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Western Refining
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August 15, 2014

Glen Von Gonten
Environmental Engineer
New Mexico Energy, Minerals & Natural Resources Dept.
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505

UPS Tracking # (OCD Santa Fe):
UPS Tracking # (OCD Aztec):

RE: Request for Closure
Former Bloomfield Crude Station

Dear Mr. Von Gonten;

Western Refining is requesting Site Closure and a determination of No Further Action for the Former Bloomfield Crude Station located in the NW ¼ of the NW ¼ of Section 22, Township 29 North, Range 11 West in Bloomfield, New Mexico. As part of this closure request, Western is requesting permission to permanently cease bioventing operations, plug and abandon all injection and monitoring points, and decommission the remediation system.

If you should have any questions or require additional information, please do not hesitate to contact me at 505-632-4166 or at Kelly.robinson@wnr.com.

Sincerely,

Kelly Robinson

Kelly Robinson
Environmental Manager
Western Refining Southwest, Inc.

cc: Brandon Powell, NM OCD Aztec District Office
Randy Schmaltz, Western Refining, Bloomfield
Allen Haines, Western Refining, El Paso
WNR File

BLOOMFIELD CRUDE STATION
CLOSURE REQUEST

BLOOMFIELD, NEW MEXICO

Western Refining Southwest, Inc.
111 County Road 4990
Bloomfield, NM 87413

AUGUST 2014

LT ENVIRONMENTAL, INC.
2243 Main Avenue, Suite 3
Durango, Colorado 81301

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EXECUTIVE SUMMARY

Western Refining Southwest, Inc. ("Western") is requesting site closure and a determination of no further action for the Former Bloomfield Crude Station. This report provides a summary of the history of the facility and the efforts put forth in remediation of impacted soil and groundwater at the Bloomfield Crude Station (Site) over the past 10 years.

The Site was originally leased for oil exploration and production on September 6, 1929. Since that time, the Site has been owned and leased by several companies who have operated various process units and tanks on or near the Site, including refining operations. In 1994, the Site operated as a crude oil storage facility and contained several buildings and tanks, including one 55,000-barrel tank identified as Tank 967-D used to store crude oil. Tank 967-D was constructed in 1956 and used until 1991. In association with the removal of Tank 967-D in 1994, samples indicated the presence of petroleum hydrocarbons in the soil at the Site. Historic use of the Site for storage of petroleum hydrocarbons resulted in impacts to subsurface soil and groundwater. Additionally, during demolition of Tank 967-D, surface soil was impacted by lead due to flaking of lead-based paint and petroleum hydrocarbons due to loss of tank integrity. Lead and petroleum hydrocarbon impacts to soil at the Site have been remediated to the most practical extent via excavation and bioventing; petroleum hydrocarbon impacts to groundwater at the Site have been remediated via air sparging and natural attenuation.

Following over 10 years of remediation efforts, Western is requesting site closure. Current concentrations of petroleum hydrocarbons sourced from the Site have been reduced to below or near acceptable standards in soil and groundwater. Petroleum hydrocarbons significantly exceeding appropriate standards are located offsite and are unrelated to the historical releases from Tank 967-D. Additional groundwater parameters of concern the result of chemical processes associated with ongoing natural attenuation of petroleum hydrocarbons or related to poor water quality of the local shallow aquifer.

1.0 INTRODUCTION

Western Refining Southwest, Inc. ("Western") is requesting site closure and a determination of no further action for the Former Bloomfield Crude Station. This report provides a summary of the history of the facility and the efforts put forth in remediation of impacted soil and groundwater at the Bloomfield Crude Station (Site) over the past 10 years.

1.1 SITE LOCATION AND BACKGROUND

The Site is located in the northwest quarter of the northwest quarter of Section 22, Township 29 North, and Range 11 West in San Juan County, New Mexico, as depicted on Figure 1. The fenced and locked Site is in a mixed residential and industrial area within the limits of the City of Bloomfield, New Mexico. Water for potable uses near the Site is supplied by the City of Bloomfield. According to the New Mexico Office of the State Engineer, the nearest down gradient water well is over 1,800 feet down gradient of the Site.

The Site was originally leased for oil exploration and production on September 6, 1929. Since that time, the Site has been owned and leased by several companies who have operated various process units and tanks on or near the Site, including refining operations. These companies include, but are not limited to Aerex Refining, Plateau Refining, Shell Oil Company, El Paso Products, Malco, Clayton Investment of Thriftway Marketing, Giant Industries Arizona, Inc. (Giant), and the current owner, Western. In 1994, the Site operated as a crude oil storage facility under ownership of Giant. The Site contained several buildings and tanks, including one 55,000 barrel tank identified as Tank 967-D used to store crude oil (Figure 2). Tank 967-D was constructed in 1956 and used until 1991.

Over the history of this area, at least four historical oil exploration and production wells are known to have been drilled within approximately 500 feet of the Site. According to the New Mexico Oil Conservation Division (NMOCD) records, these wells are identified as Bishop #1, Bishop #3, Hare #1, and Kittell #1 (Figure 2). It is important to note that the public records for these wells in the NMOCD database are sparse and no latitude or longitude coordinates are available. The Bishop #3 well was drilled in 1925 for oil production and abandoned in approximately 1953. In 1982, the cement plugs were reset in the abandoned well. The Hare #1 well was spudded in 1941 and completed in 1942. In approximately 1980, the well was plugged and abandoned. No additional records were available for the Bishop #1 or the Kittell #1 wells. Appendix A is a map obtained from NMOCD records depicting the approximate locations of the Bishop #1, Bishop #3, Hare #1, and Kittell #1 wells. The Aerex Refinery, which operated from approximately 1931 to possibly the early 1960's, was formerly located east of the Site, immediately across Fifth Street. This facility has since been demolished and the property remains vacant. Vacant land, residential apartments, and houses are located around the Site.

2.0 SITE HISTORY

In 1994, hydrocarbons were identified in the subsurface soils within the vacuity of Tank 967-D. Subsequent, several investigations were performed to delineate the impacts to groundwater and subsurface soils within the vicinity of Tank 967-D. The following is a brief summary of the previously performed investigation activities.

2.1 RELEASES

On March 15, 1994, in association with the removal of Tank 967-D, a backhoe excavated to a depth of approximately 12 feet below ground surface (bgs) on the east side of the Tank 967-D. The results from soil samples collected from the excavation area confirmed the presence of petroleum hydrocarbon impacted soil in the vicinity of Tank 967-D.

On December 12, 1995, during cleaning activities, Tank 967-D caught fire and caused flaking of lead-based paint chips and release of tank bottom materials to surface soil. Subsequent soil sample results confirmed the presence of lead and petroleum hydrocarbon impacted soil at the ground surface in the vicinity of Tank 967-D.

2.2 INVESTIGATIONS

Investigations were conducted in multiple phases for both the petroleum hydrocarbon impacts to subsurface soil and groundwater in addition to the lead and petroleum hydrocarbon impacts to surface soil at the Site.

2.2.1 Petroleum Hydrocarbons in Subsurface Soil and Groundwater

2.2.1.1 Initial Site Assessment

The *Initial Site Assessment and Characterization Plan* dated May 9, 1994 summarizes the results of an initial site assessment of subsurface impacts prior to loss of Tank 967-D. Soil samples were collected from a pothole excavated on the east side of Tank 967-D on March 15, 1994, and analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency (USEPA) Method 8020 and fuel hydrocarbons carbon range (C) C6 to C10 (gasoline range organics (GRO)), fuel hydrocarbons C10 to C22 (diesel range organics (DRO)), and fuel hydrocarbons C22 to C36 (motor oil range organics (MRO)) by EPA Method 8015. Sample 1 and Sample 2 on Figure 3 represent the approximate location of where the pothole samples were collected. The pothole extended to a total depth of approximately 12 feet bgs. A summary of the analytical and field data collected at these locations is provided in Table 1.

Sample results indicated the presence of petroleum hydrocarbons in the subsurface soil at the Site to a depth of approximately 12 feet bgs (Table 1). On March 29, 1994, verification of the impacts was made by field screening four soil samples from 0.5 feet to 3 feet bgs within the area of the pothole using a photo-ionization detector (PID). Field screening results are included in Table 1.

2.2.1.2 Site Assessment – Phase 1

Based on the findings of the initial site assessment, Giant initiated a more detailed site characterization of subsurface impacts. The *Site Assessment and Proposed Action Plan for the Bloomfield Crude Station* dated January 1995 summarizes Phase 1 of the site characterization and the initial site assessment.

In September 1994, the first phase of the site characterization was conducted. Site characterization activities included drilling and sampling of eight soil borings (SB1 through SB8) and installation and sampling of four groundwater monitoring wells (MW-1 through MW-4). The soil boring and monitoring wells were installed within the vicinity of Tank 967-D (Refer to Figure 3 and Figure 4). Soil samples were field screened with a PID. The soil sample from each soil boring with the highest PID reading was sent to Analytical Technologies, Incorporated, for analysis of GRO (C6-C12) and DRO (C12-C30, C32, C34). Analytical results of the soil samples are summarized in Table 1. The sample results confirmed the presence of total petroleum hydrocarbons (TPH), specifically GRO and DRO at depths from 5 feet bgs to 17 feet bgs at concentrations ranging from 48 milligrams per kilograms (mg/kg) to 8,100 mg/kg. The highest concentrations of TPH were identified in SB4 and SB5, located west and north of Tank 967-D at depths of 16.5 feet to 17 feet bgs, respectively.

Lithology at the Site was determined to be very coarse, dry sand from ground surface extending to depths between 4 feet to 10 feet bgs, at which depth, a moist, clayey sand to sandy clay unit was identified. This clayey sand to sandy clay unit extended to depths between 19 feet to 21 feet bgs and contained sand layers ranging from 2 inches to 8 inches thick, which were usually saturated. It appears these sand layers transmitted groundwater beneath the Site. Beneath the clayey sand to sandy clay unit, a coarse, well graded, wet sand unit was observed. The extent of the wet sand unit was documented as approximately 22 feet to 27 feet bgs at which depth a clay unit was encountered in the borings that extended to those depths. The petroleum hydrocarbon impact to soil was concentrated primarily in the sandy clays or clayey sands, at depths ranging from 3.5 feet to 20 feet bgs.

Monitoring well MW-1 was screened from 3.5 feet to 13.5 feet bgs, MW-2 and MW-3 were both screened from 3.7 feet to 18.7 feet bgs, and MW-4 was screened from 21.3 feet to 26.3 feet bgs. Water level measurements collected on October 31, 1994, indicated 0.11 feet of free product was present in MW-2. The potentiometric elevation of MW-2 was corrected to address the free product and groundwater flow direction was determined to be to the southwest. The potentiometric elevation of MW-4 was not used for determining the groundwater flow direction because it was believed to be screened in a lower saturated unit. Groundwater samples collected on October 31, 1994, from MW-2, MW-3, and MW-4 were analyzed for purgeable halocarbons and aromatics by EPA Method 601/602; polynuclear aromatic hydrocarbons (PAHs) by EPA Method 610; total petroleum hydrocarbons by EPA Method 8015 modified; 13 priority pollutant metals (silver, arsenic, beryllium, cadmium, chromium, copper, mercury, nickel, lead, antimony, selenium, thallium, and zinc); and general chemistry including pH, conductivity, total dissolved solids (TDS), alkalinity, bicarbonate, carbonate, hydroxide, sodium absorption ratio, chloride, sulfate, calcium, magnesium, potassium and sodium. MW-1 was not sampled on October 31, 1994, due to insufficient volume of water in the well. The groundwater sampling results are summarized in Tables 2 through 6.

Groundwater analytical results indicated the presence of BTEX impacts to groundwater in MW-2 and MW-4. In addition, MW-2 had detectable concentrations of TPH, chromium, copper, zinc, and the following PAHs: naphthalene, fluorene, phenanthrene, fluoranthene, chrysene, 1-methylnapthalene, and 2-methylnapthalene. Notable detections of general chemistry parameters included elevated concentrations of TDS in MW-2 (3,049 milligrams per liter (mg/L)), MW-3 (3,413 mg/L), and MW-4 (4,389 mg/L). Elevated concentrations of chloride were detected in MW-2 (1,050 mg/L); and elevated concentrations of sulfate in MW-3 (1,920 mg/L) and MW-4 (2,470 mg/L). Overall general chemistry results indicated the groundwater at the Site was not suitable for use as a domestic supply due to naturally occurring elevated concentrations of TDS and sulfate, specifically in MW-3, up gradient of the Site.

2.2.1.3 Site Assessment – Phase 2

To further investigation the lateral extent of impacted soil and groundwater at the Site, additional investigation activities were conducted (Phase 2). The results of Phase 2 are included in the *Site Assessment for the Bloomfield Crude Station Report* dated May 1995.

Soils Assessment

In April 1995, four soil borings (SB-9 through SB-12) were drilled on site, nine soil borings were drilled offsite (SB-13 through SB-21). Refer to figure 3 for approximate boring locations. In addition, one groundwater monitoring well (MW-5) was installed offsite (Figure 4). Soil samples collected from SB-9 through SB-21 were field screened with a PID for the presence of petroleum hydrocarbons in lieu of collection of soil samples for analytical laboratory analysis. Field headspace screening of soils from SB-9, SB-13, SB-14, SB-19, SB-20, and SB-21 indicate the petroleum hydrocarbon impacts did not extend to these borings. Field headspace screening of soils from SB-10, SB-11, SB-12, SB-15, SB-16, SB-17, and SB-18 detected the presence of petroleum hydrocarbon impacts.

Based on field documentation, the petroleum hydrocarbon impacts were observed from a minimum depth of 9 feet bgs in SB-12 to a maximum depth of 20 feet bgs in SB-16. Overall, the petroleum hydrocarbon impacted soil zone became thinner and deeper the further away from Tank 967-D. Results of the highest detected PID readings from each boring are summarized in Table 1 and Figure 3.

Groundwater Assessment

A discussion regarding the screened intervals of MW-1 compared to MW-4 was provided. According to the report, the screened interval of MW-1 was selected to avoid a clay layer present at 15 feet that may have been confining hydrocarbons to the shallow soil at the Site; MW-4 was screened in a sand unit approximately 10 feet deeper than the screened interval of MW-1 to assess whether hydrocarbons had impacted groundwater beneath the clay layer present in between the screened intervals of MW-1 and MW-4. The shallower screened interval of MW-1 resulted in this monitoring well lacking sufficient water for purging and sampling. MW-1 was not sampled during Phase 1 or Phase 2 of the Site Characterization.

Groundwater monitoring wells MW-2 through MW-5 were monitored and sampled in May 1995. Water level gauging indicated 0.47 feet of free product was present in MW-2, and groundwater flow direction was to the southwest. Groundwater samples from MW-2 through MW-5 were

analyzed for BTEX, TPH, pH, conductivity, TDS, SAR, alkalinity, hardness, carbonate, bicarbonate, hydroxide, chloride, sulfate, calcium, magnesium, potassium, and sodium. Analytical results of groundwater samples indicated the presence of BTEX and TPH impacts to the groundwater in MW-2. General chemistry results were similar to the results of the September 1994 sampling event and chloride, TDS, and sulfate concentrations in MW-5 were elevated. Results are summarized in Tables 2 through 4 and Table 6.

2.2.1.4 Tank Fire Investigations

On December 12, 1995, Tank 967-D caught fire during tank cleaning activities. The fire resulted in soil impacts of lead-based paint chips from the tank exterior, and tank bottom material. Impact from the fire was addressed through April 1996, which included general clean-up, removal of the lead chips and hydrocarbon impacted soils, and removal Tank 967-D. Closure of the tank fire clean-up and lead impacts as a result of the tank fire were granted by NMOCD on June 21, 1999.

2.2.1.5 Additional Site Investigations

On November 3, 1995, a *Remedial Action Work Plan* was submitted pursuant to an earlier request made by NMOCD. The Work Plan proposed installation of a bioventing system to remediate hydrocarbon impacted soil at the Site. On December 8, 1995, NMOCD approved the Work Plan with conditions. The conditions included submittal of a work plan for an additional monitoring well, additional groundwater sampling, submission of annual reports, and submittal of the biovent system pilot test with final design proposal by March 1996.

Due to the clean-up efforts completed between 1996 and 1999 as a result of the tank fire, Giant submitted the *Work Plan for the Giant Bloomfield Crude Station* on September 27, 2999. The Work Plan included a request to re-evaluate the remedial strategies best suited for the Bloomfield Crude Station. NMOCD approved the Work Plan on October 29, 1999 and requested that Giant submit a comprehensive report of the Site.

Giant submitted to NMOCD the *Comprehensive Report for the Bloomfield Crude Station* dated January 2000. The Report detailed the past and current investigations completed, and indentified the remedial alternatives for hydrocarbon source removal as excavation of the soil in the vicinity of MW-2 and beneath the tank pad. On May 19, 2000, NMOCD issued conditional approval of the proposed work plan, requesting installation of two additional groundwater monitoring wells (MW-6 and MW-7). This work was conducted in August 2000 and included abandonment of MW-1.

According to the report titled *Monitoring Well Installation, Ground Water Sampling and Bioventing Pilot Test, Bloomfield Crude Station, Bloomfield, New Mexico* dated July 2001, MW-6 and MW-7 were installed on May 17, 2001. Petroleum hydrocarbon odor was observed in MW-7 at a depth of 25 feet bgs. In May, 2001, MW-3, MW-4, MW-5, MW-6, and MW-7 were sampled; MW-2 was not sampled due to the presence of free product on the water table. Results indicated BTEX was not detected in MW-3, MW-4, or MW-5 above the laboratory detection limit; however benzene in MW-6 and MW-7 and total xylenes in MW-7 were detected in excess of the New Mexico Water Quality Control Commission (NMWQCC) groundwater standards

(Table 3 and Figure 4). Groundwater flow direction was determined to be to the southwest, placing MW-7 cross gradient of former Tank 967-D and excavation and within the vicinity of historical operations with likely use of unlined pits; therefore, the BTEX in MW-7 was attributed to a separate source. Based on results of the investigation, Giant requested installation of a bioventing system.

The bioventing system was installed on October 4, 2002. The *Annual Report, Bloomfield Crude Station, Bloomfield, New Mexico* dated March 2004 summarizes the installation of the bioventing system. Soil samples were field screened with a PID at 3-foot intervals during installation of the bioventing injection points (IP) and monitoring points (MP) (Figure 5). The eight soil samples with highest field screening concentrations (MW11, IP16, MP8, IP12, IP7, MP3, MP7, and IP10) at depths ranging from 6 feet bgs to 12 feet bgs were submitted to Pinnacle Laboratories for analysis of BTEX and TPH. Analytical results indicated the highest concentration of BTEX was in MP11 at 12 feet bgs (44.70 mg/kg) and the highest concentration of TPH was in IP16 at 9 feet bgs (5,690 mg/kg). There was no BTEX detected in MP8 and IP12 and no TPH was detected in MP8. Field screening data and laboratory analytical results are summarized in Table 7.

2.3 REMEDIATION

Remediation has been conducted on petroleum hydrocarbon impacts to subsurface soil and groundwater, and petroleum hydrocarbon and lead impacts to surface soil. The NMOCD has previously approved closure of the remediation of lead impacts to surface soil.

2.3.1 Petroleum Hydrocarbons in Subsurface Soil and Groundwater

Petroleum hydrocarbon impacts to subsurface soil have been remediated by excavation and bioventing. In January 2000, a *Comprehensive Report of the Site* was submitted to NMOCD in which excavation and offsite disposal of petroleum hydrocarbon impacted soil combined with free product recovery from the water table was selected as the remedial alternative to address the petroleum hydrocarbon impacts at the Site. On May 19, 2000, NMOCD approved this remedial alternative.

During August 2000, approximately 12,924 cubic yards of hydrocarbon impacted soil were excavated from the Site and disposed in the Giant landfarm south of Bloomfield, New Mexico (Figure 3). The excavation was partially left open to allow for recovery of free product from the water table. Based on the large volume of hydrocarbon impacted soil removed, excavation activities ceased and bioventing was proposed to complete the remediation at the Site.

On February 7, 2001, NMOCD approved the proposal for the bioventing pilot test, which was conducted between June 20 and June 26, 2001. The NMOCD approved the bioventing pilot test results and requested a work plan for proposed bioventing remediation system on June 13, 2002. The bioventing work plan was submitted to NMOCD on August 9, 2002, and approved by NMOCD on December 9, 2002. Installation of the bioventing system began on October 4, 2002, and the system began operating on February 17, 2003, and is still in operation today.

The petroleum hydrocarbon impacts to groundwater have been addressed by free product recovery, air sparging, and natural attenuation. Free product recovery from the open excavation began in August 2000 and ceased in 2001, when the excavation was backfilled completely. Free

product recovery from MW-2 began in May 1995 and continued until August 2004. Free product has not been detected at the Site since August 2004.

In October 2006, an air sparging well (SW-2) was installed adjacent to MW-2 to expedite remediation of elevated BTEX concentrations in this area. The air sparging well operated until January 2007, at which time the BTEX concentrations in MW-2 had declined by 92 percent (%) during the four months of operation. By 2010, eight consecutive quarters of groundwater samples were below NMWQCC standards for BTEX in MW-2 (Table 3).

2.3.2 Petroleum Hydrocarbons and Lead in Surface Soil

Between March 7 and July 24, 1996, lead and petroleum hydrocarbon impacted surface soil was excavated and disposed of offsite. A report recommending site closure for the lead impacts to surface soil was submitted to NMOCD on April 28, 1999, and approved by NMOCD on June 21, 1999.

3.0 CURRENT STATUS

The concentrations of petroleum hydrocarbons in soil and groundwater have been significantly reduced since remediation began at the Site. The following provides a summary of the remedial progress at the Site over the past 10 years.

3.1 SOIL

As part of the bioventing plan, soil has been monitored regularly to assess concentrations of BTEX and TPH. By comparing the initial TPH and BTEX concentrations obtained from soil samples collected during bioventing system installation to the most recent soil samples collected in April 2012, TPH concentrations in MP11, IP16, MP8, IP12, IP7, MP3, MP7, and IP10 have decreased by 91% to 99% at the Site due to the bioventing activities. During the April 2012 sampling event, TPH at IP-12 was less than 139.2 mg/kg; no other sample results exceeded the NMOCD standard of 100 mg/kg TPH (Table 7). The initial sampling results indicated low concentrations of total BTEX in the soil, which have subsequently declined as a direct result of the bioventing activities. No BTEX concentrations have exceeded the laboratory method detection limit in any soil sample since April 2009 (Table 7).

3.2 GROUNDWATER

Groundwater sampling was conducted in 1994, 1995, 1999, and annually between 2001 and 2012. Groundwater flow direction was to the southwest during the earliest monitoring events in 1994 through 2006 (Figure 4). After 2006, groundwater flow direction began shifting to the south/southwest. During the 2011 and 2012 monitoring events, groundwater flow direction has been generally to the south. The most recent groundwater sampling event occurred in January 2012 and a potentiometric surface map is depicted on Figure 6. Historical groundwater flow direction data place MW-7 crossgradient of former Tank 967-D and the excavation.

Laboratory analytical results from the January 2012 groundwater sampling event indicate BTEX concentrations in all monitoring wells have declined to concentrations compliant with NMWQCC standards except for benzene and total xylenes in MW-7 (Refer to Table 3, Figures 7, and Figure 8). The benzene concentration in MW-7 was 62 micrograms per liter (µg/L) and the total xylenes concentration was 3,500 µg/L. Additionally, MW-7 contained 640 µg/L of ethylbenzene. Monitoring well MW-6 contained 61 µg/L of ethylbenzene and 220 µg/L of total xylenes. The concentrations at MW-6 did not exceed NMWQCC standards. No other monitoring wells contained detectable concentrations of BTEX.

Concentrations of iron and manganese exceed the NMWQCC standard in all existing monitoring wells including upgradient monitoring well MW-3. Concentrations of sulfate and TDS exceed the NMWQCC standard in all existing monitoring wells except MW-7. The concentration of chloride in MW-5 exceeds the NMWQCC standard; and the concentration of barium in MW-7 exceeds the NMWQCC standard (Table 2).

4.0 BASIS FOR CLOSURE

Western is requesting NMOCD approval for Site Closure for Western is an appropriate consideration based on the success of soil and groundwater remediation. Current concentrations of petroleum hydrocarbons sourced from the Site have been reduced to below or near acceptable standards in soil and groundwater as a direct result of over 10 years of remediation efforts. Remaining petroleum hydrocarbon concentrations significantly exceeding appropriate standards are unrelated to Western's activities at the Site. Additional groundwater parameters of concern are the result of chemical processes associated with ongoing natural attenuation of petroleum hydrocarbons, or related to poor water quality of the local shallow aquifer.

4.1 SOIL

Excavation of 12,924 cubic yards of hydrocarbon impacted soil from the Site effectively removed the majority of the mass of petroleum hydrocarbons in subsurface soil at the Site, and removed the source of the petroleum hydrocarbons to groundwater. This is evident by the absence of free product in MW-2 within 28 months of completion of the excavation activities.

A bioventing system was installed to deliver oxygen to the subsurface and address residual hydrocarbon impacts to soil. Remediation progress has been monitored by the collection of soil samples for analysis of TPH and BTEX on a routine basis. Laboratory results indicate that the excavation combined with nearly 10 years of bioventing have decreased the total mass of petroleum hydrocarbons in the soil at the Site by 91% to 99%.

The oxygen delivered by the bioventing system degraded petroleum hydrocarbons in two ways: the physical process of volatilization and the biological process of biodegradation. The rate of biodegradation generally exceeds the rate of volatilization, especially for heavier hydrocarbon constituents such as those found at the Site. Biodegradation, and subsequently mass removal of petroleum hydrocarbons from the subsurface, will eventually exhibit asymptotic behavior, at which time further mass removal of petroleum hydrocarbons from the soil is minimized relative to the amount of oxygen input into the system. One common option to improve oxygen distribution is to pulse the system operation; however, due to the operation schedule of the system at the Site (the air compressor operates from 6 a.m. until 6 p.m. daily); the bioventing system has been pulsing injections for the duration of its operation. The bioventing system and residual petroleum hydrocarbon concentrations in the soil are exhibiting asymptotic behavior and further oxygen injection into the subsurface is not likely to yield any significant additional petroleum hydrocarbon mass reduction in the soil.

The NMOCD has several sets of remedial guidelines depending upon the type of site. Remedial goals are provided in the following documents: *Guidelines for Remediation of Leaks, Spills and Releases*, dated August 13, 1993; New Mexico Administrative Code (NMAC) 19.15.36 *Surface Waste Management Facilities*; and NMAC 19.15.17 provides regulations regarding *Pits, Closed-Loop Systems, Below-Grade Tanks, and Sumps* (the Pit Rule). The New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) and the Ground Water Quality Bureau's Voluntary Remediation Program have written the *Risk Assessment Guidance for Site Investigations and Remediation*, updated June 2012. This document utilizes a human health risk-

based approach to develop soil screening levels for various chemicals and groups of chemicals under various use scenarios. The four sets of regulations that provide remedial standards for benzene, total BTEX, and TPH in soil in New Mexico provide a range of acceptable concentrations for cleanup of a site. Remedial standards for benzene range from 0.2 mg/kg to 138 mg/kg; TPH ranges from 100 mg/kg to 5,000 mg/kg; and total BTEX has one consistent remedial standard (50 mg/kg) throughout all four regulations.

Based on the April 2012 soil sample results, current concentrations of benzene and total BTEX meet all of these standards. Soil sampling in 2012 indicate current TPH concentrations in soil at the Site meet most of the above standards and only exceeds the strictest standard (100 mg/kg) by less than 38.2 mg/kg. The residual TPH concentrations exist at a depth above groundwater and at least 12 feet below ground surface. The remaining TPH is comprised of heavier range DRO and MRO, which are unlikely to migrate to groundwater as evidenced by historical groundwater analytical results that indicate no BTEX concentrations resulting from Tank 967-D release exists in the groundwater at the Site.

4.2 GROUNDWATER

Remediation undertaken to address petroleum hydrocarbon impacts to groundwater at the Site include free product removal and air sparging, which have successfully remediated groundwater impacted by Tank 967-D. Elevated BTEX concentrations in MW-7, because it is separately sourced, have not been addressed. Other groundwater quality parameters exceeding NMWQCC standards can be attributed to chemical processes associated with natural attenuation of petroleum hydrocarbons in groundwater at MW-7 or naturally occurring background conditions.

Although no active remediation has been applied to groundwater at MW-7, natural attenuation is underway. Natural attenuation includes multiple biological and physical processes. The physical processes of volatilization, dispersion, and sorption will result in decreased concentrations of petroleum hydrocarbons in groundwater, but will not decrease the mass of petroleum hydrocarbons in groundwater. The biological processes of aerobic and anaerobic respiration (biodegradation) are the most significant attenuation mechanisms that decrease petroleum hydrocarbon mass in the groundwater. Biodegradation of petroleum hydrocarbons occurs due to the transfer of electrons from an electron donor to an electron acceptor, an activity that is completed via respiration of indigenous microorganisms in the subsurface. The petroleum hydrocarbon is the electron donor. There are multiple electron acceptors, and as each electron acceptor becomes depleted, the biodegradation process shifts to utilize other electron acceptors as they are available. Electron acceptors and their sequence of use are oxygen, nitrate, manganese, iron, sulfate, and lastly carbon. The process initially occurs under aerobic conditions, which occurs more rapidly than anaerobic conditions.

Denitrification and sulfate reduction are the dominant electron-accepting processes at most petroleum hydrocarbon sites undergoing anaerobic biodegradation. Depleted nitrate and sulfate concentrations will be observed where reduction is occurring (i.e., near the highest concentrations of petroleum hydrocarbons in groundwater) relative to background concentrations. By comparing the nitrate and sulfate concentrations from various wells at the Site, it is evident that anaerobic biodegradation of the petroleum hydrocarbons in groundwater is actively occurring. Evidence includes:

- Depleted nitrate concentrations in MW-2, MW-4, MW-5, MW-6, and MW-7 relative to background concentrations in MW-3, indicating denitrification has occurred (Figure 9). Denitrification may be close to completion as nitrate concentrations near the sources are beginning to rebound (Table 2); and

- Depleted sulfate concentrations in MW-7 compared to MW-2, MW-3, MW-4, MW-5, and MW-6 indicating sulfate reduction is actively ongoing (Figure 10).

The observations of depleted nitrate and sulfate in addition to elevated benzene and total xylenes in MW-7 lend to the conclusion that as of the January 2012 sampling, anaerobic bioremediation is ongoing in the vicinity of MW-7 with nitrate and sulfate accepting electrons from the electron donors of benzene and total xylenes. The concentration of sulfate exceeds the NMWQCC groundwater standards in all monitoring wells except MW-7.

The concentrations of iron and manganese exceed the NMWQCC groundwater standards in all monitoring wells. Iron and manganese occur naturally in various geologic formations, and once weathered from bedrock, are likely to adsorb onto fine grained clay particles, such as are found at the Site. Iron and manganese will leach from fine grained particles into groundwater, resulting in naturally occurring elevated concentrations in groundwater, as is observed in all the monitoring wells at the Site.

The concentration of TDS exceeds the NMWQCC groundwater standard in all monitoring wells except MW-7; which indicates the aquifer has naturally occurring elevated concentrations of TDS.

The concentration of barium in MW-7 exceeds the NMWQCC groundwater standard and barium in MW-6 has exceeded the NMWQCC standard in the past. Barite was historically used as a weighting agent in oil and gas well drilling fluids, and the elevated barium in these monitoring wells may be the result of former unlined drilling pits used to drill historical exploration and production wells in the vicinity of MW-7, which is located outside the Site boundary.

The concentration of chloride in MW-5 exceeds the NMWQCC groundwater standard. Chloride occurs naturally in arid and semi-arid environments. Because MW-5 is the only groundwater monitoring well at the Site with chloride concentrations exceeding the NMWQCC groundwater standard, it is likely this well is screened across a saturated lithologic unit that has naturally occurring elevated chloride. Evaluation of the lithologic log for MW-5 indicates a clay layer from approximately 8 feet bgs to approximately 19 feet bgs, which is a thicker clay layer than any of the other groundwater monitoring wells encounter. Given that clay particles are negatively charged and have a high cation exchange capacity, they absorb greater amounts of soluble salts, including chloride, which is a likely explanation for the elevated chloride concentration, observed in MW-5.

4.3 SUMMARY

4.3.1 Soil

Soil at the Site has been remediated to the most practical extent possible via excavation and bioventing. Remaining TPH concentrations in the soil have decreased by 91% to 99% and are

not migrating either from the Site or to groundwater. The source of petroleum hydrocarbons in the soil has been removed and will no longer impact groundwater, as observed by the absence of BTEX in groundwater in monitoring wells affected by former Tank 967-D. During the April 2012 sampling event, all but one soil sample contained less than 100 mg/kg of TPH, which meets the strictest soil standards in New Mexico. The soil sample that exceeded 100 mg/kg of TPH contained less than 138.2 mg/kg, only slightly exceeding NMOCD standards. Further bioventing is not likely to yield any significant TPH mass reduction in the soil and potential receptors are unlikely to be impacted due to the subsurface location of the residual impact (approximately 12 feet bgs) and a composition of heavier range DRO and MRO, which are unlikely to migrate to groundwater.

4.3.2 Groundwater

Western has successfully remediated groundwater impacted by former Tank 967-D. Evaluation of total BTEX concentrations in groundwater coincidentally with groundwater flow direction between 1994 and 2012 indicates the presence of a groundwater plume with two, separate source areas: Tank 967-D at the Site and a separate source to the west of the Site. In August 2000, the petroleum hydrocarbon impacted soil at the Site was excavated, thus removing the majority of the petroleum hydrocarbons in soil from the Site, which were acting as a source of hydrocarbon impacts to groundwater at the Site. Between October 2006 and January 2007, air sparging activities were conducted adjacent to MW-2, which resulted in benzene and total xylenes concentrations in MW-2 to decrease to less than 10 µg/L during all subsequent sampling events.

Despite the groundwater and soil remedial activities at the Site, benzene and total xylenes concentrations in groundwater in offsite MW-7 have exceeded the NMWQCC standards from May 2001 until present. Subsequent remediation of the petroleum hydrocarbon groundwater plume beneath the Site has decreased benzene and total xylene concentrations in groundwater at the Site by approximately 99% while the petroleum hydrocarbon plume to the west of the Site remains in a steady state with decreasing concentrations of benzene and relatively stable concentrations of total xylenes. Even prior to air sparging activities near MW-2, benzene and total xylenes concentrations in groundwater in offsite MW-7 exceeded benzene and total xylenes concentrations in groundwater in on-site MW-2.

Groundwater flow direction between 1994 and 2006 was consistently to the southwest; however, since 2006, the groundwater flow has been shifting to a southerly flow direction. BTEX, specifically total xylenes concentrations in MW-6, have been variable between the May 2001 and January 2012 sampling events; however, the highest concentrations of total xylenes in MW-6 were detected in January 2008 and January 2011, which is after the groundwater flow direction began shifting to a more southerly flow direction. It is likely that these elevated total xylenes concentrations in MW-6 are due to this changing groundwater flow direction, resulting in the edge of the petroleum hydrocarbon plume west of the Site migrating toward the east, with MW-6 intercepting the edge of the plume.

Based on the evidence presented above, the elevated benzene and total xylenes concentrations in groundwater in MW-7 are likely not sourced from the release of petroleum hydrocarbons from Tank 967-D, but related to a separate source of petroleum hydrocarbons located west of the Site.

During the January 2012 sampling event, concentrations of TDS, chloride, sulfate, manganese, barium, and iron in one or more groundwater monitoring wells located on site exceeded the respective NMWQCC standards. The elevated concentration of sulfate is apparently a natural condition in this area; once the source of electron donors (petroleum hydrocarbons in groundwater to the west of the Site) is depleted, then concentration of sulfate in MW-7 are expected to return to the elevated background concentrations. Elevated concentrations of sulfate, iron, manganese, and TDS also appear to be naturally occurring in the aquifer; likely due to leaching of these parameters and others from finer grained silt and clay particles. Elevated concentrations of chloride in MW-5 can be attributed to dissolution of naturally occurring chloride found in the 11-foot thick clay layer that is intercepted by the 15-foot screened interval. Elevated barium concentrations in MW-7 might be attributable to historical drilling operations unrelated to crude oil storage at the Site.

Evaluation of the groundwater data for the Site indicates that anaerobic biodegradation of petroleum hydrocarbons is ongoing and effectively reducing the concentration and mass of petroleum hydrocarbons in groundwater at MW-7. Additionally, there is no indication from the geochemical data that this process will slow or cease until all the electron donors (petroleum hydrocarbons) have been completely oxidized.

5.0 CLOSURE REQUEST

5.1 CEASE ACTIVE REMEDIATION

Based on the evidence presented in this report, Western proposes to cease bioventing operations, plug and abandon all injection and monitoring points, and decommission the system. The bioventing system has successfully reduced BTEX and TPH concentrations in soil and further oxygen injection into the subsurface is not likely to yield any significant additional petroleum hydrocarbon mass reduction in the soil.

5.2 CEASE SAMPLING

Western proposes to cease all soil and groundwater sampling activities. BTEX concentrations resulting from Tank 967-D have been remediated. Additional groundwater parameters of concern are naturally occurring or the result of chemical processes associated with ongoing natural attenuation of petroleum hydrocarbons from a separate historical source near MW-7.

Groundwater monitoring wells will be abandoned by cutting the well casing two feet below ground surface, then filling the well casing from total depth to 2 feet below ground surface with hydrated bentonite, then grout to ground surface.

5.3 SITE RECLAMATION

Upon completion of all well abandonment and decommissioning activities, Western will grade the site level and drill seed the following seed mixture:

Galleta (*Pleuraphis jamesii*)	20%	10 lbs PLS/Ac
Squirreltail (*Elymus elymoides)*	20%	10 lbs PLS/Ac
Indian Ricegrass *(Achnatherum hymenoides)*	20%	15 lbs PLS/Ac
Blue grama *(Bouteloua gracilis)*	30%	5 lbs PLS/Ac
Broom snakeweed *(Gutierrezia sarothrae)*	10%	5 lbs PLS/Ac

*lbs PLS/Ac – pounds of pure live seed per acre

If seeds are not available for a particular plant, then a similar alternate plant will be utilized, or that portion will be distributed among the other recommended seeds. No noxious or invasive weeds will be used in any revegetative efforts at the Site. Following seeding, mulch will be applied and crimped to the soil and revegetation efforts will be monitored and weeds will be controlled semi-annually until the Site achieves 70% vegetative cover with less than 10% weed species, at which time Western will cease all monitoring of the Site.

FIGURES

IMAGE COURTESY OF USGS/ESRI

LEGEND

○ SITE LOCATION

0 2,000 4,000
Feet

N

FIGURE 1
SITE LOCATION MAP
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING, SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1007 BLOOMFIELD CRUDE\WR1007_BLOOMFIELD_FIG01_SL_2012_Q3.mxd

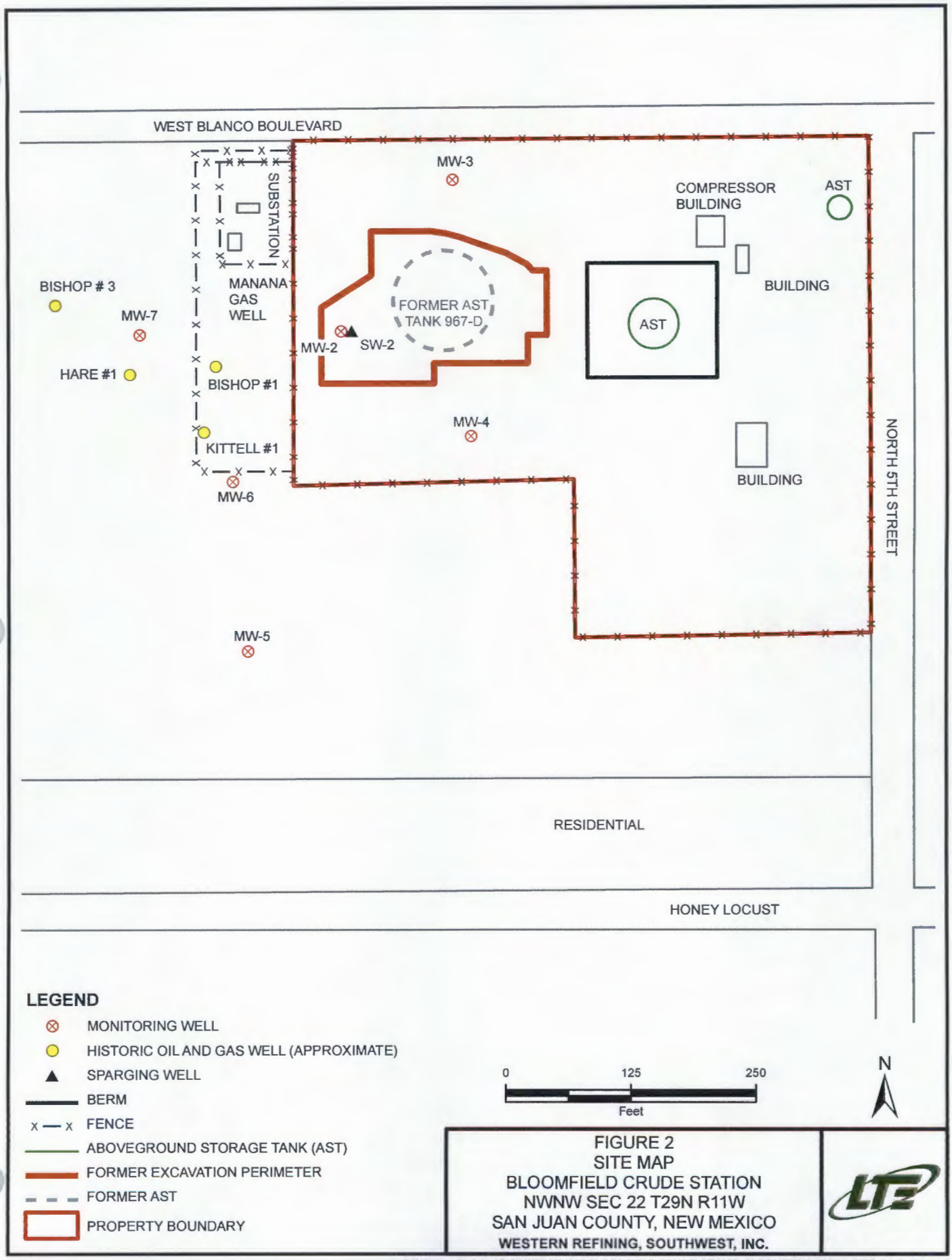
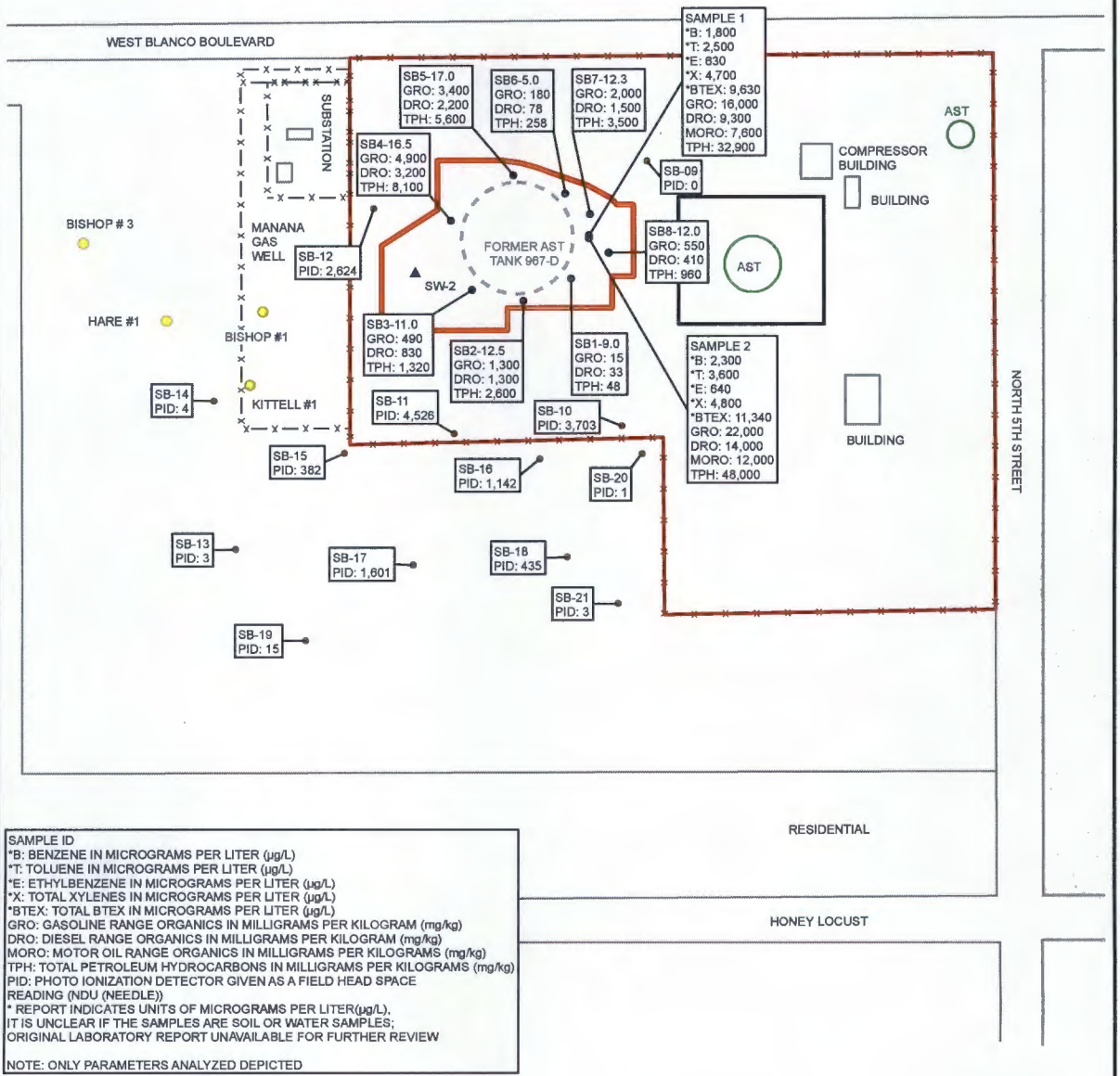


FIGURE 2
SITE MAP
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING, SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1007 BLOOMFIELD CRUDE\WR1007_BLOOMFIELD_FIG02_SITE_2012_Q3.mxd



SAMPLE ID
*B: BENZENE IN MICROGRAMS PER LITER (µg/L)
*T: TOLUENE IN MICROGRAMS PER LITER (µg/L)
*E: ETHYLBENZENE IN MICROGRAMS PER LITER (µg/L)
*X: TOTAL XYLENES IN MICROGRAMS PER LITER (µg/L)
*BTEX: TOTAL BTEX IN MICROGRAMS PER LITER (µg/L)
GRO: GASOLINE RANGE ORGANICS IN MILLIGRAMS PER KILOGRAM (mg/kg)
DRO: DIESEL RANGE ORGANICS IN MILLIGRAMS PER KILOGRAM (mg/kg)
MORO: MOTOR OIL RANGE ORGANICS IN MILLIGRAMS PER KILOGRAMS (mg/kg)
TPH: TOTAL PETROLEUM HYDROCARBONS IN MILLIGRAMS PER KILOGRAMS (mg/kg)
PID: PHOTO IONIZATION DETECTOR GIVEN AS A FIELD HEAD SPACE READING (NDU (NEEDLE))
* REPORT INDICATES UNITS OF MICROGRAMS PER LITER(µg/L), IT IS UNCLEAR IF THE SAMPLES ARE SOIL OR WATER SAMPLES; ORIGINAL LABORATORY REPORT UNAVAILABLE FOR FURTHER REVIEW

NOTE: ONLY PARAMETERS ANALYZED DEPICTED

LEGEND

- HISTORIC OIL AND GAS WELL (APPROXIMATE)
- SPARGING WELL
- SOIL SAMPLE COLLECTED FROM POTHOLE IN MARCH 1994
- PHASE I SOIL SAMPLE TAKEN IN SEPTEMBER 1994
- PHASE II SOIL SAMPLE TAKEN IN APRIL 1995
- BERM
- FENCE
- ABOVEGROUND STORAGE TANK (AST)
- FORMER EXCAVATION PERIMETER
- FORMER AST
- PROPERTY BOUNDARY

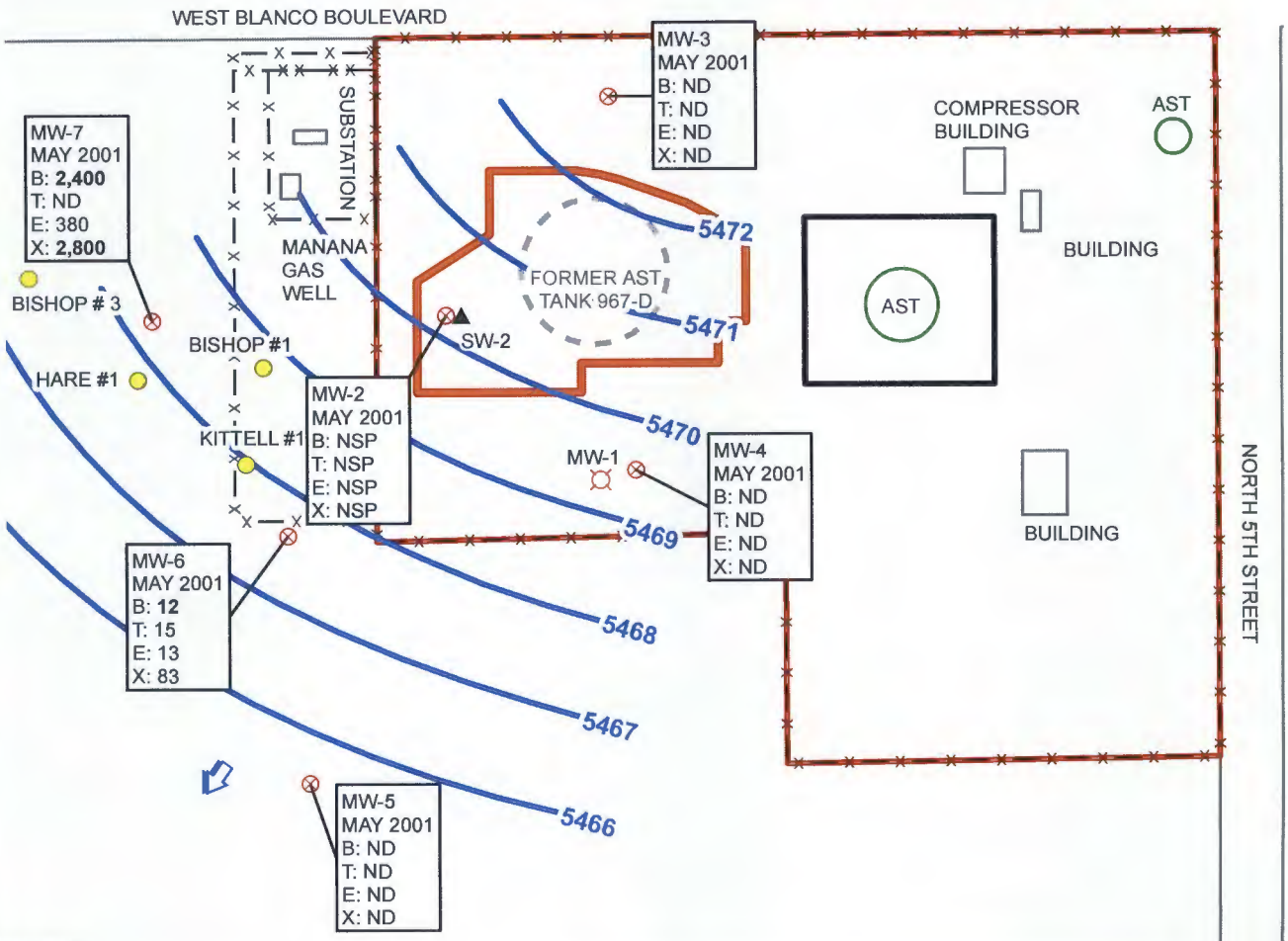
IMAGE COURTESY OF ESRI

0 100 200
Feet

N

FIGURE 3
SOIL INVESTIGATIONS MAP
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING, SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1007 BLOOMFIELD CRUDE\WR1007_BLOOMFIELD_FIG03_SOIL_2012_03_11X17.mxd



LEGEND

- MONITORING WELL
- FORMER MONITORING WELL
- HISTORIC OIL AND GAS WELL (APPROXIMATE)
- SPARGING WELL
- GROUNDWATER FLOW DIRECTION
- BERM
- FENCE
- ABOVEGROUND STORAGE TANK (AST)
- FORMER EXCAVATION PERIMETER
- FORMER AST
- GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER ELEVATIONS MEASURED IN FEET ABOVE MEAN SEA LEVEL ON JULY 9, 2001
- CONTOUR INTERVAL = 1 FOOT
- PROPERTY BOUNDARY

RESIDENTIAL

SAMPLE ID
SAMPLE DATE
GROUNDWATER ELEVATION
B: BENZENE
T: TOULENE
E: ETHYLBENZENE
X: TOTAL XYLENES
ALL SAMPLES REPORTED IN MICROGRAMS PER LITER (µg/L)
ND: NOT DETECTED
NSP: NOT SAMPLED DUE TO PRODUCT IN WELL
BOLD: INDICATES VALUE EXCEEDS NEW MEXICO WATER QUALITY CONTROL COMMISSION STANDARD

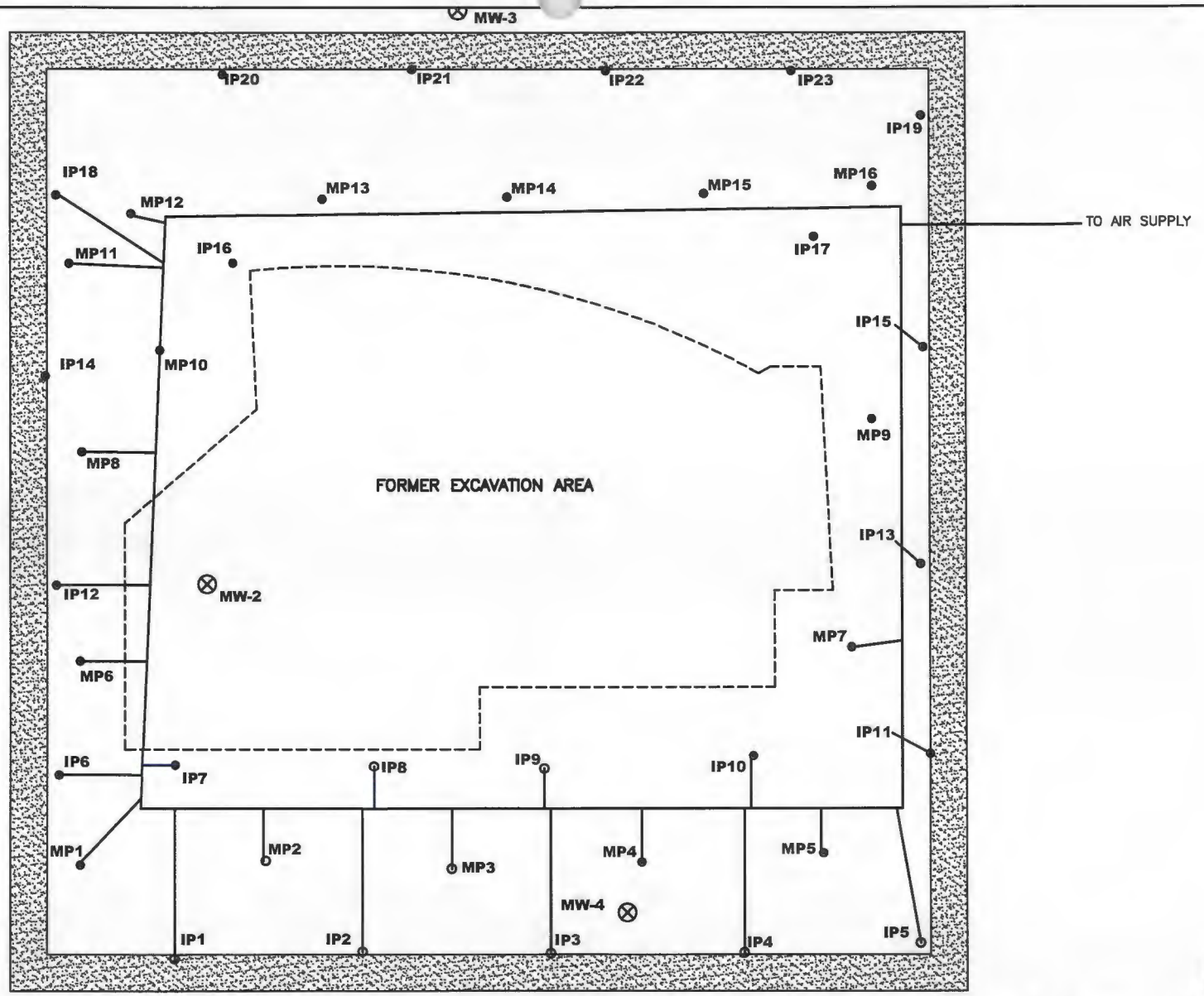
0 125 250
Feet

N

MONITORING WELL INSTALLATION, GROUNDWATER, SAMPLING AND BIOVENTING PILOT TEST; BLOOMFIELD CRUDE STATION; BLOOMFIELD, NEW MEXICO PREPARED BY GOLDEN ENVIRONMENTAL MANAGEMENT, INC., JULY 2001

FIGURE 4
GROUNDWATER INVESTIGATIONS MAP
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING, SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1007 BLOOMFIELD CRUDE\WR1007_BLOOMFIELD_FIG04_WATER_2012_Q3.mxd



LEGEND

- MONITORING WELL
- INJECTION POINT
- MONITORING POINT
- FORMER BERM
- FORMER EXCAVATION PERIMETER
- AIR SUPPLY LINE

FIGURE 3
BIOVENT SYSTEM LAYOUT
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29 R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING, SOUTHWEST, INC.

LTE

WR100702 2/11

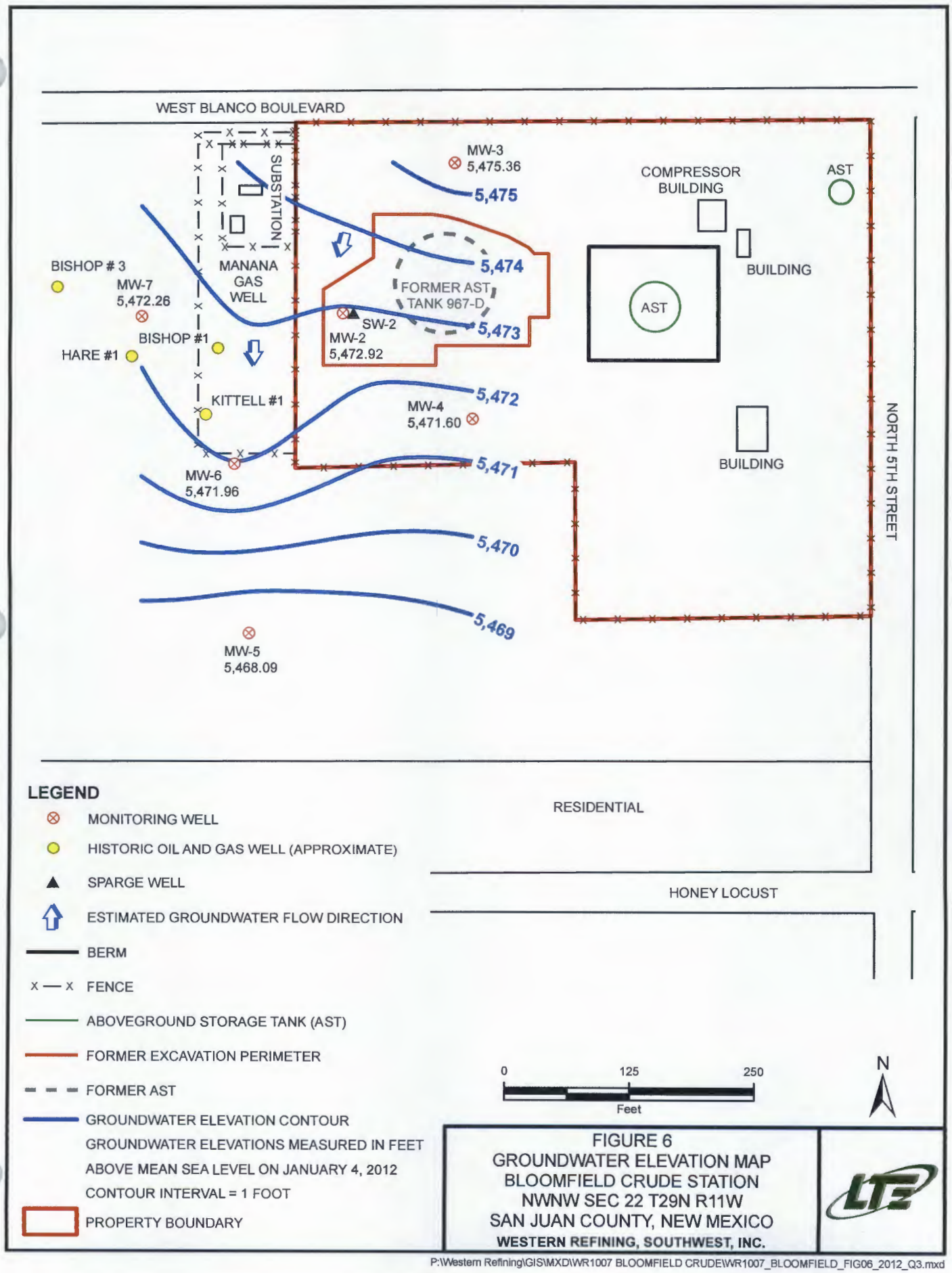


FIGURE 6
GROUNDWATER ELEVATION MAP
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING, SOUTHWEST, INC.

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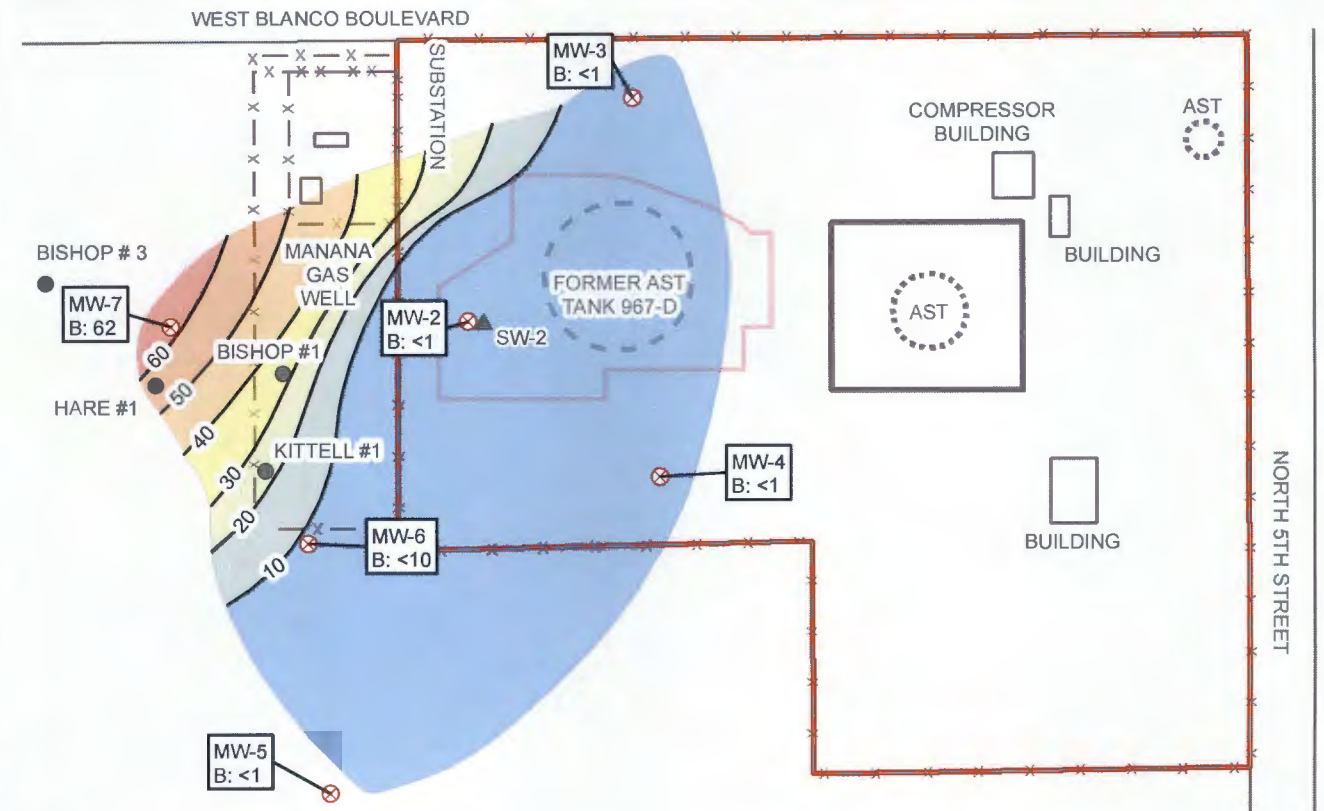


LEGEND

- MONITORING WELL
- HISTORIC OIL AND GAS WELL (APPROXIMATE)
- SPARGING WELL
- BERM
- FENCE
- ABOVEGROUND STORAGE TANK (AST)
- FORMER AST
- FORMER EXCAVATION PERIMETER
- BENZENE ISOCONCENTRATION CONTOUR IN (µg/L)

BENZENE ISOCONCENTRATION CONTOUR (µg/L)

- <10
- 10-20
- 20-30
- 30-40
- 40-50
- 50-60
- 60+
- PROPERTY BOUNDARY

SAMPLE ID
B: BENZENE IN MICROGRAMS PER LITER (µg/L)
<: LESS THEN LABORATORY REPORTING LIMIT

ALL SAMPLES COLLECTED ON 1/4/2012

0 125 250
Feet

N

FIGURE 7
BENZENE ISOCONCENTRATION CONTOURS
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING, SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1007 BLOOMFIELD CRUDE\WR1007_BLOOMFIELD_FIG07_BENZENE_2012_Q3.mxd

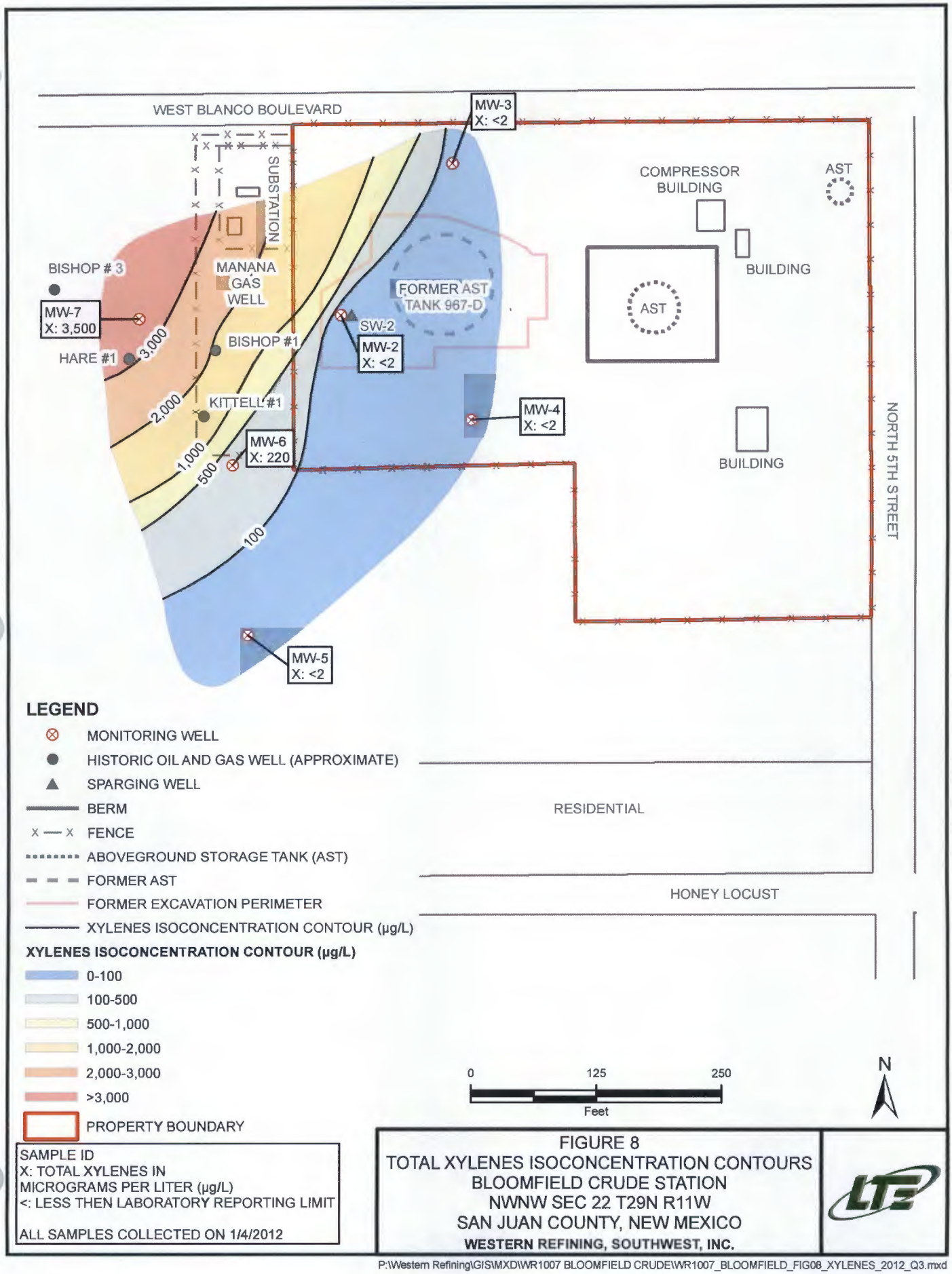


FIGURE 8
TOTAL XYLENES ISOCONCENTRATION CONTOURS
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING, SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1007 BLOOMFIELD CRUDE\WR1007_BLOOMFIELD_FIG08_XYLENES_2012_Q3.mxd

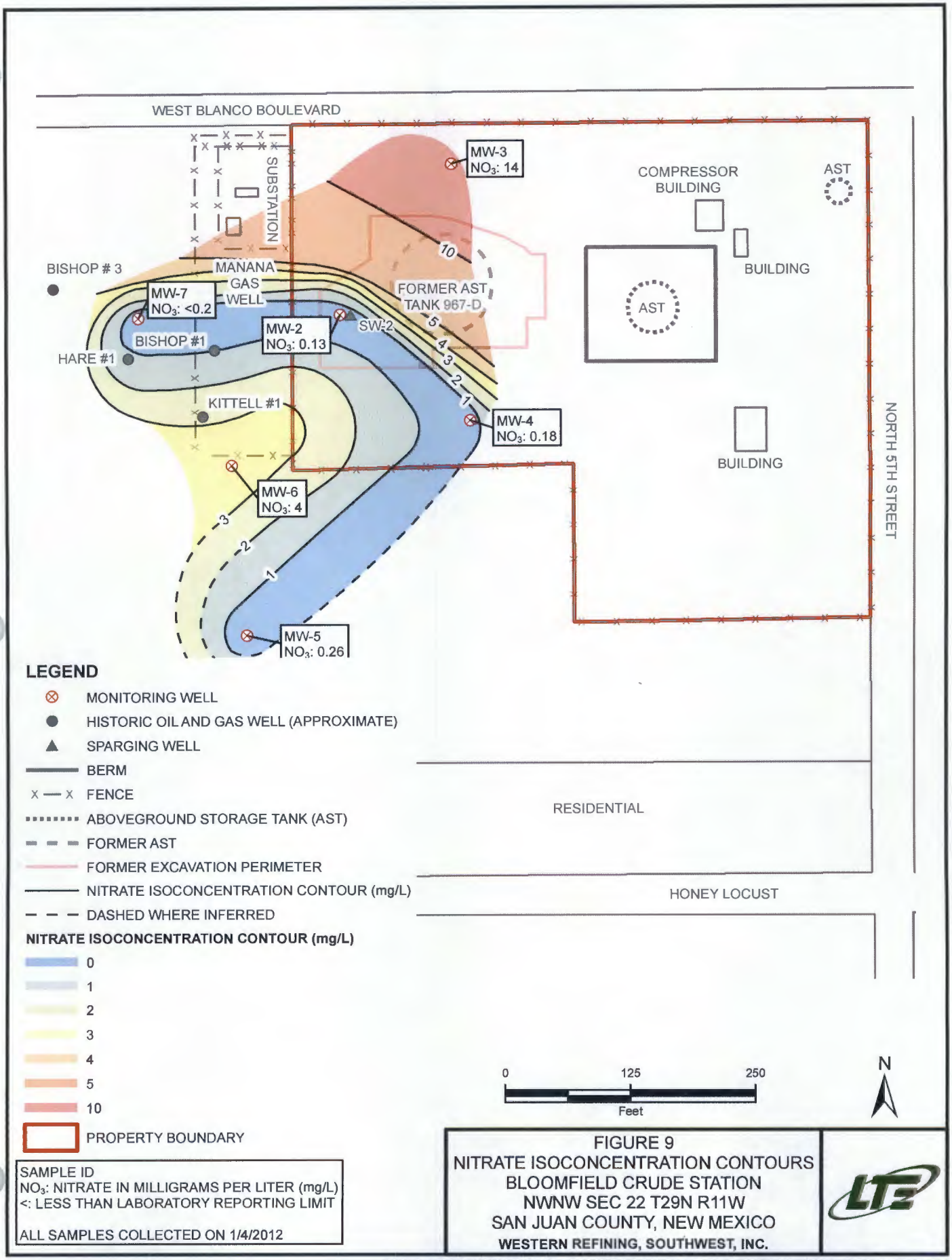


FIGURE 9
NITRATE ISOCONCENTRATION CONTOURS
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING, SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1007 BLOOMFIELD CRUDE\WR1007_BLOOMFIELD_FIG09_NITRATE_2012_Q3.mxd

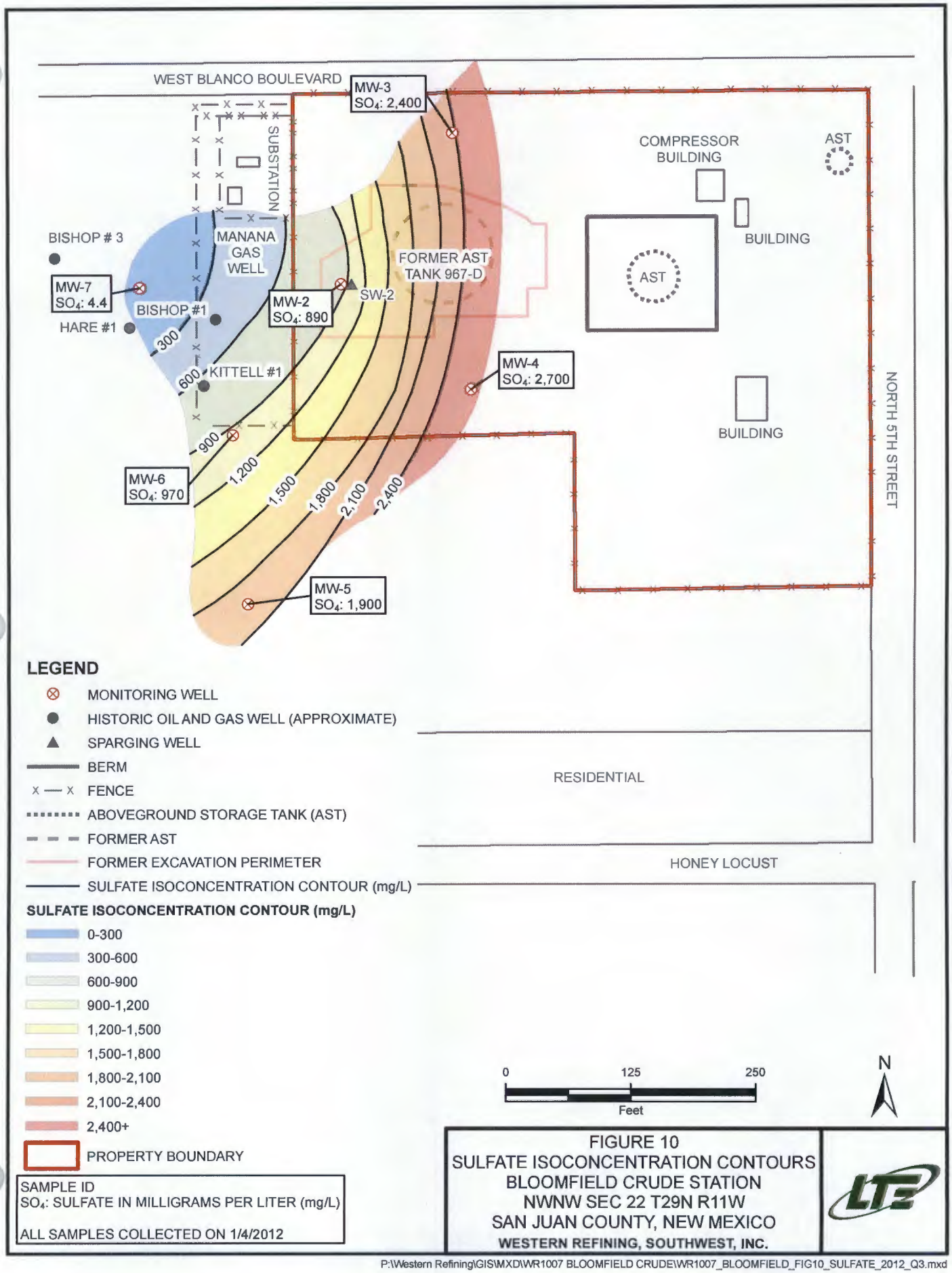


FIGURE 10
SULFATE ISOCONCENTRATION CONTOURS
BLOOMFIELD CRUDE STATION
NWNW SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING, SOUTHWEST, INC.

P:\Western Refining\GIS\MXD\WR1007 BLOOMFIELD CRUDE\WR1007_BLOOMFIELD_FIG10_SULFATE_2012_Q3.mxd

TABLES

TABLE 1

PETROLEUM HYDROCARBON SOIL ANALYTICAL AND FIELD SCREENING RESULTS
INITIAL, PHASE 1, AND PHASE 2 SITE ASSESSMENTS
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

	Sample ID	Sample Depth (feet)	Date Sampled	Field Headspace Reading (NDU)	Benzene (µg/L)*	Toluene (µg/L)*	Ethyl-benzene (µg/L)*	Total Xylenes (µg/L)*	Total BTEX (µg/L)*	Gasoline Range Organics** (mg/kg)	Diesel Range Organics ** (mg/kg)	Motor Oil Range Organics ** (mg/kg)	Total Petroleum Hydrocarbons *** (mg/kg)
Initial Site Assessment	Sample 1	4	3/15/94	N/M	1,800	2,500	630	4,700	9,630	16,000	9,300	7,600	32,900
	Sample 2	10	3/15/94	N/M	2,300	3,600	640	4,800	11,340	22,000	14,000	12,000	48,000
	None	0.5	3/29/94	180	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	None	1.0	3/29/94	192	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	None	3.0	3/29/94	220	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	None	3.0	3/29/94	180	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Phase 1 Site Assessment	SB1	9.0	9/19/94	465	N/A	N/A	N/A	N/A	N/A	15	33	N/A	48
	SB2	12.5	9/19/94	432	N/A	N/A	N/A	N/A	N/A	1,300	1,300	N/A	2,600
	SB3	11.0	9/19/94	383	N/A	N/A	N/A	N/A	N/A	490	830	N/A	1,320
	SB4	16.5	9/19/94	305	N/A	N/A	N/A	N/A	N/A	4,900	3,200	N/A	8,100
	SB5	17.0	9/19/94	187	N/A	N/A	N/A	N/A	N/A	3,400	2,200	N/A	5,600
	SB6	5.0	9/19/94	236	N/A	N/A	N/A	N/A	N/A	180	78	N/A	258
	SB7	12.3	9/19/94	176	N/A	N/A	N/A	N/A	N/A	2,000	1,500	N/A	3,500
	SB8	12.0	9/19/94	202	N/A	N/A	N/A	N/A	N/A	550	410	N/A	960
Phase 2 Site Assessment	SB-9	15.0	4/24/95	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB-10	16.5	4/24/95	3,703	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB-11	11.0	4/24/95	4,526	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB-12	13.0	4/24/95	2,624	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB-13	21.0	4/25/95	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB-14	23.5	4/25/95	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB-15	17.5	4/25/95	382	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB-16	13.5	4/25/95	1,142	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB-17	17.0	4/26/95	1,601	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB-18	17.0	4/26/95	435	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB-19	15.0	4/26/95	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB-20	19.0	4/27/95	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB-21	19.0	4/27/95	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
Bold indicates value exceeds NMOCD standard
mg/kg - milligrams per kilogram
N/A - not analyzed
N/M - not measured
NDU - needle deflection unit (on HNu photoionization detector, is approximately equivalent to parts per million)
NMOCD - New Mexico Oil Conservation Division
µg/L - micrograms per liter
* - report indicates units of µg/L, it is not clear if the samples are soil samples or water samples; original laboratory report not available for further review
** -March 1994 samples: Gasoline Range Organics = Carbon Range (C) 6 -C10; Diesel Range Organics = C10-C22; Motor Oil Range Organics = C22-C36
September 1994 samples: Gasoline Range Organics = C6-C12; Diesel Range Organics = C12 to either C30, C32, or C34
*** - total petroleum hydrocarbons, summation of Gasoline Range, Diesel Range, and Motor Oil Range Organics

TABLE 2

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - GENERAL CHEMISTRY
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC

Well Number	Year	Lab pH (su)	Conductivity (µmhos/cm)	TDS (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)	Sodium Absorption Ratio	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Barium (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nitrate/ Nitrite (mg/L)
MW-2	1994	6.60	4,920	**3,049**	957	NA	11.78	1,170	0	0	**1,050**	24	325	30	1.4	828	NA	NA	NA	NA
	1995	6.70	5,010	**3,180**	910	885	12.4	1,110	0	0	**884**	591	305	30	2.0	846	NA	NA	NA	NA
	2001	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NA	NSP	NSP	NSP
	2002	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NA	NSP	NSP	NSP
	2003	7.00	3,230	**3,220**	1,520	416	NA	1,850	<1	<1	51	369	133	20	1	660	NA	NA	NA	NA
	2004	7.00	3,100	**2,000**	1,500	420	NA	1,500	<1	<1	85	130	140	18	3	680	NA	**11**	**3.1**	<0.10
	2005	7.60	3,000	**2,000**	1,300	430	NA	1,300	7	<1	110	58	140	19	3.8	620	NA	**11**	**3.1**	<0.10
	2006	7.40	3,400	**2,000**	1,400	440	NA	1,400	4.3	<1	130	150	150	18	2.4	610	NA	**4**	**1.3**	<0.10
	2007	7.40	5,490	**4,580**	726	1,190	NA	724	2.57	<1	43.5	**2,460**	476	59.5	12.5	869	NA	**16.3**	**5.0**	NA
	2008	7.50	5,100	**4,350**	543	1,220	NA	534	<1	<1	42.3	**2,468**	463	49.5	2.93	739	NA	**10.7**	**6.76**	ND
	2009	7.34	4,300	**3,900**	760	NA	NA	760	ND	NA	42	**2,000**	380	42	2.3	720	0.038	ND	**0.25**	ND
	2010	7.39	3,700	**3,160**	900	870	NA	900	ND	NA	60	**1,500**	290	34	1.8	690	0.18	**1.2**	**7.4**	ND
	2011	7.49	3,700	**2,750**	1,300	880	NA	1,300	<5.0	NA	52	**920**	290	34	6.9	740	0.21	**32**	**6.1**	NA
	2012	7.80	3,500	**2,720**	1,300	NA	NA	1,300	<5.0	NA	40	**890**	220	26	2.5	710	0.079	**7.6**	**3.7**	0.13
MW-3	1994	7.10	4,250	**3,413**	521	NA	8.14	635	0	0	48	**1,920**	439	37	1.4	661	NA	NA	NA	NA
	1995	7.20	4,420	**3,860**	523	1,480	7.36	638	0	0	56	**2,060**	523	43	3.1	652	NA	NA	NA	NA
	2001	7.30	4,500	**3,960**	459	1,220	NA	559	<1	<1	78	**2,250**	423	40.4	2.5	711	NA	NA	NA	NA
	2002	7.00	4,440	**3,820**	358	1,290	NA	437	<1	<1	46	**2,520**	446	43	0.6	705	NA	NA	NA	NA
	2003	7.00	4,320	**3,660**	560	1,230	NA	683	<1	<1	56	**2,330**	428	39.4	1.6	671	NA	NA	NA	NA
	2004	7.30	4,500	**4,000**	560	1,400	NA	560	1	<1	44	**2,300**	320	44	3.6	780	NA	**3.9**	**0.79**	<0.10
	2005	7.40	4,700	**2,000**	560	1,400	NA	560	1	<1	37	**2,100**	450	47	3.9	690	NA	**3.9**	**0.79**	<0.10
	2006	7.50	5,400	**3,600**	580	1,300	NA	580	1.5	<1	37	**2,200**	450	47	3.7	680	NA	**4.4**	**0.38**	0.36
	2007	7.50	4,780	**3,750**	565	1,120	NA	563	1.92	<1	36.2	**1,920**	449	43	10.36	649	NA	**1.28**	**0.41**	NA
	2008	7.50	4,330	**3,600**	627	1,090	NA	626	1.32	<1	34.8	**1,690**	419	39.8	2.36	594	NA	**1.91**	**0.394**	ND
	2009	7.33	4,000	**3,700**	580	NA	NA	580	ND	NA	37	**2,000**	390	37	2.2	600	0.049	**3.2**	**6.6**	3.1
	2010	7.47	3,500	**3,430**	530	1,100	NA	530	ND	NA	35	**1,800**	370	36	1.5	600	0.024	ND	0.15	5.8
	2011	7.39	4,100	**3,400**	560	1,300	NA	560	<2.0	NA	39	**2,000**	450	39	4.2	660	0.075	**7**	**1.2**	NA
	2012	7.75	4,000	**3,470**	560	NA	NA	560	<2.0	NA	37	**2,400**	410	39	2.3	620	0.033	**2.9**	**0.55**	14
MW-4	1994	7.00	5,420	**4,389**	576	NA	10.88	703	0	0	175	**2,470**	439	53	3.5	907	NA	NA	NA	NA
	1995	7.20	5,360	**4,530**	577	1,520	10.1	701	0	0	163	**2,420**	523	53	4.3	907	NA	NA	NA	NA
	2001	7.10	5,090	**4,630**	490	1,460	NA	597	<1	<1	77	**2,680**	500	52.5	4.2	900	NA	NA	NA	NA
	2002	6.90	5,140	**4,420**	358	1,310	NA	437	<1	<1	47	**2,930**	449	47	2.6	873	NA	NA	NA	NA
	2003	7.00	4,460	**3,850**	400	1,070	NA	488	<1	<1	40	**2,570**	361	40.8	2.8	667	NA	NA	NA	NA
	2004	7.30	4,500	**3,900**	400	1,200	NA	400	3	<1	27	**2,500**	390	44	6.7	810	NA	**18**	**5.2**	<0.10
	2005	7.30	4,900	**4,000**	420	1,300	NA	420	1	<1	30	**2,200**	450	49	10	740	NA	**18**	NA	<0.10
	2006	7.40	5,400	**3,700**	450	1,200	NA	450	5.9	<1	31	**2,500**	410	47	7	790	NA	**3.8**	**5.4**	<0.10
	2007	7.20	4,700	**3,690**	455	1,020	NA	454	1.17	<1	54.5	**1,730**	410	43.3	12.1	678	NA	0.56	**5.73**	NA
	2008	7.60	4,500	**3,710**	458	1,040	NA	457	<1	<1	<5	**1,790**	394	41.2	3.55	637	NA	**2.72**	**5.41**	ND
	2009	7.19	4,400	**4,000**	450	NA	NA	450	ND	NA	36	**2,400**	400	42	3.7	670	0.037	ND	**4.7**	ND
	2010	7.49	4,300	**4,060**	490	1,200	NA	490	ND	NA	50	**2,400**	420	45	3.2	740	0.024	ND	**4.9**	ND
	2011	7.33	4,600	**4,010**	460	1,600	NA	460	<2.0	NA	36	**2,600**	540	55	5.4	760	0.026	**1.8**	**8.2**	NA
	2012	7.62	4,500	**4,050**	470	NA	NA	470	<2.0	NA	30	**2,700**	480	51	6.6	690	0.11	**15**	**8.8**	0.18
MW-5	1995	6.90	6,000	**4,410**	775	NA	8.84	945	0	0	**996**	**1,390**	634	51	6.6	861	NA	NA	NA	NA
	2001	6.70	7,000	**5,230**	757	2,010	NA	923	<1	<1	**1,320**	**1,230**	700	63.2	5.6	924	NA	NA	NA	NA
	2002	6.50	6,880	**4,810**	567	1,880	NA	692	<1	<1	**1,200**	**1,230**	661	55.3	4.9	855	NA	NA	NA	NA
	2003	6.60	6,910	**5,080**	830	1,780	NA	1,010	<1	<1	**1,090**	**1,330**	616	58.1	4.8	829	NA	NA	NA	NA
	2004	6.80	6,700	**4,600**	840	2,000	NA	840	1	<1	**1,300**	**1,400**	690	57	11	1,000	NA	**4.3**	**11**	<0.10
	2005	7.00	6,800	**4,800**	870	1,900	NA	870	<1	<1	**1,100**	**1,200**	670	60	10	910	NA	**4.3**	**11**	<0.10
	2006	7.10	8,000	**4,300**	990	1,800	NA	990	<1	<1	**1,000**	**1,200**	630	58	12	920	NA	**11**	**58**	<0.10
	2007	7.30	6,630	**4,750**	915	1,320	NA	914	1.11	<1	**884**	**1,800**	621	57.6	16.6	896	NA	0.5	**10.8**	NA
	2008	7.10	6,750	**4,780**	933	1,510	NA	932	<1	<1	109	**1,310**	585	51.5	5.11	834	NA	**1.32**	**10.7**	ND
	2009	6.80	6,200	**5,700**	840	NA	NA	840	ND	840	**1,000**	**1,900**	570	50	5.6	860	0.07	NA	**10**	ND
	2010	7.26	5,600	**4,760**	770	1,600	NA	770	ND	NA	**880**	**1,900**	560	52	4.9	850	0.054	0.22	**9.7**	ND
	2011	7.18	5,800	**4,370**	780	1,600	NA	780	<2.0	NA	**350**	**900**	570	48	5.6	850	0.038	**1.7**	**9.4**	NA
	2012	7.12	4,700	**3,880**	680	NA	NA	680	<2.0	NA	**510**	**1,900**	520	45	5.9	810	0.086	**8.2**	**7.5**	0.26

TABLE 2

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - GENERAL CHEMISTRY
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC

Well Number	Year	Lab pH (su)	Conductivity (µmhos/cm)	TDS (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)	Sodium Absorption Ratio	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Barium (mg/L)	Iron (mg/L)	Manganese (mg/L)	Nitrate/ Nitrite (mg/L)
MW-6	2001	6.90	5,470	**4,508**	740	1,550	NA	903	<1	<1	80	**2,780**	534	53.3	6.3	1,030	NA	NA	NA	NA
	2002	6.80	4,460	**3,560**	669	932	NA	816	<1	<1	55	**1,900**	319	33	2.5	830	NA	NA	NA	NA
	2003	7.00	3,070	**2,180**	1,140	602	NA	1,390	<1	<1	79	540	203	23.1	2.1	514	NA	NA	NA	NA
	2004	7.20	4,100	**3,000**	1,000	1,100	NA	1,000	<1	<1	96	**1,400**	390	63	29	870	NA	**23**	**4**	<0.10
	2005	7.20	4,100	**3,000**	1,100	670	NA	1,100	2	<1	93	**940**	220	28	6.7	670	NA	**23**	**4**	<0.10
	2006	7.20	7,000	**4,500**	800	1,400	NA	800	3.6	<1	82	**2,600**	440	68	24	1,200	NA	**87**	**11**	<0.10
	2007	7.10	7,460	**6,070**	678	1,320	NA	676	2.23	<1	57.5	**3,140**	529	65.1	17.3	1,500	NA	**17.7**	**13.8**	NA
	2008	7.50	2,840	**1,920**	1,140	533	NA	1,140	1.25	1.25	<1	312	195	25.6	2.83	442	NA	**24.5**	**2.62**	ND
	2009	7.14	2,800	**1,900**	1,100	NA	NA	1,100	ND	NA	180	260	180	23	2.2	430	**1.2**	**9.1**	**1.9**	ND
	2010	7.53	2,900	**2,130**	1,000	630	NA	1,000	ND	NA	170	500	210	26	1.6	510	**2.3**	**6.8**	**3.1**	ND
	2011	7.50	3,100	**1,890**	1,100	980	NA	1,100	<2.0	NA	150	490	320	46	12	570	**4.9**	**99**	**5.1**	NA
	2012	7.62	3,400	**2,560**	1,100	NA	NA	1,100	<2.0	NA	130	**970**	280	37	6.4	580	0.5	**100**	**4.2**	4.0
MW-7	2001	6.70	2,160	**1,710**	600	843	NA	732	<1	<1	52	**642**	296	25.6	1.6	234	NA	NA	NA	NA
	2002	6.80	1,870	**1,570**	432	758	NA	527	<1	<1	20	**700**	258	27.8	2.2	151	NA	NA	NA	NA
	2003	6.70	1,310	810	696	531	NA	849	<1	<1	35	57	152	36.8	1	126	NA	NA	NA	NA
	2004	6.80	1,400	920	720	520	NA	720	<1	<1	13	120	170	23	7	170	NA	**27**	**3**	<0.10
	2005	7.00	1,500	930	740	540	NA	740	1	<1	15	190	180	20	3.3	150	NA	**27**	**0.3**	<0.10
	2006	7.40	1,800	**1,200**	750	660	NA	750	3.2	<1	16	310	220	23	3.3	170	NA	**49**	**2.9**	<0.10
	2007	7.10	1,460	858	638	402	NA	636	1.8	<1	22.4	127	161	20.2	8.84	124	NA	**32.7**	**2.34**	NA
	2008	7.30	1,320	810	748	369	NA	747	<1	<1	18.1	50.9	139	15.4	1.2	120	NA	**14.4**	**1.6**	ND
	2009	7.03	1,200	750	680	NA	NA	680	ND	NA	22	6.8	150	17	0.9	140	**1.4**	**11**	**1.5**	ND
	2010	7.63	1,200	762	650	390	NA	650	ND	NA	24	6.5	130	15	ND	130	**2.4**	**8.4**	**1.2**	ND
	2011	7.50	1,300	734	670	460	NA	670	<2.0	NA	26	7.8	150	19	1.3	130	**2.7**	**47**	**1.3**	NA
	2012	7.75	1,300	800	720	NA	NA	720	<2.0	NA	24	4.4	150	17	2.6	160	**2.1**	**22**	**0.89**	<0.20
NMWQCC Standard		**6-9**	**NE**	**1,000**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**250**	**600**	**NE**	**NE**	**NE**	**NE**	**1.0**	**1.0**	**0.2**	**NE**

Notes:
mg/L - milligrams per liter
ND - not detected
NMWQCC - New Mexico Water Quality Control Commission
NA - not analyzed
NSP - not sampled due to product in the well
SU - standard units
TDS - Total Dissolved Solids
umhos/cm - microhms per centimeter
Bold indicates value exceeds NMWQCC standard
< - indicates value is less than laboratory detection limit

TABLE 3

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - BTEX
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC

Well Number	Date Sampled	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)
MW-2	Sep-94	**640**	600	82	**690**
	Apr-95	**220**	280	53	430
	Sep-99	NSP	NSP	NSP	NSP
	Dec-99	NSP	NSP	NSP	NSP
	May-01	NSP	NSP	NSP	NSP
	May-02	NSP	NSP	NSP	NSP
	Jan-03	**1700**	ND	650	**3200**
	Jan-04	**1100**	ND	340	**1800**
	Jan-05	**430**	ND	360	**1000**
	Jan-06	**250**	ND	410	**790**
	Sep-06	**230**	50	290	**640**
	Jan-07	8.7	9.7	16	55
	Apr-07	7.8	6	61	110
	Jul-07	4.2	20	30	68
	Oct-07	0.87	18	120	180
	Jan-08	4.4	45	24	100
	May-08	0.86	12.3	<0.5	16.6
	Aug-08	1.1	7.3	14	28
	Nov-08	1.7	2	7.3	15
	Jan-09	1.6	ND	2.1	6.9
	Feb-09	<1.0	<1.0	2.3	7.7
	May-09	1.1	2.1	1.0	6.8
	Aug-09	1.2	<1.0	<1.0	2.0
	Nov-09	<1.0	<1.0	<1.0	<2.0
	Jan-10	<1.0	<1.0	<1.0	<2.0
	Feb-10	<1.0	<1.0	<1.0	<2.0
	Jan-11	<1.0	<1.0	<1.0	2.5
	Jan-12	<1.0	<1.0	<1.0	<2.0
MW-3	Sep-94	ND	ND	ND	ND
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	ND
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	0.8	ND	ND	ND
	Jan-08	ND	ND	ND	ND
	Jan-09	ND	ND	ND	ND
	Jan-10	<1.0	<1.0	<1.0	<2.0
	Jan-11	<1.0	<1.0	<1.0	<2.0
	Jan-12	<1.0	<1.0	<1.0	<2.0

TABLE 3

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - BTEX
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC

Well Number	Date Sampled	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)
MW-4	Sep-94	2.1	ND	ND	1.2
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	ND
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	ND	ND	ND	ND
	Jan-08	ND	ND	ND	ND
	Jan-09	ND	ND	ND	ND
	Jan-10	<1.0	<1.0	<1.0	<2.0
	Jan-11	<1.0	<1.0	<1.0	<2.0
	Jan-12	<1.0	<1.0	<1.0	<2.0
MW-5	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	1.1
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	ND	ND	ND	ND
	Jan-08	ND	ND	ND	ND
	Jan-09	ND	ND	ND	ND
	Jan-10	<1.0	<1.0	<1.0	<2.0
	Jan-11	<1.0	<1.0	<1.0	<2.0
	Jan-12	<1.0	<1.0	<1.0	<2.0

TABLE 3

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - BTEX
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC

Well Number	Date Sampled	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)
MW-6	May-01	**12**	15	13	83
	May-02	ND	ND	0.53	1.4
	Oct-02	ND	ND	ND	3.2
	Jan-03	6	20	87	350
	Jul-03	ND	2.7	3.2	16
	Sep-03	0.8	3.7	4	24
	Jan-04	0.9	0.6	2.9	16
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	14	32
	Jan-07	ND	ND	3.6	9.1
	Jan-08	0.9	11	130	**930**
	Jan-09	ND	ND	66	510
	Jan-10	<5.0	<5.0	<5.0	<10
	Jan-11	<10.0	<10.0	140	**960**
	Jan-12	<10.0	<10.0	61	220
MW-7	May-01	**2,400**	ND	380	**2,800**
	Jun-02	**2,000**	ND	140	**1,100**
	Oct-02	**1,100**	ND	79	490
	Jan-03	**3,200**	ND	400	**3,100**
	Jan-04	**3,300**	ND	460	**3,300**
	Jan-05	**1,600**	ND	220	**1,500**
	Jan-06	**1,400**	ND	280	**1,500**
	Jan-07	**1,200**	ND	450	**2,500**
	Jan-08	**750**	ND	520	**3,100**
	Jan-09	**570**	ND	450	**2,800**
	Jan-10	**270**	<20	460	**2,500**
	Jan-11	**140**	<20	470	**2,400**
	Jan-12	**62**	<20	640	**3,500**
NMWQCC Standard		**10**	**750**	**750**	**620**

Notes:
ND - not detected
NMWQCC - New Mexico Water Quality Control Commission

NS - not sampled
NSP - not sampled due to product in well
µg/L - micrograms per liter
< indicates result is less than the stated laboratory method detection limit
Bold indicates value exceeds NMWQCC standard
BTEX - Benzene, toluene, ethylbenzene, and total zylenes.

TABLE 4

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - METALS
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

Well Number	Year	Silver (mg/L)	Arsenic (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Mercury (mg/L)	Nickel (mg/L)	Lead (mg/L)	Antimony (mg/L)	Selenium (mg/L)	Thallium (mg/L)	Zinc (mg/L)
MW-2	1994	<0.01	<0.005	<0.004	<0.0005	0.01	0.012	<0.0002	<0.02	<0.002	<0.05	<0.005	<0.005	0.032
	2011	<0.0050	<0.020	NA	<0.0020	0.011	NA	<0.0002	NA	0.017	NA	<0.050	NA	NA
	2012	<0.0050	<0.020	NA	<0.0020	<0.0060	NA	<0.00020	NA	<0.0050	NA	<0.050	NA	NA
MW-3	1994	<0.01	<0.005	<0.004	<0.0005	<0.01	<0.01	<0.0002	<0.02	<0.002	<0.05	<0.005	<0.005	0.023
	2011	<0.0050	<0.020	NA	<0.0020	<0.0060	NA	<0.0002	NA	<0.0050	NA	<0.050	NA	NA
	2012	<0.0050	<0.020	NA	<0.0020	<0.0060	NA	<0.00020	NA	<0.0050	NA	<0.050	NA	NA
MW-4	1994	<0.01	<0.005	<0.004	<0.0005	<0.01	<0.01	<0.0002	<0.02	<0.002	<0.05	<0.005	<0.005	0.026
	2011	<0.0050	<0.020	NA	<0.0020	<0.0060	NA	<0.0002	NA	<0.0050	NA	<0.050	NA	NA
	2012	<0.0050	<0.020	NA	<0.0020	0.011	NA	<0.00020	NA	<0.0050	NA	<0.050	NA	NA
MW-5	1994	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2011	<0.0050	<0.020	NA	<0.0020	<0.0060	NA	<0.0002	NA	<0.0050	NA	<0.050	NA	NA
	2012	<0.0050	<0.020	NA	<0.0020	0.0062	NA	<0.00020	NA	<0.0050	NA	<0.050	NA	NA
MW-6	1994	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2011	<0.0050	0.039	NA	<0.0020	0.042	NA	<0.0002	NA	0.023	NA	<0.050	NA	NA
	2012	<0.0050	0.074	NA	0.0023	0.011	NA	<0.00020	NA	0.0069	NA	<0.050	NA	NA
MW-7	1994	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2011	<0.0050	<0.020	NA	<0.0020	<0.0060	NA	<0.0002	NA	0.0072	NA	<0.050	NA	NA
	2012	<0.0050	<0.020	NA	<0.0020	<0.0060	NA	<0.00020	NA	<0.0050	NA	<0.050	NA	NA
NMWQCC Standard		**0.05**	**0.1**	**NE**	**0.01**	**0.05**	**1**	**0.002**	**0.2**	**0.05**	**NE**	**0.05**	**NE**	**10**

Notes:
mg/L - milligrams per liter
NE - not establis hed
NMWQCC - New Mexico Water Quality Control Commission
NA- not analyzed
Bold indicates value exceeds NMWQCC standard
< - indicates value is less than laboratory detection limit

TABLE 5

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - PAHs
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC

	MW-2	MW-3	MW-4	NMWQCC Standard
Date Sampled	**9/22/1994**	**9/23/1994**	**9/23/1994**	
Indeno(1,2,3-cd) Pyrene (µg/L)	<0.10	<0.10	<0.10	NE
Acenaphthylene (µg/L)	<1.0	<1.0	<1.0	NE
Acenaphthene (µg/L)	<0.5	<0.5	<0.5	NE
Fluorene (µg/L)	1.2	<1.0	<1.0	NE
Phenanthrene (µg/L)	1.8	<0.05	<0.05	NE
Anthracene (µg/L)	<0.05	<0.05	<0.05	NE
Fluoranthene (µg/L)	1.2	<0.10	<0.10	NE
Pyrene (µg/L)	<0.10	<0.10	<0.10	NE
Benzo(a)Anthracene (µg/L)	<0.10	<0.10	<0.10	NE
Chrysene (µg/L)	0.17	<0.10	<0.10	NE
Benzo(b)Fluoranthene (µg/L)	<0.10	<0.10	<0.10	NE
Benzo(k)Fluoranthene (µg/L)	<0.10	<0.10	<0.10	NE
Benzo(a)Pyrene (µg/L)	<0.10	<0.10	<0.10	0.7
Di-benzo(a,h)Anthracene (µg/L)	<0.20	<0.20	<0.20	NE
Benzo(g,h,l)Perylene (µg/L)	<0.10	<0.10	<0.10	NE
Naphthalene (µg/L)	8.9	<0.50	<0.50	NE
1-Methylnaphthalene (µg/L)	5.9	<0.30	<0.30	Combined to 30
2-Methylnaphthalene (µg/L)	5.8	<0.30	<0.30	

Notes:
NE - not established
NMWQCC - New Mexico Water Quality Control Commission
µg/L - micrograms per liter
< - indicates value is less than laboratory detection limit

TABLE 6

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - TPH
TOTAL PETROLEUM HYDROCARBONS
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC

Well Number	Date Sampled	Gasoline Range Organics Carbon 6-Carbon 12 (mg/L)
MW-2	5/2/1995	3
MW-3	5/2/1995	<1
MW-4	5/2/1995	<1
MW-5	5/3/1995	<1

Notes:
mg/L - milligrams per liter
< - indicates value is less than laboratory detection limit

TABLE 7

PETROLEUM HYDROCARBON SOIL ANALYTICAL RESULTS - BIOVENT SYSTEM
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

Sample ID	Sample Depth (ft)	Date Sampled	Field Headspace Reading (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	Gasoline Range Organics* (mg/kg)	Diesel Range Organics * (mg/kg)	Motor Oil Range Organics * (mg/kg)	Total Petroleum Hydrocarbons ** (mg/kg)
MP11	12	10/2002	732	2.9	<0.05	5.8	36	44.70 - <44.75	NA	NA	NA	**1,290**
		10/2003	191	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**157**
		10/2004	0.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2005	7.49	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2006	3.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**124**
		10/2007	0.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2008	17.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	60	60 - <75
		4/2009	0.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		7/2009	0.7	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	110	**110 - <125**
		10/2009	0.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 -< 65
		1/2010	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		4/2010	0.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	89	89 - **<104**
		7/2010	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	28	67	95 - **<100**
		10/2010	0.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	110	150	**260 - <265**
		1/2011	1.4	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	21	<50	21 - <76
		4/2011	0.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	36	100	**136 -<141**
		7/7/2011	0.2	<0.049	<0.049	<0.049	<0.098	0 - <0.245	<4.9	19	<49	19 - <72.9
		10/4/2011	0.3	<0.049	<0.049	<0.049	<0.097	0 - <0.244	<4.9	56	85	**141 - <145.9**
		1/6/2012	0.9	<0.050	<0.050	<0.050	<0.10	0 - <0.25	<5.0	<9.7	<48	0 - <62.7
		4/5/2012	0.0	<0.050	<0.050	<0.050	<0.099	0-<0.249	<5.0	13	<51	13 - <69.0
IP16	9	10/2002	728	0.85	<0.05	<0.05	<0.1	0.85 - <1.05	NA	NA	NA	**5,690**
		10/2003	110	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**2,600**
		10/2004	0.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**540**
		10/2005	0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	52
		10/2006	5	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**210**
		10/2007	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**1,500**
		10/2008	4.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	140	310	**450 - <455**
		4/2009	3.8	0.10	<0.05	<0.05	<0.1	0.1 - <0.30	<5.0	380	660	**1,040 - <1,045**
		7/2009	1.6	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	220	310	**530 - <535**
		10/2009	0.9	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	130	200	**330 - <335**
		1/2010	0.5	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	100	200	**300 - <305**
		4/2010	2.7	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	25	110	**135 - <140**
		7/2010	0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	95	120	**215 - <220**
		10/2010	0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	360	570	**930 - <935**
		1/2011	0.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	58	75	**133 -< 138**
		4/2011	0.4	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	24	70	**94 - <99**
		7/7/2011	1.1	<0.049	<0.049	<0.049	<0.098	0 - <0.245	<4.9	150	140	**290 - <294.9**
		10/4/2011	0.6	<0.047	<0.047	<0.047	<0.094	0 - <0.235	<4.7	860	810	**1,670 - <1,674.7**
		1/6/2012	0.5	<0.047	<0.047	<0.047	<0.093	0 - <0.234	<4.7	30	60	90 - <94.7
		4/5/2012	0.8	<0.048	<0.048	<0.048	<0.097	0 - <0.241	<4.8	30	60	90 - <94.8
MP8	9	10/2002	772	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2003	149	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2004	149.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2005	56.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2006	4.6	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	28
		10/2007	0.6	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	70
		10/2008	3.7	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	55	55 - <70
		4/2009	0.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		7/2009	0.4	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		10/2009	0.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		1/2010	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		4/2010	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		7/2010	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		10/2010	0.4	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		1/2011	1.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		4/2011	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	20	55	75 - <80
		7/7/2011	0.2	<0.049	<0.049	<0.049	<0.098	0 - <0.245	<4.9	<10	<51	0 - <65.9
		10/4/2011	0.2	<0.046	<0.046	<0.046	<0.092	0 - <0.23	<4.6	<10	<50	0 - <64.6
		1/6/2012	0.5	<0.049	<0.049	<0.049	<0.097	0 - <0.244	<4.9	<10	<51	0 - <65.9
		4/5/2012	0.3	<0.048	<0.048	<0.048	<0.096	0 - <0.240	<4.8	<4.8	<49	0 - <63.7

TABLE 7

PETROLEUM HYDROCARBON SOIL ANALYTICAL RESULTS - BIOVENT SYSTEM
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

Sample ID	Sample Depth (ft)	Date Sampled	Field Headspace Reading (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	Gasoline Range Organics* (mg/kg)	Diesel Range Organics * (mg/kg)	Motor Oil Range Organics * (mg/kg)	Total Petroleum Hydrocarbons ** (mg/kg)
IP12	12	10/2002	616	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**2,470**
		10/2003	190	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**720**
		10/2004	253.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2005	120	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**770**
		10/2006	3.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**520**
		10/2007	0.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	84
		10/2008	3.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	49	160	**209 - <214**
		4/2009	0.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	55	80	**135 - <140**
		7/2009	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	62	**62 - <77**
		10/2009	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		1/2010	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	45	94	**139 - <144**
		4/2010	0.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	52	160	**212 - <217**
		7/2010	0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	35	<50	35 - <90
		10/2010	0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	100	160	**260 - <265**
		1/2011	1.8	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	81	97	**178 - <183**
		4/2011	0.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	31	73	**104 - <109**
		7/7/2011	0.6	<0.049	<0.049	<0.049	<0.098	0 - <0.245	<4.9	39	<50	39 - <93.9
		10/4/2011	0.1	<0.049	<0.049	<0.049	<0.097	0 - <0.244	<4.9	29	<50	29 - <83.9
		1/6/2012	0.8	<0.048	<0.048	<0.048	<0.095	0 - <0.239	<4.8	23	<51	23 - <78.8
		4/5/2012	11.2	<0.092	<0.092	<0.092	<0.18	0 - <0.456	<9.2	53	77	**130 - <139.2**
IP7	12	10/2002	676	2.9	<0.05	<0.05	<0.1	2.9 - <3.1	NA	NA	NA	**4,720**
		10/2003	287	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**1,299**
		10/2004	123.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**139**
		10/2005	6.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	55
		10/2006	7.4	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**770**
		10/2007	0.5	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**1,460**
		10/2008	3.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	64	64 - <79
		4/2009	0.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		7/2009	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		10/2009	0.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	16	81	97 - **<102**
		1/2010	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		4/2010	0.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	32	120	**152 - <157**
		7/2010	0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	110	120	**230 - <235**
		10/2010	0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	21	<50	21 -<76
		1/2011	1.4	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		4/2011	0.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	60	94	**154 - <159**
		7/7/2011	0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<9.9	<49	0 - <63.9
		10/4/2011	0.4	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<9.9	<50	0 - <64.9
		1/6/2012	0.7	<0.049	<0.049	<0.049	<0.097	0 - <0.244	<4.9	<9.9	<49	0 - <63.8
		4/5/2012	0.4	<0.048	<0.048	<0.048	<0.096	0 - <0.240	<4.8	<9.7	<49	0 - <63.5
MP3	6	10/2002	777	2	<0.05	<0.05	<0.1	2.0 - <2.2	NA	NA	NA	**750**
		10/2003	314	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**400**
		10/2004	0.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2005	0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	39
		10/2006	4.7	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2007	0.4	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	45
		10/2008	3.9	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	78	78 - <93
		4/2009	0.9	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		7/2009	0.5	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	**0 - <65**
		10/2009	0.5	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		1/2010	0.4	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		4/2010	1.9	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		7/2010	0.4	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		10/2010	1.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		1/2011	0.9	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		4/2011	0.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	16	<50.0	16 - <71
		7/7/2011	0	<0.048	<0.048	<0.048	<0.095	0 - <0.239	<4.8	12	<51	12 - <67.8
		10/4/2011	0.2	<0.050	<0.050	<0.050	<0.10	0 - <0.25	<5.0	<9.9	<50	0 - <64.9
		1/6/2012	4.7	<0.049	<0.049	<0.049	<0.098	0 - <0.245	<4.9	<9.9	<50	0 - <64.8
		4/5/2012	0.2	<0.48	<0.48	<0.48	<0.097	0 - <0.241	<4.8	<10	<51	0 - <65.8

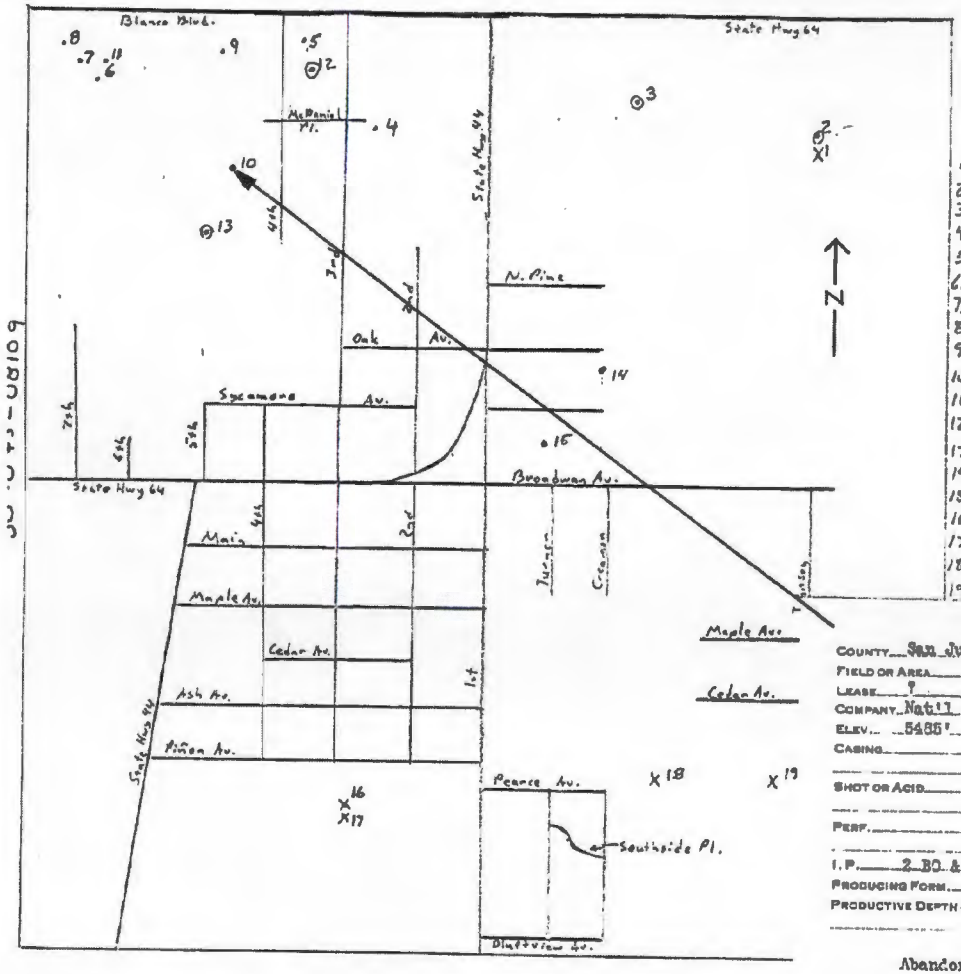
TABLE 7

PETROLEUM HYDROCARBON SOIL ANALYTICAL RESULTS - BIOVENT SYSTEM
BLOOMFIELD CRUDE STATION
WESTERN REFINING SOUTHWEST, INC.

Sample ID	Sample Depth (ft)	Date Sampled	Field Headspace Reading (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	Gasoline Range Organics* (mg/kg)	Diesel Range Organics * (mg/kg)	Motor Oil Range Organics * (mg/kg)	Total Petroleum Hydrocarbons ** (mg/kg)
MP7	6	10/2002	872	2	<0.05	<0.05	<0.1	2.0 - <2.2	NA	NA	NA	**2,830**
		10/2003	3946	3.5	<0.05	<0.05	<0.1	3.5 - <3.7	NA	NA	NA	**4,700**
		10/2004	994.0	3.5	<0.05	<0.05	<0.1	3.5 - <3.7	NA	NA	NA	**2,330**
		10/2005	443	< 0.13	< 0.13	6	32	38 - <38.26	NA	NA	NA	**2,040**
		10/2006	4.9	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	22
		10/2007	0.5	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	**1,250**
		10/2008	4.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	730	1500	**2,230 - <2,235**
		4/2009	9.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		7/2009	2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	460	350	**810 - <815**
		10/2009	1.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	960	1300	**2,260 - <2,265**
		1/2010	0.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	91	130	**221 - <226**
		4/2010	0.6	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	400	340	**740 - <745**
		7/2010	0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	890	1100	**1,990 - <1,995**
		10/2010	1.4	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	28	<50	28 - <83
		1/2011	1.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	62	99	**161 - <166**
		4/2011	0.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	670	930	**1,600 - <1,605**
		7/7/2011	0	<0.049	<0.049	<0.049	<0.098	0 - <0.24	<4.9	580	650	**1,230 - <1,234.9**
		10/4/2011	0.4	<0.047	<0.047	<0.047	<0.094	0 - <0.235	<4.7	180	<240	**180 - <424.7**
		1/6/2012	0.3	<0.047	<0.047	<0.047	<0.095	0 - <0.236	<4.7	230	340	**570 - <574.7**
		4/5/2012	0	<0.049	<0.049	<0.049	<0.099	0 - <0.246	<4.9	36	<49	36 - <89.9
IP10	6	10/2002	756	0.42	<0.05	<0.05	<0.1	0.42 - <0.62	NA	NA	NA	**1,470**
		10/2003	311	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	21
		10/2004	262.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2005	30.3	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2006	13.8	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2007	0.5	<0.05	<0.05	<0.05	<0.1	0 - <0.25	NA	NA	NA	ND
		10/2008	25.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	240	440	**680 - <685**
		4/2009	6.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		7/2009	2.4	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		10/2009	0.9	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		1/2010	0.2	<0.05	<0.05	<0.05	<0.1	0 - <0.25	5.2	<10	<50	5.2 - <65.2
		4/2010	0.1	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	200	210	**410 - <415**
		7/2010	0.5	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		10/2010	0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	60	<50	60 - **<115**
		1/2011	1.9	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	<10	<50	0 - <65
		4/2011	0.0	<0.05	<0.05	<0.05	<0.1	0 - <0.25	<5.0	59	110	**169 - <174**
		7/7/2011	0	<0.049	<0.049	<0.049	<0.098	0 - <0.24	<4.9	<10	<52	0 - <66.9
		10/4/2011	0.2	<0.050	<0.050	<0.050	<0.10	0 - <0.25	<5.0	<9.8	<49	**0 - <63.8**
		1/6/2012	0.8	<0.048	<0.048	<0.048	<0.096	0 - <0.24	<4.8	340	620	**960 - <964.8**
		4/5/2012	0.2	<0.48	<0.48	<0.48	<0.095	0 - <0.239	<4.8	12	<51	12 - <67.8
NMOCD Standard				**10**	**NE**	**NE**	**NE**	**50**	**NE**	**NE**	**NE**	**100**

Notes:
ft - feet
mg/kg - milligrams per kilogram
NA - not analyzed
ND - not detected
NE - not established
NMOCD - New Mexico Oil Conservation Commission
ppm - parts per million
TPH - total petroleum hydrocarbons
Bold indicates value exceeds NMOCD standard
< indicates result is less than the stated laboratory method detection limit
* - gasoline range organics = Carbon (C) range 6-C10, diesel range organics = C10-C22, motor oil range organics = C22-C36
** - total petroleum hydrocarbons, summation of Gasoline Range, Diesel Range, and Motor Oil Range Organics

APPENDICES



Wells in Sec. 22, Twp 29N. R

X Producers
⊙ Reported as P+A
• Wells reported as drilled and no records

1.	Mañana Gas Inc.	Finch #1
2.	Melborne Pet. Corp.	M.T. Finch #1
3	" " "	R.L. Finch #1
4.	Frank Webber	? #1
5.	Finley & Johansen	Hare #1
6.	Haney & Smith	Kitted #1
7.	Mid Continent Oil	Hare #1
8	Smith & Miley	Bishop #3
9	Bloomfield O&G	Grace Bishop #4
10	Nat'l Petro. Co.	? #1
11	A.E. Haney	Bishop #1
12.	Vincent & Goodrum	Refinery Hare #1
13.	Page & Davis	Salmon #1
14.	Finley & Johnson	Fee #1
15.	Bloomfield O&G	S.W. Gannison #1
16	Kimbell Oil Co.	Cook #2
17	"	Cook #1
18	John C. Pickett	Grace Pearce #1
19.	Kimbell Oil Co.	Hartman #1

COUNTY San Juan STATE NEW MEXICO SE
FIELD OR AREA Bloomfield SEC. 22 T. 29N R.
LEASE ? LOCATION 905'/N
COMPANY Nat'l Petr. Co. WELL NO. 1
ELEV. 5485' T.D. 700' SPD. COMPLETED
CASING P.B.
SHOT OR ACID
PERF.
I.P. 2 BO & 10 BW
PRODUCING FORM.
PRODUCTIVE DEPTH OR INTERVAL

REMARKS:
Abandoned, 9-30-25 P&A 1932

APPENDIX A
HISTORICAL MAP FROM NMOCD
BLOOMFIELD CRUDE STATION
SEC 22 T29N R11W
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.