51469-20	
Benzene	ug/kg	ND	(0.5)	ND	(0.5)	ND	(0.5)	ND	(0.5)
Ethylbenzene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Toluene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Xylene, m	ug/kg	5.3	(1.0)	ND	(3.0)	ND	(4.0)	ND	(2.0)
Xylenes, o & p	ug/kg	2.1	(2.0)	ND	(3.0)	ND	(2.0)	ND	(4.0)

Parameter	Units	51469-21		51469-22		51469-23		51469-24	
Benzene	ug/kg	ND	(0.5)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Ethylbenzene	ug/kg	ND	(1.0)	ND	(4.0)	ND	(1.0)	ND	(1.0)
Toluene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(2.0)	ND	(1.0)
Xylene, m	ug/kg	ND	(1.0)	ND	(25)	ND	(1.0)	ND	(1.0)
Xylenes, o & p	ug/kg	ND	(4.0)	ND	(25)	ND	(2.0)	ND	(2.0)

Parameter	Units	51469-25		51469-26		51469-27		51469-28	
Benzene	ug/kg	ND	(0.5)	ND	(0.5)	ND	(0.5)	ND	(0.5)
Ethylbenzene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Toluene	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Xylene, m	ug/kg	ND	(1.0)	ND	(1.0)	ND	(1.0)	ND	(1.0)
Xylenes, o & p	ug/kg	ND	(2.0)	ND	(2.0)	ND	(2.0)	ND	(2.0)

Parameter	Units	51469-29	
Benzene	ug/kg	ND	(0.5)
Ethylbenzene	ug/kg	ND	(1.0)
Toluene	ug/kg	ND	(1.0)
Xylene, m	ug/kg	ND	(1.0)
Xylenes, o & p	ug/kg	ND	(2.0)

ND = Not detected. Detection limits in parentheses. *Analyses incomplete.

ANALYTICAL RESULTS

for

Engineering Science - Bloomfield Refining Company

PERCENT MOISTURE

Sample Number	Percent Moisture	Sample Number	Percent Moisture
51469-01	4%	51469-16	4%
51469-02	5%	51469-17	9%
51469-03	4%	51469-18	10%
51469-04	3%	51469-19	10%
51469-05	3%	51469-20	8%
51469-06	3%	51469-21	6%
51469-07	6%	51469-22	6%
51469-08	4%	51469-23	8%
51469-09	23%	51469-24	5%
51469-10	14%	51469-25	5%
51469-11	18%	51469-26	7%
51469-12	13%	51469-27	5%
51469-13	22%	51469-28	4%
51469-14	14%	51469-29	4%
51469-15	28%		

ANALYTICAL RESULTS

for

Engineering Science - Bloomfield Refining Company

SKINNER VOLATILE ORGANICS, SOIL

Parameter	Units	51469-15		51469-16		51469-23	
Acrolein	ug/kg	BDL	(30)	BDL	(30)	BDL	(30)
Acrylonitrile*	ug/kg	-	-	-	-	-	-
Benzene	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
Carbon disulfide	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
Carbon tetrachloride	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
Chlorobenzene	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
Chloromethane	ug/kg	BDL	(10)	BDL	(10)	BDL	(10)
1,2 Dibromoethane	ug/kg	BDL	(20)	BDL	(20)	BDL	(20)
Chloroform	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
Dichloromethane	ug/kg	BDL	(10)	BDL	(10)	BDL	(10)
1,1-Dichloroethane	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
1,2-Dichloroethane	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
1,1-Dichloroethylene	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
Dichloropropane	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
Methyl ethyl ketone	ug/kg	BDL	(10)	53	(10)	BDL	(10)
Styrene	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
1,1,2,2-Tetrachloroethane	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
Tetrachloroethylene	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
Toluene	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
1,2-trans-Dichloroethylene	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
1,1,1-Trichloroethane	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
1,1,2-Trichloroethane	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)
Trichloroethylene	ug/kg	BDL	(5)	BDL	(5)	BDL	(5)

BDL = Below detection limit. Detection limits in parentheses.
*Not consistantly recovered using Method 8240.

ANALYTICAL RESULTS

for

Engineering Science - Bloomfield Refining Company

SKINNER BASE/NEUTRAL ORGANICS, SOILS

Parameter	Units	51469-15		51469-16		51469-23	
Anthracene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Benzidine	ug/kg	BDL	(4000)	BDL	(4000)	BDL	(4000)
Benz(c)acridine**	ug/kg	-	-	-	-	-	-
Benzo(a)anthracene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Benzo(a)pyrene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Benzo (b) fluoranthene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Benzo (k) fluoranthene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Bis (2-chloroethyl)ether	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Bis (2-chloroisopropyl)ether	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Bis (2-ethylhexyl)phthalate	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Butyl benzyl phthalate	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
2-Chloronaphthalene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Chrysene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Dibenz(a,h)acridine**	ug/kg	-	-	-	-	-	-
Dibenz(a,j)acridine	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
7,12-DimethylBenz(a)anthracene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Dibenz(a,h) anthracene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
7H Dibenzo(c,g)carbazole	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
1,2-Dichlorobenzene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
1,3-Dichlorobenzene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
1,4-Dichlorobenzene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Diethyl phthalate	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Dimethyl phthalate	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Di-n-butyl phthalate	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
2,4-Dinitrotoluene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
2,6-Dinitrotoluene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Di-n-octyl phthalate	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
1,2-Diphenylhydrazine*	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Fluoranthene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)

BDL = Below detection limit. Detection limits in parentheses. *Measured as azobenzene.
**Not consistantly recovered using Method 8270, or no analytical standard available.

ANALYTICAL RESULTS

for

Engineering Science - Bloomfield Refining Company

SKINNER BASE/NEUTRAL ORGANICS, SOIL (Cont.)

Parameter	Units	51469-15		51469-16		51469-23	
Indene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Indeno(1,2,3-cd)pyrene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Methyl Benz(c)phenanthrene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
3-Methylcholanthrene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Methyl Chrysene**	ug/kg	-	-	-	-	-	-
Naphthalene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Nitrobenzene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
n-Nitrosodiethylamine	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
5-Nitroacenapthene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Quinoline	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Phenanthrene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Pyrene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
1,2,4-Trichlorobenzene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Trimethyl Benz(a)anthracene	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)

SKINNER ACID ORGANICS

Parameter	Units	51469-15		51469-16		51469-23	
2-Chlorophenol	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
o-Cresol	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
m/p-Cresol	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
2,4-Dimethylphenol	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
4,6-Dinitro-o-phenol	ug/kg	BDL	(2000)	BDL	(2000)	BDL	(2000)
2,4-Dinitrophenol	ug/kg	BDL	(4000)	BDL	(4000)	BDL	(4000)
2-Nitrophenol	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
4-Nitrophenol	ug/kg	BDL	(800)	BDL	(800)	BDL	(800)
p-Chloro-m-cresol	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Pentachlorophenol	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
Phenol	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)
2,4,6-Trichlorophenol	ug/kg	BDL	(400)	BDL	(400)	BDL	(400)

BDL = Below detection limit. Detection limits in parentheses.
**Not consistantly recovered using Method 8270, or no analytical standard available.

III. ANALYTICAL METHODOLOGY

The methods for the metals and organic compounds were derived from three sources of EPA methods, 1) the methods promulgated in 40 CFR 136 for priority pollutants, 2) the methods published in SW-846 and 3) methods developed by the EPA-EMSL/LV for Superfund investigations, as well as several documents published by the EPA and RMAL in 1984 and 1985. These methods all use the same generic technology as summarized below:

- o Metals, acid digestion followed by analysis by ICP supported by graphite furnace AA,
- o Volatile Organics, purge and trap GC/MS, and
- o Semivolatile (base/neutral and acid) organics, solvent extraction followed by capillary column GC/MS.

The EPA (40 CFR 136, SW-846 and Superfund) methods were, to a large degree, developed and validated to determine the priority pollutants in a broad spectrum of environmental samples. Between October 1983 and July 1985 the EPA released three methods manuals and a "Guidance Manual" which were compendiums of modified SW-846 methods specifically adapted for the analysis of Appendix VIII constituents in petroleum refining wastes (not water samples). The most useful of these documents was an October, 1984 draft methods manual which unfortunately was never formally distributed by EPA, apparently in order to avoid a conflict with a proposed rule in the October 1, 1984 Federal Register. However, even this document (as discussed by an RMAL review for API in December, 1984) lacked many important details that are critical to the successful analysis of environmental samples impacted by petroleum refineries.

Thus, although the methods used by RMAL were based on these various EPA documents, the actual details of each method were implemented by RMAL as explained in more detail below. The various documents which were used to establish RMAL's approach are listed in a bibliography. The discussion below references method numbers in SW-846. However, it should be noted that several different versions of these methods are cited in the various EPA documents. In addition to the documents listed in the bibliography, RMAL has continued a dialogue through phone conversations and meetings with EPA/OSW to ensure that this approach is in line with the Agency's expectations. Much of RMAL's approach is being incorporated in pending Agency promulgations.

Total Metals

Metals were determined using inductively coupled plasma-atomic emission spectroscopy (ICP). Prior to analysis, the samples were prepared using Method 3050. The ICP was preprogrammed to perform off peak background correction on both the high and low wavelength sides of the analytical peaks of interest as appropriate. One hundred interelemental corrections were also automatically applied to the analysis. A matrix spike is analyzed as a quality control check for the ICP analyses.

Skinner Volatile Organics

Volatile organic compounds were determined by purge and trap gas chromatography/mass spectrometry (GC/MS) using Method 8240 with the appropriate sample introduction procedure. The appropriate procedure was determined using a screening procedure consisting of a liquid-liquid extraction with hexadecane followed by direct injection of an aliquot of the extract into a gas chromatograph with flame ionization detection (GC/FID). All volatile samples were screened in this way before GC/MS analysis. The GC/FID screening results were evaluated to determine the amount of sample to use that provides the lowest detection limits possible without overloading the GC/MS system.

Skinner Semivolatile Organics

Semivolatile organics were determined by capillary column GC/MS using SW-846 Method 8270. Soil samples were extracted using SW-846 Sonication Method 3550. After extraction, the samples were subjected to Method 3530 to separate the extract into acidic and basic fractions. The basic fraction was then cleaned up using Method 3570 to generate aliphatic and aromatic fractions. GC/MS analyses were then performed on the acidic and aromatic fractions.

Identification and quantitation of the target compounds determined by GC/MS were performed according to the process described in Methods 8240 and 8270. In summary, this process has the following features:

- o Multipoint calibration for each compound to establish instrument response using multiple internal standards,

- Identification of compounds using a computerized reverse search with selected key fragment ions, and

- Quantitation using the previously determined response factors.

Volatile Aromatics

The samples were analyzed for benzene, ethyl benzene, toluene, and xylenes using purge and trap methodology to extract and concentrate the volatile compounds. The samples were desorbed into a gas chromatograph equipped with a photoionization detector (P.I.D.). Identification and quantitation were determined using internal and external standards.

Phenolics

Phenolics were determined colorimetrically using SW-846 Method 9065.

V. BIBLIOGRAPHY

A. Documents Pertaining to Appendix VIII Constituents

1) January, 1984 letter form Myles Morse pertaining to delisting petitions as well as land treatment demonstrations, including sampling procedures and data requirements.

2) March, 1984 letter to delisting petitioners from Barbara Bush revising target parameters.

3) April, 1984 memo from John Skinner to Permit Branch Chiefs concerning land treatment containing target parameters and analytical methods.

4) May, 1984 memo from John Skinner clarifying previous memo.

5) September, 1984 letter to Petitioners from Barbara Bush distributing Refinery Handbook.

6) November, 1984 letter from Eileen Claussen to all delisting petitioners describing new RCRA requirements.

7) May 3, 1985 RMAL Memo.

8) January 8, 1985 RMAL letter to Eileen Claussen, EPA-OSW.

B. Documents Pertaining to Analytical Methods

1) "Handbook for the Analysis of Petroleum Refinery Residuals and Waste", October, 1984 - prepared by Radian Corporation for EPA/OSW.

2) "Evaluation of the Applicability of the SW-846 Manual To Support All RCRA Subtitle C Testing", December 20, 1984 - prepared by Rocky Mountain Analytical Laboratory for API.

3) "Comments on the 'Handbook for the Analysis of Petroleum Refinery Residuals and Waste, October, 1984'", December 12, 1984 - prepared by Rocky Mountain Analytical Laboratory for API.

4) "Comments on the 'Handbook for the Analysis of Petroleum Refinery Residuals and Waste, April 2, 1984", August 15, 1984 - prepared by Rocky Mountain Analytical Laboratory for API.

5) "Handbook for the Analysis of Petroleum Refinery Residuals and Waste", April 2, 1984 - prepared by S-Cubed for EPA/OSW.

6) EPA document "Guidance for the Analysis of Refinery Wastes", July 5, 1985.

7) "Recovery and Detection Limits of Organic Compounds in Petroleum Refinery Wastes", January 25, 1985.

8) SW-846 - "Test Methods for Evaluating Solid Waste, Physical Chemical Methods" USEPA, 2nd Edition, 1982.

9) 40CFR136 - "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act."

State of New Mexico
ENVIRONMENT DEPARTMENT
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-2850

BRUCE KING
GOVERNOR

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

January 25, 1994

Mr. David Roderick, Refinery Manager
Bloomfield Refining Company
P.O. Box 159
Bloomfield, New Mexico 87413

Dear Mr. Roderick:

RE: Bloomfield Refining Company Landfill Pond Closure Plan Approval (EPA I.D. No. NMD089416416)

The New Mexico Environment Department (NMED) hereby approves the closure plan for the Bloomfield Refining Company (BRC) landfill pond located near Bloomfield, New Mexico. The approved plan for the landfill pond is contained in the document entitled, "Final Closure Plan for the API Wastewater Ponds, Landfill, and Landfill Pond at the Bloomfield Refinery" dated July 1986. The effective date of the closure plan approval is the date you receive this letter.

The Hazardous and Radioactive Materials Bureau (HRMB) of the NMED released the proposed closure plan and associated documents for a thirty (30) day public comment period which ran from December 10, 1993, through January 9, 1994. The HRMB received one written comment during the public notice period. A copy of the comment is enclosed for your information. The recommendation stated in the comment that BRC take measures to prevent water from ponding in this site for extended periods of time does not require a change in the final approved closure plan. Thus, no changes were made to the proposed closure plan in finalizing our approval. No additional closure activities are required to demonstrate clean closure of the site.

Mr. David Roderick
Page 2
January 25, 1994

Please contact Marc Sides of my staff at (505) 827-4308 if you have any questions

Sincerely,

Kathleen M. Sisneros, Director
Water and Waste Management Division

Enclosure

cc: David Neleigh, EPA Permits
Greg Lyssy, EPA Enforcement
Mark Wilson, US Fish and Wildlife
Benito Garcia, HRMB
Barbara Hoditschek, HRMB
Marc Sides, HRMB
File - Red

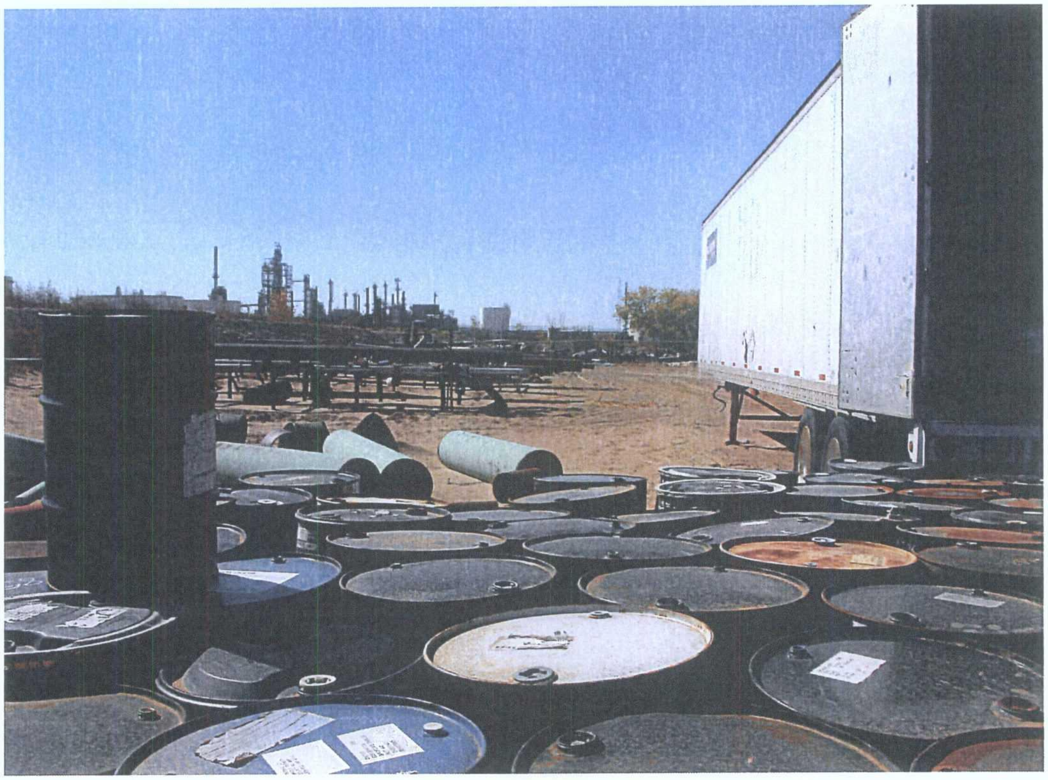
RPS JDC

Appendix D

Photographs

North Bone Yard (SWMU No. 2)
Looking West at staging area for empty drums.

North Bone Yard
Looking northwest from center



North Bone Yard (SWMU No. 2)
Empty drums being loaded for transport.

North Bone Yard
MW-1

North Bone yard
Scrap metal storage area.

Landfill (SWMU No. 8)
Looking to southeast across landfill

Landfill
Looking south from Northwest corner.

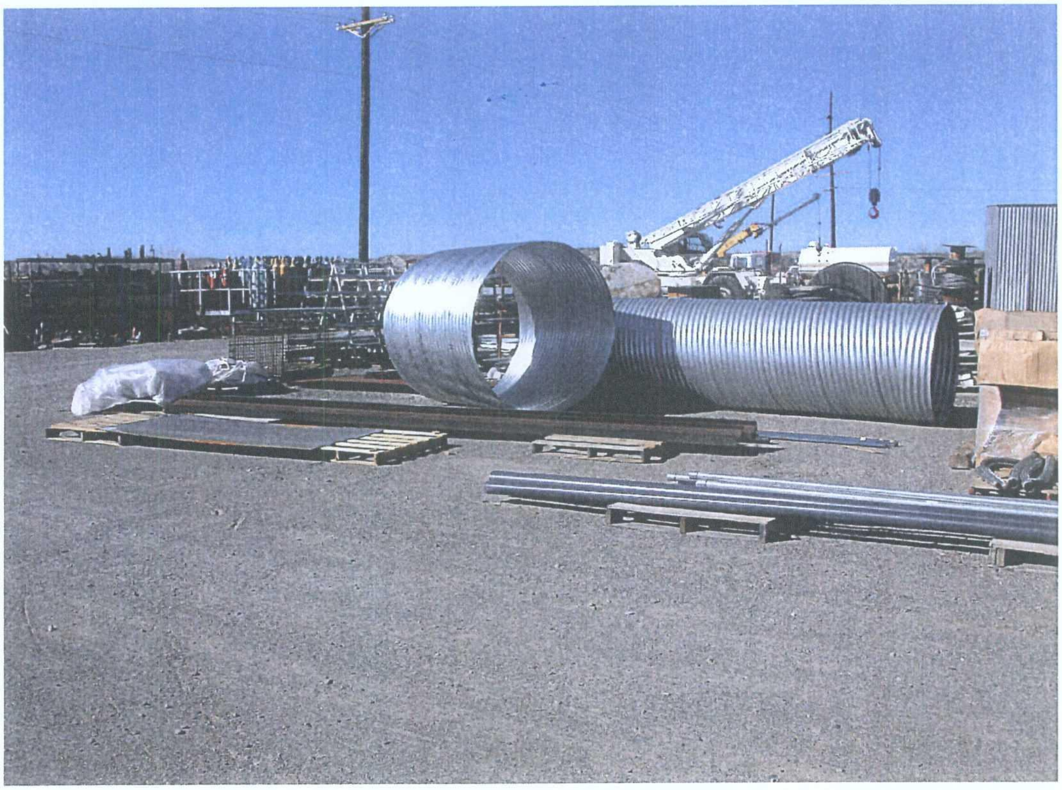
Landfill
Looking southeast across landfill area.

Landfill
Looking east across landfill, MW-8 off to left.

Landfill
Closeup of MW-8.

Spray Irrigation Area (SWMU No. 11)
Looking to southeast across former irrigation area.

Warehouse Yard (SWMU No. 18)
Looking to north across former drum storage area.



Warehouse Yard
Looking north across western portion of former drum storage area.

RPS JDC

Appendix E

Correspondence

Scott Crouch

From: Monzeglio, Hope, NMENV [hope.monzeglio@state.nm.us]
Sent: Thursday, September 25, 2008 9:10 AM
To: Scott Crouch; Randy Schmaltz
Cc: Cobrain, Dave, NMENV; Frischkorn, Cheryl, NMENV; Robinson, Kelly; Tracy Payne
Subject: RE: Western Refining GP 2 Investigation

Scott

You may continue with your proposed location and the ODEX method.

Hope

From: Scott Crouch [mailto:scrouch@jdconsult.com]
Sent: Thursday, September 25, 2008 7:25 AM
To: Monzeglio, Hope, NMENV; Randy Schmaltz
Cc: Cobrain, Dave, NMENV; Frischkorn, Cheryl, NMENV; Robinson, Kelly; Tracy Payne
Subject: RE: Western Refining GP 2 Investigation

Hope:

I am providing notice pursuant to Section VIII.A.3.a Drilling, that we have encountered problems, which require a change in the planned location for one of the monitoring wells and also a change in drilling methodology. The request to change the well location pertains to SWMU No. 8 Landfill. We have successfully collected the soil samples at the originally approved locations as shown on the attached map for SWMU No. 8. However, when we drilled deeper at the northern most of the two proposed monitoring well locations we encountered a water line. The water line has been isolated but I would like to move the monitoring well location approx. 40 feet due west to get beyond the impact of the water leak so that we can better determine when we hit the "true" top of saturation. I have marked the new location on the attached map.

We drilled the second monitoring well location (southwest corner) in SWMU No. 8 and encountered very difficult conditions, which resulted in breaking all of the teeth off the lead auger and the auger flights actually began to peel off from the auger. I have attached a few photos. Photo # 964 shows the lead auger and you can see a nub on the left end where the teeth used to be. The driller has recommended that we utilize the ODEX method, which is discussed on page 93 of the Order (attached). I have discussed the options with the driller and they believe the ODEX method will allow us the best opportunity to collect soil samples as we advance the casing.

Please contact me with any questions. We await your response so that we can move forward.

Scott T. Crouch, P.G.

RPS JDC

404 Camp Craft Rd., Austin, TX 78746
Office (512) 347-7588 **Direct (512) 879-6697**
Cell (512) 297-3743 **Fax (512) 347-8243**
crouchs@rpsgroup.com

Before printing, think about the environment

From: Monzeglio, Hope, NMENV [mailto:hope.monzeglio@state.nm.us]
Sent: Friday, June 13, 2008 10:15 AM
To: Randy Schmaltz; Scott Crouch
Cc: Cobrain, Dave, NMENV; Frischkorn, Cheryl, NMENV
Subject: Group 2

Randy and Scott

For general chemistry, do major cation/anions in addition to what is already listed in the work plan. Thanks

Let me know if you have any questions.

Hope

Hope Monzeglio
Environmental Specialist
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, BLDG 1
Santa Fe NM 87505
Phone: (505) 476-6045; Main No.: (505)-476-6000
Fax: (505)-476-6060
hope.monzeglio@state.nm.us

Websites:
New Mexico Environment Department
Hazardous Waste Bureau

Aerial Map Source: Google Maps, 2007.

Western Refining

WESTERN REFINING COMPANY

PROJ. NO.: Giant	DATE: 10/26/07	FILE: GiantA02

FIGURE 9
SWMUs No. 8 AND No. 9
SAMPLE LOCATION MAP
GIANT BLOOMFIELD REFINERY

N

0 80
SCALE IN FEET

LEGEND

PROPOSED SOIL BORING LOCATION

W PROPOSED MONITORING WELL COMPLETION

MW-8 MONITORING WELL LOCATION

404 Camp Craft Road
Austin, Texas 78746

RPS JDC

Scott Crouch

From: Monzeglio, Hope, NMENV [hope.monzeglio@state.nm.us]
Sent: Wednesday, October 01, 2008 2:46 PM
To: Scott Crouch; Randy Schmaltz
Cc: Cobrain, Dave, NMENV; Frischkorn, Cheryl, NMENV; Robinson, Kelly; Tracy Payne
Subject: RE: Western Refining GP 2 Investigation

Scott

That is fine. Just make sure the screen length is long enough that is crosses the water table and for the well to produce water for the collection of samples.

Hope

From: Scott Crouch [mailto:scrouch@jdconsult.com]
Sent: Wednesday, October 01, 2008 1:34 PM
To: Monzeglio, Hope, NMENV; Randy Schmaltz
Cc: Cobrain, Dave, NMENV; Frischkorn, Cheryl, NMENV; Robinson, Kelly; Tracy Payne
Subject: RE: Western Refining GP 2 Investigation

Hope:

In SWMU #2 (Bone Yard), we have encountered saturation at 14' below the land surface and the top of the Nacimiento Formation at 18'. We plan to drill another half foot allow for placement of 6" of filter pack sand beneath the screen. We originally specified 15' of screen to make sure we could cover the entire saturated thickness and any fluctuations in the water table. In this area, I would prefer to set only 10' of screen (8' to 18') instead of extending the screen to within 3' of the land surface, which is what would occur if we set 15' of screen. The water table would have to rise more than 6' to rise above the top of the screen interval, which seems very unlikely in this location. I think a greater problem could potentially be from vertical infiltration from the surface if there were to be any surface spills.

We have two new wells planned in this area and I assume there will be similar conditions at both locations unless the top of the Nacimiento is eroded significantly at the other well location. Please let us know if you are OK with the 10' screen length in this area instead of 15'.

Thanks,

Scott T. Crouch, P.G.

RPS JDC
404 Camp Craft Rd., Austin, TX 78746
Office (512) 347-7588 **Direct (512) 879-6697**
Cell (512) 297-3743 **Fax (512) 347-8243**
crouchs@rpsgroup.com

From: Scott Crouch
Sent: Thursday, September 25, 2008 9:15 AM
To: 'Monzeglio, Hope, NMENV'; Randy Schmaltz
Cc: Cobrain, Dave, NMENV; Frischkorn, Cheryl, NMENV; Robinson, Kelly; Tracy Payne
Subject: RE: Western Refining GP 2 Investigation

Thanks for the quick reply. We will keep you informed if there are any problems.

Scott T. Crouch, P.G.

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RPS Group Plc web link: http://www.rpsgroup.com

From: Monzeglio, Hope, NMENV [mailto:hope.monzeglio@state.nm.us]
Sent: Thursday, September 25, 2008 9:10 AM
To: Scott Crouch; Randy Schmaltz
Cc: Cobrain, Dave, NMENV; Frischkorn, Cheryl, NMENV; Robinson, Kelly; Tracy Payne
Subject: RE: Western Refining GP 2 Investigation

Scott

You may continue with your proposed location and the ODEX method.

Hope

From: Scott Crouch [mailto:scrouch@jdconsult.com]
Sent: Thursday, September 25, 2008 7:25 AM
To: Monzeglio, Hope, NMENV; Randy Schmaltz
Cc: Cobrain, Dave, NMENV; Frischkorn, Cheryl, NMENV; Robinson, Kelly; Tracy Payne
Subject: RE: Western Refining GP 2 Investigation

Hope:

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Please contact me with any questions. We await your response so that we can move forward.

Scott T. Crouch, P.G.

RPS JDC

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☎ Cell (512) 297-3743 Fax (512) 347-8243
crouchs@rpsgroup.com

From: Monzeglio, Hope, NMENV [mailto:hope.monzeglio@state.nm.us]
Sent: Friday, June 13, 2008 10:15 AM
To: Randy Schmaltz; Scott Crouch
Cc: Cobrain, Dave, NMENV; Frischkorn, Cheryl, NMENV
Subject: Group 2

Randy and Scott

For general chemistry, do major cation/anions in addition to what is already listed in the work plan. Thanks

Let me know if you have any questions.

Hope

Hope Monzeglio
Environmental Specialist

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Scott Crouch

From: Monzeglio, Hope, NMENV [hope.monzeglio@state.nm.us]
Sent: Wednesday, March 18, 2009 10:51 AM
To: Schmaltz, Randy
Cc: Robinson, Kelly; Scott Crouch; Hains, Allen; Cobrain, Dave, NMENV
Subject: RE: Reporting Request

Randy

From the table that was attached to this email, it appears that all constituents highlighted in yellow that have no available screening/cleanup level are all non detect. Western does not need to create a screening level for these. If it is non detect, Western does not need to worry about it. If there was a detection of a constituent that does not have a screening/cleanup level, you can look up the constituent on IRIS (http://cfpub.epa.gov/ncea/iris/index.cfm) (or other source that identifies toxilogical effects) to see if it it a carcinogen or not. If it is not a carcinogen, it should not be a problem. For these cases, you can contact NMED to discuss whether we need to create a screening level or not, these will be determined on a case by case basis. Hope this clarifies your questions, let me know if you have additional questions.

Hope

From: Schmaltz, Randy [mailto:Randy.Schmaltz@wnr.com]
Sent: Monday, March 16, 2009 9:43 AM
To: Monzeglio, Hope, NMENV
Cc: Robinson, Kelly; scrouch@jdconsult.com; Hains, Allen
Subject: Reporting Request

Hope

We are preparing the Site Investigation Report for SWMU Group N. 2 and have noted that the laboratory reported results for a number of constituents for which there is no screening/cleanup level provided by either NMED or EPA region VI. We had the laboratory analyze the samples using SW-846 methods 8260 (volatiles) and 8270 (semi-volatiles) and did not specify a specific list of analytes (e.g., the EPA Region V Skinner List) that would potentially be associated with a petroleum refinery so the laboratory reported all constituents they can identify and quantify under the particular method.

I have attached an Excel table that list all of the constituents reported by the laboratory for SW-846 methods 8260, 8270, and 8015B, and the metals analyses. The constituents for which there is no available screening/cleanup level are highlighted in yellow and to the right are columns indicating if there were any detections of the constituent in the samples collected for the SWMU Group No. 2 samples. As you will note, most of these constituents were not detected in either soils or ground water.

To address this situation, I propose to include all analytical results in the summary tables to be included in the Site Investigation Report. For constituents that do not have available screening/cleanup levels and were not detected in either soil or ground water we would "screen" these constituents from development of screening/cleanup levels. For constituents that were detected in either soil or ground water, we will develop cleanup levels for both soil and ground water. The cleanup levels for soils will be developed utilizing the equations (Equation numbers 6, 7, 8 and 9) for commercial/industrial and construction workers as provided in the NMED *Technical Background Document for Development of Soil Screening Levels*, Revision 4.0 June 2006. The cleanup levels for ground water will be developed utilizing the applicable equations (Equation numbers 10 and 11) as provided in the NMED *Technical*

*Background Document for Development of Soil Screening Lev*els, Revision 4.0 June 2006 with appropriate modifications in the exposure factors for commercial/industrial workers pursuant to EPA guidance. The development of these cleanup levels will be documented in a separate appendix to the Site Investigation Report pursuant to Section X.C.8 of the Order.

Thanks for you consideration of our request.

Randy Schmaltz
Western Refining Southwest, Inc.
Bloomfield Refinery

Main (505) 632-8013
Direct (505) 632-4171
email: randy.schmaltz@wnr.com

Scott Crouch

From: Schmaltz, Randy [Randy.Schmaltz@wnr.com]

Sent: Wednesday, May 06, 2009 3:54 PM

To: Scott Crouch; Robinson, Kelly

Subject: FW: Phone call follow up

FYI

From: Monzeglio, Hope, NMENV [mailto:hope.monzeglio@state.nm.us]
Sent: Wednesday, May 06, 2009 2:25 PM
To: Schmaltz, Randy
Cc: Cobrain, Dave, NMENV
Subject: Phone call follow up

Randy

You may submit the laboratory data electronically and include a hard (paper) copy of the chain of custodies within the report as you stated on the phone. Make sure each document sent to us contains the electronic copy as well as the hard copies (sometimes the data only makes it into one of the documents)

As far for the excess soil from the investigation (drill cuttings etc), you may dispose of it onsite as long as you are able to demonstrate that it is not hazardous and meets NMED's soil screening standards, residential scenario. Include all documentation for this in investigation report for where the soil was disposed or will be disposed. Let me know if you have questions.

Hope

Hope Monzeglio
Environmental Specialist
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, BLDG 1
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Phone: (505) 476-6045; Main No.: (505)-476-6000
Fax: (505)-476-6060
hope.monzeglio@state.nm.us

Websites:
New Mexico Environment Department
Hazardous Waste Bureau

RPS JDC

Appendix F

Quality Assurance/Quality Control

1.0 DATA VALIDATION INTRODUCTION

This summary presents data verification results for soil and groundwater samples collected from soil boring and monitoring wells installed at the Bloomfield Refinery in accordance with the approved Investigation Work Plan - Group 2. The data review was performed in accordance with the procedures specified in the Order issued by NMED (NMED, 2007), USEPA Functional Guidelines for Organic and Inorganic Data Review, and quality assurance and control parameters set by the project laboratory Hall Environmental Analysis Laboratory, Inc.

A total of 68 soil samples and 18 groundwater samples were collected between September 2008 and January 2009 in accordance with the Group 2 Investigation Work Plan. Soil and groundwater samples were submitted to Hall Environmental Analysis Laboratory for the following parameters:

- volatile organic compounds (VOCs) by USEPA Method 8260B;
- semi-volatile organic compounds (SVOCs) by USEPA Method 8270;
- Gasoline and diesel range organics by SW-846 Method 8015B;
- Total recoverable metals (Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, nickel, selenium, silver, vanadium, and zinc) by SW846 Method 6010/6020;
- Cyanide by SW-846 method 9012;
- Mercury by EPA Method 7470.

Groundwater samples submitted to Hall Environmental Analysis Laboratory were analyzed for the following additional analytes:

- Anions (chloride, Nitrate+Nitrite, and sulfate) by USEPA Method 300.0;
- Alkalinity (total alkalinity, carbonate, and bicarbonate) by SM 2320B;
- Dissolved metals (iron, calcium, magnesium, manganese, potassium, and sodium) by USEPA Method 6010B;

Additionally, 74 quality assurance samples consisting of trip blanks, field blanks, equipment rinsate blanks, and field duplicates were collected and analyzed as part of the investigation activities. Table A-1 presents a summary of the sample identifications, laboratory sample identifications, and requested analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level II data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody;
- Sample Preservation and Temperature Upon Laboratory Receipt
- Holding Times;
- Blank Contamination (method blanks, trip blanks, field blanks, and equipment rinsate blanks);
- Surrogate Recovery (for organic parameters);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD);
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD;
- Duplicates (field duplicate, laboratory duplicate); and
- Other Applicable QC Parameters.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable.

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

Results for the performance monitoring events that required qualification based on the data verification are summarized in Table A-2.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the respective project laboratories. The samples were received by the laboratory at the correct temperature (4 ± 2° Celsius) with the following exceptions:

- Samples collected on October 15, 2008 were received at 1.0 degrees Celsius. The temperature outlier did not significantly impact the sample results; therefore, data qualification was not required.

2.3 HOLDING TIMES

All samples were extracted and analyzed within method-specified holding time limits.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency.

- Acetone was detected in the method blank for analytical batch 17176 at a concentration of 5.7 ug/kg-dry. Acetone was detected above the laboratory reporting limit in associated soil sample SWMU 8-1 (1.5-2.0') at 5.38 ug/kg-dry. Data qualification "UJ" with the detection limit raised to 5.7 ug/kg-dry was required for the associated sample to account for potential bias due to potential laboratory contamination.

2.4.2 Trip Blank

Trip blanks were analyzed at the appropriate frequency as specified in the Order. Target compounds were not detected in the trip blanks.

2.4.3 Field Blanks/Equipment Rinsate Blank

Equipment rinsate blanks were performed at the appropriate frequency as specified in the Group 2 Investigation Work Plan. Target compounds were not detected in the field blanks and equipment rinsate blank except for the following:

- Acetone was detected in an equipment rinsate blank for water samples collected on October 1, 2008. Data qualification was not required because the associated samples were non-detect for this analyte.
- Bromodichloromethane was frequently detected in field and equipment rinsate blanks for samples collected during Group 2 sampling activities. Data qualification was not required because the associated samples were non-detect for this analyte.
- Chloroform was frequently detected in field and equipment rinsate blanks for samples collected during Group 2 sampling activities. Data qualification was not required because the associated samples were non-detect for this analyte.
- Dibromochloromethane was frequently detected in field and equipment rinsate blanks for samples collected during Group 2 sampling activities. Data qualification was not required because the associated samples were non-detect.

- Barium was detected in field and equipment rinsate blanks collected on October 15, 2008. Data qualification was not required because the detected concentration in associated field samples were greater than five times the detected blank concentration.
- Chloride was frequently detected in field and equipment rinsate blanks for samples collected during Group 2 sampling activities. Data qualification was not required because detected concentrations in associated samples were greater than five times the blank concentration results.
- Iron was detected in the field blank collected on October 1, 2008. Associated sample results for groundwater sample SWMU 2-8 GW were qualified "UJ" and the detection limit was raised to equal the detected concentration in the associated field blank to account for potential bias.
- Lead was detected in a field blank collected on September 30, 2008. Associated non-detect field sample results for sample SWMU 2-7 GW and SWMU 2-6 GW were qualified "UJ" with a detection limit equal to the highest detected field blank concentration to account for a potential bias.
- Magnesium was detected in the field blank collected on October 1, 2008. No data qualification was required because detected concentrations of magnesium in associated samples were greater than five times the field blank detected concentration.
- Manganese was detected in a field blank and equipment rinsate blanks collected on October 1, 2008 and January 8, 2009, respectively. Data qualification was not required because detected concentrations of manganese in associated samples were greater than five times the respective blank concentrations.
- Nitrate/Nitrite was detected in field and equipment rinsate blanks collected on September 30, 2008. Groundwater samples SWMU 2-4 GW and SWMU 2-6 GW were qualified "UJ" and the detect limit raised to the equal highest detected blank concentration to account for potential low bias.
- Sulfate was detected in a water equipment rinsate blank collected on September 30, 2008. Data qualification was not required since the detected concentration in the associated samples were greater than five times the equipment blank detected concentration.
- Zinc was detected in field and equipment rinsate blanks collected on September 24, 2008, October 28, 2008, and January 8, 2009. Data validation was not required because associated field samples had detected concentrations greater than five times the field blank concentration.

2.4.4 Common Laboratory Contaminants

Per USEPA guidelines, common laboratory contaminants for VOC analysis are acetone, 2-butanone (MEK), cyclohexane, and methylene chloride. Common laboratory contaminants for SVOC analysis include phthalates. Analytical results are qualified if the detected sample concentration is less than 10 times the method reporting limit.

- VOC analyte 2-butanone (MEK) was detected in soil sample SWMU 18-1 (0-0.5'), SWMU 18-3 (1.5-2.0'), and SWMU 18-4 (1.5-2.0') at concentrations less than 10 times the method reporting limit; therefore the data was qualified "J" due to common laboratory contaminant potential low bias.

- SVOC analyte Di-n-butyl phthalate as detected in soil sample SWMU 2-2 (13.5-14.0') at a concentration less than 10 times the method reporting limit; therefore the data was qualified "J" due to common laboratory contaminant potential low bias.

2.5 SURROGATE RECOVERY

Surrogate recoveries for the organic and inorganic analyses were performed at the required frequency and were within laboratory acceptance limits, with the following exceptions:

- Surrogate recovery for 2,4,6-Tribromophenol (34.2%) and 4-Terphenyl-d14 (30.2%) were below the lower acceptance limits of 35.5% and 34.6%, respectively, for soil sample SWMU 2-4 (0-0.5'). Data qualification was not required because two other acid and base/neutral fractions were within acceptance limits.
- Surrogate recoveries for 2,4,6-Tribromophenol (23.1%), 2-Fluorophenol (16.7%), 4-Terphenyl-d14 (22.3%), and Phenol-d5 (16.6%) were below the respective acceptance limits (35.5%, 28.2%, 34.6%, and 37.6% respectively) for sample SWMU 9-1 (5-7.5'). The associated field sample data was qualified "UJ" for non-detects and "J" for detects due to the potential bias.
- Surrogate recoveries for 2,4,6-Tribromophenol (0%) and 2-Fluorophenol (6.64%) were below the lower acceptance limit of 16.6% and 9.54%, respectively, for groundwater sample MW-53 due to high emulsion during extraction. Data was qualified "UJ" due to potential low bias.
- Surrogate recoveries for 2,4,6-Tribromophenol (13.3%) were below the acceptance limit of 16.6% for sample MW-52. Data was not qualified since the other surrogates were recovered within acceptance limits.
- Surrogate recovery for 4-Terphenyl-d14 (32.8%) was below the acceptance limits of 34.6% for sample SWMU 18-2 (0-0.5') included on analytical report 0809578. Data qualification was not required because the other two base/neutral and three acid fractions were within acceptance limits.
- Surrogate recovery for Phenol-d5 (3.86%) was below the lower acceptance limit (10.7%) for sample SWMU 2-3 GW. The sample was re-extracted at three days past holding time, and reanalyzed within the 14-day holding time. All surrogate results from the reanalysis were within acceptance levels and the sample results confirmed the initial sample results. The associated sample results were non-detect; therefore the associated data was qualified "UJ" for potential low bias.
- Surrogate recovery for BFB (127%) was above the upper acceptance limit of 123% for soil sample SWMU 18-2 (1.5-2.0'). The associated gasoline range organics (GRO) sample result was qualified "J" for sample SWMU 18-2 (1.5-2.0') due to potential bias.

2.6 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

LCS/LCSD percent recoveries and RPDs were within acceptance limits except for the following:

- The LCS recovery for 4-Nitrophenol (132%) was above the upper acceptance limit of 123% for analytical batch 17154. Data qualification was not required because all associated samples were non-detect.
- The LCS duplicate relative percent difference for 2,4-Dinitrotoluene (17.3 %) was above the upper acceptance limit of 14.7% for analytical batch 17208. Data qualification was not required because all associated samples were non-detect.
- The LCS duplicate relative percent difference for Trichloroethene (26.8 %) was above the upper acceptance limit of 23% for analytical batch 17176. Data qualification was not required because the percent recovered for the LCS and LCS duplicates were within acceptance limits.
- The LCS duplicate relative percent difference for 2,4-Dinitrotoluene (17.3%) was above the upper acceptance limit of 14.7% for analytical batch 17208. Data qualification was not required because the LCS/LCS duplicate percent recoveries were within acceptance limits.
- The LCS recovery for Benzene (118%) and Trichloroethene (116%) was above the acceptance limit of 116% and 112%, respectively, for analytical batch R30775. Data qualification was not required because all associated samples were non-detect.
- The LCS recovery for benzene (117%) and trichloroethene (115%) were above the upper acceptance limits of 116% and 112%, respectively, for analytical batch R30936. Data qualification was not required since all sample results were non-detect.

2.7 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If the MS or MSD recovery for an analyte was above acceptance limits but the analyte was not detected in the associated analytical batch, then data qualification was not required.
- If the MS or MSD recovery for an analyte was above acceptance limits and the analyte was detected in the associated analytical batch, then analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

MS/MSD percent recoveries and RPDs were within acceptance limits except for the following:

- The MS/MS duplicate recoveries for Benzene (84.4% / 81.9%) were below the lower acceptance limits for analytical batch R30780. Associated non-detect sample results were qualified "UJ" to account for potential bias.
- The MS duplicate percent recovery (86%) for 1,1-Dichloroethene was below the lower acceptance limit of 88% for analytical batch R30731. Data qualification was not required since the MS/MS duplicate relative percent difference was within acceptance limits.
- The MS recovery for benzene (127%) was above the acceptance limit of 122% for analytical batch R30775. Data qualification was not required because the MS/MS duplicate relative percent difference was within acceptance limits.
- The MS/MSD recoveries for Antimony (28.4% / 17.8%) and Selenium (64.2% / 72.6%) were both below the lower acceptance limit of 75% for analytical batch 17264. Associated field sample results for Antimony and Selenium were non-detect. Data qualification "UJ" was required to indicate a potential bias for the associated samples.
- The MS/MSD recoveries for Antimony (10.7% / 7.58%, and 12.8% / 13.3%) for analytical batch 17405 and 17406, respectively, were below the lower acceptance limit of 75%. Associated field sample results were non-detect. Associated data was qualified "UJ" for all non-detected sample results due to potential bias.
- The MS recovery for Selenium (63.8%) was below the lower acceptance limit of 75% for analytical batch 17406. Associated data results for samples SWMU 18-1 (0-0.5') and SWMU 18-2 (1.5-2.0') were qualified "UJ" to account for potential low bias.
- The MS/MS duplicate recoveries for Antimony (23.7% /15.7%) were below the acceptance limit of 75% for analytical batch 17417. Associated sample results were non-detect; therefore associated sample results were qualified "UJ" for potential low bias.
- The MS duplicate recoveries for Barium (137%) were above acceptance limits of 125% for analytical batch 17417. Data qualification was not required because MS/MS duplicate relative percent difference was within acceptance limits.

- The MS duplicate relative percent difference for Selenium (32.7%) was above the acceptance limit of 30% for analytical batch 17417. Data qualification was not required because MS/MS duplicate recoveries were within acceptance limits.
- The MS (112% and 111%) and MS duplicate (113% and 117%) recoveries for Cyanide were above the acceptance limit of 110% for analytical batch B_R119632. Data qualification was not required because associated analytical sample results were non-detect.
- The MS/MS duplicate percent recoveries for Antimony (11.7% /11.9%) were below the acceptance limit of 75% for analytical batch 17329. Analytical samples were qualified "UJ" since all associated samples were non-detects to account for potential low bias.
- The MS percent recovery for benzene (127%) was above the acceptance limit of 116% for analytical batch R30775. Data qualification was not required since all sample results were non-detect.
- The MS/MS duplicate percent recoveries for trichloroethene (125%/120%) in batch ID R30775 of analytical report 0810370 were above the acceptance limit of 114%. Data qualification was not required since all sample results were non-detect.
- The MS/MS duplicate percent recoveries for toluene (116%), benzene (131%), and trichloroethene (116%) were above the acceptance limits for analytical batch R30936. Data qualification was not required because all associated samples were non-detect.
- The MS/MS duplicate recoveries for trichloroethene (125% /120%) were above the acceptance limit of 114% for analytical batch R30775. Data qualification was not required since all associated sample results were non-detect.
- The MS duplicate recoveries for benzene (131%) and trichloroethene (116%) were above the acceptance limits of 122% and 114%, respectively, for analytical batch R30936. The MS/MS duplicate relative percent difference for benzene was within acceptance limits, and all associated samples were non-detect for trichloroethene; therefore data qualification was not necessary.
- The MS duplicate relative percent difference for gasoline range organics (GRO) (15.1%) was above the acceptance limit of 11.6% in analytical batch R30911 of analytical report 0810326. Data qualification was not required because MS/MSD percent recovery were within acceptance limits.
- The MS/MS duplicate recoveries for cyanide for analytical batch B08101650 (111/117%) and batch B08101781 (112/113%) were above the upper acceptance limit of 110%. Data qualification was not required because all associated field samples were non-detect.
- The MS recovery for silver was below acceptance limits for batch L367749-11. The associated non-detect sample results were qualified "UJ" for potential low bias.
- The MS/MS duplicate percent recoveries for Nitrate+Nitrite (11,100% / 11,100%) were above the acceptance limit of 118% for analytical batch R32070. Data qualification was not required since all sample results were non-detect.

2.8 DUPLICATES

2.8.1 Field Duplicates

Field duplicates were collected at a rate of 10 percent and submitted for analysis. The RPDs between the field duplicate and its associated sample were calculated and are presented in Table A-3. The field duplicates were evaluated by the following criteria:

- If an analyte was detected at a concentration greater than five times the method reporting limit, the RPD should be less than 35percent for soil and 25 percent for groundwater samples.
- If an analyte was detected at a concentration that is less than five times the method reporting limit, then the difference between the sample and the field duplicate should not exceed the method reporting limit.
- Duplicate RPDs are calculated by dividing the difference of the concentrations by the average of the concentrations.

Field duplicate RPDs were within acceptance limits except for the following:

- The concentration difference between sample SWMU 8-6 (0-0.5') and SWMU 8-6 (0-0.5') DUP for Acetone was above the acceptance limit. Data qualification "J" was required to indicate a potential bias.
- The concentration difference between SWMU 8-9(0-0.5') and SWMU 8-9 (0-0.5') DUP for acetone was above the acceptance limit. Data qualification "UJ" was required to indicate a potential bias.
- The RPD difference between SWMU 8-9(0-0.5') and SWMU 8-9 (0-0.5') DUP for trichlorofluoromethane was above the acceptance limit. Data qualification "J" was required to indicate a potential bias.
- The RPD difference between SWMU 2-3 (0-0.5') and SWMU 2-3 (0-0.5') DUP for barium was above the acceptance limit. Data qualification "J" was required to indicate a potential bias.
- The concentration difference between SWMU 18-3 (7.5-9') and SWMU 18.3 (7.5-9') DUP for acetone was above the acceptance limit. Data qualification "UJ" was required to indicate a potential bias.
- The RPD difference between SWMU 2-4 (14-14.5') and SWMU 2-4 (14-14.5') DUP for barium and chromium was above the acceptance limits. Data qualification "J" was required to indicate a potential bias.

2.9 OTHER APPLICABLE QC PARAMETERS

2.9.1 Calibration

The Method 8260B continuing calibration verification (CCV) standards were within acceptance limits, except for the following:

- The 30 ppm and 40 ppm continuing standard had a high recovery for benzoic acid at 140.2% and 141.3%, respectively. Data qualification was not required because the analyte was not detected in the associated samples.
- The opening CCV recovery associated with analytical batch 17218 had a recovery below the lower acceptance limit for chloroethane. Associated sample results were qualified "UJ" for potential low bias.
- Acetone concentration results for soil samples SWMU 18-1 (0-0.5'). SWMU 18-3 (0-0.5'), SWMU 18-3 (1.5-2.0'), and SWMU 18-4 (1.5-2.0') were above the upper calibration limit. Associated sample results were qualified "J" to account for estimated reporting results.
- Cyanide result for sample SWMU 2-5 (13-14') was qualified "UJ" due to matrix interference to account for a potential low bias.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. The following equations were used to calculate the two types of completeness:

$$\% \text{ Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}}\right) \times 100$$

$$\% \text{ Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}}\right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 98 percent for soil analysis (182 out of a total 11,100 results required qualification). The technical completeness attained for Group 2 RCRA Investigation activities was 100 percent. The completeness results are provided in Table A-4. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

TABLE A-1
Sampling and Analysis Schedule

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Sampling and Analysis Schedule

Group 2 RCRA Investigation Summary Report

Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Lab ID	Date Collected	Sample Type	Parameters
SWMU 2-6 (0-0.5')	0809553-18	9/25/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 2-6 (1.5-2.0')	0809553-19	9/25/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 2-7 (0-0.5')	0809578-01	9/25/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 2-7 (1.5-2.0')	0809578-02	9/25/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 2-8 (0-0.5')	0809578-03	9/25/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 2-8 (1.5-2.0')	0809578-04	9/25/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 2-9 (0-0.5')	0809578-06	9/25/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 2-9 (1.5-2.0')	0809578-07	9/25/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
EB 092608	0809578-26	9/26/2008	EB-Soil	VOCs, SVOCs, Metals, Mercury, TPHs,
FB 092608	0809578-14	9/26/2008	FB-Soil	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 18-3 (7.5-9') DUP	0809578-16	9/26/2008	FD	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 18-1 (0-0.5)	0809578-11	9/26/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 18-1 (1.5-2.0)	0809578-12	9/26/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 18-2 (0-0.5)	0809578-13	9/26/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 18-2 (1.5-2.0')	0809578-19	9/26/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 18-3 (0-0.5)	0809578-20	9/26/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 18-3 (1.5-2.0')	0809578-21	9/26/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 18-3 (7.5-9')	0809578-15	9/26/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 18-4 (0-0.5')	0809578-22	9/26/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 18-4 (1.5-2.0')	0809578-23	9/26/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
EB 092808	0809636-15	9/28/2008	EB-Groundwater	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
FB-092808	0809636-03	9/28/2008	FB-Groundwater	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
SWMU 9-1 (5-7.5')	0809636-08	9/28/2008	MB	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 9-1 GW	0809636-02	9/28/2008	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
SWMU 9-1 (0-0.6')	0809636-04	9/28/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 9-1 (1.5'-2.0')	0809636-07	9/28/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 9-1 (14.5-15.0')	0809636-01	9/28/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
TB(092808)	0809636-05	9/28/2008	TB	VOCs
EBW (1)-092908	0809636-10	9/29/2008	EB-Groundwater	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
EBS (1)-092908	0809636-11	9/29/2008	EB-Soil	VOCs, SVOCs, Metals, Mercury, TPHs,
FB-092908	0810002-02	9/29/2008	FB-Groundwater	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
SWMU 2-2GW	0810002-05	9/29/2008	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
SWMU 2-3GW	0810002-01	9/29/2008	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
SWMU2-1 GW	0809636-14	9/29/2008	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
SWMU 2-1 (15-15.5')	0809636-12	9/29/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 2-2 (13.5-14.0')	0810002-04	9/29/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
SWMU 2-3 (13.5-14.0')	0810002-06	9/29/2008	N	VOCs, SVOCs, Metals, Mercury, TPHs,
TB(2) 092908	0809636-09	9/29/2008	TB	VOCs

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Sampling and Analysis Schedule
Group 2 RCRA Investigation Summary Report
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Lab ID	Date Collected	Sample Type	Parameters
MW-51	0810580-02	10/28/2008	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
MW-52	0810606-02	10/28/2008	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
MW-53	0810606-06	10/28/2008	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
MW-54	0810606-05	10/28/2008	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
EB-010809	0901119-07	1/8/2009	EB-Groundwater	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
FB-010809	0901119-06	1/8/2009	FB-Groundwater	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
MW-54 DUP	0901132-02	1/8/2009	FD	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
MW-50	0901119-01	1/8/2009	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
MW-51	0901119-05	1/8/2009	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
MW-52	0901119-02	1/8/2009	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
MW-53	0901119-03	1/8/2009	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
MW-54	0901132-01	1/8/2009	N	VOCs, SVOCs, TPHs, General Chemistry, Total Metals, Dissolved Metals, and Nitrate/Nitrite
MeOH BLANK	0809453-10	N/A	MB	VOCs
MeOH BLANK	0809553-13	N/A	MB	VOCs
Meoh Blank	0809578-18	N/A	MB	VOCs
MeOH Blank	0809448-21	N/A	MB	VOCs
MeOH Blank	0809448-22	N/A	MB	VOCs
MeOH Blank	0809448-27	N/A	MB	VOCs
Meoh Blank(2)-092808	0809636-13	N/A	MB	VOCs
Meoh Blank-092808	0809636-06	N/A	MB	VOCs
Meoh Blank-10/14/08	0810299-02	N/A	MB	VOCs
Meoh Blank-10/15/08	0810326-02	N/A	MB	VOCs
MeOH Blank2-0925	0809553-20	N/A	MB	VOCs
MeOH Blank3 092508	0809578-10	N/A	MB	VOCs
TB	0901119-04	N/A	TB	VOCs
TB (3) 092908	0810002-03	N/A	TB	VOCs
TB(1) 093008	0810002-10	N/A	TB	VOCs
TB-092508	0809553-12	N/A	TB	VOCs
TB-102808	0810580-04	N/A	TB	VOCs
TB-102808-2	0810606-04	N/A	TB	VOCs
TB102808-3	0810606-07	N/A	TB	VOCs
TB2 092608	0809578-17	N/A	TB	VOCs
TB3 082508	0809578-09	N/A	TB	VOCs
TB3 092608	0809578-24	N/A	TB	VOCs
TP2-092508	0809553-21	N/A	TB	VOCs

TABLE A-2
Qualified Data

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Qualified Data
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 2-3 GW	9/29/2008	1,2,4-Trichlorobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	1,2,4-Trichlorobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	1,2,4-Trichlorobenzene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	1,2-Dichlorobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	1,2-Dichlorobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	1,2-Dichlorobenzene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	1,3-Dichlorobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	1,3-Dichlorobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	1,3-Dichlorobenzene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	1,4-Dichlorobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	1,4-Dichlorobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	1,4-Dichlorobenzene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	2,4,5-Trichlorophenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	2,4,5-Trichlorophenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2,4,5-Trichlorophenol	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	2,4,6-Trichlorophenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	2,4,6-Trichlorophenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2,4,6-Trichlorophenol	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	2,4-Dichlorophenol	< 20	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	2,4-Dichlorophenol	< 20	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2,4-Dichlorophenol	< 2.5	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	2,4-Dimethylphenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	2,4-Dimethylphenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2,4-Dimethylphenol	< 1.9	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	2,4-Dinitrophenol	< 20	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	2,4-Dinitrophenol	< 20	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2,4-Dinitrophenol	< 2.5	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	2,4-Dinitrotoluene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	2,4-Dinitrotoluene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2,4-Dinitrotoluene	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	2,6-Dinitrotoluene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	2,6-Dinitrotoluene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2,6-Dinitrotoluene	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 18-1 (0-0.5)	9/26/2008	2-Butanone	6.63	µg/Kg-dry	Soil	J	Qualified due to potential laboratory contamination
SWMU 18-3 (1.5-2.0')	9/26/2008	2-Butanone	7.54	µg/Kg-dry	Soil	J	Qualified due to potential laboratory contamination
SWMU 18-4 (1.5-2.0')	9/26/2008	2-Butanone	4.18	µg/Kg-dry	Soil	J	Qualified due to potential laboratory contamination
SWMU 2-3 GW	9/29/2008	2-Chloronaphthalene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	2-Chloronaphthalene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2-Chloronaphthalene	< 1.6	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	2-Chlorophenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	2-Chlorophenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2-Chlorophenol	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	2-Methylnaphthalene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	2-Methylnaphthalene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2-Methylnaphthalene	2.9	mg/Kg-dry	Soil	J	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	2-Methylphenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	2-Methylphenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2-Methylphenol	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	2-Nitroaniline	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery

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Qualified Data
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Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
MW-53	10/28/2008	2-Nitroaniline	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2-Nitroaniline	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	2-Nitrophenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	2-Nitrophenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	2-Nitrophenol	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	3,3'-Dichlorobenzidine	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	3,3'-Dichlorobenzidine	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	3,3'-Dichlorobenzidine	< 1.6	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	3+4-Methylphenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	3+4-Methylphenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	3+4-Methylphenol	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	3-Nitroaniline	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	3-Nitroaniline	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	3-Nitroaniline	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	4,6-Dinitro-2-methylphenol	< 20	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	4,6-Dinitro-2-methylphenol	< 20	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	4,6-Dinitro-2-methylphenol	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	4-Bromophenyl phenyl ether	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	4-Bromophenyl phenyl ether	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	4-Bromophenyl phenyl ether	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	4-Chloro-3-methylphenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	4-Chloro-3-methylphenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	4-Chloro-3-methylphenol	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	4-Chloroaniline	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	4-Chloroaniline	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	4-Chloroaniline	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	4-Chlorophenyl phenyl ether	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	4-Chlorophenyl phenyl ether	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	4-Chlorophenyl phenyl ether	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	4-Nitroaniline	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	4-Nitroaniline	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	4-Nitroaniline	< 1.6	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	4-Nitrophenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	4-Nitrophenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	4-Nitrophenol	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Acenaphthene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Acenaphthene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Acenaphthene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Acenaphthylene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Acenaphthylene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Acenaphthylene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 8-6 (0-0.5')	9/23/2008	Acetone	66.9	µg/Kg-dry	Soil	J	Qualified due to detection in associated method blank and high RPD in duplicate sample
SWMU 8-1 (1.5-2.0')	9/23/2008	Acetone	<5.7	µg/Kg-dry	Soil	UJ	Qualified due to detection in associated method blank
SWMU 18-1 (0-0.5)	9/26/2008	Acetone	46.6	µg/Kg-dry	Soil	J	Qualified due to detected concentration outside calibration limits
SWMU 18-3 (0-0.5)	9/26/2008	Acetone	46.8	µg/Kg-dry	Soil	J	Qualified due to detected concentration outside calibration limits
SWMU 18-3 (1.5-2.0')	9/26/2008	Acetone	71	µg/Kg-dry	Soil	J	Qualified due to detected concentration outside calibration limits
SWMU 18-4 (1.5-2.0')	9/26/2008	Acetone	37.3	µg/Kg-dry	Soil	J	Qualified due to detected concentration outside calibration limits
SWMU 8-9 (0-0.5')	9/23/2008	Acetone	<4.24	mg/kg-dry	soil	UJ	Qualified due to high field duplicate RPD

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Qualified Data

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Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 18-3 (7.5-9')	9/26/2008	Acetone	<4.26	mg/Kg-dry	soil	UJ	Qualified due to high field duplicate difference.
SWMU 2-3 GW	9/29/2008	Aniline	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Aniline	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Aniline	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Anthracene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Anthracene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Anthracene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 8-5 (0-0.5')	9/23/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-5 (1.5-2.0')	9/23/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-6 (0-0.5')	9/23/2008	Antimony	< 2.6	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-7 (1.5-2.0')	9/23/2008	Antimony	< 2.6	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-8 (0-0.5')	9/23/2008	Antimony	< 2.6	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-8 (1.5-2.0')	9/23/2008	Antimony	< 2.6	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-6 (0-0.5') Dup	9/23/2008	Antimony	< 2.6	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-7 (0-0.5')	9/23/2008	Antimony	< 2.6	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-6 (1.5-2.0')	9/23/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-9 (0-0.5')	9/23/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-9 (0-0.5') DUP	9/23/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-9 (1.5-2.0')	9/23/2008	Antimony	< 13	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-10 (0-0.5')	9/23/2008	Antimony	< 2.6	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-10 (1.5-2.0')	9/23/2008	Antimony	< 2.6	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-11 (0-0.5')	9/23/2008	Antimony	< 27	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-11 (1.5-2.0')	9/23/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-12 (0-0.5')	9/23/2008	Antimony	< 13	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-12 (1.5-2.0')	9/23/2008	Antimony	< 2.6	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-2 (1.5-2.0')	9/25/2008	Antimony	< 2.6	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-3 (0-0.5')	9/25/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-3 (0-0.5') DUP	9/25/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-1 (0-0.5')	9/25/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-1 (1.5-2.0')	9/25/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-2 (0-0.5')	9/25/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-4 (1.5-2.0')	9/25/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-5 (0-0.5')	9/25/2008	Antimony	< 2.8	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-5 (1.5-2.0')	9/25/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-3 (1.5-2.0')	9/25/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-4 (0-0.5')	9/25/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-7 (0-0.5')	9/26/2008	Antimony	< 13	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-7 (1.5-2.0')	9/26/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-8 (0-0.5')	9/26/2008	Antimony	< 2.8	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-8 (1.5-2.0')	9/26/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-8 (0-0.5') DUP	9/26/2008	Antimony	< 2.8	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-9 (0-0.5')	9/26/2008	Antimony	< 13	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-9 (1.5-2.0')	9/26/2008	Antimony	< 14	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 18-1 (0-0.5)	9/26/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 18-1 (1.5-2.0)	9/26/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 18-2 (0-0.5)	9/26/2008	Antimony	< 2.6	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 18-3 (7.5-9')	9/26/2008	Antimony	< 14	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 18-3 (7.5-9') DUP	9/26/2008	Antimony	< 14	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 18-2 (1.5-2.0')	9/26/2008	Antimony	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery

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Qualified Data
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 18-3 (0-0.5)	9/26/2008	Antimony	< 13	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 18-3 (1.5-2.0')	9/26/2008	Antimony	< 14	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 18-4 (0-0.5')	9/26/2008	Antimony	< 13	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 18-4 (1.5-2.0')	9/26/2008	Antimony	< 13	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-2 (13.5-14.0')	9/29/2008	Antimony	< 2.8	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-3 (13.5-14.0')	9/29/2008	Antimony	< 2.6	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-4 (14-14.5')	9/29/2008	Antimony	< 2.9	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-4 (14-14.5') DUP	9/29/2008	Antimony	< 2.9	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 2-3 GW	9/29/2008	Azobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Azobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Azobenzene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-4 (14-14.5')	9/29/2008	Barium	110	mg/Kg-dry	Soil	J	Qualified due to high field sample RPD
SWMU 2-3 (0-0.5')	9/25/2008	Barium	89	mg/Kg-dry	soil	J	Qualified due to high field duplicate RPD
SWMU 2-3 GW	9/29/2008	Benz(a)anthracene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Benz(a)anthracene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Benz(a)anthracene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 8-6a (33-34')	10/1/2008	Benzene	< 0.050	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
Meoh Blank-10/14/08	10/1/2008	Benzene	< 0.050	mg/Kg	MeOH Blank	UJ	Qualified due to low MS/MSD recovery
SWMU 2-3 GW	9/29/2008	Benzo(a)pyrene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Benzo(a)pyrene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Benzo(a)pyrene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Benzo(b)fluoranthene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Benzo(b)fluoranthene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Benzo(b)fluoranthene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Benzo(g,h,i)perylene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Benzo(g,h,i)perylene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Benzo(g,h,i)perylene	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Benzo(k)fluoranthene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Benzo(k)fluoranthene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Benzo(k)fluoranthene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Benzoic acid	< 20	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Benzoic acid	< 20	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Benzoic acid	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Benzyl alcohol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Benzyl alcohol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Benzyl alcohol	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Bis(2-chloroethoxy)methane	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Bis(2-chloroethoxy)methane	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Bis(2-chloroethoxy)methane	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Bis(2-chloroethyl)ether	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Bis(2-chloroethyl)ether	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Bis(2-chloroethyl)ether	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Bis(2-chloroisopropyl)ether	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Bis(2-chloroisopropyl)ether	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Bis(2-chloroisopropyl)ether	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Bis(2-ethylhexyl)phthalate	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Bis(2-ethylhexyl)phthalate	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Bis(2-ethylhexyl)phthalate	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Butyl benzyl phthalate	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery

T[illegible]-2
Qualified Data
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
MW-53	10/28/2008	Butyl benzyl phthalate	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Butyl benzyl phthalate	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Carbazole	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Carbazole	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Carbazole	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-7 (0-0.5')	9/26/2008	Chloroethane	< 0.992	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 2-7 (1.5-2.0')	9/26/2008	Chloroethane	< 0.999	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 2-8 (0-0.5')	9/26/2008	Chloroethane	< 0.970	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 2-8 (1.5-2.0')	9/26/2008	Chloroethane	< 0.920	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 2-8 (0-0.5') DUP	9/26/2008	Chloroethane	< 1.02	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 2-9 (0-0.5')	9/26/2008	Chloroethane	< 0.988	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 2-9 (1.5-2.0')	9/26/2008	Chloroethane	< 0.939	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 18-1 (0-0.5)	9/26/2008	Chloroethane	< 0.965	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 18-1 (1.5-2.0)	9/26/2008	Chloroethanc	< 1.05	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 18-2 (0-0.5)	9/26/2008	Chloroethane	< 0.963	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 18-3 (7.5-9')	9/26/2008	Chloroethane	< 1.07	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 18-3 (7.5-9') DUP	9/26/2008	Chloroethane	< 1.07	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 18-2 (1.5-2.0')	9/26/2008	Chloroethane	< 1.08	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 18-3 (0-0.5)	9/26/2008	Chloroethane	< 1.03	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 18-3 (1.5-2.0')	9/26/2008	Chloroethane	< 1.04	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 18-4 (0-0.5')	9/26/2008	Chloroethane	< 0.974	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 18-4 (1.5-2.0')	9/26/2008	Chloroethane	< 0.925	µg/Kg-dry	Soil	UJ	Qualified due to low CCV recoveries
SWMU 2-4 (14-14.5')	9/29/2008	Chromium	5.8	mg/Kg-dry	Soil	J	Qualified due to high field sample RPD
SWMU 2-3 GW	9/29/2008	Chrysene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Chrysene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Chrysene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-5 (13-14')	10/15/2008	Cyanide	<0.25	mg/kg	Soil	UJ	Qualified due to matrix interference
SWMU 2-5 (13-14')	9/30/2008	Cyanide	<0.25	mg/kg	Soil	UJ	Qualified due to detection in assoicated field blank
SWMU 2-3 GW	9/29/2008	Dibenz(a,h)anthracene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Dibenz(a,h)anthracene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Dibenz(a,h)anthracene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Dibenzofuran	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Dibenzofuran	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Dibenzofuran	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Diethyl phthalate	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Diethyl phthalate	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Diethyl phthalate	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Dimethyl phthalate	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Dimethyl phthalate	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Dimethyl phthalate	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Di-n-butyl phthalate	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Di-n-butyl phthalate	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Di-n-butyl phthalate	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-2 (13.5-14.0')	9/29/2008	Di-n-butyl phthalate	0.79	mg/Kg-dry	Soil	J	Qualified due to potential laboratory contamination
SWMU 2-3 GW	9/29/2008	Di-n-octyl phthalate	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Di-n-octyl phthalate	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Di-n-octyl phthalate	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Fluoranthene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Fluoranthene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery

T[illegible]A-2
Qualified Data
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 9-1 (5-7.5')	9/28/2008	Fluoranthene	< 1.6	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Fluorene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Fluorene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Fluorene	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 18-2 (1.5-2.0')	9/26/2008	Gasoline Range Organics (GRO)	23	mg/Kg-dry	Meoh (Soil)	J	Qualified due to high surrogate recovery
SWMU 2-3 GW	9/29/2008	Hexachlorobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Hexachlorobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Hexachlorobenzene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Hexachlorobutadiene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Hexachlorobutadiene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Hexachlorobutadiene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Hexachlorocyclopentadiene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Hexachlorocyclopentadiene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Hexachlorocyclopentadiene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Hexachloroethane	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Hexachloroethane	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Hexachloroethane	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Indeno(1,2,3-cd)pyrene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Indeno(1,2,3-cd)pyrene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Indeno(1,2,3-cd)pyrene	< 1.6	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-8 GW	10/1/2008	Iron	<0.24	mg/L	Aqueous	UJ	Qualified due to detection in associated field blank
SWMU 2-3 GW	9/29/2008	Isophorone	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Isophorone	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Isophorone	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-6 GW	9/30/2008	Lead	<0.0079	mg/L	Aqueous	UJ	Qualified due to detection in associated field blank
SWMU 2-6 GW	9/29/2008	Lead	0.022	mg/L	Aqueous	J	Qualified due to detection in associated field blank
SWMU 2-7 GW	9/30/2008	Lead	<0.0079	mg/L	Aqueous	UJ	Qualified due to detection in associated field blank
SWMU 2-3 GW	9/29/2008	Naphthalene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Naphthalene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Naphthalene	1.7	mg/Kg-dry	Soil	J	Qualified due to low surrogate recovery
SWMU 2-4 GW	9/30/2008	Nitrate (As N)+Nitrite (As N)	<6.5	mg/L	Aqueous	UJ	Qualified due to detection in assoicated field and equipment blanks
SWMU 2-6 GW	9/30/2008	Nitrate (As N)+Nitrite (As N)	<6.5	mg/L	Aqueous	UJ	Qualified due to detection in assciated field and equipment blanks
SWMU 2-3 GW	9/29/2008	Nitrobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Nitrobenzene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Nitrobenzene	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
MW-51	10/28/2008	Nitrogen, Nitrate (as N)	0.68	mg/L	Aqueous	J	Qualified due to high field duplicate RPD
SWMU 2-3 GW	9/29/2008	N-Nitrosodimethylamine	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	N-Nitrosodimethylamine	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	N-Nitrosodi-n-propylamine	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	N-Nitrosodi-n-propylamine	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	N-Nitrosodi-n-propylamine	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	N-Nitrosodiphenylamine	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	N-Nitrosodiphenylamine	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	N-Nitrosodiphenylamine	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Pentachlorophenol	< 20	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Pentachlorophenol	< 20	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Pentachlorophenol	< 2.5	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Phenanthrene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Phenanthrene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery

T[illegible]-2
Qualified Data
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
SWMU 9-1 (5-7.5')	9/28/2008	Phenanthrene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Phenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Phenol	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Phenol	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Pyrene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Pyrene	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Pyrene	< 1.2	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 2-3 GW	9/29/2008	Pyridine	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
MW-53	10/28/2008	Pyridine	< 10	µg/L	Aqueous	UJ	Qualified due to low surrogate recovery
SWMU 9-1 (5-7.5')	9/28/2008	Pyridine	< 3.1	mg/Kg-dry	Soil	UJ	Qualified due to low surrogate recovery
SWMU 8-5 (0-0.5')	9/23/2008	Selenium	< 27	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-5 (1.5-2.0')	9/23/2008	Selenium	< 27	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-6 (0-0.5')	9/23/2008	Selenium	< 26	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-7 (1.5-2.0')	9/23/2008	Selenium	< 26	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-8 (0-0.5')	9/23/2008	Selenium	< 26	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-8 (1.5-2.0')	9/23/2008	Selenium	< 26	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-6 (0-0.5') Dup	9/23/2008	Selenium	< 26	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-7 (0-0.5')	9/23/2008	Selenium	< 26	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-6 (1.5-2.0')	9/23/2008	Selenium	< 27	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-9 (0-0.5')	9/23/2008	Selenium	< 27	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-9 (0-0.5') DUP	9/23/2008	Selenium	< 27	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-9 (1.5-2.0')	9/23/2008	Selenium	< 13	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-10 (0-0.5')	9/23/2008	Selenium	< 26	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-10 (1.5-2.0')	9/23/2008	Selenium	< 26	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-11 (0-0.5')	9/23/2008	Selenium	< 27	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-11 (1.5-2.0')	9/23/2008	Selenium	< 26	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-12 (0-0.5')	9/23/2008	Selenium	< 13	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 8-12 (1.5-2.0')	9/23/2008	Selenium	< 26	mg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 18-1 (0-0.5)	9/26/2008	Selenium	< 13	mg/Kg-dry	Soil	UJ	Qualified due to low MS recoveries
SWMU 18-1 (1.5-2.0)	9/26/2008	Selenium	< 2.7	mg/Kg-dry	Soil	UJ	Qualified due to low MS recoveries
EBS (1)-092908	9/28/2008	Silver	<0.010	mg/L	Aqueous	UJ	Qualified due to low MS/MSD recovery
SWMU 8-9 (0-0.5')	9/23/2008	Trichlorofluoromethane	2.05	mg/kg-dry	soil	J	Qualified due to high field duplicate RPD

Notes:
mg/L - milligrams per liter
ug/L - microgram per liter
UJ - Estimated reporting limit
J - potential bias

RPD - Relative Percent Difference
MS/MSD - Matrix spike/matrix spike duplicate

TABLE A-3
Field Duplicate Summary

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 8-6 (0-0.5') Sample Result	SWMU 8-6 (0-0.5') Dup Field Duplicate	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	93	81	13.8
	Motor Oil Range Organics (MRO)	300	260	14.3
	Gasoline Range Organics (GRO)	< 5.0	< 5.0	NC
VOCs (ug/kg-dry)	Benzene	< 1.17	< 1.11	NC
	Toluene	< 1.17	< 1.11	NC
	Ethylbenzene	< 1.17	< 1.11	NC
	Xylenes, Total	< 1.17	< 1.11	NC
	Methyl tert-butyl ether (MTBE)	< 1.17	< 1.11	NC
	1,2,4-Trimethylbenzene	< 1.17	< 1.11	NC
	1,3,5-Trimethylbenzene	< 1.17	< 1.11	NC
	1,2-Dichloroethane (EDC)	< 1.17	< 1.11	NC
	1,2-Dibromoethane (EDB)	< 1.17	< 1.11	NC
	Naphthalene	< 1.17	< 1.11	NC
	Acetone	66.9 *	< 4.44	NC
	Bromobenzene	< 1.17	< 1.11	NC
	Bromodichloromethane	< 1.17	< 1.11	NC
	Bromoform	< 1.17	< 1.11	NC
	Bromomethane	< 1.17	< 1.11	NC
	2-Butanone	< 4.67	< 4.44	NC
	Carbon tetrachloride	< 1.17	< 1.11	NC
	Chlorobenzene	< 1.17	< 1.11	NC
	Chloroethane	< 1.17	< 1.11	NC
	Chloroform	< 1.17	< 1.11	NC
	Chloromethane	< 1.17	< 1.11	NC
	2-Chlorotoluene	< 1.17	< 1.11	NC
	Carbon disulfide	< 4.67	< 4.44	NC
	4-Chlorotoluene	< 1.17	< 1.11	NC
	cis-1,2-DCE	< 1.17	< 1.11	NC
	cis-1,3-Dichloropropene	< 1.17	< 1.11	NC
	1,2-Dibromo-3-chloropropane	< 1.17	< 1.11	NC
	Dibromochloromethane	< 1.17	< 1.11	NC
	Dibromomethane	< 1.17	< 1.11	NC
	1,2-Dichlorobenzene	< 1.17	< 1.11	NC
	1,3-Dichlorobenzene	< 1.17	< 1.11	NC
	1,4-Dichlorobenzene	< 1.17	< 1.11	NC
	Dichlorodifluoromethane	< 1.17	< 1.11	NC
	1,1-Dichloroethane	< 1.17	< 1.11	NC
	1,1-Dichloroethene	< 1.17	< 1.11	NC
	1,2-Dichloropropane	< 1.17	< 1.11	NC
	1,3-Dichloropropane	< 1.17	< 1.11	NC
	2,2-Dichloropropane	< 1.17	< 1.11	NC
	1,1-Dichloropropene	< 1.17	< 1.11	NC
	Hexachlorobutadiene	< 1.17	< 1.11	NC
	Isopropylbenzene	< 1.17	< 1.11	NC
	4-Isopropyltoluene	< 1.17	< 1.11	NC
	Methylene chloride	< 2.34	< 2.22	NC
	n-Butylbenzene	< 1.17	< 1.11	NC
	2-Hexanone	< 4.67	< 4.44	NC
	n-Propylbenzene	< 1.17	< 1.11	NC
	sec-Butylbenzene	< 1.17	< 1.11	NC
	Styrene	< 1.17	< 1.11	NC
	tert-Butylbenzene	< 1.17	< 4.44	NC
	4-Methyl-2-pentanone	< 4.67	< 1.11	NC
	1,1,1,2-Tetrachloroethane	< 1.17	< 1.11	NC
	1,1,2,2-Tetrachloroethane	< 1.17	< 1.11	NC
	Tetrachloroethene (PCE)	< 1.17	< 1.11	NC
	trans-1,2-DCE	< 1.17	< 1.11	NC
	trans-1,3-Dichloropropene	< 1.17	< 1.11	NC
	1,2,3-Trichlorobenzene	< 1.17	< 1.11	NC
	1,2,4-Trichlorobenzene	< 1.17	< 1.11	NC
	1,1,1-Trichloroethane	< 1.17	< 1.11	NC
	1,1,2-Trichloroethane	< 1.17	< 1.11	NC
	Trichloroethene (TCE)	< 1.17	< 1.11	NC
	Trichlorofluoromethane	2.14	< 1.11	NC
	1,2,3-Trichloropropane	< 1.17	< 1.11	NC
	Vinyl chloride	< 1.17	< 1.11	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 8-6 (0-0.5') Sample Result	SWMU 8-6 (0-0.5') Dup Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	Acenaphthene	< 1.1	< 1.1	NC
	Acenaphthylene	< 1.1	< 1.1	NC
	Aniline	< 1.1	< 1.1	NC
	Anthracene	< 1.1	< 1.1	NC
	Azobenzene	< 1.1	< 1.1	NC
	Benz(a)anthracene	< 1.1	< 1.1	NC
	Benzo(a)pyrene	< 1.1	< 1.1	NC
	Benzo(b)fluoranthene	< 1.1	< 1.1	NC
	Benzo(g,h,i)perylene	< 2.6	< 2.6	NC
	Benzo(k)fluoranthene	< 1.1	< 1.1	NC
	Benzoic acid	< 2.6	< 2.6	NC
	Benzyl alcohol	< 1.1	< 1.1	NC
	Bis(2-chloroethoxy)methane	< 1.1	< 1.1	NC
	Bis(2-chloroethyl)ether	< 1.1	< 1.1	NC
	Bis(2-chloroisopropyl)ether	< 1.1	< 1.1	NC
	Bis(2-ethylhexyl)phthalate	< 2.6	< 2.6	NC
	4-Bromophenyl phenyl ether	< 1.1	< 1.1	NC
	Butyl benzyl phthalate	< 1.1	< 1.1	NC
	Carbazole	< 1.1	< 1.1	NC
	4-Chloro-3-methylphenol	< 2.6	< 2.6	NC
	4-Chloroaniline	< 2.6	< 2.6	NC
	2-Chloronaphthalene	< 1.3	< 1.3	NC
	2-Chlorophenol	< 1.1	< 1.1	NC
	4-Chlorophenyl phenyl ether	< 1.1	< 1.1	NC
	Chrysene	< 1.1	< 1.1	NC
	Di-n-butyl phthalate	< 2.6	< 2.6	NC
	Di-n-octyl phthalate	< 1.1	< 1.1	NC
	Dibenz(a,h)anthracene	< 1.1	< 1.1	NC
	Dibenzofuran	< 1.1	< 1.1	NC
	1,2-Dichlorobenzene	< 1.1	< 1.1	NC
	1,3-Dichlorobenzene	< 1.1	< 1.1	NC
	1,4-Dichlorobenzene	< 1.1	< 1.1	NC
	3,3´-Dichlorobenzidine	< 1.3	< 1.3	NC
	Diethyl phthalate	< 1.1	< 1.1	NC
	Dimethyl phthalate	< 1.1	< 1.1	NC
	2,4-Dichlorophenol	< 2.1	< 2.1	NC
	2,4-Dimethylphenol	< 1.6	< 1.6	NC
	4,6-Dinitro-2-methylphenol	< 2.6	< 2.6	NC
	2,4-Dinitrophenol	< 2.1	< 2.1	NC
	2,4-Dinitrotoluene	< 2.6	< 2.6	NC
	2,6-Dinitrotoluene	< 2.6	< 2.6	NC
	Fluoranthene	< 1.3	< 1.3	NC
	Fluorene	< 2.6	< 2.6	NC
	Hexachlorobenzene	< 1.1	< 1.1	NC
	Hexachlorobutadiene	< 1.1	< 1.1	NC
	Hexachlorocyclopentadiene	< 1.1	< 1.1	NC
	Hexachloroethane	< 1.1	< 1.1	NC
	Indeno(1,2,3-cd)pyrene	< 1.3	< 1.3	NC
	Isophorone	< 2.6	< 2.6	NC
	2-Methylnaphthalene	< 1.3	< 1.3	NC
	2-Methylphenol	< 2.6	< 2.6	NC
	3+4-Methylphenol	< 1.1	< 1.1	NC
	N-Nitrosodi-n-propylamine	< 1.1	< 1.1	NC
	N-Nitrosodiphenylamine	< 1.1	< 1.1	NC
	Naphthalene	< 1.1	< 1.1	NC
	2-Nitroaniline	< 1.1	< 1.1	NC
	3-Nitroaniline	< 1.1	< 1.1	NC
	4-Nitroaniline	< 1.3	< 1.3	NC
	Nitrobenzene	< 2.6	< 2.6	NC
	2-Nitrophenol	< 1.1	< 1.1	NC
	4-Nitrophenol	< 1.1	< 1.1	NC
	Pentachlorophenol	< 2.1	< 2.1	NC
	Phenanthrene	< 1.1	< 1.1	NC
	Phenol	< 1.1	< 1.1	NC
	Pyrene	< 1.1	< 1.1	NC
	Pyridine	< 2.6	< 2.6	NC
	1,2,4-Trichlorobenzene	< 1.1	< 1.1	NC
	2,4,5-Trichlorophenol	< 1.1	< 1.1	NC
	2,4,6-Trichlorophenol	< 1.1	< 1.1	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 8-6 (0-0.5') Sample Result	SWMU 8-6 (0-0.5') Dup Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Mercury	0.046	0.049	6.3
	Antimony	< 2.6	< 2.6	NC
	Arsenic	< 2.6	2.9	NC
	Barium	210	200	4.9
	Beryllium	0.43	0.44	2.3
	Cadmium	< 0.11	< 0.11	NC
	Chromium	85	87	2.3
	Cobalt	4.2	4.4	4.7
	Lead	6.1	6.4	4.8
	Nickel	8.5	11	29.4
	Selenium	< 26	< 26	NC
	Silver	< 0.26	< 0.26	NC
	Vanadium	18	21	15.4
	Zinc	89	92	3.3

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/L = micrograms per liter
mg/L = milligrams per liter
mg/kg = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 8-9 (0-0.5) Sample Result	SWMU 8-9 (0-0.5') DUP *Field Duplicate*	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	< 11	< 11	0.0
	Motor Oil Range Organics (MRO)	< 55	< 55	0.0
	Gasoline Range Organics (GRO)	< 5.0	< 5.0	NC
VOCs (ug/kg-dry)	Benzene	< 1.06	< 0.993	NC
	Toluene	1.61	1.09	NC
	Ethylbenzene	< 1.06	< 0.993	NC
	Xylenes, Total	< 1.06	< 0.993	NC
	Methyl tert-butyl ether (MTBE)	< 1.06	< 0.993	NC
	1,2,4-Trimethylbenzene	< 1.06	< 0.993	NC
	1,3,5-Trimethylbenzene	< 1.06	< 0.993	NC
	1,2-Dichloroethane (EDC)	< 1.06	< 0.993	NC
	1,2-Dibromoethane (EDB)	< 1.06	< 0.993	NC
	Naphthalene	< 1.06	< 0.993	NC
	Acetone	< 4.24 *	9.58	NC
	Bromobenzene	< 1.06	< 0.993	NC
	Bromodichloromethane	< 1.06	< 0.993	NC
	Bromoform	< 1.06	< 0.993	NC
	Bromomethane	< 1.06	< 0.993	NC
	2-Butanone	< 4.24	< 3.97	NC
	Carbon tetrachloride	< 1.06	< 0.993	NC
	Chlorobenzene	< 1.06	< 0.993	NC
	Chloroethane	< 1.06	< 0.993	NC
	Chloroform	< 1.06	< 0.993	NC
	Chloromethane	< 1.06	< 0.993	NC
	2-Chlorotoluene	< 4.24	< 0.993	NC
	Carbon disulfide	< 1.06	< 3.97	NC
	4-Chlorotoluene	< 1.06	< 0.993	NC
	cis-1,2-DCE	< 1.06	< 0.993	NC
	cis-1,3-Dichloropropene	< 1.06	< 0.993	NC
	1,2-Dibromo-3-chloropropane	< 1.06	< 0.993	NC
	Dibromochloromethane	< 1.06	< 0.993	NC
	Dibromomethane	< 1.06	< 0.993	NC
	1,2-Dichlorobenzene	< 1.06	< 0.993	NC
	1,3-Dichlorobenzene	< 1.06	< 0.993	NC
	1,4-Dichlorobenzene	< 1.06	< 0.993	NC
	Dichlorodifluoromethane	< 1.06	< 0.993	NC
	1,1-Dichloroethane	< 1.06	< 0.993	NC
	1,1-Dichloroethene	< 1.06	< 0.993	NC
	1,2-Dichloropropane	< 1.06	< 0.993	NC
	1,3-Dichloropropane	< 1.06	< 0.993	NC
	2,2-Dichloropropane	< 1.06	< 0.993	NC
	1,1-Dichloropropene	< 1.06	< 0.993	NC
	Hexachlorobutadiene	< 1.06	< 0.993	NC
	Isopropylbenzene	< 1.06	< 0.993	NC
	4-Isopropyltoluene	< 1.06	< 0.993	NC
	Methylene chloride	< 2.12	< 1.99	NC
	n-Butylbenzene	< 1.06	< 0.993	NC
	2-Hexanone	< 4.24	< 3.97	NC
	n-Propylbenzene	< 1.06	< 0.993	NC
	sec-Butylbenzene	< 1.06	< 0.993	NC
	Styrene	< 1.06	< 0.993	NC
	tert-Butylbenzene	< 4.24	< 0.993	NC
	4-Methyl-2-pentanone	< 1.06	< 3.97	NC
	1,1,1,2-Tetrachloroethane	< 1.06	< 0.993	NC
	1,1,2,2-Tetrachloroethane	< 1.06	< 0.993	NC
	Tetrachloroethene (PCE)	< 1.06	< 0.993	NC
	trans-1,2-DCE	< 1.06	< 0.993	NC
	trans-1,3-Dichloropropene	< 1.06	< 0.993	NC
	1,2,3-Trichlorobenzene	< 1.06	< 0.993	NC
	1,2,4-Trichlorobenzene	< 1.06	< 0.993	NC
	1,1,1-Trichloroethane	< 1.06	< 0.993	NC
	1,1,2-Trichloroethane	< 1.06	< 0.993	NC
	Trichloroethene (TCE)	< 1.06	< 0.993	NC
	Trichlorofluoromethane	2.05	4.19	68.6 *
	1,2,3-Trichloropropane	< 1.06	< 0.993	NC
	Vinyl chloride	< 1.06	< 0.993	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 8-9 (0-0.5) Sample Result	SWMU 8-9 (0-0.5') DUP Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	Acenaphthene	< 0.22	< 0.22	NC
	Acenaphthylene	< 0.22	< 0.22	NC
	Aniline	< 0.22	< 0.22	NC
	Anthracene	< 0.22	< 0.22	NC
	Azobenzene	< 0.22	< 0.22	NC
	Benz(a)anthracene	< 0.22	< 0.22	NC
	Benzo(a)pyrene	< 0.22	< 0.22	NC
	Benzo(b)fluoranthene	< 0.22	< 0.22	NC
	Benzo(g,h,i)perylene	< 0.55	< 0.55	NC
	Benzo(k)fluoranthene	< 0.22	< 0.22	NC
	Benzoic acid	< 0.55	< 0.55	NC
	Benzyl alcohol	< 0.22	< 0.22	NC
	Bis(2-chloroethoxy)methane	< 0.22	< 0.22	NC
	Bis(2-chloroethyl)ether	< 0.22	< 0.22	NC
	Bis(2-chloroisopropyl)ether	< 0.22	< 0.22	NC
	Bis(2-ethylhexyl)phthalate	< 0.55	< 0.55	NC
	4-Bromophenyl phenyl ether	< 0.22	< 0.22	NC
	Butyl benzyl phthalate	< 0.22	< 0.22	NC
	Carbazole	< 0.22	< 0.22	NC
	4-Chloro-3-methylphenol	< 0.55	< 0.55	NC
	4-Chloroaniline	< 0.55	< 0.55	NC
	2-Chloronaphthalene	< 0.27	< 0.27	NC
	2-Chlorophenol	< 0.22	< 0.22	NC
	4-Chlorophenyl phenyl ether	< 0.22	< 0.22	NC
	Chrysene	< 0.22	< 0.22	NC
	Di-n-butyl phthalate	< 0.55	< 0.55	NC
	Di-n-octyl phthalate	< 0.22	< 0.22	NC
	Dibenz(a,h)anthracene	< 0.22	< 0.22	NC
	Dibenzofuran	< 0.22	< 0.22	NC
	1,2-Dichlorobenzene	< 0.22	< 0.22	NC
	1,3-Dichlorobenzene	< 0.22	< 0.22	NC
	1,4-Dichlorobenzene	< 0.22	< 0.22	NC
	3,3´-Dichlorobenzidine	< 0.27	< 0.27	NC
	Diethyl phthalate	< 0.22	< 0.22	NC
	Dimethyl phthalate	< 0.22	< 0.22	NC
	2,4-Dichlorophenol	< 0.44	< 0.44	NC
	2,4-Dimethylphenol	< 0.33	< 0.33	NC
	4,6-Dinitro-2-methylphenol	< 0.55	< 0.55	NC
	2,4-Dinitrophenol	< 0.44	< 0.44	NC
	2,4-Dinitrotoluene	< 0.55	< 0.55	NC
	2,6-Dinitrotoluene	< 0.55	< 0.55	NC
	Fluoranthene	< 0.27	< 0.27	NC
	Fluorene	< 0.55	< 0.55	NC
	Hexachlorobenzene	< 0.22	< 0.22	NC
	Hexachlorobutadiene	< 0.22	< 0.22	NC
	Hexachlorocyclopentadiene	< 0.22	< 0.22	NC
	Hexachloroethane	< 0.22	< 0.22	NC
	Indeno(1,2,3-cd)pyrene	< 0.27	< 0.27	NC
	Isophorone	< 0.55	< 0.55	NC
	2-Methylnaphthalene	< 0.27	< 0.27	NC
	2-Methylphenol	< 0.55	< 0.55	NC
	3+4-Methylphenol	< 0.22	< 0.22	NC
	N-Nitrosodi-n-propylamine	< 0.22	< 0.22	NC
	N-Nitrosodiphenylamine	< 0.22	< 0.22	NC
	Naphthalene	< 0.22	< 0.22	NC
	2-Nitroaniline	< 0.22	< 0.22	NC
	3-Nitroaniline	< 0.22	< 0.22	NC
	4-Nitroaniline	< 0.27	< 0.27	NC
	Nitrobenzene	< 0.55	< 0.55	NC
	2-Nitrophenol	< 0.22	< 0.22	NC
	4-Nitrophenol	< 0.22	< 0.22	NC
	Pentachlorophenol	< 0.44	< 0.44	NC
	Phenanthrene	< 0.22	< 0.22	NC
	Phenol	< 0.22	< 0.22	NC
	Pyrene	< 0.22	< 0.22	NC
	Pyridine	< 0.55	< 0.55	NC
	1,2,4-Trichlorobenzene	< 0.22	< 0.22	NC
	2,4,5-Trichlorophenol	< 0.22	< 0.22	NC
	2,4,6-Trichlorophenol	< 0.22	< 0.22	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 8-9 (0-0.5) Sample Result	SWMU 8-9 (0-0.5') DUP Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Mercury	< 0.036	< 0.036	NC
	Antimony	< 2.7	< 2.7	NC
	Arsenic	< 2.7	< 2.7	NC
	Barium	300	300	0.0
	Beryllium	0.46	0.47	2.2
	Cadmium	< 0.11	< 0.11	NC
	Chromium	17	13	26.7
	Cobalt	4.7	4.8	2.1
	Lead	4.7	4.7	0.0
	Nickel	7.0	7.0	0.0
	Selenium	< 27	< 27	NC
	Silver	< 0.27	< 0.27	NC
	Vanadium	20	20	0.0
	Zinc	34	33	3.0

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/L = micrograms per liter
mg/L = milligrams per liter
mg/kg = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 2-3 (0-0.5') Sample Result	SWMU 2-3 (0-0.5') DUP Field Duplicate	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	< 11	< 11	NC
	Motor Oil Range Organics (MRO)	< 54	< 54	NC
	Gasoline Range Organics (GRO)	< 5.4	< 5.4	NC
VOCs (ug/kg-dry)	Benzene	< 1.02	< 0.974	NC
	Toluene	1.29	< 0.974	NC
	Ethylbenzene	< 1.02	< 0.974	NC
	Xylenes, Total	< 1.02	< 0.974	NC
	Methyl tert-butyl ether (MTBE)	< 1.02	< 0.974	NC
	1,2,4-Trimethylbenzene	< 1.02	< 0.974	NC
	1,3,5-Trimethylbenzene	< 1.02	< 0.974	NC
	1,2-Dichloroethane (EDC)	< 1.02	< 0.974	NC
	1,2-Dibromoethane (EDB)	< 1.02	< 0.974	NC
	Naphthalene	< 1.02	< 0.974	NC
	Acetone	4.09	< 3.90	NC
	Bromobenzene	< 1.02	< 0.974	NC
	Bromodichloromethane	< 1.02	< 0.974	NC
	Bromoform	< 1.02	< 0.974	NC
	Bromomethane	< 1.02	< 0.974	NC
	2-Butanone	< 4.07	< 3.90	NC
	Carbon tetrachloride	< 1.02	< 0.974	NC
	Chlorobenzene	< 1.02	< 0.974	NC
	Chloroethane	< 1.02	< 0.974	NC
	Chloroform	< 1.02	< 0.974	NC
	Chloromethane	< 1.02	< 0.974	NC
	2-Chlorotoluene	< 1.02	< 0.974	NC
	Carbon disulfide	< 4.07	< 3.90	NC
	4-Chlorotoluene	< 1.02	< 0.974	NC
	cis-1,2-DCE	< 1.02	< 0.974	NC
	cis-1,3-Dichloropropene	< 1.02	< 0.974	NC
	1,2-Dibromo-3-chloropropane	< 1.02	< 0.974	NC
	Dibromochloromethane	< 1.02	< 0.974	NC
	Dibromomethane	< 1.02	< 0.974	NC
	1,2-Dichlorobenzene	< 1.02	< 0.974	NC
	1,3-Dichlorobenzene	< 1.02	< 0.974	NC
	1,4-Dichlorobenzene	< 1.02	< 0.974	NC
	Dichlorodifluoromethane	< 1.02	< 0.974	NC
	1,1-Dichloroethane	< 1.02	< 0.974	NC
	1,1-Dichloroethene	< 1.02	< 0.974	NC
	1,2-Dichloropropane	< 1.02	< 0.974	NC
	1,3-Dichloropropane	< 1.02	< 0.974	NC
	2,2-Dichloropropane	< 1.02	< 0.974	NC
	1,1-Dichloropropene	< 1.02	< 0.974	NC
	Hexachlorobutadiene	< 1.02	< 0.974	NC
	Isopropylbenzene	< 1.02	< 0.974	NC
	4-Isopropyltoluene	< 1.02	< 0.974	NC
	Methylene chloride	< 2.03	< 1.95	NC
	n-Butylbenzene	< 1.02	< 0.974	NC
	2-Hexanone	< 4.07	< 0.974	NC
	n-Propylbenzene	< 1.02	< 3.90	NC
	sec-Butylbenzene	< 1.02	< 0.974	NC
	Styrene	< 1.02	< 0.974	NC
	tert-Butylbenzene	< 4.07	< 0.974	NC
	4-Methyl-2-pentanone	< 1.02	< 3.90	NC
	1,1,1,2-Tetrachloroethane	< 1.02	< 0.974	NC
	1,1,2,2-Tetrachloroethane	< 1.02	< 0.974	NC
	Tetrachloroethene (PCE)	< 1.02	< 0.974	NC
	trans-1,2-DCE	< 1.02	< 0.974	NC
	trans-1,3-Dichloropropene	< 1.02	< 0.974	NC
	1,2,3-Trichlorobenzene	< 1.02	< 0.974	NC
	1,2,4-Trichlorobenzene	< 1.02	< 0.974	NC
	1,1,1-Trichloroethane	< 1.02	< 0.974	NC
	1,1,2-Trichloroethane	< 1.02	< 0.974	NC
	Trichloroethene (TCE)	< 1.02	< 0.974	NC
	Trichlorofluoromethane	< 1.02	< 0.974	NC
	1,2,3-Trichloropropane	< 1.02	< 0.974	NC
	Vinyl chloride	< 1.02	< 0.974	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 2-3 (0-0.5') Sample Result	SWMU 2-3 (0-0.5') DUP Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	Acenaphthene	< 0.22	< 0.22	NC
	Acenaphthylene	< 0.22	< 0.22	NC
	Aniline	< 0.22	< 0.22	NC
	Anthracene	< 0.22	< 0.22	NC
	Azobenzene	< 0.22	< 0.22	NC
	Benz(a)anthracene	< 0.22	< 0.22	NC
	Benzo(a)pyrene	< 0.22	< 0.22	NC
	Benzo(b)fluoranthene	< 0.22	< 0.22	NC
	Benzo(g,h,i)perylene	< 0.54	< 0.54	NC
	Benzo(k)fluoranthene	< 0.22	< 0.22	NC
	Benzoic acid	< 0.54	< 0.54	NC
	Benzyl alcohol	< 0.22	< 0.22	NC
	Bis(2-chloroethoxy)methane	< 0.22	< 0.22	NC
	Bis(2-chloroethyl)ether	< 0.22	< 0.22	NC
	Bis(2-chloroisopropyl)ether	< 0.22	< 0.22	NC
	Bis(2-ethylhexyl)phthalate	< 0.54	< 0.54	NC
	4-Bromophenyl phenyl ether	< 0.22	< 0.22	NC
	Butyl benzyl phthalate	< 0.22	< 0.22	NC
	Carbazole	< 0.22	< 0.22	NC
	4-Chloro-3-methylphenol	< 0.54	< 0.54	NC
	4-Chloroaniline	< 0.54	< 0.54	NC
	2-Chloronaphthalene	< 0.27	< 0.27	NC
	2-Chlorophenol	< 0.22	< 0.22	NC
	4-Chlorophenyl phenyl ether	< 0.22	< 0.22	NC
	Chrysene	< 0.22	< 0.22	NC
	Di-n-butyl phthalate	< 0.54	< 0.54	NC
	Di-n-octyl phthalate	< 0.22	< 0.22	NC
	Dibenz(a,h)anthracene	< 0.22	< 0.22	NC
	Dibenzofuran	< 0.22	< 0.22	NC
	1,2-Dichlorobenzene	< 0.22	< 0.22	NC
	1,3-Dichlorobenzene	< 0.22	< 0.22	NC
	1,4-Dichlorobenzene	< 0.22	< 0.22	NC
	3,3´-Dichlorobenzidine	< 0.27	< 0.27	NC
	Diethyl phthalate	< 0.22	< 0.22	NC
	Dimethyl phthalate	< 0.22	< 0.22	NC
	2,4-Dichlorophenol	< 0.43	< 0.43	NC
	2,4-Dimethylphenol	< 0.32	< 0.32	NC
	4,6-Dinitro-2-methylphenol	< 0.54	< 0.54	NC
	2,4-Dinitrophenol	< 0.43	< 0.43	NC
	2,4-Dinitrotoluene	< 0.54	< 0.54	NC
	2,6-Dinitrotoluene	< 0.54	< 0.54	NC
	Fluoranthene	< 0.27	< 0.27	NC
	Fluorene	< 0.54	< 0.54	NC
	Hexachlorobenzene	< 0.22	< 0.22	NC
	Hexachlorobutadiene	< 0.22	< 0.22	NC
	Hexachlorocyclopentadiene	< 0.22	< 0.22	NC
	Hexachloroethane	< 0.22	< 0.22	NC
	Indeno(1,2,3-cd)pyrene	< 0.27	< 0.27	NC
	Isophorone	< 0.54	< 0.54	NC
	2-Methylnaphthalene	< 0.27	< 0.27	NC
	2-Methylphenol	< 0.54	< 0.54	NC
	3+4-Methylphenol	< 0.22	< 0.22	NC
	N-Nitrosodi-n-propylamine	< 0.22	< 0.22	NC
	N-Nitrosodiphenylamine	< 0.22	< 0.22	NC
	Naphthalene	< 0.22	< 0.22	NC
	2-Nitroaniline	< 0.22	< 0.22	NC
	3-Nitroaniline	< 0.22	< 0.22	NC
	4-Nitroaniline	< 0.27	< 0.27	NC
	Nitrobenzene	< 0.54	< 0.54	NC
	2-Nitrophenol	< 0.22	< 0.22	NC
	4-Nitrophenol	< 0.22	< 0.22	NC
	Pentachlorophenol	< 0.43	< 0.43	NC
	Phenanthrene	< 0.22	< 0.22	NC
	Phenol	< 0.22	< 0.22	NC
	Pyrene	< 0.22	< 0.22	NC
	Pyridine	< 0.54	< 0.54	NC
	1,2,4-Trichlorobenzene	< 0.22	< 0.22	NC
	2,4,5-Trichlorophenol	< 0.22	< 0.22	NC
	2,4,6-Trichlorophenol	< 0.22	< 0.22	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 2-3 (0-0.5') Sample Result	SWMU 2-3 (0-0.5') DUP Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Mercury	< 0.036	< 0.036	NC
	Antimony	< 2.7	< 2.7	NC
	Arsenic	< 2.7	< 2.7	NC
	Barium	89	140	44.5 *
	Beryllium	0.34	0.34	0.0
	Cadmium	< 0.11	< 0.11	NC
	Chromium	4.5	4.7	4.3
	Cobalt	3.2	3.3	3.1
	Lead	4.2	4.3	2.4
	Nickel	7.9	7.1	10.7
	Selenium	< 2.7	< 2.7	NC
	Silver	< 0.27	< 0.27	NC
	Vanadium	12	12	0.0
	Zinc	23	23	0.0

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/L = micrograms per liter
mg/L = milligrams per liter
mg/kg = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 18-3 (7.5-9) Sample Result	SWMU 18-3 (7.5-9) DUP Field Duplicate	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	< 11	< 11	NC
	Motor Oil Range Organics (MRO)	62	< 56	NC
	Gasoline Range Organics (GRO)	< 5.6	< 5.6	NC
VOCs (ug/kg-dry)	Benzene	< 1.07	< 1.07	NC
	Toluene	< 1.07	< 1.07	NC
	Ethylbenzene	< 1.07	< 1.07	NC
	Xylenes, Total	< 1.07	< 1.07	NC
	Methyl tert-butyl ether (MTBE)	< 1.07	< 1.07	NC
	1,2,4-Trimethylbenzene	< 1.07	< 1.07	NC
	1,3,5-Trimethylbenzene	< 1.07	< 1.07	NC
	1,2-Dichloroethane (EDC)	< 1.07	< 1.07	NC
	1,2-Dibromoethane (EDB)	< 1.07	< 1.07	NC
	Naphthalene	< 1.07	< 1.07	NC
	Acetone	< 4.26 *	12.3	NC
	Bromobenzene	< 1.07	< 1.07	NC
	Bromodichloromethane	< 1.07	< 1.07	NC
	Bromoform	< 1.07	< 1.07	NC
	Bromomethane	< 1.07	< 1.07	NC
	2-Butanone	< 4.26	< 4.28	NC
	Carbon tetrachloride	< 1.07	< 1.07	NC
	Chlorobenzene	< 1.07	< 1.07	NC
	Chloroethane	< 1.07	< 1.07	NC
	Chloroform	< 1.07	< 1.07	NC
	Chloromethane	< 1.07	< 1.07	NC
	2-Chlorotoluene	< 1.07	< 4.28	NC
	Carbon disulfide	< 4.26	< 1.07	NC
	4-Chlorotoluene	< 1.07	< 1.07	NC
	cis-1,2-DCE	< 1.07	< 1.07	NC
	cis-1,3-Dichloropropene	< 1.07	< 1.07	NC
	1,2-Dibromo-3-chloropropane	< 1.07	< 1.07	NC
	Dibromochloromethane	< 1.07	< 1.07	NC
	Dibromomethane	< 1.07	< 1.07	NC
	1,2-Dichlorobenzene	< 1.07	< 1.07	NC
	1,3-Dichlorobenzene	< 1.07	< 1.07	NC
	1,4-Dichlorobenzene	< 1.07	< 1.07	NC
	Dichlorodifluoromethane	< 1.07	< 1.07	NC
	1,1-Dichloroethane	< 1.07	< 1.07	NC
	1,1-Dichloroethene	< 1.07	< 1.07	NC
	1,2-Dichloropropane	< 1.07	< 1.07	NC
	1,3-Dichloropropane	< 1.07	< 1.07	NC
	2,2-Dichloropropane	< 1.07	< 1.07	NC
	1,1-Dichloropropene	< 1.07	< 1.07	NC
	Hexachlorobutadiene	< 1.07	< 1.07	NC
	Isopropylbenzene	< 1.07	< 1.07	NC
	4-Isopropyltoluene	< 1.07	< 1.07	NC
	Methylene chloride	< 2.13	< 2.14	NC
	n-Butylbenzene	< 1.07	< 1.07	NC
	2-Hexanone	< 4.26	< 4.28	NC
	n-Propylbenzene	< 1.07	< 1.07	NC
	sec-Butylbenzene	< 1.07	< 1.07	NC
	Styrene	< 1.07	< 1.07	NC
	tert-Butylbenzene	< 1.07	< 4.28	NC
	4-Methyl-2-pentanone	< 4.26	< 1.07	NC
	1,1,1,2-Tetrachloroethane	< 1.07	< 1.07	NC
	1,1,2,2-Tetrachloroethane	< 1.07	< 1.07	NC
	Tetrachloroethene (PCE)	< 1.07	< 1.07	NC
	trans-1,2-DCE	< 1.07	< 1.07	NC
	trans-1,3-Dichloropropene	< 1.07	< 1.07	NC
	1,2,3-Trichlorobenzene	< 1.07	< 1.07	NC
	1,2,4-Trichlorobenzene	< 1.07	< 1.07	NC
	1,1,1-Trichloroethane	< 1.07	< 1.07	NC
	1,1,2-Trichloroethane	< 1.07	< 1.07	NC
	Trichloroethene (TCE)	< 1.07	< 1.07	NC
	Trichlorofluoromethane	< 1.07	< 1.07	NC
	1,2,3-Trichloropropane	< 1.07	< 1.07	NC
	Vinyl chloride	< 1.07	< 1.07	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 18-3 (7.5-9) Sample Result	SWMU 18-3 (7.5-9) DUP Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	Acenaphthene	< 0.22	< 0.23	NC
	Acenaphthylene	< 0.22	< 0.23	NC
	Aniline	< 0.22	< 0.23	NC
	Anthracene	< 0.22	< 0.23	NC
	Azobenzene	< 0.22	< 0.23	NC
	Benz(a)anthracene	< 0.22	< 0.23	NC
	Benzo(a)pyrene	< 0.22	< 0.23	NC
	Benzo(b)fluoranthene	< 0.22	< 0.23	NC
	Benzo(g,h,i)perylene	< 0.56	< 0.56	NC
	Benzo(k)fluoranthene	< 0.22	< 0.23	NC
	Benzoic acid	< 0.56	< 0.56	NC
	Benzyl alcohol	< 0.22	< 0.23	NC
	Bis(2-chloroethoxy)methane	< 0.22	< 0.23	NC
	Bis(2-chloroethyl)ether	< 0.22	< 0.23	NC
	Bis(2-chloroisopropyl)ether	< 0.22	< 0.23	NC
	Bis(2-ethylhexyl)phthalate	< 0.56	< 0.56	NC
	4-Bromophenyl phenyl ether	< 0.22	< 0.23	NC
	Butyl benzyl phthalate	< 0.22	< 0.23	NC
	Carbazole	< 0.22	< 0.23	NC
	4-Chloro-3-methylphenol	< 0.56	< 0.56	NC
	4-Chloroaniline	< 0.56	< 0.56	NC
	2-Chloronaphthalene	< 0.28	< 0.28	NC
	2-Chlorophenol	< 0.22	< 0.23	NC
	4-Chlorophenyl phenyl ether	< 0.22	< 0.23	NC
	Chrysene	< 0.22	< 0.23	NC
	Di-n-butyl phthalate	< 0.56	< 0.56	NC
	Di-n-octyl phthalate	< 0.22	< 0.23	NC
	Dibenz(a,h)anthracene	< 0.22	< 0.23	NC
	Dibenzofuran	< 0.22	< 0.23	NC
	1,2-Dichlorobenzene	< 0.22	< 0.23	NC
	1,3-Dichlorobenzene	< 0.22	< 0.23	NC
	1,4-Dichlorobenzene	< 0.22	< 0.23	NC
	3,3´-Dichlorobenzidine	< 0.28	< 0.28	NC
	Diethyl phthalate	< 0.22	< 0.23	NC
	Dimethyl phthalate	< 0.22	< 0.23	NC
	2,4-Dichlorophenol	< 0.45	< 0.45	NC
	2,4-Dimethylphenol	< 0.34	< 0.34	NC
	4,6-Dinitro-2-methylphenol	< 0.56	< 0.56	NC
	2,4-Dinitrophenol	< 0.45	< 0.45	NC
	2,4-Dinitrotoluene	< 0.56	< 0.56	NC
	2,6-Dinitrotoluene	< 0.56	< 0.56	NC
	Fluoranthene	< 0.28	< 0.28	NC
	Fluorene	< 0.56	< 0.56	NC
	Hexachlorobenzene	< 0.22	< 0.23	NC
	Hexachlorobutadiene	< 0.22	< 0.23	NC
	Hexachlorocyclopentadiene	< 0.22	< 0.23	NC
	Hexachloroethane	< 0.22	< 0.23	NC
	Indeno(1,2,3-cd)pyrene	< 0.28	< 0.28	NC
	Isophorone	< 0.56	< 0.56	NC
	2-Methylnaphthalene	< 0.28	< 0.28	NC
	2-Methylphenol	< 0.56	< 0.56	NC
	3+4-Methylphenol	< 0.22	< 0.23	NC
	N-Nitrosodi-n-propylamine	< 0.22	< 0.23	NC
	N-Nitrosodiphenylamine	< 0.22	< 0.23	NC
	Naphthalene	< 0.22	< 0.23	NC
	2-Nitroaniline	< 0.22	< 0.23	NC
	3-Nitroaniline	< 0.22	< 0.23	NC
	4-Nitroaniline	< 0.28	< 0.28	NC
	Nitrobenzene	< 0.56	< 0.56	NC
	2-Nitrophenol	< 0.22	< 0.23	NC
	4-Nitrophenol	< 0.22	< 0.23	NC
	Pentachlorophenol	< 0.45	< 0.45	NC
	Phenanthrene	< 0.22	< 0.23	NC
	Phenol	< 0.22	< 0.23	NC
	Pyrene	< 0.22	< 0.23	NC
	Pyridine	< 0.56	< 0.56	NC
	1,2,4-Trichlorobenzene	< 0.22	< 0.23	NC
	2,4,5-Trichlorophenol	< 0.22	< 0.23	NC
	2,4,6-Trichlorophenol	< 0.22	< 0.23	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 18-3 (7.5-9) Sample Result	SWMU 18-3 (7.5-9) DUP Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Mercury	< 0.037	< 0.037	NC
	Antimony	< 14	< 14	NC
	Arsenic	< 14	< 14	NC
	Barium	210	170	21.1
	Beryllium	< 0.84	< 0.84	NC
	Cadmium	< 0.56	< 0.56	NC
	Chromium	6.6	4.7	33.6
	Cobalt	4.6	3.4	30.0
	Lead	7	5	33.3
	Nickel	6.8	5.1	28.6
	Selenium	< 14	< 14	NC
	Silver	< 1.4	< 1.4	NC
	Vanadium	18	< 14	25.0
	Zinc	34	26	26.7

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/L = micrograms per liter
mg/L = milligrams per liter
mg/kg = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 2-8 (0-0.5) Sample Result	SWMU 2-8 (0-0.5) DUP Field Duplicate	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	< 11	18	NC
	Motor Oil Range Organics (MRO)	< 55	57	NC
	Gasoline Range Organics (GRO)	< 5.5	< 5.7	NC
VOCs (ug/kg-dry)	Benzene	< 0.970	< 1.02	NC
	Toluene	< 0.970	< 1.02	NC
	Ethylbenzene	< 0.970	< 1.02	NC
	Xylenes, Total	< 0.970	< 1.02	NC
	Methyl tert-butyl ether (MTBE)	< 0.970	< 1.02	NC
	1,2,4-Trimethylbenzene	< 0.970	< 1.02	NC
	1,3,5-Trimethylbenzene	< 0.970	< 1.02	NC
	1,2-Dichloroethane (EDC)	< 0.970	< 1.02	NC
	1,2-Dibromoethane (EDB)	< 0.970	< 1.02	NC
	Naphthalene	< 0.970	< 1.02	NC
	Acetone	< 3.88	4.67	NC
	Bromobenzene	< 0.970	< 1.02	NC
	Bromodichloromethane	< 0.970	< 1.02	NC
	Bromoform	< 0.970	< 1.02	NC
	Bromomethane	< 0.970	< 1.02	NC
	2-Butanone	< 3.88	< 4.09	NC
	Carbon tetrachloride	< 0.970	< 1.02	NC
	Chlorobenzene	< 0.970	< 1.02	NC
	Chloroethane	< 0.970	< 1.02	NC
	Chloroform	< 0.970	< 1.02	NC
	Chloromethane	< 0.970	< 1.02	NC
	2-Chlorotoluene	< 3.88	< 4.09	NC
	Carbon disulfide	< 0.970	< 1.02	NC
	4-Chlorotoluene	< 0.970	< 1.02	NC
	cis-1,2-DCE	< 0.970	< 1.02	NC
	cis-1,3-Dichloropropene	< 0.970	< 1.02	NC
	1,2-Dibromo-3-chloropropane	< 0.970	< 1.02	NC
	Dibromochloromethane	< 0.970	< 1.02	NC
	Dibromomethane	< 0.970	< 1.02	NC
	1,2-Dichlorobenzene	< 0.970	< 1.02	NC
	1,3-Dichlorobenzene	< 0.970	< 1.02	NC
	1,4-Dichlorobenzene	< 0.970	< 1.02	NC
	Dichlorodifluoromethane	< 0.970	< 1.02	NC
	1,1-Dichloroethane	< 0.970	< 1.02	NC
	1,1-Dichloroethene	< 0.970	< 1.02	NC
	1,2-Dichloropropane	< 0.970	< 1.02	NC
	1,3-Dichloropropane	< 0.970	< 1.02	NC
	2,2-Dichloropropane	< 0.970	< 1.02	NC
	1,1-Dichloropropene	< 0.970	< 1.02	NC
	Hexachlorobutadiene	< 0.970	< 1.02	NC
	Isopropylbenzene	< 0.970	< 1.02	NC
	4-Isopropyltoluene	< 0.970	< 1.02	NC
	Methylene chloride	< 1.94	< 2.05	NC
	n-Butylbenzene	< 0.970	< 1.02	NC
	2-Hexanone	< 0.970	< 1.02	NC
	n-Propylbenzene	< 3.88	< 4.09	NC
	sec-Butylbenzene	< 0.970	< 1.02	NC
	Styrene	< 0.970	< 1.02	NC
	tert-Butylbenzene	< 3.88	< 1.02	NC
	4-Methyl-2-pentanone	< 0.970	< 4.09	NC
	1,1,1,2-Tetrachloroethane	< 0.970	< 1.02	NC
	1,1,2,2-Tetrachloroethane	< 0.970	< 1.02	NC
	Tetrachloroethene (PCE)	< 0.970	< 1.02	NC
	trans-1,2-DCE	< 0.970	< 1.02	NC
	trans-1,3-Dichloropropene	< 0.970	< 1.02	NC
	1,2,3-Trichlorobenzene	< 0.970	< 1.02	NC
	1,2,4-Trichlorobenzene	< 0.970	< 1.02	NC
	1,1,1-Trichloroethane	< 0.970	< 1.02	NC
	1,1,2-Trichloroethane	< 0.970	< 1.02	NC
	Trichloroethene (TCE)	< 0.970	< 1.02	NC
	Trichlorofluoromethane	< 0.970	< 1.02	NC
	1,2,3-Trichloropropane	< 0.970	< 1.02	NC
	Vinyl chloride	< 0.970	< 1.02	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 2-8 (0-0.5) Sample Result	SWMU 2-8 (0-0.5) DUP Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	Acenaphthene	< 0.22	< 0.23	NC
	Acenaphthylene	< 0.22	< 0.23	NC
	Aniline	< 0.22	< 0.23	NC
	Anthracene	< 0.22	< 0.23	NC
	Azobenzene	< 0.22	< 0.23	NC
	Benz(a)anthracene	< 0.22	< 0.23	NC
	Benzo(a)pyrene	< 0.22	< 0.23	NC
	Benzo(b)fluoranthene	< 0.22	< 0.23	NC
	Benzo(g,h,i)perylene	< 0.55	< 0.57	NC
	Benzo(k)fluoranthene	< 0.22	< 0.23	NC
	Benzoic acid	< 0.55	< 0.57	NC
	Benzyl alcohol	< 0.22	< 0.23	NC
	Bis(2-chloroethoxy)methane	< 0.22	< 0.23	NC
	Bis(2-chloroethyl)ether	< 0.22	< 0.23	NC
	Bis(2-chloroisopropyl)ether	< 0.22	< 0.23	NC
	Bis(2-ethylhexyl)phthalate	< 0.55	< 0.57	NC
	4-Bromophenyl phenyl ether	< 0.22	< 0.23	NC
	Butyl benzyl phthalate	< 0.22	< 0.23	NC
	Carbazole	< 0.22	< 0.23	NC
	4-Chloro-3-methylphenol	< 0.55	< 0.57	NC
	4-Chloroaniline	< 0.55	< 0.57	NC
	2-Chloronaphthalene	< 0.28	< 0.28	NC
	2-Chlorophenol	< 0.22	< 0.23	NC
	4-Chlorophenyl phenyl ether	< 0.22	< 0.23	NC
	Chrysene	< 0.22	< 0.23	NC
	Di-n-butyl phthalate	< 0.55	< 0.57	NC
	Di-n-octyl phthalate	< 0.22	< 0.23	NC
	Dibenz(a,h)anthracene	< 0.22	< 0.23	NC
	Dibenzofuran	< 0.22	< 0.23	NC
	1,2-Dichlorobenzene	< 0.22	< 0.23	NC
	1,3-Dichlorobenzene	< 0.22	< 0.23	NC
	1,4-Dichlorobenzene	< 0.22	< 0.23	NC
	3,3´-Dichlorobenzidine	< 0.28	< 0.28	NC
	Diethyl phthalate	< 0.22	< 0.23	NC
	Dimethyl phthalate	< 0.22	< 0.23	NC
	2,4-Dichlorophenol	< 0.44	< 0.45	NC
	2,4-Dimethylphenol	< 0.33	< 0.34	NC
	4,6-Dinitro-2-methylphenol	< 0.55	< 0.57	NC
	2,4-Dinitrophenol	< 0.44	< 0.45	NC
	2,4-Dinitrotoluene	< 0.55	< 0.57	NC
	2,6-Dinitrotoluene	< 0.55	< 0.57	NC
	Fluoranthene	< 0.28	< 0.28	NC
	Fluorene	< 0.55	< 0.57	NC
	Hexachlorobenzene	< 0.22	< 0.23	NC
	Hexachlorobutadiene	< 0.22	< 0.23	NC
	Hexachlorocyclopentadiene	< 0.22	< 0.23	NC
	Hexachloroethane	< 0.22	< 0.23	NC
	Indeno(1,2,3-cd)pyrene	< 0.28	< 0.28	NC
	Isophorone	< 0.55	< 0.57	NC
	2-Methylnaphthalene	< 0.28	< 0.28	NC
	2-Methylphenol	< 0.55	< 0.57	NC
	3+4-Methylphenol	< 0.22	< 0.23	NC
	N-Nitrosodi-n-propylamine	< 0.22	< 0.23	NC
	N-Nitrosodiphenylamine	< 0.22	< 0.23	NC
	Naphthalene	< 0.22	< 0.23	NC
	2-Nitroaniline	< 0.22	< 0.23	NC
	3-Nitroaniline	< 0.22	< 0.23	NC
	4-Nitroaniline	< 0.28	< 0.28	NC
	Nitrobenzene	< 0.55	< 0.57	NC
	2-Nitrophenol	< 0.22	< 0.23	NC
	4-Nitrophenol	< 0.22	< 0.23	NC
	Pentachlorophenol	< 0.44	< 0.45	NC
	Phenanthrene	< 0.22	< 0.23	NC
	Phenol	< 0.22	< 0.23	NC
	Pyrene	< 0.22	< 0.23	NC
	Pyridine	< 0.55	< 0.57	NC
	1,2,4-Trichlorobenzene	< 0.22	< 0.23	NC
	2,4,5-Trichlorophenol	< 0.22	< 0.23	NC
	2,4,6-Trichlorophenol	< 0.22	< 0.23	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 2-8 (0-0.5) Sample Result	SWMU 2-8 (0-0.5) DUP Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Mercury	0.61	0.9	38.4**
	Antimony	< 2.8	< 2.8	NC
	Arsenic	< 2.8	< 2.8	NC
	Barium	240	180	28.6
	Beryllium	0.40	0.40	0.0
	Cadmium	0.44	0.63	35.5
	Chromium	16	9.4	52.0
	Cobalt	4	4.4	9.5
	Lead	6.8	5.8	15.9
	Nickel	14	14	0.0
	Selenium	< 14	< 2.8	NC
	Silver	< 0.28	< 0.28	NC
	Vanadium	15	16	6.5
	Zinc	48	40	18.2

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/L = micrograms per liter
mg/L = milligrams per liter
mg/kg = milligrams per kilogram
* = Field Duplicate RPD Outlier
** = No data qualification required; detection is less than 5 times the reporting limit.

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 2-4 (14-14.5') Sample Result	SWMU 2-4 (14-14.5') DUP Field Duplicate	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	< 11	< 12	NC
	Motor Oil Range Organics (MRO)	< 57	< 59	NC
	Gasoline Range Organics (GRO)	< 5.7	< 5.9	NC
VOCs (ug/kg-dry)	Benzene	< 0.919	< 0.926	NC
	Toluene	< 0.919	< 0.926	NC
	Ethylbenzene	< 0.919	< 0.926	NC
	Xylenes, Total	< 0.919	< 0.926	NC
	Methyl tert-butyl ether (MTBE)	< 0.919	< 0.926	NC
	1,2,4-Trimethylbenzene	< 0.919	< 0.926	NC
	1,3,5-Trimethylbenzene	< 0.919	< 0.926	NC
	1,2-Dichloroethane (EDC)	< 0.919	< 0.926	NC
	1,2-Dibromoethane (EDB)	< 0.919	< 0.926	NC
	Naphthalene	< 0.919	< 0.926	NC
	Acetone	< 3.68	< 3.70	NC
	Bromobenzene	< 0.919	< 0.926	NC
	Bromodichloromethane	< 0.919	< 0.926	NC
	Bromoform	< 0.919	< 0.926	NC
	Bromomethane	< 0.919	< 0.926	NC
	2-Butanone	< 3.68	< 3.70	NC
	Carbon tetrachloride	< 0.919	< 0.926	NC
	Chlorobenzene	< 0.919	< 0.926	NC
	Chloroethane	< 0.919	< 0.926	NC
	Chloroform	< 0.919	< 0.926	NC
	Chloromethane	< 0.919	< 0.926	NC
	2-Chlorotoluene	< 0.919	< 3.70	NC
	Carbon disulfide	< 3.68	< 0.926	NC
	4-Chlorotoluene	< 0.919	< 0.926	NC
	cis-1,2-DCE	< 0.919	< 0.926	NC
	cis-1,3-Dichloropropene	< 0.919	< 0.926	NC
	1,2-Dibromo-3-chloropropane	< 0.919	< 0.926	NC
	Dibromochloromethane	< 0.919	< 0.926	NC
	Dibromomethane	< 0.919	< 0.926	NC
	1,2-Dichlorobenzene	< 0.919	< 0.926	NC
	1,3-Dichlorobenzene	< 0.919	< 0.926	NC
	1,4-Dichlorobenzene	< 0.919	< 0.926	NC
	Dichlorodifluoromethane	< 0.919	< 0.926	NC
	1,1-Dichloroethane	< 0.919	< 0.926	NC
	1,1-Dichloroethene	< 0.919	< 0.926	NC
	1,2-Dichloropropane	< 0.919	< 0.926	NC
	1,3-Dichloropropane	< 0.919	< 0.926	NC
	2,2-Dichloropropane	< 0.919	< 0.926	NC
	1,1-Dichloropropene	< 0.919	< 0.926	NC
	Hexachlorobutadiene	< 0.919	< 0.926	NC
	Isopropylbenzene	< 0.919	< 0.926	NC
	4-Isopropyltoluene	< 0.919	< 0.926	NC
	Methylene chloride	< 1.84	< 1.85	NC
	n-Butylbenzene	< 0.919	< 0.926	NC
	2-Hexanone	< 0.919	< 0.926	NC
	n-Propylbenzene	< 3.68	< 3.70	NC
	sec-Butylbenzene	< 0.919	< 0.926	NC
	Styrene	< 0.919	< 0.926	NC
	tert-Butylbenzene	< 0.919	< 0.926	NC
	4-Methyl-2-pentanone	< 3.68	< 3.70	NC
	1,1,1,2-Tetrachloroethane	< 0.919	< 0.926	NC
	1,1,2,2-Tetrachloroethane	< 0.919	< 0.926	NC
	Tetrachloroethene (PCE)	< 0.919	< 0.926	NC
	trans-1,2-DCE	< 0.919	< 0.926	NC
	trans-1,3-Dichloropropene	< 0.919	< 0.926	NC
	1,2,3-Trichlorobenzene	< 0.919	< 0.926	NC
	1,2,4-Trichlorobenzene	< 0.919	< 0.926	NC
	1,1,1-Trichloroethane	< 0.919	< 0.926	NC
	1,1,2-Trichloroethane	< 0.919	< 0.926	NC
	Trichloroethene (TCE)	< 0.919	< 0.926	NC
	Trichlorofluoromethane	< 0.919	< 0.926	NC
	1,2,3-Trichloropropane	< 0.919	< 0.926	NC
	Vinyl chloride	< 0.919	< 0.926	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 2-4 (14-14.5') Sample Result	SWMU 2-4 (14-14.5') DUP Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	Acenaphthene	< 0.23	< 0.24	NC
	Acenaphthylene	< 0.23	< 0.24	NC
	Aniline	< 0.23	< 0.24	NC
	Anthracene	< 0.23	< 0.24	NC
	Azobenzene	< 0.23	< 0.24	NC
	Benz(a)anthracene	< 0.23	< 0.24	NC
	Benzo(a)pyrene	< 0.23	< 0.24	NC
	Benzo(b)fluoranthene	< 0.23	< 0.24	NC
	Benzo(g,h,i)perylene	< 0.57	< 0.59	NC
	Benzo(k)fluoranthene	< 0.23	< 0.24	NC
	Benzoic acid	< 0.57	< 0.59	NC
	Benzyl alcohol	< 0.23	< 0.24	NC
	Bis(2-chloroethoxy)methane	< 0.23	< 0.24	NC
	Bis(2-chloroethyl)ether	< 0.23	< 0.24	NC
	Bis(2-chloroisopropyl)ether	< 0.23	< 0.24	NC
	Bis(2-ethylhexyl)phthalate	< 0.57	< 0.59	NC
	4-Bromophenyl phenyl ether	< 0.23	< 0.24	NC
	Butyl benzyl phthalate	< 0.23	< 0.24	NC
	Carbazole	< 0.23	< 0.24	NC
	4-Chloro-3-methylphenol	< 0.57	< 0.59	NC
	4-Chloroaniline	< 0.57	< 0.59	NC
	2-Chloronaphthalene	< 0.29	< 0.29	NC
	2-Chlorophenol	< 0.23	< 0.24	NC
	4-Chlorophenyl phenyl ether	< 0.23	< 0.24	NC
	Chrysene	< 0.23	< 0.24	NC
	Di-n-butyl phthalate	< 0.57	< 0.59	NC
	Di-n-octyl phthalate	< 0.23	< 0.24	NC
	Dibenz(a,h)anthracene	< 0.23	< 0.24	NC
	Dibenzofuran	< 0.23	< 0.24	NC
	1,2-Dichlorobenzene	< 0.23	< 0.24	NC
	1,3-Dichlorobenzene	< 0.23	< 0.24	NC
	1,4-Dichlorobenzene	< 0.23	< 0.24	NC
	3,3´-Dichlorobenzidine	< 0.29	< 0.29	NC
	Diethyl phthalate	< 0.23	< 0.24	NC
	Dimethyl phthalate	< 0.23	< 0.24	NC
	2,4-Dichlorophenol	< 0.46	< 0.47	NC
	2,4-Dimethylphenol	< 0.34	< 0.35	NC
	4,6-Dinitro-2-methylphenol	< 0.57	< 0.59	NC
	2,4-Dinitrophenol	< 0.46	< 0.47	NC
	2,4-Dinitrotoluene	< 0.57	< 0.59	NC
	2,6-Dinitrotoluene	< 0.57	< 0.59	NC
	Fluoranthene	< 0.29	< 0.29	NC
	Fluorene	< 0.57	< 0.59	NC
	Hexachlorobenzene	< 0.23	< 0.24	NC
	Hexachlorobutadiene	< 0.23	< 0.24	NC
	Hexachlorocyclopentadiene	< 0.23	< 0.24	NC
	Hexachloroethane	< 0.23	< 0.24	NC
	Indeno(1,2,3-cd)pyrene	< 0.29	< 0.29	NC
	Isophorone	< 0.57	< 0.59	NC
	2-Methylnaphthalene	< 0.29	< 0.29	NC
	2-Methylphenol	< 0.57	< 0.59	NC
	3+4-Methylphenol	< 0.23	< 0.24	NC
	N-Nitrosodi-n-propylamine	< 0.23	< 0.24	NC
	N-Nitrosodiphenylamine	< 0.23	< 0.24	NC
	Naphthalene	< 0.23	< 0.24	NC
	2-Nitroaniline	< 0.23	< 0.24	NC
	3-Nitroaniline	< 0.23	< 0.24	NC
	4-Nitroaniline	< 0.29	< 0.29	NC
	Nitrobenzene	< 0.57	< 0.59	NC
	2-Nitrophenol	< 0.23	< 0.24	NC
	4-Nitrophenol	< 0.23	< 0.24	NC
	Pentachlorophenol	< 0.46	< 0.47	NC
	Phenanthrene	< 0.23	< 0.24	NC
	Phenol	< 0.23	< 0.24	NC
	Pyrene	< 0.23	< 0.24	NC
	Pyridine	< 0.57	< 0.59	NC
	1,2,4-Trichlorobenzene	< 0.23	< 0.24	NC
	2,4,5-Trichlorophenol	< 0.23	< 0.24	NC
	2,4,6-Trichlorophenol	< 0.23	< 0.24	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 2-4 (14-14.5') Sample Result	SWMU 2-4 (14-14.5') DUP Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Mercury	0.039	< 0.039	NC
	Antimony	< 2.9	< 2.9	NC
	Arsenic	< 2.9	< 2.9	NC
	Barium	110	73	40.4 *
	Beryllium	< 0.17	< 0.18	NC
	Cadmium	< 0.11	< 0.12	NC
	Chromium	5.8	14	82.8 *
	Cobalt	2.2	1.7	25.6
	Lead	2.8	1.7	48.9
	Nickel	2.5	2.6	3.9
	Selenium	< 2.9	< 2.9	NC
	Silver	< 0.29	< 0.29	NC
	Vanadium	12	8.6	33.0
	Zinc	22	13	51.4

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/L = micrograms per liter
mg/L = milligrams per liter
mg/kg = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 2-4 (14-14.5') Sample Result	SWMU 2-4 (14-14.5') DUP Field Duplicate	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	< 11	< 12	NC
	Motor Oil Range Organics (MRO)	< 57	< 59	NC
	Gasoline Range Organics (GRO)	< 5.7	< 5.9	NC
VOCs (ug/kg-dry)	Benzene	< 0.919	< 0.926	NC
	Toluene	< 0.919	< 0.926	NC
	Ethylbenzene	< 0.919	< 0.926	NC
	Xylenes, Total	< 0.919	< 0.926	NC
	Methyl tert-butyl ether (MTBE)	< 0.919	< 0.926	NC
	1,2,4-Trimethylbenzene	< 0.919	< 0.926	NC
	1,3,5-Trimethylbenzene	< 0.919	< 0.926	NC
	1,2-Dichloroethane (EDC)	< 0.919	< 0.926	NC
	1,2-Dibromoethane (EDB)	< 0.919	< 0.926	NC
	Naphthalene	< 0.919	< 0.926	NC
	Acetone	< 3.68	< 3.70	NC
	Bromobenzene	< 0.919	< 0.926	NC
	Bromodichloromethane	< 0.919	< 0.926	NC
	Bromoform	< 0.919	< 0.926	NC
	Bromomethane	< 0.919	< 0.926	NC
	2-Butanone	< 3.68	< 3.70	NC
	Carbon tetrachloride	< 0.919	< 0.926	NC
	Chlorobenzene	< 0.919	< 0.926	NC
	Chloroethane	< 0.919	< 0.926	NC
	Chloroform	< 0.919	< 0.926	NC
	Chloromethane	< 0.919	< 0.926	NC
	2-Chlorotoluene	< 0.919	< 3.70	NC
	Carbon disulfide	< 3.68	< 0.926	NC
	4-Chlorotoluene	< 0.919	< 0.926	NC
	cis-1,2-DCE	< 0.919	< 0.926	NC
	cis-1,3-Dichloropropene	< 0.919	< 0.926	NC
	1,2-Dibromo-3-chloropropane	< 0.919	< 0.926	NC
	Dibromochloromethane	< 0.919	< 0.926	NC
	Dibromomethane	< 0.919	< 0.926	NC
	1,2-Dichlorobenzene	< 0.919	< 0.926	NC
	1,3-Dichlorobenzene	< 0.919	< 0.926	NC
	1,4-Dichlorobenzene	< 0.919	< 0.926	NC
	Dichlorodifluoromethane	< 0.919	< 0.926	NC
	1,1-Dichloroethane	< 0.919	< 0.926	NC
	1,1-Dichloroethene	< 0.919	< 0.926	NC
	1,2-Dichloropropane	< 0.919	< 0.926	NC
	1,3-Dichloropropane	< 0.919	< 0.926	NC
	2,2-Dichloropropane	< 0.919	< 0.926	NC
	1,1-Dichloropropene	< 0.919	< 0.926	NC
	Hexachlorobutadiene	< 0.919	< 0.926	NC
	Isopropylbenzene	< 0.919	< 0.926	NC
	4-Isopropyltoluene	< 0.919	< 0.926	NC
	Methylene chloride	< 1.84	< 1.85	NC
	n-Butylbenzene	< 0.919	< 0.926	NC
	2-Hexanone	< 0.919	< 0.926	NC
	n-Propylbenzene	< 3.68	< 3.70	NC
	sec-Butylbenzene	< 0.919	< 0.926	NC
	Styrene	< 0.919	< 0.926	NC
	tert-Butylbenzene	< 0.919	< 0.926	NC
	4-Methyl-2-pentanone	< 3.68	< 3.70	NC
	1,1,1,2-Tetrachloroethane	< 0.919	< 0.926	NC
	1,1,2,2-Tetrachloroethane	< 0.919	< 0.926	NC
	Tetrachloroethene (PCE)	< 0.919	< 0.926	NC
	trans-1,2-DCE	< 0.919	< 0.926	NC
	trans-1,3-Dichloropropene	< 0.919	< 0.926	NC
	1,2,3-Trichlorobenzene	< 0.919	< 0.926	NC
	1,2,4-Trichlorobenzene	< 0.919	< 0.926	NC
	1,1,1-Trichloroethane	< 0.919	< 0.926	NC
	1,1,2-Trichloroethane	< 0.919	< 0.926	NC
	Trichloroethene (TCE)	< 0.919	< 0.926	NC
	Trichlorofluoromethane	< 0.919	< 0.926	NC
	1,2,3-Trichloropropane	< 0.919	< 0.926	NC
	Vinyl chloride	< 0.919	< 0.926	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 2-4 (14-14.5') Sample Result	SWMU 2-4 (14-14.5') DUP Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	Acenaphthene	< 0.23	< 0.24	NC
	Acenaphthylene	< 0.23	< 0.24	NC
	Aniline	< 0.23	< 0.24	NC
	Anthracene	< 0.23	< 0.24	NC
	Azobenzene	< 0.23	< 0.24	NC
	Benz(a)anthracene	< 0.23	< 0.24	NC
	Benzo(a)pyrene	< 0.23	< 0.24	NC
	Benzo(b)fluoranthene	< 0.23	< 0.24	NC
	Benzo(g,h,i)perylene	< 0.57	< 0.59	NC
	Benzo(k)fluoranthene	< 0.23	< 0.24	NC
	Benzoic acid	< 0.57	< 0.59	NC
	Benzyl alcohol	< 0.23	< 0.24	NC
	Bis(2-chloroethoxy)methane	< 0.23	< 0.24	NC
	Bis(2-chloroethyl)ether	< 0.23	< 0.24	NC
	Bis(2-chloroisopropyl)ether	< 0.23	< 0.24	NC
	Bis(2-ethylhexyl)phthalate	< 0.57	< 0.59	NC
	4-Bromophenyl phenyl ether	< 0.23	< 0.24	NC
	Butyl benzyl phthalate	< 0.23	< 0.24	NC
	Carbazole	< 0.23	< 0.24	NC
	4-Chloro-3-methylphenol	< 0.57	< 0.59	NC
	4-Chloroaniline	< 0.57	< 0.59	NC
	2-Chloronaphthalene	< 0.29	< 0.29	NC
	2-Chlorophenol	< 0.23	< 0.24	NC
	4-Chlorophenyl phenyl ether	< 0.23	< 0.24	NC
	Chrysene	< 0.23	< 0.24	NC
	Di-n-butyl phthalate	< 0.57	< 0.59	NC
	Di-n-octyl phthalate	< 0.23	< 0.24	NC
	Dibenz(a,h)anthracene	< 0.23	< 0.24	NC
	Dibenzofuran	< 0.23	< 0.24	NC
	1,2-Dichlorobenzene	< 0.23	< 0.24	NC
	1,3-Dichlorobenzene	< 0.23	< 0.24	NC
	1,4-Dichlorobenzene	< 0.23	< 0.24	NC
	3,3´-Dichlorobenzidine	< 0.29	< 0.29	NC
	Diethyl phthalate	< 0.23	< 0.24	NC
	Dimethyl phthalate	< 0.23	< 0.24	NC
	2,4-Dichlorophenol	< 0.46	< 0.47	NC
	2,4-Dimethylphenol	< 0.34	< 0.35	NC
	4,6-Dinitro-2-methylphenol	< 0.57	< 0.59	NC
	2,4-Dinitrophenol	< 0.46	< 0.47	NC
	2,4-Dinitrotoluene	< 0.57	< 0.59	NC
	2,6-Dinitrotoluene	< 0.57	< 0.59	NC
	Fluoranthene	< 0.29	< 0.29	NC
	Fluorene	< 0.57	< 0.59	NC
	Hexachlorobenzene	< 0.23	< 0.24	NC
	Hexachlorobutadiene	< 0.23	< 0.24	NC
	Hexachlorocyclopentadiene	< 0.23	< 0.24	NC
	Hexachloroethane	< 0.23	< 0.24	NC
	Indeno(1,2,3-cd)pyrene	< 0.29	< 0.29	NC
	Isophorone	< 0.57	< 0.59	NC
	2-Methylnaphthalene	< 0.29	< 0.29	NC
	2-Methylphenol	< 0.57	< 0.59	NC
	3+4-Methylphenol	< 0.23	< 0.24	NC
	N-Nitrosodi-n-propylamine	< 0.23	< 0.24	NC
	N-Nitrosodiphenylamine	< 0.23	< 0.24	NC
	Naphthalene	< 0.23	< 0.24	NC
	2-Nitroaniline	< 0.23	< 0.24	NC
	3-Nitroaniline	< 0.23	< 0.24	NC
	4-Nitroaniline	< 0.29	< 0.29	NC
	Nitrobenzene	< 0.57	< 0.59	NC
	2-Nitrophenol	< 0.23	< 0.24	NC
	4-Nitrophenol	< 0.23	< 0.24	NC
	Pentachlorophenol	< 0.46	< 0.47	NC
	Phenanthrene	< 0.23	< 0.24	NC
	Phenol	< 0.23	< 0.24	NC
	Pyrene	< 0.23	< 0.24	NC
	Pyridine	< 0.57	< 0.59	NC
	1,2,4-Trichlorobenzene	< 0.23	< 0.24	NC
	2,4,5-Trichlorophenol	< 0.23	< 0.24	NC
	2,4,6-Trichlorophenol	< 0.23	< 0.24	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 2-4 (14-14.5') Sample Result	SWMU 2-4 (14-14.5') DUP Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Mercury	0.039	< 0.039	NC
	Antimony	< 2.9	< 2.9	NC
	Arsenic	< 2.9	< 2.9	NC
	Barium	110	73	40.4 *
	Beryllium	< 0.17	< 0.18	NC
	Cadmium	< 0.11	< 0.12	NC
	Chromium	5.8	14	82.8 *
	Cobalt	2.2	1.7	25.6
	Lead	2.8	1.7	48.9
	Nickel	2.5	2.6	3.9
	Selenium	< 2.9	< 2.9	NC
	Silver	< 0.29	< 0.29	NC
	Vanadium	12	8.6	33.0
	Zinc	22	13	51.4

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/L = micrograms per liter
mg/L = milligrams per liter
mg/kg = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-54 Field Sample	MW-54 DUP Field Duplicate	RPD (%)
TPH (mg/L):	Diesel Range Organics (DRO)	7.2	7.1	1.4
	Motor Oil Range Organics (MRO)	< 5.0	< 5.0	NC
	Gasoline Range Organics (GRO)	3.4	3.4	0
VOCs (ug/L):	1,1,1,2-Tetrachloroethane	< 10	< 10	NC
	1,1,1-Trichloroethane	< 10	< 10	NC
	1,1,2,2-Tetrachloroethane	< 20	< 20	NC
	1,1,2-Trichloroethane	< 10	< 10	NC
	1,1-Dichloroethane	< 10	< 10	NC
	1,1-Dichloroethene	< 10	< 10	NC
	1,1-Dichloropropene	< 10	< 10	NC
	1,2,3-Trichlorobenzene	< 10	< 10	NC
	1,2,3-Trichloropropane	< 20	< 20	NC
	1,2,4-Trichlorobenzene	< 10	< 10	NC
	1,2,4-Trimethylbenzene	67	63	6.2
	1,2-Dibromo-3-chloropropane	< 20	< 20	NC
	1,2-Dibromoethane (EDB)	< 10	< 10	NC
	1,2-Dichlorobenzene	< 10	< 10	NC
	1,2-Dichloroethane (EDC)	< 10	< 10	NC
	1,2-Dichloropropane	< 10	< 10	NC
	1,3,5-Trimethylbenzene	< 10	< 10	NC
	1,3-Dichlorobenzene	< 10	< 10	NC
	1,3-Dichloropropane	< 10	< 10	NC
	1,4-Dichlorobenzene	< 10	< 10	NC
	1-Methylnaphthalene	82	65	23.1
	2,2-Dichloropropane	< 20	< 20	NC
	2-Butanone	< 100	< 100	NC
	2-Chlorotoluene	< 10	< 10	NC
	2-Hexanone	< 100	< 100	NC
	2-Methylnaphthalene	93	74	22.8
	4-Chlorotoluene	< 10	< 10	NC
	4-Isopropyltoluene	< 10	< 10	NC
	4-Methyl-2-pentanone	< 100	< 100	NC
	Acetone	< 100	< 100	NC
	Benzene	1100	1000	9.5
	Bromobenzene	< 10	< 10	NC
	Bromodichloromethane	< 10	< 10	NC
	Bromoform	< 10	< 10	NC
	Bromomethane	< 10	< 10	NC
	Carbon disulfide	< 100	< 100	NC
	Carbon Tetrachloride	< 10	< 10	NC
	Chlorobenzene	< 10	< 10	NC
	Chloroethane	< 20	< 20	NC
	Chloroform	< 10	< 10	NC
	Chloromethane	< 10	< 10	NC
	cis-1,2-DCE	< 10	< 10	NC
	cis-1,3-Dichloropropene	< 10	< 10	NC
	Dibromochloromethane	< 10	< 10	NC
	Dibromomethane	< 10	< 10	NC
	Dichlorodifluoromethane	< 10	< 10	NC
	Ethylbenzene	200	200	0
	Hexachlorobutadiene	< 10	< 10	NC
	Isopropylbenzene	34	36	5.7
	Methyl tert-butyl ether (MTBE)	160	160	0.0
	Methylene Chloride	< 30	< 30	NC
	Naphthalene	160	150	6.5
	n-Butylbenzene	< 10	< 10	NC
	n-Propylbenzene	39	36	8.0
	sec-Butylbenzene	< 10	< 10	NC
	Styrene	< 10	< 10	NC
	tert-Butylbenzene	< 10	< 10	NC
	Tetrachloroethene (PCE)	< 10	< 10	NC
	Toluene	< 10	< 10	NC
	trans-1,2-DCE	< 10	< 10	NC
	trans-1,3-Dichloropropene	< 10	< 10	NC
	Trichloroethene (TCE)	< 10	< 10	NC
	Trichlorofluoromethane	< 10	< 10	NC
	Vinyl chloride	< 10	< 10	NC
	Xylenes, Total	24	24	0.0

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-54 Field Sample	MW-54 DUP Field Duplicate	RPD (%)
SVOCs (ug/L):	1,2,4-Trichlorobenzene	< 10	< 10	NC
	1,2-Dichlorobenzene	< 10	< 10	NC
	1,3-Dichlorobenzene	< 10	< 10	NC
	1,4-Dichlorobenzene	< 10	< 10	NC
	2,4,5-Trichlorophenol	< 10	< 10	NC
	2,4,6-Trichlorophenol	< 10	< 10	NC
	2,4-Dichlorophenol	< 20	< 20	NC
	2,4-Dimethylphenol	< 10	< 10	NC
	2,4-Dinitrophenol	< 20	< 20	NC
	2,4-Dinitrotoluene	< 10	< 10	NC
	2,6-Dinitrotoluene	< 10	< 10	NC
	2-Chloronaphthalene	< 10	< 10	NC
	2-Chlorophenol	< 10	< 10	NC
	2-Methylnaphthalene	49	51	4.0
	2-Methylphenol	< 10	< 10	NC
	2-Nitroaniline	< 10	< 10	NC
	2-Nitrophenol	< 10	< 10	NC
	3,3'-Dichlorobenzidine	< 10	< 10	NC
	3+4-Methylphenol	< 10	< 10	NC
	3-Nitroaniline	< 10	< 10	NC
	4,6-Dinitro-2-methylphenol	< 20	< 20	NC
	4-Bromophenyl phenyl ether	< 10	< 10	NC
	4-Chloro-3-methylphenol	< 10	< 10	NC
	4-Chloroaniline	< 10	< 10	NC
	4-Chlorophenyl phenyl ether	< 10	< 10	NC
	4-Nitroaniline	< 10	< 10	NC
	4-Nitrophenol	< 10	< 10	NC
	Acenaphthene	< 10	< 10	NC
	Acenaphthylene	< 10	< 10	NC
	Aniline	< 10	< 10	NC
	Anthracene	< 10	< 10	NC
	Azobenzene	< 10	< 10	NC
	Benz(a)anthracene	< 10	< 10	NC
	Benzo(a)pyrene	< 10	< 10	NC
	Benzo(b)fluoranthene	< 10	< 10	NC
	Benzo(g,h,i)perylene	< 10	< 10	NC
	Benzo(k)fluoranthene	< 10	< 10	NC
	Benzoic acid	< 20	< 20	NC
	Benzyl alcohol	< 10	< 10	NC
	Bis(2-chloroethoxy)methane	< 10	< 10	NC
	Bis(2-chloroethyl)ether	< 10	< 10	NC
	Bis(2-chloroisopropyl)ether	< 10	< 10	NC
	Bis(2-ethylhexyl)phthalate	< 10	< 10	NC
	Butyl benzyl phthalate	< 10	< 10	NC
	Carbazole	< 10	< 10	NC
	Chrysene	< 10	< 10	NC
	Dibenz(a,h)anthracene	< 10	< 10	NC
	Dibenzofuran	< 10	< 10	NC
	Diethyl phthalate	< 10	< 10	NC
	Dimethyl phthalate	< 10	< 10	NC
	Di-n-butyl phthalate	< 10	< 10	NC
	Di-n-octyl phthalate	< 10	< 10	NC
	Fluoranthene	< 10	< 10	NC
	Fluorene	< 10	< 10	NC
	Hexachlorobenzene	< 10	< 10	NC
	Hexachlorobutadiene	< 10	< 10	NC
	Hexachlorocyclopentadiene	< 10	< 10	NC
	Hexachloroethane	< 10	< 10	NC
	Indeno(1,2,3-cd)pyrene	< 10	< 10	NC
	Isophorone	< 10	< 10	NC
	Naphthalene	82	83	1.2
	Nitrobenzene	< 10	< 10	NC
	N-Nitrosodimethylamine	< 10	< 10	NC
	N-Nitrosodi-n-propylamine	< 10	< 10	NC
	N-Nitrosodiphenylamine	< 10	< 10	NC
	Pentachlorophenol	< 20	< 20	NC
	Phenanthrene	< 10	< 10	NC
	Phenol	< 10	< 10	NC
	Pyrene	< 10	< 10	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

Parameter	MW-54 Field Sample	MW-54 DUP Field Duplicate	RPD (%)
Pyridine	< 10	< 10	NC

Table A-3
Field Duplicate Summary
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-54 Field Sample	MW-54 DUP Field Duplicate	RPD (%)
Anions (mg/L):	Chloride	4200	3900	7.4
	Nitrogen, Nitrate (As N)	---		NC
	Nitrogen, Nitrite (As N)	---		NC
	Nitrate (As N)+Nitrite (As N)	< 10	< 10	NC
	Sulfate	2.8	2.2	24.0
Alkalinity (mg/L as CaCO3):	Alkalinity, Total (As CaCO3)	820	810	1.2
	Bicarbonate	820	810	1.2
	Carbonate	< 2.0	< 4.0	NC
Total Metals (mg/L):	Antimony	0.0011	0.0011	0.0
	Arsenic	0.02	0.02	0.0
	Barium	13	11	16.7
	Beryllium	< 0.0030	< 0.0030	NC
	Cadmium	< 0.0020	< 0.0020	NC
	Chromium	< 0.0060	< 0.0060	NC
	Cobalt	< 0.0060	< 0.0060	NC
	Lead	0.0081	0.008	1.2
	Mercury	< 0.00020	< 0.00020	NC
	Nickel	0.011	< 0.010	NC
	Selenium	0.0014	0.0015	6.9
	Silver	< 0.0050	< 0.0050	NC
	Vanadium	< 0.050	< 0.050	NC
Dissolved Metals (mg/L):	Zinc	0.16	< 0.020	NC
	Calcium	530	540	1.9
	Iron	36	34	5.7
	Magnesium	210	220	4.7
	Manganese	12	13	8.0
	Potassium	12	12	0.0
Inorganics (mg/L):	Sodium	1500	1600	6.5
	Cyanide, Total	< 0.0050	< 0.0050	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/L = micrograms per liter
mg/L = milligrams per liter
mg/kg = milligrams per kilogram
* = Field Duplicate RPD Outlier

TABLE A-4
Completeness Summaries

Table A-4
Completeness Summary - Soil
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	Total Number of Results	Number of Contractual Compliance	Percent Contractural Compliance	Number of Usable Results	Percent Technical Complianc
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	74	74	100	74	100
	Motor Oil Range Organics (MRO)	74	74	100	74	100
	Gasoline Range Organics (GRO)	74	73 a	99	74	100
VOCs (ug/kg-dry)	Benzene	74	73 b	99	74	100
	Acetone	74	66 c, d, e	89	74	100
	2-Butanone	74	71 f	96	74	100
	Chloroethane	74	57 g	77	74	100
	Trichlorofluoromethane	74	73 c	99	74	100
	All remaining VOC analytes	4292	4292	100	4292	100
SVOCs (mg/kg-dry):	Di-n-butyl phthalate	74	72 f	97	74	100
	All remaining SVOC analytes	5032	4958 a	99	5032	100
Metals (mg/kg-dry):	Mercury	74	74	100	74	100
	Antimony	74	24 b	32	74	100
	Arsenic	74	74	100	74	100
	Barium	74	72 c	97	74	100
	Beryllium	74	74	100	74	100
	Cadmium	74	74	100	74	100
	Chromium	74	73 c	99	74	100
	Cobalt	74	74	100	74	100
	Cyanide	74	72 d	97	74	100
	Lead	74	74	100	74	100
	Nickel	74	74	100	74	100
	Selenium	74	54 b	73	74	100
	Silver	74	74	100	74	100
	Vanadium	74	74	100	74	100
	Zinc	74	74	100	74	100

Notes:
Number of samples used in completeness calculations includes field duplicates but does not include equipment rinsate, field, or trip blanks.
Percent Contractural Compliance = (number of contract compliant results / Number of reported results)*100
Percent Technial Compliance = (Number of usable results / Number of reported results) * 100
a = Qualified due to low surrogate recoveries
b = Qualified due to low matrix spike/matrix spike duplicate recoveries
c = Qualified due to high field duplicate relative percent difference.
d = Qualified due to associated blank detection.
e = Qualified due to detection outside calibration limits.
f = Qualified due to potential laboratory contamination.
g= Qualified due to low CCV recoveries

Table A-4
Completeness Summary - Groundwater Samples
Group 2 RCRA Investigation Summary
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	Total Number of Samples	Number of Contractual Compliance	Percent Contractural Compliance	Number of Usable Results	Percent Technical Complianc
TPH (mg/L):	Diesel Range Organics (DRO)	20	20	100	20	100
	Motor Oil Range Organics (MRO)	20	20	100	20	100
	Gasoline Range Organics (GRO)	20	20	100	20	100
VOCs (ug/L):	All analytes	1300	1300	100	1300	100
SVOCs (ug/L):	All analytes	1400	1260 a	90	1400	100
Anions (mg/L):	Chloride	20	20	100	20	100
	Nitrogen, Nitrate (As N)	9	8 c	89	9	100
	Nitrogen, Nitrite (As N)	9	9	100	9	100
	Nitrate (As N)+Nitrite (As N)	11	9 d	82	11	100
	Sulfate	20	20	20	20	100
Alkalinity (mg/L as CaCO3):	Alkalinity, Total (As CaCO3)	20	20	100	20	100
	Bicarbonate	20	20	100	20	100
	Carbonate	20	20	100	20	100
Total Metals (mg/L):	Antimony	20	20	100	20	100
	Arsenic	20	20	100	20	100
	Barium	20	20	100	20	100
	Beryllium	20	20	100	20	100
	Cadmium	20	20	100	20	100
	Chromium	20	20	100	20	100
	Cobalt	20	20	100	20	100
	Lead	20	17d	85	20	100
	Mercury	20	20	100	20	100
	Nickel	20	20	100	20	100
	Selenium	20	20	100	20	100
	Silver	20	20	100	20	100
	Vanadium	20	20	100	20	100
Dissolved Metals (mg/L):	Zinc	20	20	100	20	100
	Calcium	20	20	100	20	100
	Iron	20	19 d	95	20	100
	Magnesium	20	20	100	20	100
	Manganese	20	20	100	20	100
	Potassium	20	20	100	20	100
Inorganics (mg/L):	Sodium	20	20	100	20	100
	Cyanide, Total	20	20	100	20	100
		3309	3162	0.955575703		

Notes:

Number of samples used in completeness calculations includes field duplicates but does not include equipment rinsate, field, or trip blanks.
Percent Contractural Compliance = (number of contract compliant results / Number of reported results)*100
Percent Technial Compliance = (Number of usable results / Number of reported results) * 100
a = Qualified due to low surrogate recoveries
b = Qualified due to low matrix spike/matrix spike duplicate recoveries
c = Qualified due to high field duplicate relative percent difference.
d = Qualified due to associated blank detection.
e = Qualified due to detection outside calibration limits.
f = Qualified due to potential laboratory contamination.
g= Qualified due to low CCV recoveries

RPS JDC

Appendix G

Analytical Data Results

0901119

Chain-of-Custody Record

Client: Western Refining Southwest Inc.
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email or Fax#: kelly.robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #:

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

On Ice: ☒ Yes ☐ No

Sample Temperature: 4

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. 0901119	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) + TPH-GRO, DRO	8270 (Semi-VOA) *	Gen Chemistry	Metals *	Cyanide *	NO_2/NO_3 *	Air Bubbles (Y or N)
1/8/9	1315	GW	MW-50	(6) VOAs	HCl	1										X						
				(1) Amber	NONE	1											X					
				(1) Poly	NONE	1												X				
				(3) Poly	HNO_3	1													X			
				(1) Poly	H_2SO_4	1															X	
				(1) Poly	NaOH	1														X		
1/8/9	1210		MW-52	(6) VOAs	HCl	2										X						
				(1) Amber	None	2											X					
				(1) Poly	None	2												X				
				(3) Poly	HNO_3	2													X			
				(1) Poly	H_2SO_4	2															X	
				(1) Poly	NaOH	2														X		

Date	Time	Relinquished by	Received by	Date	Time
1/8/9	1500	Kelly Robinson	To Fed Ex		
			[signature]	1/9/09	1035

Remarks: *Refer to Work Plan for Analyte List; Recall required DLs per Consent Order.

0901119

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email or Fax#: kelly.robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #: ——

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

On Ice: ☑ Yes ☐ No

Sample Temperature: 4

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. 0901119
1/8/9	1055	GW	MW-53			3
↓	↓	↓	↓			3
↓	↓	↓	↓			3
↓	↓	↓	↓			3
↓	↓	↓	↓			3
↓	↓	↓	↓			3
—	—	GW	TB			4

HEAL No.	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~~ 8260B	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH-GRO, DRO	8270 (Semi-VOA) *	Gen Chemistry *	Metals *	Cyanide *	NO_2/NO_3 *	Air Bubbles (Y or N)
3										X						
3											X					
3												X				
3													X			
3															X	
3														X		
4							X									

Date	Time	Relinquished by	Received by	Date	Time
1/8/9	1500	Kelly Robinson	To FedEx		
			[signature]	1/9/09	1030

Remarks: *Refer to Work Plan for Analyte list; Refer to Consent Order for DLs

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.

0901119

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email or Fax#: Kelly.robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush ____

Project Name: RCRA Investigation - Group 2

Project #: ____

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

On Ice: ☑ Yes ☐ No

Sample Temperature: 4

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. 0901119	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~~ 8260	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH-GRO,DRO	8270 (Semi-VOA) *	Gen. Chemistry *	Metals *	Cyanide *	NO_2/NO_3 *	Air Bubbles (Y or N)
1/8/9	1440	GW	MW-51	(6) VOAs	HCl	5										X						
				(1) Amber	None	5											X					
				(1) Poly	None	5												X				
				(3) Poly	HNO_3	5													X			
				(1) Poly	H_2SO_4	5															X	
				(1) Poly	NaOH	5														X		
			TB	(6) VOAs	HCl								X			X						
				~~(1) Amber~~	~~None~~												~~X~~					
				~~(1) Poly~~	~~None~~													~~X~~				
				~~(3) Poly~~	~~HNO_3~~														~~X~~			
				~~(1) Poly~~	~~H_2SO_4~~																~~X~~	
			(12)	~~(1) Poly~~	~~NaOH~~															~~X~~		

Date: 1/8/9 Time: 1500 Relinquished by: Kelly Robinson

Received by: To Fed Ex Date Time

Date: Time: Relinquished by:

Received by: [illegible] Date 1/9/09 Time 1035

Remarks: * Refer to Work Plan for Analyte List; Recall required DLs - Ask Andy (Per Consent Order)

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.

0901119

Chain-of-Custody Record

Client: Western Refining Southwest
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email or Fax#: Kelly.robinson@wnr.c

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

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

On Ice: ☒ Yes ☐ No

Sample Temperature: 4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0901119	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) +TPH-DRO/GRO	8270 (Semi-VOA) *	Gen Chemistry *	Metals *	Cyanide *	NO_2/NO_3 *	Air Bubbles (Y or N)
1/08/09	1250	GW	FB-010809	(6) VOAs		6										X						
1/08/09				(1) Amber		6											X					
				(1) Poly		6												X				
				(3) Poly		6													X			
				(1) Poly		6															X	
				(1) Poly		6														X		
	1400		EB-010809	(6) VOAs		7										X						
				(1) Amber		7											X					
				(1) Poly		7												X				
				(3) Poly		7													X			
				(1) Poly		7															X	
				(1) Poly		7														X		

Date	Time	Relinquished by	Received by	Date	Time
1/8/9	1500	Kelly Robinson	To Fed Ex		
			[signature]	1/9/09	1035

Remarks: * Refer to Work Plan for Analyte List; Note DLs per Consent Order

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.

0901132

Chain-of-Custody Record

Client: Western Refining Southwest Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM

Phone #: (505) 632-4166

email or Fax#: Kelly.robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

On Ice: ☑ Yes ☐ No

Sample Temperature: 3°

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0901132	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~~ 8260 only	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) ~~+TPH-GRO, DRO~~	8270 (Semi-VOA)*	Gen. Chemistry*	Metals*	Cyanide*	NO_2/NO_3*	Air Bubbles (Y or N)
1/08/09	16:30	GW	MW-54	(6) VOAs	HCl	1										X						
				(1) Amber	None	1											X					
				(1) Poly	None	1												X				
				(3) Poly	HNO_3	1													X			
				(1) Poly	H_2SO_4	1															X	
				(1) Poly	NaOH	1														X		
		GW	MW-54 (DUP)	(6) VOAs	HCl	2										X						
				(1) Amber	None	2											X					
				(1) Poly	None	2												X				
				(3) Poly	HNO_3	2													X			
				(1) Poly	H_2SO_4	2															X	
		~~GW~~	~~TB 8260 only~~	(1) Poly	NaOH	2														X		

Date	Time	Relinquished by:	Received by:	Date	Time
1/9/9	0800	Kelly Robinson	Bus		
			[signature]	1/9/09	16:00

Remarks: * Refer to Work Plan for Analyte list; Note low DLs required

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.

0902297

Chain-of-Custody Record

Client: Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email or Fax#: Krobinson@wnr.com

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

Turn-Around Time:
☐ Standard ☑ Rush 1-week if possible

Project Name: RCRA Investigation - Group 2 IDW

Project #: —

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

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. 0902297	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)	TCLP - Metals	TCLP - VOCs			Air Bubbles (Y or N)
2/26/09	1010	Soil	SWMU No. 2 - IDW	(2) - 4oz		1												X	X			
	1000		SWMU No. 18 - IDW	(2) - 4oz		2												X	X			
	1030		SWMU No. 8 - IDW	(2) - 4oz		3												X	X			
	1020		SWMU No. 9 - IDW	(2) - 4oz		4												X	X			

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/26/09	1400	Kelly Robinson	Gave to Andy	2/26/09	1400
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.

0810606

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield, NM
Phone #: (505) 632-4166
email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2
Project #: —
Project Manager: Kelly Robinson
Sampler: Kelly Robinson
On Ice: ☐ Yes ☐ No
Sample Temperature:

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. 0810606	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) + TPH-GRO/DRO	8270 (Semi-VOA)	Cyanide	Metals*	Gen Chemistry*	NO_2/NO_3	Air Bubbles (Y or N)
10/28/8	1615	GW	EB 102808	(6) VOAs	HCl	1										X						
				(1) Amber	None	1											X					
				(1) Poly	NaOH	1												X				
				(3) Poly	HNO_3	1													X			
				(1) Poly	None	1														X		
				(1) Poly	H_2SO_4	1															X	
10/28/8	1730	GW	MW-52	(6) VOAs	HCl	2										X						
				(1) Amber	None	2											X					
				(1) Poly	NaOH	2												X				
				(3) Poly	HNO_3	2													X			
				(1) Poly	None	2														X		
				(1) Poly	H_2SO_4	2															X	

Date	Time	Relinquished by	Received by	Date	Time
10/28/08	1500	Kelly Robinson	[signature]	10/30/08	10:15

Remarks:
* = Refer to Work Plan for analyte list.

Chain-of-Custody Record

0810606

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Western Refining Southwest Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield NM

Phone #: (505) 632-4166

email or ~~Fax~~#: Kelly.Robinson@Wnr.com

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

Turn-Around Time: ☐ Standard ☐ Rush

Project Name:

Project #:

Project Manager:

Sampler:

On Ice: ☑ Yes ☐ No

Sample Temperature: 4

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0810606	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~~ 8260	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH-DRO, GRO	8270 (Semi-VOA)	Metals *	Gen Chemistry *	NO_2 / NO_3 *	Cyanide	Air Bubbles (Y or N)
10/28/08	0600	GW	FB102808	(6) VOAS	HCl	3										X						
	1600			(3) Poly	HNO_3	3												X				
				(1) Amber	None	3											X					
				(1) Poly	None	3													X			
				(1) Poly	H_2SO_4	3														X		
				(1) Poly	NaOH	3															X	
—	—	GW	TB102808-2	~~(6)~~ (2) VOA	HCl	4							X									

Date	Time	Relinquished by	Received by	Time	Date
10/28/08	1500	Kelly Robinson	[signature]	10:15	10/30/08
Date:	Time:	Relinquished by:	Received by:	Time	Date

Remarks: * = Refer to Work Plan for analyte list.

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.

0810600

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Western Refining Southwest, Inc. Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM

Phone #: (505) 632-4166

email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation-Group 2

Project #:

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

On Ice: ☑ Yes ☐ No

Sample Temperature: 4

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0810600	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) + TPH-GRO,DRO*	8270 (Semi-VOA)*	Gen. Chemistry*	Metals*	Cyanide*	NO_2/NO_3*	Air Bubbles (Y or N)
10/28/08	1445	GW	MW-54	(6) VOAs	HCl	5										X						
↓	↓	↓	↓	(1) Amber	None	5											X					
				(1) Poly	None	5												X				
				(3) Poly	~~None~~ HNO_3	5													X			
				(1) Poly	H_2SO_4	5															X	
				(1) Poly	NaOH	5														X		
	1545	GW	MW-52	(6) VOAs	HCl	6										X						
	↓	↓	↓	(1) Amber	None	6											X					
				(1) Poly	None	6												X				
				(3) Poly	HNO_3	6													X			
				(1) Poly	H_2SO_4	6															X	
↓				(1) Poly	NaOH	6														X		

Date	Time	Relinquished by	Received by	Time	Date
10/29/08	1500	Kelly Robinson	[signature]	10:15	10/30/08

Remarks: * = Refer to Work Plan for analyte list.

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.

0810606

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield NM

Phone #: (505) 632-4166

email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

On Ice: ☐ Yes ☐ No

Sample Temperature:

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. 0810606	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)					Air Bubbles (Y or N)
—	—	GW	TB 102808-3	(2) VOA	HCl	7										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/28/08	1500	Kelly Robinson	[signature]	10/30/08	10:15
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.

0810580

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email ~~or Fax#:~~ Kelly.Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush ____

Project Name: RCRA Investigation - Group 2

Project #: ____

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

On Ice: ☑ Yes ☐ No

Sample Temperature:

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. 0810580	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) + TPH, DRO/GRO	8270 (Semi-VOA)	Metals *	Gen Chemistry *	NO_2/NO_3	Cyanide	Air Bubbles (Y or N)
10/28/08	1015	GW	MW-50	(6) VOAs	HCl	1										X						
↓	↓	↓	↓	(1) Amber	None	1											X					
				(2) Poly	HNO_3	1												X				
				(1) Poly	None	1													X			
				(1) Poly	H_2SO_4	1														X		
				(1) Poly	NaOH	1															X	
↓	1130	↓	MW-51	(6) VOAs	HCl	2										X						
	↓		↓	(1) Amber	None	2											X					
				(2) Poly	HNO_3	2												X				
				(1) Poly	None	2													X			
				(1) Poly	H_2SO_4	2														X		
				(1) Poly	NaOH	2															X	

Date	Time	Relinquished by	Received by	Date	Time
10/28/08	1500	Kelly Robinson	[signature]	10/29/08	9:30

Remarks:
* = Refer to Work Plan for analyte list.

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.

0810580

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Western Refining Southwest Inc

Bloomfield Refinery

Mailing Address: 50 Road 4990

Bloomfield, NM

Phone #: (505) 632-4166

email ~~or Fax#~~: ~~Krobinson~~ Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #: ——

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

On Ice: ☑ Yes ☐ No

Sample Temperature: 3°

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0810580	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) + TPH-DRO/GRO	8270 (Semi-VOA)	Metals *	Gen Chemistry *	NO_2/NO_3 *	Cyanide	Air Bubbles (Y or N)
10/28/8	1130	GW	MW-51 (DUP)	(6) VOAs	HCl	3										X						
				(1) Amber	None	3											X					
				(2) Poly	HNO_3	3												X				
				(1) Poly	None	3													X			
				(1) Poly	H_2SO_4	3														X		
				(1) Poly	NaOH	3															X	
—	—	GW	TB102808	(2) VOAs	HCl	4																

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/28/08	1500	Kelly Robinson	[signature]	10/29/08	9:30
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

* = Refer to Work Plan for analyte list.

0810370

Chain of-Custody Record

Client: Westem Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield NM

Phone #: (505) 632-4166

email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #:

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 5

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 0810370	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) +TPH-GRO/DRO	8270 (Semi-VOA)	Metals*	8260			Air Bubbles (Y or N)
10/15/08	1645	Soil	SWMU 18-2 (28-29)	(2) VIALS	MeOH	1										X						
↓	↓	↓	↓	(3) 4oz	None	1											X	X				
	1630	Soil	SWMU 18-2 (18-20)	(2) VIALS	MeOH	2										X						
↓		↓	↓	(3) 4oz	None	2											X	X				
↓	—	Water	TB-101508 (2)	(2) VOAs	HCl	3													X			
↓	—	Water	MeOH Blank-101508	(2) VIAL	MeOH	4													X			

Date:	Time:	Relinquished by:	~~Received by:~~	Date	Time
10/16/08	1500	Kelly Robinson	To UPS		

Date:	Time:	Relinquished by:	Received by:	Date	Time
				10/17/08	1130

Remarks: Refer to Work Plan for analyte list.

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.

Chain-of-Custody Record

Client: Western Refining
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield NM
Phone #: (505) 632-4166
email ~~or Fax#:~~ Kelly Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush ______

Project Name:
RCRA Investigation-Group 2

Project #:
______

Project Manager:
Kelly Robinson

Sampler: Tracy Payne
On Ice: ☑ Yes ☐ No
Sample Temperature: 0

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

0810075

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0810075	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) +TPH-GRO,DRO	8270 (Semi-VOA)	Gen Chemistry *	NO_2/NO_3	Cyanide	Metals *	Air Bubbles (Y or N)
10-01-08	1330	Water	EBW-100108	(6) VOAs	HCl	1										X						
↓	↓	↓	↓	(1) 1L	None	1											X					
				(1) 100ml	H_2SO_4	1													X			
				(1) 250ml	NaOH	1														X		
				(2) 500ml	HNO_3	1															X	
				(1) 1L	None	1												X				
10/1/8	1445	Water	FB-100108	(6) VOAs	HCl	2										X						
↓	↓	↓	↓	(1) 1L	None	2											X					
				(1) 100ml	H_2SO_4	2													X			
				(1) 250ml	NaOH	2														X		
				(2) 500ml	HNO_3	2															X	
				(1) 1L	None	2												X				

Date	Time	Relinquished by	Received by	Date	Time
10/2/08	1500	Kelly Robinson	To UPS		
			[signature]	10/3/08	1050

Remarks: Refer to Work Plan for analyte list.

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.

0810075

Chain-of-Custody Record

Client: Western Refining Southwest Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield NM

Phone #: (505) 632-4166

email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation-GROUP 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature:

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0810075	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~~ 8260 dil	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH-GRO, DRO	8270 (Semi-VOA)	Gen Chemistry*	NO_2/NO_3	Cyanide	Metals*	Air Bubbles (Y or N)
10/1/08	1400	Water	EBS-100108	(6) VOAs	HCl	3										X						
				(1) 1L	None	3											X					
				(1) 100ml	H_2SO_4	3													X			
				(1) 250ml	NaOH	3														X		
				(2) 500ml	HNO_3	3															X	
				(1) 1L	None	3												X				
—	—	Water	TB(3)-100108	(2) VOAs	HCl	4							X									

Date	Time	Relinquished by	Received by	Date	Time
10/2/08	1500	Kelly Robinson	TO UPS		
			[signature]	10/3/08	1030

Remarks: Refer to Work Plan for analyte list

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.

0810299

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush ______

Project Name: RCRA Investigation Group 2

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.3

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0810299	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)~~ Metals #	~~RCRA 8 Metals~~ NO_2/NO_3	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH-GRO, DRO	8270 (Semi-VOA)	Gen Chemistry*	Metals*	8260B	Cyanide	Air Bubbles (Y or N)
10/14/08	0915	Soil	Sump 8-6a (33-34)	(2) VIALs	MeOH	1										X						
↓	↓	↓	↓	(3) 4oz	None	1											X		X			
10/14/08	—	Water	MeOH Blank-101408	(1) VIAL	MeOH	2														X		
↓	—	↓	TB-101408	(2) VOAs	HCl	3														X		
	1400	~~Water~~	FB-101408	(6) VOAs	HCl	4										X						
				(1) 500ml	None	4												X				
				(1) 1L	None	4											X					
				(2) 500ml	H_2NO_3	4													X			
				(1) 200mL	NaOH	4															X	
				(1) 200ml	H_2SO_4	4							X									
↓	↓	↓	↓	(1) 200ml	HNO_3	4						X										

Date	Time	Relinquished by	Received by	Date	Time
10/14/08	1500	Kelly Robinson	[signature]	10/15/08	935

Remarks: Refer to Work Plan

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0810299

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Western Refining Southwest Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM

Phone #: (505) 632-4166

email ~~or Fax#:~~ Kelly.Robinson@wnr.com

QA/QC Package:

- ☐ Standard
- ☑ Level 4 (Full Validation)
- ☐ Other
- ☑ EDD (Type)

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation-Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler:

On Ice: ☒ Yes ☐ No

Sample Temperature: 3

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0810299	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~~ Cyanide	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH-GRO-DRO	8270 (Semi-VOA)	Gen Chemistry *	Metals *	Metals (filtered) *	NO_2/NO_3	Air Bubbles (Y or N)
10/14/08	1415	Water	EB-101408	(6) VOAs	HCl	5										X						
				(1) 1L	None	5											X					
				(1) 500ml	None	5												X				
				(2) 500ml	HNO_3	5													X			
				(1) 250ml	HNO_3	5														X		
				(1) 250ml	H_2SO_4	5															X	
				(1) 250ml	NaOH	5							X									

Date	Time	Relinquished by	Received by	Date	Time
10/14/08	1500	Kelly Robinson	To UPS		
			[signature]	10/15/08	935

Remarks: Refer to Work Plan

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.

0810326

Chain of Custody Record

Client: Western Refining Southwest Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush ______

Project Name: RCRA Investigation Group 2

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☒ Yes ☐ No

Sample Temperature: 1°

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. 0810326	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)~~ Gen Chem*	~~RCRA 8 Metals~~ NO_2/NO_3	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH-GRO/DRO	8270 (Semi-VOA)	Metals*	VOCs	Metals (filtered)*	Cyanide	Air Bubbles (Y or N)
10/15/08	1015	Soil	SWMU 2-6(13-14	(2) VIALS	MeOH	-1										X						
↓	↓	↓	↓	(3) 4oz	None	-1											X	X				
↓	—	Water	TB101508	(1) VOA	HCl	-3													X			
↓	—	MeOH	MeOH Blank-101508	(1) VIAL		-2													X			
10/15/08	1115	Water	FB-101508	(6) VOAs	HCl	-4										X						
				(1) 1L	None	-4											X					
				(2) 500ml	HNO_3	-4												X				
				(1) 250ml	HNO_3	-4														X		
				(1) 250ml	NaOH	-4															X	
				(1) 1L	None	-4					X											
↓	↓	↓	↓	(1) 250ml	H_2SO_4	-4							X									

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/15/08	1500	Kelly Robinson	To UPS		
Date:	Time:	Relinquished by:	Received by: [signature]	10/16/08	1020

Remarks: Refer to Work Plan for analyte list.

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.

Chain-of-Custody Record

0810326

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: Western Refining Southwest Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM

Phone #: (505) 632-4166

email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☒ Yes ☐ No

Sample Temperature: 7

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0810326	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) ~~TPH, GRO, DRO~~	8270 (Semi-VOA)	Metals *	Cyanide	Gen Chemistry *	NO_2/NO_3	Air Bubbles (Y or N)
10/15/08	1130	Water	EB-101508	(6) VOAs	HCl	-5										X						
↓	↓	↓	↓	(1) 1L	None	-5											X					
↓	↓	↓	↓	(2) 500mL	HNO_3	-5												X				
↓	↓	↓	↓	(1) 250mL	HNO_3	-5												X				
↓	↓	↓	↓	(1) 250mL	NaOH	-5													X			
↓	↓	↓	↓	(1) 1L	None	-5														X		
↓	↓	↓	↓	(1) 250mL	H_2SO_4	-5															X	

Date:	Time:	Relinquished by:	~~Received by:~~	Date	Time
10/15/08	1500	Kelly Robinson	To UPS		
Date:	Time:	Relinquished by:	Received by: [signature]	Date 10/16/08	Time 1020

Remarks: * Refer to Work Plan for full analyte list.

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.

0810022

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Western Refining Southwest, Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM

Phone #: (505) 632-4166

email or ~~Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☒ Yes ☐ No

Sample Temperature: 4

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0810022	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~~ Gen Chem*	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH-DRO, GRO	8270 (Semi-VOA)	Metals*	NO_2/NO_3	Cyanide	8260 only	Air Bubbles (Y or N)
9/30/08	1315 ~~1510~~	SOIL	SWMU 2-6 (13.5'-14')	(2) VIALS		1										X						
↓	↓	↓	↓	(2) Encore		1										X						
↓	↓	↓	↓	(2) 4oz		1											X	X				
↓	1430	Water	SWMU 2-6GW	(6) VOAs		2										X						
↓	↓	↓	↓	(1) 1L		2											X					
↓	↓	↓	↓	(2) 500ml	HNO_3	2												X				
↓	↓	↓	↓	(1) 250ml	H_2SO_4	2													X			
↓	↓	↓	↓	(1) 500ml	None	2							X									
↓	↓	↓	↓	(1) 200ml	NaOH	2														X		
9/30/08	—	Water	TB (3) -093008 ~~(2)-0930~~	(2) VOAs	HCl	3															X	
↓	—	MeOH	MeOH Blank (3)-093008	(1) VIAL	MeOH	4															X	

Date	Time	Relinquished by	Received by	Date	Time
10/1/08	1500	Kelly Robinson	~~Received by:~~ TO UPS		
			[signature]	10/2/08	10:25

Remarks: *Refer to Work Plan for analyte list.

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.

0810022

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield NM
Phone #: (505) 632-4166
email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 4°

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. 0810022	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) +TPH-DRO,GRO	8270 (Semi-VOA)	Gen Chemistry *	Cyanide	Metals *	NO_2/NO_3	Air Bubbles (Y or N)
9/30/08	1515	Water	EBW-093008	(6) VOAs	HCl	5										X						
				(1) 1L	None	5											X					
				(1) ~~1L~~ 500ml	None	5												X				
				(1) 250ml	NaOH	5													X			
				(2) 500ml	HNO_3	5														X		
				(1) 200ml	H_2~~NO_3~~SO_4	5															X	
9/30/08	1530	Water	FB-093008	(6) VOAs	HCl	6										X						
				(1) 1L	None	6											X					
				(1) 500ml	None	6												X				
				(1) 250ml	NaOH	6													X			
				(2) 500ml	HNO_3	6														X		
				(1) 200ml	H_2SO_4	6															X	

Date	Time	Relinquished by	Received by	Date	Time
10/1/08	1500	Kelly Robinson	To UPS		
			[signature]	10/2/08	10:25

Remarks:
* Refer to Work Plan for Analyte List.

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0810022

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield, NM
Phone #: (505) 632-4166
~~email or Fax#:~~ Kelly.Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne
On Ice: ☑ Yes ☐ No
Sample Temperature: 4

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. 0810022	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) + TPH-DRO, GRO	8270 (Semi-VOA)	Metals*	General Chemistry*	Cyanide	NO_2/NO_3	Air Bubbles (Y or N)
9/30/08	1545	Water	EBS-093008	(6) VOAs	HCl	7										X						
				(1) 1L	None	7											X					
				(2) 500ml	HNO_3	7												X				
				(1) 500ml	None	7													X			
				(1) 250ml	NaOH	7														X		
				(1) 200ml	H_2SO_4	7															X	
9/30/08	1630	Soil	SWMU 2-7 (13.5-14')	(2) VIALS	MeOH	8										X						
				(2) Encore	None	8										X						
				(2) 4oz		8											X	X				
10/01/08	—	—	MeOH Blank (1)-100108	(1) VIAL	MeOH	9										X						
	—	—	TB (1) -100108	(2) VOA	HCl	10										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/1/08	1500	Kelly Robinson	To UPS		
Date:	Time:	Relinquished by:	Received by:	Date	Time
				10/2/08	10:25

Remarks: * Refer to Work Plan for analyte list.

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0810022,

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield NM

Phone #: (505) 632-4166

email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 4

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. 0810022	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) + TPH Gro-DRO	8270 (Semi-VOA)	Metals *	Cyanide	NO_2/NO_3	Gen Chemistry	Air Bubbles (Y or N)
9/30/08	1315	Water	SWMU2-7GW	(6) VOAs	HCl	11										X						
↓	↓	↓	↓	(1) 1L	None	11											X					
				(2) 500ml	HNO_3	11												X				
				(1) 200ml	NaOH	11													X			
				(1) 200ml	H_2SO_4	11														X		
				(1) 1L	None	11															X	
10/1/08	0815	Soil	SWMU2-8 (13-13.5')	(2) VIALS	MeOH	12										X						
↓	↓	↓	↓	(2) Encore	None	12										X						
				(2) 4oz	↓	12											X	X				
10/1/08	1115	Soil	SWMU2-9 (13.5-14)	(2) VIALS	MeOH	13										X						
↓	↓	↓	↓	(2) Encore	None	13										X						
				(2) 4oz	↓	13											X	X				

Date	Time	Relinquished by	Received by	Date	Time
10/1/08	1500	Kelly Robinson	TOUPS		
			[signature]	10/2/08	10:25

Remarks: Refer to Work Plan for Analyte List.

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.

0810022

Chain-of-Custody Record

Client: Western Refining Southwest - Bloomfield Refinery

Mailing Address: 50 Road 4990

Phone #: (505) 632-4166

email ~~or Fax#~~: Kelly Robins

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other

☐ EDD (Type)

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #:

Project Manager:

Sampler:

On Ice: ☐ Yes ☐ No

Sample Temperature:

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. 0810022	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) + TPH-GRO/DRO	8270 (Semi-VOA)	Metals *	Cyanide	NO_2/NO_3 *	Gen Chemistry *	Air Bubbles (Y or N)
10/1/8	0915	Water	SWMU 2-BGW	(6) VOAs	HCl	14										X						
				(2) 500ml	HNO_3	14												X				
				KR ~~(1) 1L~~	~~None~~												~~X~~					
				(1) 250ml	NaOH	14													X			
				(1) 200ml	H_2SO_4	14														X		
				RR ~~(1) 500ml~~	~~None~~																~~X~~	

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/1/08	1500	Kelly Robinson	~~Received by:~~ To UPS		
Date:	Time:	Relinquished by:	Received by: [signature]	10/2/08	1025

Remarks: Refer to Work Plan for analyte list.

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.

0810022

Chain-of-Custody Record

Client: Western Refining Southwest Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield NM

Phone #: (505) 632-4166

email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 4

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. 0810022	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)	General Chemistry				Air Bubbles (Y or N)
10-1-08	915	Water	SWMU 2-8GW	(1) 1L	None	14											X					
↓	↓	↓	↓	(1) 500ml	None	14												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
10/1/08	1500	Kelly Robinson	UPS		
Date:	Time:	Relinquished by:	Received by: [signature]	10/2/08	10:25

Remarks: Refer to Work Plan for analyte list.

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.

0810002

Chain of-Custody Record

Client: Western Refining Southwest Inc

Bloomfield Refinery

Mailing Address: 50 Road 4990

Bloomfield NM

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other ______

☑ EDD (Type) ______

Turn-Around Time:

☑ Standard ☐ Rush ______

Project Name: RCRA Investigation-Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 3

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. 0810002	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) + TPH-DRO/GRO	8270 (Semi-VOA)	Metals*	Gen. Chemistry	Cyanide	NO_2/NO_3	Air Bubbles (Y or N)
9/29/08	1645	Water	SWM 2-3 GW	(6) VOCs	HCl	1										X						
				(1) 1L	None	1											X					
				(2) 125ml	HNO_3	1												X				
				(1) 250ml	None	1													X			
				(1) 100ml	NaOH	1														X		
				(1) 100ml	H_2SO_4	1															X	
	1700	Water	FB-092908	(6) VOAs	HCl	2										X						
				(1) 1L	None	2											X					
				(2) 125ml	HNO_3	2												X				
				(1) 250ml	None	2													X			
				(1) 100ml	NaOH	2														X		
				(1) 100ml	H_2SO_4	2															X	

Date	Time	Relinquished by	Received by	Date	Time
9/30/08	1500	Kelly Robinson	To UPS		
			[signature]	10/1/08	1050

Remarks: Refer to Work Plan

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.

0810002

Chain-of-Custody Record

Client: Western Refining Southwest Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield NM

Phone #: (505) 632-4164

email ~~or Fax#:~~ Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush ______

Project Name: RCRA Investigation Grp 2

Project #: ——

Project Manager: Kelly Robinson

Sampler:

On Ice: ☑ Yes ☐ No

Sample Temperature: 3

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. 0810002	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) + TPH - DRO/GRO	8270 (Semi-VOA)	8260	Metals *	Gen Chemistry	NO_2/NO_3	Air Bubbles (Y or N)
9/29/08	—	Water	TB(3)-092908	(2) VOAs	HCl	3												X				
9/29/08	1415	Soil	SWMU 2-2 (13.5-14.0')	(2) VIALS	MeOH	4										X						
↓	↓	↓	↓	(2) Encores	None	4										X						
↓	↓	↓	↓	(3) 4oz	↓	4											X		X			
↓	1445	Water	SWMU 2-2 GW	(6) VOAs	HCl	5										X						
↓	↓	↓	↓	(1) 1L	None	5											X					
↓	↓	↓	↓	(2) 250mL	HNO_3	5													X			
↓	↓	↓	↓	(1) 250mL	None	5														X		
↓	↓	↓	↓	(1) 100mL	H_2SO_4	5															X	
↓	1615	Soil	SWMU 2-3 (13.5-14')	(2) Vials	MeOH	6										X						
↓	↓	↓	↓	(2) Encores	None	6										X						
↓	↓	↓	↓	(2) 4oz	↓	6											X		X			

Date	Time	Relinquished by	Received by	Date	Time
9/30/08	1500	Kelly Robinson	~~Received by:~~ TO UPS		
			[signature]	10/1/08	1000

Remarks: *Refer to Work Plan for analyte list.

0810002

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email ~~or Fax#:~~ Kelly.Robinson@wnr.com

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other ______

☑ EDD (Type) ______

Turn-Around Time:

☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0810002	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)					Air Bubbles (Y or N)
9/29/08	—	Water	MeOH Blank (3)-092908	1 VIAL		7										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/30/08	1500	Kelly Robinson	To UPS		
Date:	Time:	Relinquished by:	Received by:	Date	Time
			[signature]	10/1/08	1050

Remarks:

Refer to Work Plan for analyte list

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.

0810002

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email ~~or Fax#~~: kelly.robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 3

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. 0810002	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~~ Gen Chem*	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH GRO, DRO	8270 (Semi-VOA)	Metals*	8260B only	Cyanide	NO_2/NO_3	Air Bubbles (Y or N)
9/30/08	0900	Soil	SWMU 2-4 (14-14.5')	(2) VIALS	MeOH	8										X						
↓	↓	↓	↓	(2) Encore	None	8										X						
↓	↓	↓	↓	(2) 4oz	↓	8											X	X				
↓	0900	Soil	SWMU 2-4 (14-14.5') DUP	(2) VIALS	MeOH	9										X						
↓	↓	↓	↓	(2) Encore	None	9										X						
↓	↓	↓	↓	(2) 4oz	↓	9											X	X				
9/30/08	—	Water	TB (1) - 093008	(2) VOAs	HCl	10													X			
9/30/08	—	MeOH	MeOH Blank (1) - 093008	(2) VIAL	—	11										X						
↓	1000	Water	SWMU 2-4 (GW)	(6) VOAs	HCl	12										X						
↓	↓	↓	↓	(1) 1LS	None	12											X					
↓	↓	↓	↓	(2) 500ml	HNO_3	12												X				
↓	↓	↓	↓	(1) 1L	None	12							X									

Date:	Time:	Relinquished by:	~~Received by:~~	Date	Time
9/30/08	1510	Kelly Robinson	To UPS		
Date:	Time:	Relinquished by:	Received by:	Date	Time
			[signature]	10/1/08	1050

Remarks:
* Refer to Work Plan for analyte list.

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.

0810002

Chain of Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #: ——

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0810002	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)	NO_2/NO_3	Cyanide			Air Bubbles (Y or N)
9/30/08	1100	Water	SWMU 2-40W	(1) 125ml	H_2SO_4	12												X				
↓	↓	↓	↓	(1) 250ml	NaOH	12													X			

Date:	Time:	Relinquished by:	~~Received by:~~	Date	Time
9/30/08	1500	Kelly Robinson	To UPS		
Date:	Time:	Relinquished by:	Received by:	Date	Time
				10/1/08	1050

Remarks: Refer to Work Plan

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.

0809036

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery
Address: 50 Road 4990

Phone #: (505) 632-4166
email or ~~Fax#:~~ Kelly. Robinson
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ______
☑ EDD (Type) ______

Turn-Around Time:
☑ Standard ☐ Rush
Project Name: RCRA Investigation - Group 2
Project #: ______
Project Manager: Kelly Robinson
Sampler: Tracy Payne
On Ice: ☑ Yes ☐ No
Sample Temperature: 4

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	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0809036	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8260)	~~8310 (PNA or PAH)~~ Nitrate/Nitrite	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH DRO GRO	8270 (Semi-VOA)	Metals *	8260 Only	General Chemistry *	Cyanide	Air Bubbles (Y or N)
9/28/08	1700	SWMU 9-1 (14.5-15.0')	(2) VIALS	MeOH	1										X						
↓	↓	↓	(2) Encores	None	1										X						
↓	↓	↓	(2) 4oz	↓	1											X					
↓	1715	SWMU 9-1 GW	(6) VOAS	HCl	2										X		X				
↓	↓	↓	(1) 250mL	None	2												X		X		
↓	↓	↓	(2) 250mL	HNO_3	2												X				
↓	↓	↓	(1) 150mL	NaOH	2															X	
↓	↓	↓	(1) 100mL	H_2SO_4	2							X									
↓	↓	↓	(1) 1L	None	2											X					
↓	1730	FB-092808	(6) VOAS	HCl	3										X						
↓	↓	↓	(1) 250mL	None	3														X		
↓	↓	↓	(2) 250mL	HNO_3	3												X				

Date: 9/29/08 Time: 1500 Relinquished by: Kelly Robinson ~~Received by:~~ To UPS

Date: Time: Relinquished by: Received by: [illegible] 10:25 9/30/08

Remarks: Refer to Work Plan for metals analyte list.

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.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: Western Refining Southwest
Bloomfield Refinery
Address: 50 Road 4990
Bloomfield, NM
Phone #:
email ~~or Fax#:~~ Kelly.Robinson
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type)

Turn-Around Time: ☑ Standard ☐ Rush
Project Name: RCRA Investigation - Group 2
Project #: —
Project Manager:
Sampler: Tracy Payne
On Ice: ☑ Yes ☐ No
Sample Temperature: 4

Date	Time	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0809036	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8260)	8310 (PNA or PAH)	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide	Nitrate/Nitrite			Air Bubbles (Y or N)
9/28/08	1730	FB-092808	(1) 150ml	NaOH	3												X				
↓	↓	↓	(1) 100ml	H_2SO_4	3													X			
↓	↓	↓	(1) L	None	3											X					
	~~1745~~	~~EB-092808~~																			

Date	Time	Relinquished by	Received by
9/29/08	1500		~~Received by:~~ To UPS
Date:	Time:	Relinquished by:	Received by: 10:25 9/30/08

Remarks: Refer to Work Plan for analyte list.

0809636

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Western Refining Southwest, Inc. Bloomfield Refinery

Address: 50 Road 4990 Bloomfield, NM

Phone #: (505) 632-4166

email or ~~Fax#~~: Kelly.Robinson@wnr.com

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other ______

☑ EDD (Type) ______

Turn-Around Time: ☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 4

Analysis Request

Date	Time	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0809634	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8260)	8310 (PNA or PAH)	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH	8270 (Semi-VOA)	Metals *	8260 only			Air Bubbles (Y or N)
9/28/08	1545	SWMU 9-1 (0-0.6')	(2) VIALs	MeOH	4										X						
↓	↓	↓	(2) Encore	None	4										X						
			(2) 4oz	None	4											X	X				
	—	TP 092808	(2) VOAs	HCl	5													X			
	—	MeOH Blk-092808	(1) VIAL	—	6													X			
	1600	SWMU 9-1 (1.5'-2.0')	(2) VIALs	MeOH	7										X						
	↓	↓	(2) Encore	None	7										X						
			(2) 4oz	None	7											X	X				
	1645	SWMU 9-1 (5-7.5')	(2) VIALs	MeOH	8										X						
	↓	↓	(2) Encore	None	8										X						
↓			(2) 4oz	↓	8											X	X				

Date:	Time:	Relinquished by:	~~Received by:~~
9/29/08	1500	Kelly Robinson	To UPS

Date:	Time:	Relinquished by:	Received by:
			[illegible] 1028 9/30/08

Remarks: Refer to Work Plan for analyte list.

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.

0809636

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield NM
Phone #: (505) 632-4166
email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2
Project #: —
Project Manager: Kelly Robinson
Sampler: Tracy Payne
On Ice: ☑ Yes ☐ No
Sample Temperature: 4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0809636	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)						Air Bubbles (Y or N)
9/29/08	—	Water	TB(2)-092908	(2) VOAs	HCl	~~10~~ 9 TJ 9/30/08										X							

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/29/08	1500	Kelly Robinson	UPS		
Date:	Time:	Relinquished by:	Received by:	Date	Time
			[signature]	9/30/08	10:25

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.

0809636

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: Western Refining Southwest Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield NM
Phone #: (505) 632-4166
email or ~~Fax#~~: Kelly.Robinson@wnr.com
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type)

Turn-Around Time: ☑ Standard ☐ Rush
Project Name: RCRA Investigation - Group 2
Project #: —
Project Manager: Kelly Robinson
Sampler: Tracy Payne
On Ice: ☑ Yes ☐ No
Sample Temperature: 4

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0809636	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) - TPH-GRO, DRO	8270 (Semi-VOA)	Cyanide	Gen. Chemistry *	Metals *	NO_2/NO_3	Air Bubbles (Y or N)
9/29/08	1230	Water	EBW (i) -092908	(6) VOAs	HCl	10										X						
	TJ 9/30/08			(1) 1L	None	10											X					
				(1) 100ml	NaOH	10												X				
				(1) 1L	None	10													X			
				(2) 250ml	HNO_3	10														X		
			TJ 9/30/08	(1) 100ml	H_2SO_4	10															X	
	1245	Water	~~EWS~~ B (i) -092908	(6) VOAs	HCl	11										X						
	TJ 9/30/08			(1) 1L	None	11											X					
				(1) 100ml	NaOH	11												X				
				(1) 1L	None	11													X			
				(2) 250ml	HNO_3	11														X		
				(1) 100ml	H_2SO_4	11															X	

Date	Time	Relinquished by:	Received by:	Date	Time
9/29/08	1500	Kelly Robinson	~~Received by:~~ To UPS		
			[signature]	9/30/08	10:28

Remarks: Refer to Work Plan for analyte list.

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.

0809636

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield NM

Phone #: (505) 632-4166

email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush ______

Project Name: RCRA Investigation-Group 2

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 4

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. 0809636	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)+TPH-GRO DRO	8270 (Semi-VOA)	Metals*	NO_2/NO_3	General Chemistry*	Cyanide	Air Bubbles (Y or N)
9/29/08	1130	Soil	SWMU 2-1 (15-15.5')	(2) VIAL	MeOH	12										X						
↓	↓	↓	↓	(2) Encore	None	12										X						
↓	↓	↓	↓	(3) 4oz	↓	12											X	X				
	—	MeOH	MeOH Blank (2)-092808	(1) VIAL	MeOH	13										X						
	1145	Water	SWMU 2 1 GW	(6) VOAs	HCl	14										X						
				(1) 1L	None	14											X					
				(2) ~~HNO3~~	HNO_3	14												X				
	↓	↓	↓	(1) 100mL	H_2SO_4	14													X			
				(1) 500mL	None	14														X		
↓	↓	↓	↓	(1) 200mL	NaOH	14															X	
9/28/08	1800	Water	EB092808	(1) 200mL	NaOH	15															X	
↓	↓	↓	↓	(1) 100mL	H_2SO_4	15													X			

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/29/08	1500	Kelly Robinson	UPS		
Date:	Time:	Relinquished by:	Received by: [signature]	10:25	9/30/08

Remarks:
*See Work Plan for analyte list.

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.

0809636

Chain-of-Custody Record

Client: Western Refining Southwest, Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0809636	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~~ 8260 Only	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH, GRO DRO	8270 (Semi-VOA)	Metals *	General Chemistry *	Cyanide	NO_2/NO_3	Air Bubbles (Y or N)
9/28/08	1800	Water	EB-092808	(6) VOAs	HCl	~~9~~ 15										X						
				(1) 1L	None	~~9~~ 15											X					
				(2) 250ml	HNO_3	~~9~~ 15	9/30/08											X				
				(1) 250ml	None	~~9~~ 15													X			
				(1) 150ml	NaOH	~~9~~ 15														X		
				(1) 100ml	H_2SO_4	~~9~~ 15															X	
			~~TB(2)092808~~	~~(2) VOAs~~	~~HCl~~								~~X~~									

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/29/08	1500	Kelly Robinson	~~Received by:~~ TG UPS		
			Received by: [signature]	9/30/08	10:25

Remarks: * Refer to Work Plan for full analyte list

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.

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

0809578

Client: Western Refining Southwest Inc. Bloomfield Refinery
Address: 50 Road 4990 Bloomfield, NM
Phone #: (505) 632-4166
email ~~or Fax#~~: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush
Project Name: RCRA Investigation - Group 2
Project #: —
Project Manager: Kelly Robinson
Sampler: Tracy Payne
On Ice: ☑ Yes ☐ No
Sample Temperature: 6°

Analysis Request

Date	Time	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0809578 AS 9/29 ~~0808485~~	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8260)	8310 (PNA or PAH)	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA) + TPH (DRO-GRO)	8270 (Semi-VOA)	Metals (See Remarks)				Air Bubbles (Y or N)
9/25/8	1345	SWMU 2-7 (0-0.5)	(1) VIAL	MeOH	1										X						
			(2) Encore	None	1										X						
			(1) 4oz		1											X					
			(1) 4oz		1												X				
9/25/08	1400	SWMU 2-7 (1.5-2.0)	(1) VIAL	MeOH	2										X						
			(2) Encore	None	2										X						
			(1) 4oz		2											X					
			(1) 4oz		2												X				
9/25/08	1430	SWMU 2-8 (0-0.5)	(1) VIAL	MeOH	3										X						
			(2) Encore	None	3										X						
			(1) 4oz		3											X					
			(1) 4oz		3												X				

Date:	Time:	Relinquished by:	Received by:	
9/26/08	1200	Kelly Robinson		9/26/08 1526
Date:	Time:	Relinquished by:	Received by:	

Remarks: Refer to Work Plan for metals analysis list.

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.

0809578

CHAIN-OF-CUSTODY RECORD

Client: Western Refining Bloomfield Refinery

Address: 50 Road 4990 Bloomfield, NM

Phone #: (505) 632-4166

~~Fax #:~~ Kelly.robinson@wnr.com

QA / QC Package: Std ☐ Level 4 ☑

Other:

Project Name: RCRA Investigation - Group 2

Project #: ——

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Sample Temperature: 6°

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

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative $HgCl_2$	Preservative HNO_3	Preservative	0809578 HEAL No. ~~0808485~~	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)					Air Bubbles or Headspace (Y or N)
9/25/08	1445	Soil	SWMU 2-8 (1.5-2.0)	(1) VIAL			MeOH	4											X						
				(2) Encore			None	4											X						
				(1) 4oz				4												X					
				(1) 4oz				4													X				
	1430	Soil	SWMU 2-8 (0-0.5) DUP	(1) VIAL			MeOH	5											X						
				(2) Encore			None	5											X						
				(1) 4oz				5												X					
								5													X				
9/25/08	1530	Soil	SWMU 2-9 (0-0.5)	(1) VIAL			MeOH	6											X						
				(2) Encore			None	6											X						
				(1) 4oz				6												X					
								6													X				

Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)
9/26/08	1200	Kelly Robinson	[signature] 9/26/08 1520
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)

Remarks:

0809578

CHAIN-OF-CUSTODY RECORD

Client: Western Refining Southwest, Bloomfield Refinery

Address: 50 Road 4990, Bloomfield, NM

Phone #: (505) 632-4166

~~Fax #:~~ Kelly.Robinson@wnr.com

QA / QC Package: Std ☐ Level 4 ☑

Other:

Project Name: RCRA Investigation

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Sample Temperature: 6°

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

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative $HgCl_2$	Preservative HNO_3	Preservative	HEAL No. 0809578 ~~0808485~~	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) + TPH (GRO, DRO)	8270 (Semi-VOA)	Metals (see Remarks)	8260 Only			Air Bubbles or Headspace (Y or N)
9/25/08	1545	Soil	SWMU 2-9 (1.5-2.0)	(1) VIAL			MeOH	7											X						
↓	↓	↓	↓	(2) Encore			None	7											X						
				(1) 4oz.				7												X					
				↓			↓	7													X				
9/25	1615	Water	FB~~E~~-092508	(5) VOAs			HCl	8											X						
↓	↓	↓	↓	(1) 1L			None	8												X					
				(2) 250mL			↓	8													X				
9/25/08	—	Water	TB (3)-092508	(2) VOAs				9														X			
9/25/08	—	—	MeOH Blank (3)-092508	(1) Vial			MeOH	~~9~~ 10											X						

Date	Time	Relinquished By: (Signature)	Received By: (Signature)
9/26/08	1200	Kelly Robinson	[signature] 9/26/08 1520

Remarks: Refer to Work Plan for Metals analyte list

0809578

CHAIN-OF-CUSTODY RECORD

Client: Western Refining
Bloomfield Refinery

Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

~~Fax #:~~ Kelly.Robinson@wnr.com

QA / QC Package: Std ☐ Level 4 ☑

Other:

Project Name: RCRA Investigation - Group 2

Project #: ——

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Sample Temperature: 6

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

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative: $HgCl_2$	Preservative: HNO_3	Preservative	HEAL No. 0809578 ~~0808485~~	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) + TPH (Lag DRO)	8270 (Semi-VOA)	Metals *	VOCs only 8260B			Air Bubbles or Headspace (Y or N)
1/26/08	0800	Sool	SWMU 18-1 (0-0.5')	1 Vial			MeOH	11											X						
				(2) Encore			None	11											X						
				(1) 4oz				11												X					
								11													X				
1/26/08	0815	Soil	SWMU 18-1 (1.5'-2.0')	1 VIAL			MeOH	12											X						
				(2) Encore			None	12											X						
				(1) 4oz				12												X					
								12													X				
1/26/08	0830	Soil	SWMU 18-2 (0-0.5')	1 Vial			MeOH	13											X						
				(2) Encore			None	13											X						
				(1) 4oz				13												X					
				(1) 4oz				13													X				

Date: 1/26/08 Time: 1200 Relinquished By: (Signature)

Received By: (Signature) 1/26/08 1526

Date: Time: Relinquished By: (Signature)

Received By: (Signature)

Remarks: Refer to Work Plan for Metals analyte list.

CHAIN-OF-CUSTODY RECORD

Client: Western Refining
Bloomfield Refinery

Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

~~Fax #~~: Kelly. Robinson @ Wnr.com

QA / QC Package: Std ☐ Level 4 ☑

Other:

Project Name: RCRA Investigation - Grp2

Project #: ______

Project Manager: Kelly Robinson

~~Sampler~~: Tracy Payne

Sample Temperature: 6°

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

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative $HgCl_2$	Preservative HNO_3	Preservative	0809578 or HEAL No. ~~0808485~~	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) + TPH - GRO, DRO	8270 (Semi-VOA)	Metals *	8260 only			Air Bubbles or Headspace (Y or N)
9/26/08	1000	Water	FB-092608	(5) VOA			HCl	14											X						
↓	↓	↓	↓	(2) 250mL		X		14													X				
↓	↓	↓	↓	(1) 1L.			None	14												X					
9/26/08	1015	SOIL	SWMU18-3(7.5-9)	(2) VIAL				15											X						
↓	↓	↓	↓	(2) Encore				15											X						
↓	↓	↓	↓	(1) 4oz				15												X					
↓	↓	↓	↓	(1) 4oz				15													X				
9/26/08	1015	SOIL	SWMU18-3(7.5-9) DUP	(2) VIAL				16											X						
↓	↓	↓	↓	(2) Encore				16											X						
↓	↓	↓	↓	(1) 4oz				16												X					
↓	↓	↓	↓	(1) 4oz				16													X				
9/26/08	—	Water	TB(2)-092608	(1) VOA			HCl	17														X			
9/26/08	—	MeOH	MeOH Blank(2)-092608	(1) VIAL			MeOH	18														X			

Date	Time	Relinquished By: (Signature)	Received By: (Signature)
9/26/08	1200	Kelly Robinson	[signature] 9/26/08 1502

Remarks: * = Refer to Work Plan for Metals analyte list

CHAIN-OF-CUSTODY RECORD

Client: Western Refining
Bloomfield Refinery

Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

~~Fax #:~~ Kelly.Robinson@wnr.com

QA / QC Package: Std ☐ Level 4 ☑

Other:

Project Name: RCRA Investigation-Group 2

Project #: ——

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Sample Temperature: 6

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Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
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ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative $HgCl_2$	Preservative HNO_3	Preservative	HEAL No. 0809578 ~~0808485~~	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) +TPH-GRO, DRO	8270 (Semi-VOA)	Metals *	8260 only			Air Bubbles or Headspace (Y or N)
9/26/08	0845	Soil	SWMU 18-2 (1.5-2.0')	(1) Vial			MeOH	19											X						
				(2) Encore			None	19											X						
				(1) 4oz				19												X					
				(1) 4oz				19													X				
9/26/08	0900	Soil	SWMU 18-3 (0-0.5')	(1) Vial			MeOH	20											X						
				(2) Encore			None	20											X						
				(1) 4oz				20												X					
								20													X				
	0915	Soil	SWMU 18-3 (1.5-2.0')	1 Vial			MeOH	21											X						
				(2) Encore			None	21											X						
				(1) 4oz				21												X					
								21													X				

Date: 9/26/08 Time: 1200 Relinquished By: (Signature) Kelly Robinson

Received By: (Signature) 9/26/08 1520

Date: Time: Relinquished By: (Signature)

Received By: (Signature)

Remarks:
* = Refer to Work Plan for Metals analyte List.

0809578

CHAIN-OF-CUSTODY RECORD

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Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

QA / QC Package: Std ☐ Level 4 ☑

Other:

Client: Western Refining Bloomfield Refinery

Address: 50 Road 4990 Bloomfield, NM

Phone #: (505) 632-4166

~~Fax #:~~ Kelly.Robinson@wnr.com

Project Name: RCRA Investigation Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Sample Temperature:

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative HgCl$_2$	Preservative HNO$_3$	Preservative	HEAL No. 0809578 ~~0808465~~	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) + TPH-GRO/DRO	8270 (Semi-VOA)	Metals *	8260 only			Air Bubbles or Headspace (Y or N)
9/26/08	1100	Soil	SWMU 18-4 (0-0.5')	(1) Vial			MeOH	22											X						
↓	↓	↓	↓	(2) Encore			None	22											X						
↓	↓	↓	↓	(1) 4oz			↓	22												X					
↓	↓	↓	↓	↓			↓	22													X				
↓	1115	Soil	SWMU 18-4 (1.5-2.0')	(1) Vial			MeOH	23											X						
↓	↓	↓	↓	(2) Encore			None	23											X						
↓	↓	↓	↓	(1) 4oz			↓	23												X					
↓	↓	↓	↓	(1) 4oz			↓	23													X				
↓	—	Water	TB(3) 092608					24														X			
↓	—	↓	MeOH Blank(3) 092608	1 Vial				25														X			
9/26/08	1130	Water	EB-092608	(6) VOAS			HCl	26											X						
↓	↓	↓	↓	(1) 1L. (2) 250mL			None HNO$_3$	26												X	X				

Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)
9/26/08	1200	Kelly Robinson	9/26/08 1500
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)

Remarks:
* = Refer to Work Plan for specific Metals analyte list.

0809553

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email or ~~Fax#~~: Kelly.robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - GROUP 2

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 6

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. 0809553	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) TPH-GRO, DRO	8270 (Semi-VOA)	Metals (see Remarks)	Air Bubbles (Y or N)
/25/08	0900	Soil	SWMU 2-2 (1.5-2.0')	(1) VIAL	~~Soil~~ MeOH	1										X			
↓	↓	↓	↓	(2) Encore	None	1										X			
↓	↓	↓	↓	(1) 4oz	↓	1											X		
↓	↓	↓	↓	(1) 4oz	↓	1												X	
/25/08	0930	Soil	SWMU 2-3 (0-0.5')	(1) VIAL	~~Soil~~ MeOH	2										X			
↓	↓	↓	↓	(2) Encore	None	2										X			
↓	↓	↓	↓	(1) 4oz	↓	2											X		
↓	↓	↓	↓	↓	↓	2												X	
/25/08	0930	Soil	SWMU 2-3 (0-0.5') DUP	(1) VIAL	~~Soil~~ MeOH	3										X			
↓	↓	↓	↓	(2) Encore	None	3										X			
↓	↓	↓	↓	(1) 4oz	↓	3											X		
↓	↓	↓	↓	↓	↓	3												X	

Date	Time	Relinquished by	Received by	Date	Time
/25/08	1500	Kelly Robinson	UPS		
			[signature]	9/26/08	10:30

Remarks: Refer to Work Plan for Metals analyte list

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.

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 Southwest, Inc.
Bloomfield Refinery

Address: 50 Road 4990

Phone #: (505) 632-4166

~~Fax #~~: Kelly.Robinson@wnr.com

Project Name: RCRA Investigation - Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Sample Temperature: 6°

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative $HgCl_2$	Preservative HNO_3	Preservative	HEAL No. 0809553
9/25/8	0815	Soil	SWMU 2-1 (0.-0.5')	(1) VIAL			MeOH	4
				(2) Encore			None	4
				(1) 4oz			None	4
				(1) 4oz			None	4
/25/08	0830	Soil	SWMU 2-1 (1.5-2.0')	(1) VIAL			MeOH	5
				(2) Encore			None	5
				(1) 4oz			None	5
				(1) 4oz			None	5
25/08	0845	SOIL	SWMU 2-2 (0-0.5')	(1) VIAL			MeOH	6
				(2) Encore			None	6
				(1) 4oz			None	6
				(1) 4oz			None	6

ANALYSIS REQUEST

HEAL No.	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) + TPH-GRO, DRO	8270 (Semi-VOA)	8260B only	Metals (see Remarks)			Air Bubbles or Headspace (Y or N)
4											X						
4											X						
4												X					
4														X			
5											X						
5											X						
5												X					
5														X			
6											X						
6											X						
6												X					
6														X			

Date	Time	Relinquished By: (Signature)	Received By: (Signature)
9/25/08	1500	Kelly Robinson	to UPS
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature) 10:30 9/26/08

Remarks: Refer to Work Plan for metals analyte list.

0809553

CHAIN-OF-CUSTODY RECORD

Client: Western Refining Southwest Inc
Bloomfield Refinery

Address: 50 Road 4990
Bloomfield NM

Phone #: (505) 632-4166
~~Fax #:~~ Kelly.Robinson@wnr.com

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

Project Name:
RCRA Investigation - Group 2

Project #:

Project Manager:
Kelly Robinson

Sampler: Tracy Payne

Sample Temperature: 6°

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

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative $HgCl_2$	Preservative HNO_3	Preservative	HEAL No. 0809553	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) + TPH-GRO, DRO	8270 (Semi-VOA)	Metals (See Remarks)	°			Air Bubbles or Headspace (Y or N)
9/25/08	1015	Soil	SWMU 2-4 (1.5-2.0')	(1) VIAL			MeOH	7											X						
↓	↓	↓	↓	(2) Encore			None	7											X						
↓	↓	↓	↓	(1) 4oz			↓	7												X					
↓	↓	↓	↓	↓			↓	7													X				
9/25/08	1030	Soil	SWMU 2-5 (0-0.5')	(1) VIAL			MeOH	8											X						
↓	↓	↓	↓	(2) Encore			None	8											X						
↓	↓	↓	↓	(1) 4oz			↓	8												X					
↓	↓	↓	↓	(1) 4oz			↓	8													X				
x	1045	Soil	SWMU 2-5 (1.5-2.0')	(1) VIAL			MeOH	9											X						
↓	↓	↓	↓	(2) Encore			None	9											X						
↓	↓	↓	↓	(1) 4oz			↓	9												X					
↓	↓	↓	↓	(1) 4oz			↓	9													X				

Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)
9/26/08	1500	to UPS	[signature] 1030 9/26/08
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)

Remarks: Refer to Work Plan for metals analyte list.

0809553

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Client: Western Refining Southwest, Inc. Bloomfield Refinery

Mailing Address: ~~50~~ Road 4990 Bloomfield, NM

Phone #: (505) 632-4166

email ~~or Fax#~~: kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #: ←

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 6

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0809553	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) + TPH-GRO, DRO	8270 (Semi-VOA)	Metals (see Remarks)	8260 only			Air Bubbles (Y or N)
9/25/08	0945	Soil	SWMU 2-3 (1.5-2.0')	(1) VIAL	MeOH	10										X						
↓	↓	↓	↓	(2) Encore	None	10										X						
				(1) 4oz	↓	10											X					
				(1) 4oz.		10												X				
	1000	Soil	SWMU ~~2-3~~ 2-4 (0-0.5')	(1) VIAL	MeOH	11										X						
	↓	↓	↓	(2) Encore	None	11										X						
				(1) 4oz	↓	11											X					
				↓		11												X				
	—	Water	TB - 092508	VOA (2)	HCl	12													X			
↓	—	Water	MeOH Blank	VIAL (1)	—	13													X			

Date	Time	Relinquished by	Received by	Date	Time
9/25/08	1500	Kelly Robinson	~~Received by:~~ To UPS		
			[signature]	9/26/08	10:30

Remarks: Refer to Work Plan for Metals Analyte List.

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0809553

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: Western Refining
Bloomfield Refinery
Address: 50 Road 4990
Bloomfield NM
Phone #: (505) 632-4166
email or Fax#: Kelly.robinson@wnr.c

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

Turn-Around Time: ☑ Standard ☐ Rush
Project Name: RCRA Investigation Group 2
Project #: —
Project Manager: Kelly Robinson
Sampler: Tracy Payne
On Ice: ☐ Yes ☐ No
Sample Temperature: 6

Analysis Request

Date	Time	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0809553	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8260)	8310 (PNA or PAH)	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)+TPH GRO, DRO	8270 (Semi-VOA)	Metals (See Requests)	8260 Only			Air Bubbles (Y or N)
9/24/08	1430	Swmu 8-12 (37-38.5')	1 VIAL	MeOH	14										X						
↓	↓	↓	(2) Encore		14										X						
			(1) 4oz		14											X					
			↓		14												X				
↓	1500	FB-092408	1 L	None	15											X					
	↓	↓	(6) Voas	HCl	15										X						
			250mL	None	15												X				
	1530	EB-092408	1 L	None	16											X					
	↓	↓	(5) VOAs	HCL	16										X						
↓	↓	↓	(2) 250mL		16												X				
9/24	—	TB2-092508	(2) VOAs		21													X			

Date	Time	Relinquished by	Received by
9/25/08	1500	Kelly Robinson	~~Received by:~~ To UPS
Date:	Time:	Relinquished by:	Received by: 10:30 9/26/08

Remarks: Refer to Work Plan for metals analyte list

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.

Cooler #7

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield NM
Phone #: (505) 632-4166
email ~~or Fax#~~: Kelly.Robinson@wnr.com
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush
Project Name: RCRA Investigation-Group 2
Project #: —
Project Manager: Kelly Robinson
Sampler: Tracy Payne
On Ice: ☑ Yes ☐ No
Sample Temperature: 6

0809553

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. 0809553	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) + TPH-GRO DRO	8270 (Semi-VOA)	Metals (See Remarks)	8260 only			Air Bubbles (Y or N)
9/25/08	1100	Water	EB1-092508	(6) VOAS	HCl	17										X						
				(1) 1L	None	17											X					
				(2) 250mL	HNO_3	17												X				
9/25/08	1130	Soil	SWMU 2-6 (0-0.5')	(1) VIAL	MeOH	18										X						
				(2) Encore	None	18										X						
				(1) 4oz	None	18											X					
						18												X				
9/25/08	1145	Soil	SWMU 2-6 (1.5-2.0')	(1) VIAL	MeOH	19										X						
				(2) Encore	None	19										X						
				(1) 4oz		19											X					
						19												X				
9/25/08	—	Water	Method Blank 2-092508	1 Vial	—	20													X			

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/25/08	1500	Kelly Robinson	UPS TO		
Date:	Time:	Relinquished by:	Received by:	Date	Time
				9/26/08	1030

Remarks: Refer to Work Plan for Metals analyte list.

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.

0809448

Chain-of-Custody Record

Client: Western Refining Southwest, Inc - Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM

Phone #: 505-632-4166

email or Fax#: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush ____

Project Name: RCRA Investigation - Group 2

Project #:

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 3

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	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)+TPH (DRO, GRO)	8270 (Semi-VOA)	Metals (See Remark)				Air Bubbles (Y or N)
9/23/08	1100	SOIL	SWMU 8-5 (0-0.5')	(1) VOA	MeOH	0809448-1										X						
	1100			(2) Encore	None	-1										X						
	1100			(1) 4oz	None	-1											X					
	1100			(1) 4oz	None	-1												X				
9/23/08	1115	SOIL	SWMU 8-5 (1.5-2.0')	(1) VOA	MeOH	-2										X						
				(2) Encore	None	-2										X						
				(1) 4oz	None	-2											X					
				(1) 4oz	None	-2												X				
9/23/08	1145	SOIL	SWMU 8-6 (0-0.5')	(1) VOA	MeOH	-3										X						
				(2) Encore	None	-3										X						
				(1) 4oz	None	-3											X					
				(1) 4oz	None	-3												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/23/08	1930	Kelly Robinson	AD	9/24/08	8:10
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Refer to Consent Order for Analyte List

0809448

Chain-of-Custody Record

Client: Western Refining Southwest, Inc, Bloomfield Refinery

Mailing Address: 50 Road 4990

Phone #: 505-632-4166

email or Fax#: Kelly.Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	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)	Metals (See Remarks)				Air Bubbles (Y or N)
9/23/08	1330	Soil	SWMU 8-7 (1.5-2.0)	VOA	MeOH	0809448-4			X							X						
↓	↓	↓	↓	(2) Encore	None	-4										X						
↓	↓	↓	↓	(1) 4oz	None	-4											X					
↓	↓	↓	↓	(1) 4oz	None	-4												X				
9/23/08	1400	Soil	SWMU 8-8 (0-0.5')	VOA	MeOH	-5			X							X						
↓	↓	↓	↓	(2) Encore	None	-5										X						
↓	↓	↓	↓	(1) 4oz	None	-5											X					
↓	↓	↓	↓	(1) 4oz	None	-5												X				
9/23/08	1415	Soil	SWMU 8-8 (1.5-2')	VOA	MeOH	-6			X							X						
↓	↓	↓	↓	(2) Encore	None	-6										X						
↓	↓	↓	↓	(1) 4oz	None	-6											X					
↓	↓	↓	↓	(1) 4oz	None	-6												X				

Date	Time	Relinquished by	Received by	Date	Time
9/23/08	1930	Kelly Robinson	[signature]	9/24/08	8:10
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Refer to Consent Order for list of metals analytes.

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.

0809448

Chain-of-Custody Record

Client: Western Refining Southwest, Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: 505-632-4166

email or Fax#: Kelly.Robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation Group 2

Project #: ——

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☑ Yes ☐ No

Sample Temperature: 3

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.	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) + TPH (DRO/GRO)	8270 (Semi-VOA)	Metals (See Remarks)				Air Bubbles (Y or N)
9/23/08	1145	SOIL	SWMU 8-6 (0-0.5')-DUP	VOA	MeOH	0809448-7										X						
↓	↓	↓	↓	(2) Encore	None	-7										X						
↓	↓	↓	↓	(1) 4oz	None	-7											X					
↓	↓	↓	↓	(1) 4oz	None	-7												X				
9/23/08	1315	SOIL	SWMU 8-7 (0-0.5')	VOA	MeOH	-8										X						
↓	↓	↓	↓	(2) Encore	None	-8										X						
↓	↓	↓	↓	(1) 4oz	None	-8											X					
↓	↓	↓	↓	(1) 4oz	None	-8												X				
9/22/08	1215	SOIL	SWMU 8-6 (1.5-2.0')	(1) VOA	MeOH	-9										X						
↓	↓	↓	↓	(2) Encore	None	-9										X						
↓	↓	↓	↓	(1) 4oz	None	-9											X					
↓	↓	↓	↓	(1) 4oz	None	-9												X				

Date: 9/23/08 Time: 1930 Relinquished by: Kelly Robinson

Received by: [signature] Date 9/24/08 Time 8:10

Date: Time: Relinquished by:

Received by: Date Time

Remarks: Refer to Consent Order for Metals List

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.

0809448

CHAIN-OF-CUSTODY RECORD

Client: Western Refining
Bloomfield Refinery

Address: 50 Road 4990
Bloomfield, NM

Phone #: ~~1002~~ 505-632-4166

~~Fax #:~~ ~~Kert~~ Kelly.robinson@wnr.com

QA / QC Package: Std ☐ Level 4 ☑

Other: ______

Project Name: RCRA Investigation Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Sample Temperature: 3°

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

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative $HgCl_2$	Preservative HNO_3	Preservative	HEAL No.	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) + TPH DRO/GRO	8270 (Semi-VOA)	Metals (See Remarks)					Air Bubbles or Headspace (Y or N)
9/23/08	1515	Soil	SWMU 8-9 (0-0.5)	1 VOA			MeOH	0809448-10											X							
↓	↓	↓	↓	4oz. (1)			None	-10													X					
↓	↓	↓	↓	(1) 4oz			None	-10												X						
↓	↓	↓	↓	(2) Encore			None	-10											X							
9/23/08	1515	Soil	SWMU 8-9 (0-0.5')-DUP	1 VOA			MeOH	-11											X							
↓	↓	↓	↓	(1) 4oz			None	-11												X						
↓	↓	↓	↓	(1) 4oz			None	-11													X					
↓	↓	↓	↓	(2) Encore			None	-11											X							
9/23/08	1530	Soil	SWMU 8-9 (1.5'-2.0)	1 VOA			MeOH	-12											X							
↓	↓	↓	↓	(1) 4oz			None	-12												X						
↓	↓	↓	↓	(1) 4oz			None	-12													X					
↓	↓	↓	↓	(2) Encore			None	-12											X							

Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)
1/23/08	1930	Kelly Robinson	[signature] 8:10 9/24/08
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)

Remarks: Refer to ~~Consent Order~~ Work Plan for metals analyte list.

0809448

CHAIN-OF-CUSTODY RECORD

Client: Western Refining Bloomfield Refinery

Address: 50 Road 4990 Bloomfield, NM

Phone #: 505-632-4166

~~Fax #:~~ Kelly.Robinson@wnr.com

QA / QC Package: Std ☐ Level 4 ☑

Other:

Project Name: RCRA Investigation - Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Sample Temperature: 3°

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

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative: $HgCl_2$	Preservative: HNO_3	Preservative	HEAL No.	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) + TPH (GRO, DRO)	8270 (Semi-VOA)	Metals (See Remarks)				Air Bubbles or Headspace (Y or N)
7/23/08	1545	Soil	SWMU 8-10 (0-0.5')	(1) VOA			MeOH	0809448-13											X						
				(2) Encore			None	-13											X						
				(1) 4oz			None	-13												X					
				(1) 4oz			None	-13													X				
7/23/08	1600	Soil	SWMU 8-10 (1.5-2.0')	(1) VOA			MeOH	-14											X						
				(2) Encore			None	-14											X						
				(1) 4oz				-14												X					
				(1) 4oz				-14													X				
	1610	Soil	SWMU 8-11 (0-0.5')	(1) VOA			MeOH	-15											X						
				(2) Encore			None	-15											X						
				(1) 4oz				-15												X					
				(1) 4oz				-15													X				

Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)
7/23/08	1930	Kelly Robinson	8:10 7/24/08
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)

Remarks: Refer to Work Plan for full analyte list of metals.

CHAIN-OF-CUSTODY RECORD

0809448

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
Bloomfield Refinery

Address: 50 Road 4990
Bloomfield, NM

Phone #: 505-632-4166

~~Fax #:~~ kelly.robinson@wnr.com

QA/QC Package: Std ☐ Level 4 ☑

Other:

Project Name: RCRA Investigation - Group 2

Project #:

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Sample Temperature: 3°

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative: HgCl$_2$	Preservative: HNO$_3$	Preservative	HEAL No.
9/28/08	1620	Soil	SWMU 8-11 (1.5-2.0')	(1) VOA			MeOH	0809448-16
↓	↓	↓	↓	(2) Encore			None	-16
↓	↓	↓	↓	(1) 4oz			↓	-16
↓	↓	↓	↓	(1) 4oz			↓	-16
9/28/08	1630	Soil	SWMU 8-12 (0-0.5')	(1) Voa			MeOH	-17
↓	↓	↓	↓	(2) Encore			None	-17
↓	↓	↓	↓	(1) 4oz			↓	-17
↓	↓	↓	↓	(1) 4oz			↓	-17
9/28/08	1645	Soil	SWMU 8-12 (1.5-2.0')	(1) VOA			MeOH	-18
↓	↓	↓	↓	(2) Encore			None	-18
↓	↓	↓	↓	(1) 4oz			↓	-18
↓	↓	↓	↓	(1) 4oz			↓	-18

ANALYSIS REQUEST

HEAL No.	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) + TPH (DRO, GRO)	8270 (Semi-VOA)	Metals (See Remarks)				Air Bubbles or Headspace (Y or N)
0809448-16											X						
-16											X						
-16												X					
-16													X				
-17											X						
-17											X						
-17												X					
-17													X				
-18											X						
-18											X						
-18												X					
-18													X				

Date	Time	Relinquished By: (Signature)	Received By: (Signature)
9/23/08	1930	Kelly Robinson	[signature] 8:10 9/24/08
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)

Remarks: Full metals analyte list included in Work Plan.

0809448

CHAIN-OF-CUSTODY RECORD

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 Bloomfield Refinery

Address: 50 Road 4990 Bloomfield NM

Phone #: 505-632-4166

~~Fax #:~~ Kelly.Robinson@wnr.com

QA / QC Package: Std ☐ Level 4 ☑

Other:

Project Name: RCRA Investigation-Group 2

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Sample Temperature: 3°

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative HgCl2	Preservative HNO3	Preservative	HEAL No.
9/23/07	1715	Water	EB2-092308	(6) VOAs			HCl	0809448-19
↓	↓	↓	↓	(1) 1 L.			None	-19
				(2) 250mL			HNO_3	-19
9/28/05	—	—	Trip Blank	(3) Voas			HCl	0809448-20
9/28/05	—	MeOH	MeOH Blank	1 Vial			—	-21

ANALYSIS REQUEST

Sample	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) + TPH (DRO, GRO)	8270 (Semi-VOA)	Metals (see Remarks)	8260 Only			Air Bubbles or Headspace (Y or N)
EB2-092308 (6) VOAs											X						
EB2-092308 (1) 1 L.												X					
EB2-092308 (2) 250mL													X				
Trip Blank											~~X~~			X			
MeOH Blank														X			

Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)
9/28/08	1945	Kelly Robinson	[signature] 8:10 9/24/08
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)

Remarks: Refer to Work Plan for metals analyte list.

0809448

Chain-of-Custody Record

Client: Western Refining Southwest Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM

Phone #: 505-632-4166

email or Fax#: Kelly.robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #:

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice: ☒ Yes ☐ No

Sample Temperature: 3

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.	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)					Air Bubbles (Y or N)
9/23/08	—	GW	MeOH Blank	1 VOA	MeOH	0809448-22										X						
9/23/08	—	GW	Trip Blank	3 VOAs	HCl	-23										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/23/08	1930	Kelly Robinson	[signature]	9/24/08	8:10
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.

0809448

Chain-of-Custody Record

Client: Western Refining Southwest, Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990

Phone #: 505-632-4166
email or Fax#: Kelly.Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #:

Project Manager: Kelly Robinson

Sampler: Tracy Payne
On Ice: ☒ Yes ☐ No
Sample Temperature: 3

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.	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)	See Remarks				Air Bubbles (Y or N)
09/23/08	14:30	water	EB 092308	VOA (6)	HCL	0809444-24			X							X						
↓	↓	↓	↓	1 liter (1)	None	-24											X					
				250mL (2)	HNO3	-24												X				
09/23/08	14:45	↓	FB 092308	VOA (5)	HCL	-25			X							X						
↓	↓		↓	1 liter (1)	None	-25											X					
				250ml (2)	HNO3	-25												X				
9/23/08	—	—	Trip blank	VOA (3)	HCL	-26										X						
9/23/08	—	—	MeOH blank	Vial (1)	—	-27										X						

Date: 9/23/08	Time: 1930	Relinquished by: Kelly Robinson	Received by: [signature]	Date 9/24/08	Time 8:10
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See Site Investigation workplan for metals list + attached list

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.

Chain-of-Custody Record

Client: Western Refining Southwest, Inc.
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: 505-632-4166

email or Fax#: Kelly.Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #:

Project Manager: Kelly Robinson

Sampler:

On Ice: ☑ Yes ☐ No

Sample Temperature: 5

HALL ENVIRONMENTAL ANALYSIS LABORATORY

0809453

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. 0809453	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) + Encores	8270 (Semi-VOA)	Metals (See Remark)				Air Bubbles (Y or N)
9/23/8	~~0915~~ 0930	SOIL	SWMU 8-2 (1.5'-2.0')	40mL VOA	Methanol	1										X						
↓	↓	↓	↓	(2) Encore	None	1										X						
↓	↓	↓	↓	(1) 4oz	None	1											X					
↓	↓	↓	↓	(1) 4oz	None	1												X				
9/23/8	0945	SOIL	SWMU 8-3 (0-0.5')	40mL VOA	Methanol	2										X						
↓	↓	↓	↓	(2) Encore	None	2										X						
↓	↓	↓	↓	(1) 4oz	None	2											X					
↓	↓	↓	↓	(1) 4oz	None	2												X				
9/23/8	1000	SOIL	SWMU 8-3 (1.5'-2.0')	40mL VOAs	Methanol	3										X						
↓	↓	↓	↓	(2) Encore	None	3										X						
↓	↓	↓	↓	(1) ~~40~~ 4oz	None	3											X					
↓	↓	↓	↓	(1) 4 oz	None	3												X				

Date	Time	Relinquished by	Received by	Date	Time
9/23/08	1500	Kelly Robinson	To Fed Ex		
			[signature]	9/24/08	1102

Remarks: Refer to Consent Order for Specific Analyte Lists.
Per Kelly client wants gro/dro analysis. TJ

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.

0809453

Chain-of-Custody Record

Client: Western Refining Southwest, Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990

Phone #: 505-632-4166
email or Fax#: Kelly.robinson@wnr.com

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

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 2

Project #:

Project Manager: Kelly Robinson

Sampler:
On Ice: ☑ Yes ☐ No
Sample Temperature: 5

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. 0809453	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) and Encore	8270 (Semi-VOA)	Metals (see remarks)	SVOCs (8270)			Air Bubbles (Y or N)
9/23/8	0815	Soil	SWMU 8-1 (0-0.5')	40mL VOA	Methanol	4										X						
↓	↓	↓	↓	Encore (2)	None	4										X						
				4oz (1)	None	4												X				
				4oz (1)	None	4													X			
9/23/8	0830	Soil	SWMU 8-1 (1.5-2.0')	40mL VOA	Methanol	5										X						
↓	↓	↓	↓	Encore (2)	None	5										X						
				(1) - 4oz	None	5											X					
				(1) - 4oz	None	5												X				
9/23/08	0915	Soil	SWMU 8-2 (0-0.5')	40mL VOA	Methanol	6										X						
↓	↓	↓	↓	(2) Encore	None	6										X						
				(1) 4oz	None	6											X					
				(1) 4oz	None	6												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/23/08	1530	Kelly Robinson	~~Received by:~~ To Fed Ex		
Date:	Time:	Relinquished by:	Received by:	9/24/08	1102

Remarks: Refer to Consent Order for specific analyte lists
Per Kelly client wants gro/dro to be analyzed TI.

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.

0809453

Chain-of-Custody Record

Client: Western Refining Southwest, Inc.
Bloomfield Refinery

Mailing Address: 50 Road 4990

Phone #: 505-632-4166

email or Fax#: Kelly.Robinson@wnr.com

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

Turn-Around Time:
☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 2

Project #:

Project Manager: Kelly Robinson

Sampler:

On Ice: ☑ Yes ☐ No

Sample Temperature: 5

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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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. 0809453	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) + Encore	8270 (Semi-VOA)	Metals (See Remarks)				Air Bubbles (Y or N)
9/23/08	1015	SOIL	SWMU 8-4 (0-0.5')	40mL VOA	MeOH	7										X						
				(2) Encore	None	7										X						
				(1) 4oz	None	7											X					
				(1) 4oz	None	7												X				
9/23/08	1030	SOIL	SWMU 8-4 (1.5-2.0)	40mL VOA	MeOH	8										X						
				(2) Encore	None	8										X						
				(1) 4oz	None	8											X					
				(1) 4oz	None	8												X				
9/23/08	—	GW	TB	3 VOAs	HCl	9										X	.					
9/23/08	—	GW	MeOH Blank	1 VOA	MeOH	10										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/28/08	1500	Kelly Robinson	to Fed Ex		
Date:	Time:	Relinquished by:	Received by:	Date	Time
				9/24/08	1102

Remarks: Refer to Consent Order for Metals Analyte List

Per Kelly client wants gro/dro to be analyzed. T

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.