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Volume I

NAVAJO REFINING COMPANY
ARTESIA REFINERY

THREE MILE DITCH AND EVAPORATION PONDS
CORRECTIVE ACTION INVESTIGATION REPORT

RCRA Permit No. D048918817

December 2004

Navajo Refining Company
501 East Main Street, P.O. Drawer 159
Artesia, New Mexico 88210
505-748-3311

ARCADIS

Infrastructure, buildings, environment, communications

ARCADIS G&M, Inc.
11490 Westheimer
Suite 600
Houston, Texas 77077
Tel 281.497.6900
Fax 281.497.7258
www.arcadis-us.com

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

Subject:
Navajo Refining Company RCRA Permit No. D04891887
Submittal of RCRA Facility Investigation Report for
Three-Mile Ditch and the Evaporation Ponds

Date:
December 27, 2004

Contact:
Michael Norman

Phone:
281.509.6489

Email:
mnorman@arcadis-us.com

Our ref:
MT000839

Dear Mr. Bearzi:

The Navajo Refining Company Post-Closure Permit directs Navajo Refining Company to complete a RCRA Facility Investigation for Three-Mile Ditch and the Evaporation Ponds. At the direction of Navajo, I am submitting two copies of the investigation report for these units.

If you have any questions, please contact Darrell Moore with Navajo Refining at 505.748.3311 or Michael Norman with ARCADIS at 281.509.6489.

Sincerely

ARCADIS G&M Inc.

Michael Norman

CC: Darrell Moore, Navajo Refining Co. (with attachment)
Wayne Price, New Mexico Oil Conservation Division (with attachment)
David Cobrain, New Mexico Environment Division (letter only)

Att.

Michael Norman
Regional Program Manager/ARCADIS G&M Inc.

Sharon Hall, (By Michael Norman)
Sharon Hall P.G.
Site Evaluation Department Manager/ARCADIS G&M Inc.

THREE MILE DITCH AND EVAPORATION PONDS

CORRECTIVE ACTION INVESTIGATION REPORT

Prepared for:
Navajo Refining Company
Artesia, New Mexico

Prepared by:
ARCADIS G&M, Inc.
11490 Westheimer
Suite 600
Houston
Texas 77077
Tel 281 497 6900
Fax 281 497 7258

Our Ref.:
MT000839.0001

Date:
December 23, 2004

NAVAJO REFINING CO., ARTESIA NEW MEXICO
THREE MILE DITCH AND EVAPORATION PONDS
CORRECTIVE ACTION INVESTIGATION REPORT

CERTIFICATION BY RESPONSIBLE OFFICIAL

To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this report is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Donald E. Whaley
Name (printed)

Signed

Environmental Manager
Title

12/28/04
Date

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EXECUTIVE SUMMARY

The RCRA Post-Closure Care Permit for the Navajo Refining Company Artesia Refinery, requires the assessment of solid waste management units (SWMUs) associated with historical operations at the refinery. Navajo submitted a workplan to assess Three-Mile Ditch (TMD) and the Evaporation Ponds (EP) on January 3, 2004. NMED approved the workplan March 10, 2004 and field work to implement the workplan began on June 7 and was completed on July 30.

Three-Mile Ditch was used to convey wastewater from the refinery to Evaporation Pond 1 until 1987 when it was replaced with a closed pipeline and filled in. The Evaporation Ponds occupy approximately 100 acres three miles east of the refinery and have been dry since late 2000, about a year after wastewater discharges to the ponds were discontinued. Pond 1 was used from the early 1930's until it was taken out of service in 1987 when the new wastewater pipeline was constructed. Ponds 2, 3, 5 and 6 (Pond 4 was never constructed) were constructed between 1966 and 1988 and used until September 1999 when wastewater was routed to Class I injection wells.

Previous investigations of Three-Mile Ditch in the early 1990's indicated that low levels of petroleum hydrocarbons and metals, primarily lead, were present. Groundwater monitoring wells in the vicinity of the ditch did not indicate contamination. The ditch follows an easement along Eagle Draw from the refinery to the Ponds near the Pecos River. The area of the ditch is unpopulated and used primarily for agricultural and ranching purposes. Human or ecological exposure to potentially contaminated ditch soils is unlikely since the ditch is covered.

The site of the Evaporation Ponds is owned by Navajo. There are no industrial, commercial, agricultural or other activities at the site or adjacent property owned by Navajo. Land in the general area surrounding the ponds not owned by Navajo is used primarily for ranching. Previous studies of the pond sediments in the early 1990's indicated the presence of petroleum hydrocarbon constituents and metals. Some groundwater monitoring wells directly downgradient from the ponds indicated the presence of benzene and arsenic. However Navajo owns the property above the suspected plume and the groundwater is not used for any purpose.

The purpose of this investigation is to determine if historic use of Three-Mile Ditch and the Evaporation Ponds resulted in contamination of soil or groundwater at levels that pose a threat to human health or the environment and if remediation, engineering controls or institutional controls might be needed.

Two hundred seventy one (271) soil samples from 119 borings spaced along TMD, throughout the EP and outside the EP berms were analyzed for total petroleum hydrocarbons (diesel range organics - DRO), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and RCRA metals. Groundwater samples obtained from 61 selected borings were analyzed for BTEX (benzene, toluene, ethylbenzene, xylenes) or VOCs, and SVOCs. Groundwater samples obtained from 31 existing monitor wells along TMD and around the EPs were analyzed for VOCs, SVOCs, metals and general water quality parameters. Twenty four (24) soil samples from ten (10) background borings placed near the refinery, along TMD and around the EPs were analyzed for metals, soil pH and grain size distribution.

Navajo has followed NMEDs soil screening guidance to determine those compounds that exceed risk-based screening levels and for which additional evaluation, risk assessment or cleanup may be required. Given the setting and potential exposure scenarios for Three-Mile Ditch and the Evaporation Ponds, concentration levels for detected compounds in this investigation have been compared with the lower of the Industrial/Occupational screening level or the DAF 20 soil-to-groundwater screening level. This value is referred to as the Critical Soil Screening Value (CSSL). Analytical values for groundwater sampled from monitor wells or borings were compared to the New Mexico groundwater standards (GWS).

Conclusions and Recommendations Regarding Three-Mile Ditch

Analytical results demonstrate that historic use of Three-Mile Ditch has resulted in limited and isolated impacts that may be of concern, given the current and future land use. While organics are present in the form of DRO, few specific organic compounds were identified at concentrations above the screening levels in soils or groundwater and these occurred at only a few locations. Four metals were identified above the Critical Soil Screening Level (CSSL – generally soil-to-groundwater leaching) in some boring soils, but none exceeded the industrial/occupational or construction worker Soil Screening Level (SSL) and only one metal, selenium, was found in groundwater slightly above acceptable drinking water standards.

Groundwater along TMD is of poor quality with average TDS levels near 6,000 mg/L and nitrates/nitrates up to 32 mg/L (9.1 mg/L avg.) from agricultural operations, making minor exceedances for selenium relatively inconsequential.

As in previous studies conducted in the early 1990s, this study has concluded that the major area of potential concern is between Bolton Road and Haldeman Road. Conclusions regarding areas of potential concern in this area are presented below:

- **TMD-11.** The highest concentration of lead along TMD was found at this location (15,200 mg/kg), more than five times higher than any other location except TMD-1, inside the refinery. Chromium and selenium exceedances are just above the CSSL but do not exceed the industrial/occupational or construction worker SSL. There were no exceedances in the boring groundwater or in groundwater from nearby monitor well MW-20. Limited soil removal may be warranted at this location due to the lead level.

- **TMD-12 to TMD-15.** Four of the five borings along this section exhibited lead concentrations of 1,350 mg/kg to 2,590 mg/kg, less than four times the CSSL of 750 mg/kg. Selenium levels in two borings and arsenic in one boring were just above the CSSL. The selenium concentrations do not exceed the industrial or construction worker SSLs and the arsenic concentration does not exceed the DAF 20 soil-to-groundwater SSL. None of the borings had DRO concentrations above 2,000 mg/kg. Groundwater from borings at these locations did not have any exceedances. Although there is no indication that groundwater along this section of ditch is impacted and the lead exceedances are minimal, soil removal along this section may be prudent.

- **TMD-16 to TMD-19.** Monitor wells MW-8, -21, -9 and -29 are located along this section of TMD and all have concentrations of selenium elevated above the GWS. MW-21, near TMD-16, also had an exceedance for one SVOC. Maximum DRO levels in TMD-17, -18 and -19 range from 3,220 mg/kg to 7,430 mg/kg and TMD-17 soil exceeded the standard for benzene, naphthalene and selenium. The highest observed values for arsenic, chromium and selenium occurred in TMD-19 soils and groundwater from the boring also indicated benzene and SVOCs above the GWS. Given the more extensive nature of constituents that exceed the CSSL or GWS along this section, limited soil removal may be warranted at this location.

Additional investigation or delineation of Three-Mile Ditch should not be necessary. Based on this investigation, Navajo proposes to prepare a workplan for limited soil removal from an area just west of TMD-11, extending east past TMD-19, a length of approximately 2,500 feet. Remediation of this area would consist of removing soils from an area about 10 feet wide to a depth of 2.5 – 3 feet. Removed soils will be placed in Evaporation Pond 2, near the southwest corner and the excavated area backfilled with clean soil.

Following soil removal, selected existing monitor wells along TMD should be monitored semiannually for three years for BTEX, naphthalene, lead and selenium as well as general water quality parameters, TDS and nitrates/nitrites. At the end of three years, results will be evaluated to determine groundwater trends and if monitoring can be terminated.

Conclusions and Recommendations Regarding the Evaporation Ponds

Monitor Well Groundwater Quality

Four or five wells immediately downgradient from Pond 1 have minor levels of organic constituents below the WQS. The only exceedance of the GWS is for arsenic, in six of the downgradient wells. However, the two wells immediately downgradient from Pond 1 do not have arsenic present above the WQS. The low level of organics and the distribution of the arsenic exceedances suggest that the ponds are not a continuing source of contamination to area groundwater.

General water quality for groundwater in the vicinity of the ponds is very poor. With an average TDS of about 8,000 mg/L, and the 95% UCL for TDS in upgradient and downgradient wells at 12,000 mg/L, groundwater in the area arguably exceeds the 10,000 mg/L level for application of drinking water standards. The land around the ponds and downgradient from the ponds, over the arsenic plume, is owned by Navajo and there is no risk from exposure by someone using that groundwater source.

Pond 1 and Influent Areas of Pond 2 and Pond 5

Conditions in Pond 1 and the areas near the historical discharge points to Pond 2 and Pond 5 are similar and have had little affect on groundwater. Pond 1 encompasses approximately 15 acres. The impacted area of Pond 2 extends about 300 feet from the historical discharge point at the southwest corner of the pond. The area covered by the boring locations in Pond 5 extends about 50 feet from the historical discharge point at the northwest corner.

DRO exceeds the 2,000 mg/kg SSL in most of these pond areas to a depth of about five feet although somewhat deeper areas are affected in Pond 2. Although characterized by relatively high DRO levels, exceedance of CSSLs by specific organics is infrequent. Benzene was detected above the CSSL in five samples from Pond 1 and eight samples from Pond 2. Methylene chloride was detected above the CSSL in Pond 2; however, since methylene chloride is not commonly used in refineries this is likely a laboratory artifact. Several other organics were detected in Pond 1 and impacted areas of Pond 2 and Pond 5 at concentrations above the CSSSL, but only in a few borings

Three metals were detected above the CSSL: arsenic, chromium and selenium. The 95% UCL concentrations for arsenic did not exceed the CSSL. The 95% UCL for chromium VI concentrations estimated from total chromium concentrations exceeded the CSSL in Pond 1 and Pond 2, but not Pond 5. It is unlikely however that actual chromium VI concentrations are this high. Some selenium concentrations in Pond 2 and Pond 5 exceeded the CSSL; however, the average concentration and the 95% UCL for selenium in Pond 2 did not exceed the CSSL.

Although some organic and metal constituent concentrations exceeded the CSSL, which are primarily DAF 20 soil-to-groundwater protective levels, no concentrations exceeded the industrial/commercial or construction worker SSLs.

Although several organic compounds were detected in pond soils above the CSSL, or had SQLs elevated above the CSSL, few organics were detected above the Groundwater Standard (GWS) in groundwater from the borings. Only benzene in one boring from Pond 1 and four borings from Pond 2 exceeded the GWS. Ethyl benzene, toluene and xylenes, as well as several other volatile and semivolatile compounds were detected, but none were above the WQS. BTEX and several SVOCs were detected in groundwater obtained from borings just to the south of the Pond 1, Pond 2 and Pond 3. Only benzene exceeded the GWS in four of these borings.

Monitor wells immediately downgradient from Ponds 1 and 3 did indicate the presence of BETX compounds as well as three semivolatiles, however none were above the WQS. Some downgradient wells did exceed the WQS for arsenic. One well, over 1500 feet southeast of the ponds also showed an exceedance of the WQS for selenium.

Although soils in Pond 1 and the discharge areas of Ponds 2 and 5 have high levels of DRO with the presence of some organics, the levels have not impacted groundwater above GWSs for any distance downgradient from the ponds. Elevated levels of arsenic in some downgradient wells indicate that there may have been some impact from arsenic in the past, although it is not clear the source was necessarily the ponds. Since the ponds are now dry they should not pose a source of continuing leaching or release to groundwater. In any case, the poor quality of groundwater would suggest that the water is sufficiently high in TDS that drinking water standards should not apply.

Other Pond Areas

The remaining areas of Ponds 2 and 5, as well as Pond 3, Pond 6 and the area just to the south of the berms indicated the occasional presence of low level VOCs. None of the detected organics exceeded the applicable GWS. Several detections of arsenic and selenium exceeded the CSSL, however only the 95% UCL for selenium in Pond 3 exceeds the CSSL. No organics were detected in groundwater from borings in these pond areas.

This investigation indicates that the closed ponds pose little to no risk and are not impacting groundwater above a level of concern. Therefore, no remediation or engineering controls are necessary for the closed ponds. Navajo proposes to prepare a post-closure plan to maintain the pond area to include deed recordation; maintenance of dikes, fences and signs; and routine inspections. The post-closure plan will also include a plan to monitor evaporation pond wells on a semi-annual or annual basis.

1. INTRODUCTION

The RCRA Post-Closure Care Permit for the Navajo Refining Company Artesia Refinery, effective October 2003, requires the assessment of various facilities and solid waste management units (SWMUs) associated with historical operations at the refinery. As required by the Permit, Navajo submitted a workplan to assess the Evaporation Ponds (EP) and Three-Mile Ditch (TMD) on January 3, 2004 (within 90 days of the effective permit date of October 5, 2003). NMED approved the workplan March 10, 2004, with commencement of field activities required within 90 days (by June 9, 2004). Field work to implement the workplan began on June 7 and was completed on July 30. NMED was notified more than one week prior to initiation of field activities in compliance with permit requirements. Submittal of this Investigation Report is required within 150 days of completion of field activities (by January 1, 2005).

Three-Mile Ditch was used to convey wastewater from the refinery to Evaporation Pond 1 until 1987 when it was replaced with a closed pipeline and has been inactive since that time. The Evaporation Ponds occupy approximately 100 acres three miles east of the refinery and have been dry since late 2000; about a year after wastewater discharges to the ponds were discontinued. Pond 1 was used from the early 1930's until it was taken out of service in 1987 when the new wastewater pipeline was constructed. Ponds 2, 3, 5 and 6 (Pond 4 was never constructed) were constructed between 1966 and 1988 and used until September 1999 when wastewater was routed to Class I injection wells. The following Section 2 (Background) provides more detail regarding Three-Mile Ditch and the Evaporation Ponds.

The purpose of this investigation is to determine if use of Three-Mile Ditch and the Evaporation Ponds resulted in contamination of soil or groundwater at levels that pose a threat to human health or the environment and if remediation, engineering controls or institutional controls might be needed.

Two hundred seventy one (271) soil samples from 119 borings spaced along TMD, throughout the EP and outside the EP berms were analyzed for total petroleum hydrocarbons (diesel range organics - DRO), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and RCRA metals. Groundwater samples obtained from 61 selected borings were analyzed for BTEX (benzene, toluene, ethylbenzene, xylenes) or VOCs, and SVOCs. Groundwater samples obtained from 31 existing monitor wells along TMD and around the EPs were analyzed for VOCs, SVOCs, metals and general water quality parameters. Twenty four (24) soil samples from ten (10) background borings placed near the refinery, along TMD and around the EPs were analyzed for metals, soil pH and grain size distribution. A total of 45 soil and 74 water quality control samples were analyzed.

Detail concerning the scope of the investigation is provided in Section 3. Table 2 provides a listing of borings, soil samples, groundwater samples and QC samples along with the analyses performed.

Individual sample analytical results are presented in attached Tables 6 through 14 as well as summary data comparing results to New Mexico or EPA Region 6 soil screening levels or water quality standards.

2. BACKGROUND

Navajo Refining Company operates a 70,000 barrel-per-day petroleum refinery located at 501 East Main Street in the city of Artesia, Eddy County, New Mexico. The mailing address is:

Navajo Refining Company

P.O. Box 159

Artesia, NM 88211-0159

The facility has been in operation since the 1920's and processes crude oil into asphalt, fuel oil, gasoline, diesel, jet fuel, and liquefied petroleum gas. A Facility Location Map is provided in Figure 1.

The Navajo refinery is regulated under the Resource Conservation and Recovery Act (RCRA), having EPA ID Number NM0048918817. The New Mexico Environmental Department (NMED) issued a Hazardous Waste Facility Permit to Navajo effective August 21, 1989. The RCRA Permit was issued for 10 years with an expiration date in August 1999.

Included as part of the 1989 Hazardous Waste Facility Permit was a Hazardous and Solid Waste Amendment (HSWA) Permit issued by the EPA. This permit required Navajo to identify all historical and current non-hazardous Solid Waste Management Units (SWMUs) and investigate those that had the potential to pose a threat to human health or the environment. SWMUs which pose a potential threat must undergo additional investigation (a RCRA Facility Investigation, or RFI) and possibly corrective measures (Corrective Measure Implementation, or CMI) to minimize the threat.

From an initial list of nineteen (19) SWMUs found at the Navajo refinery, three (3) were identified as requiring further investigation: The Truck Bypass Landfarm, Three-Mile Ditch (TMD), and the Evaporation Ponds (EPs). Three-Mile Ditch was used to convey treated processed wastewater to a series of ponds, referred to as Evaporation Ponds 1-6, located three (3) miles east of the refinery. The Evaporation Ponds occupied an area of approximately 100 acres and used solar evaporation to eliminate treated wastewater since there was no other feasible option for disposal or discharge. Pond 1 was taken out of service in 1987 when the open ditch was replaced with a closed pipeline.

2.1 Three-Mile Ditch

From the 1930s to 1987, a 3-mile-long unlined earthen ditch was used to convey process wastewater from the refinery to Evaporation Pond 1 (see Figure 1, Facility Location Map). Three-Mile Ditch was 3 to 4 feet wide, 1 to 2 feet deep and bermed to prevent overflow or the influx of surface water. The ditch approximately parallels the drainage of Eagle Creek on the south side of the creek; however, the base of the ditch is 5 to 10 feet above the creek bed. As the ditch approaches the Pecos River its course shifts away from Eagle Creek, turning southeast toward the Evaporation Ponds.

Three-Mile Ditch originated at the discharge from the oil/water separator on the northwest side of the refinery and operated via gravity flow. The ditch was periodically cleared of surface debris and dredged with a backhoe. The waste material removed from the bottom of the ditch was placed along the berms. In 1987, a pipeline constructed of high density polyethylene with thermally welded joints was constructed parallel to the ditch to convey the wastewater. Soil from the area adjacent to the ditch was used to cover the ditch. At that time, the point of discharge was also relocated from Pond 1 to Pond 2 and Pond 2 was taken out of service and allowed to dry.

The ditch is no longer visually evident along much of its former conveyance. Its location was identified based on historical knowledge by long-time Navajo employees, proximity to the pipeline and Eagle Creek and aerial photographs (Appendix 1).

2.2 Evaporation Ponds

The Evaporation Ponds (surface impoundments) are located adjacent to the Pecos River approximately three miles east of the refinery (Figure 1). There are a total of five evaporation ponds. Pond 1 received refinery wastewater between the early 1930s and 1987 and is considered a part of solid waste management unit (SWMU) 4. Ponds 2, 3, 5, and 6 were constructed between 1966 and 1988. Pond 4 was never constructed. The combined surface area of the evaporation ponds is approximately 100 acres. Wastewater effluent discharged directly from the refinery to Pond 1 via an open ditch (Three-Mile Ditch [TMD]) until 1987.

In 1987, discharge to Pond 1 was discontinued when the pipeline was installed to replace TMD and Pond 1 was taken out of service. After the wastewater pipeline was installed, refinery wastewater was discharged Pond 2 between 1987 and 1994 and to Pond 5 between 1994 and 1999. Ponds 3 and 6 received overflow from Ponds 2 and 5. Discharge to Ponds 2, 3, 5 and 6 was discontinued in September 1999. At that time, Navajo began operation of an on-site wastewater treatment system that discharges to

the City of Artesia publicly owned treatment works (POTW) and to a Class I injection well owned by Navajo. The Class I injection well operates under a discharge permit issued by the New Mexico Oil Conservation Division (OCD).

Pond 1 was constructed in the 1930s and taken out of service in 1987 when the open conveyance ditch was filled in and replaced with a closed pipeline. Pond 1 has been dry since 1987 and for several years underwent periodic turning and disking of the soils to promote natural biodegradation of organic constituents. After 1987, the active pond system consisted of Ponds 2, 3, 5 and 6. Pond 4 was never constructed.. Pond 2 was built in 1966, Pond 3 in 1974, Pond 5 in 1984, and Pond 6 in 1988 to provide additional capacity as the refinery grew. When Pond 1 was taken out of service in 1987, the effluent was routed to Pond 2 through the newly constructed pipeline. Pond 1 had a surface area of approximately 16 acres and Ponds 2-6 have a total area of approximately 95 acres.

The ponds are constructed in a bend of the Pecos River with their base 2 to 10 feet above the surface of the Pecos River. The dikes surrounding the ponds are 8 to 10 feet high and 25 to 50 feet wide at the base. The design of the perimeter dikes served to retain the effluent water and will secure the site from storm water run-on and potential flood water. The ponds are separated by interior dikes of varying heights. In 1988, the perimeter dikes around Ponds 2-6 were improved to meet New Mexico requirements and in January 1994, the perimeter dike height was increased by 2 feet.

In early 1994, improvements were made to the dike separating Pond 2 from Ponds 3 and 5 to eliminate hydraulic cross connection. In February 1994, the point of discharge was relocated from Pond 2 to Pond 5 and the water in Pond 2 was pumped out to the extent possible in anticipation of receiving approval to implement the a closure plan proposed at that time. In late 1997 it became necessary to again use Pond 2 for waste water storage because the remaining ponds were at capacity due to greater than normal precipitation and lower than normal evaporation during the past summer coupled with increased waste water flows resulting from recent refinery upgrade projects. A berm was constructed in the southwest corner of Pond 2 in an arc about 200 feet from the previous discharge outfall to isolate that area and prevent it from being inundated. 1997 aerial photographs of the pond area in Appendix 2 show the ponds while Pond 2 was dry and water was contained in Ponds 3, 5 and 6.

Wastewater discharges to the ponds were discontinued in September 1999 and the remaining water in the ponds evaporated by the end of the following summer. The entire perimeter of the site is fenced with 4-strand barbed wire on steel posts. There are several gates, which are kept locked. The fences and gates are maintained to prevent unknowing entry and minimize the possibility of unauthorized entry by persons or livestock.

2.3 Previous Investigations

Following completion of the Phase I RCRA Facility Investigation (RFI) in December, 1990, it was agreed by EPA and NMED that only annual monitoring was required for the Truck Bypass Landfarm, but that additional investigations were required for Three-Mile Ditch and the Evaporation Ponds.

The second phase of investigation of Three-Mile Ditch and the Evaporation Ponds was conducted from 1991 through 1993, resulting in the RFI Phase II Report finalized in November, 1993.

Additional investigation work on Ponds 2-6 was completed in September 1993. A preliminary closure approach report was submitted to EPA and NMED in October, 1993 and served as the basis for determining how Ponds 2-6 would be de-commissioned and closed. The first draft of the Closure Plan for Ponds 2-6 was submitted to EPA and NMED in March 1995. Following additional human health and ecological risk studies, a final Closure Plan was submitted in August 1996. Details of the risk assessment and closure methodology were developed in conjunction with the EPA and NMED. The risk assessment results indicated acceptable human health and ecological risks under an agricultural land use scenario.

During this period, studies of Three-Mile Ditch, Pond 1 and the groundwater continued. A final Phase III Investigation Report addressing comments from the EPA and NMED was submitted in January 1996 along with a proposed work plan for removal of waste soils from Three-Mile Ditch. Risk analyses conducted as part of the CMS Workplan indicated acceptable human health and ecological risk for future agricultural use of the site.

At the request of NMED, Navajo submitted a Post-Closure Permit Application in June 1998. The original intent of this application to address only closure and post-closure activities at the Evaporation Ponds and Three-Mile Ditch was expanded to include a complete RCRA Permit renewal application. While the permit application was pending with NMED, no additional site investigation activities were undertaken. Table 1 contains references for previous investigation reports for Three-Mile Ditch and the Evaporation Ponds.

The Secretary of the NMED issued a Post-Closure Care Permit to Navajo Refining Company, the owner and operator of the Artesia Refinery Facility (EPA ID number NMD 048918817) effective October 5, 2003. The Permit authorizes and requires Navajo (the Permittee) to conduct post-closure care at closed surface impoundments and a closed land treatment unit at the Artesia refinery. The permit also requires Navajo to submit workplans for investigation of all other identified SWMUs and Areas of concern (AOCs) within four years.

2.4 Current Conditions

The Evaporation Ponds and Three-Mile Ditch are out of service and dry. Three-Mile ditch was filled in and covered when the pipeline was installed in 1987. Previous investigations discussed above indicated low levels of petroleum hydrocarbons and metals, primarily lead, were present. Groundwater monitoring wells in the vicinity of the ditch did not indicate contamination. The ditch follows an easement along Eagle Draw from the refinery to the Ponds near the Pecos River. The area of the ditch is unpopulated and used primarily for agricultural and ranching purposes. Human or ecological exposure to potentially contaminated ditch soils is unlikely since the ditch is covered.

The site of the Evaporation Ponds is owned by Navajo and the entire perimeter is fenced with 4-strand barbed wire on steel posts. There are several gates, which are kept locked. The fences and gates are maintained to prevent unknowing entry and minimize the possibility of unauthorized entry by persons or livestock. There are no industrial, commercial, agricultural or other activities at the site or adjacent property owned by Navajo. Land in the general area surrounding the ponds not owned by Navajo is used primarily for ranching. Previous studies of the pond sediments in the early to mid 1990's indicated the presence of petroleum hydrocarbon constituents and metals. At that time, groundwater monitoring wells directly downgradient from the ponds indicated the presence of benzene and arsenic. However Navajo owns the property above the suspected plume and the groundwater is not used for any purpose.

2.5 Regional Geology

Navajo Refinery is located on the northwest Shelf of the Permian Basin. In this region, the deposits are comprised of approximately 250 to 300 feet of Quaternary alluvium uncomformably overlying approximately 2,000 feet of Permian clastic and carbonate rocks. These Permian deposits uncomformably overlie Precambrian syenite, gneiss and diabase crystalline rocks. The relationships between the sedimentary deposits are discussed below.

Quaternary Alluvium

The Quaternary alluvium in the refinery area is dominantly comprised of clays, silts, sands and gravels deposited in the Pecos River Valley. These "valley fill" deposits extend in a north-south belt approximately 20 miles wide, generally west of the Pecos River. The thickness of the valley fill varies from a thin veneer on the western margins of the Pecos River valley to a maximum of 300 feet in several depressions, one located beneath the refinery. These depressions have resulted from dissolution of the underlying Permian carbonates and evaporites. The sedimentology and mineralogy of the valley fill deposits can be divided into three units: the uppermost carbonate gravel unit, the interbedded clay unit and the underlying quartzose unit.

The carbonate gravel unit blankets the other valley fill units and forms a fairly uniform slope from the Permian rock outcrop areas on the west side of the Permian valley east to the Pecos River floodplain. The unit consists of coarse-grained carbonate gravel deposits along major drainageways to the Pecos River, which grade into brown calcareous silts and thin masses of caliche in the interstream regions. The carbonate gravel unit includes the Orchard Park, Blackdom and Lakewood terrace deposits of Fielder and Nye as well as Holocene and Pleistocene Pecos River alluvial deposits.

The agricultural land around Artesia is part of the Orchard Park terrace deposit, which forms a thin veneer overlying older valley fill alluvium. The Orchard Park terrace surface gently rises in elevation to between 5 and 25 feet above the Lakewood terrace. The Orchard Park is generally less than 20 feet in thickness in the refinery area and is comprised of silt interbedded with poorly sorted lenses of mixed size pebbles in a silt and sand matrix. Chalky caliche commonly occurs in the upper layers. The Blackdom terrace is about 40 to 50 feet in elevation above the Orchard Park terrace west of Artesia. However, the deposits associated with the Blackdom terrace are generally less than 20 feet in thickness. The Blackdom terrace deposits are coarser grained than the deposits associated with the Orchard Park and Lakewood terraces. In addition, the caliche soils have a higher density than those developed on the Orchard Park terrace.

The Lakewood deposits, the lowest of the three terrace units, are essentially the current alluvial sediments in the floodplain along the river. They consist of brown sandy brown silt interbedded with lenses of gravel and sand and some localized caliche in higher parts. The Lakewood Terrace is confined to the area immediately adjacent to the river and is underlain by Pleistocene alluvium deposited by the Pecos and its tributaries.

The clay unit is not laterally continuous throughout the valley fill deposits, but occurs in isolated lenses generally overlying the quartzose unit. The clay unit is comprised of light-to-medium-gray clays and silts deposited in localized ponds and lakes. These ponds and lakes may have formed in conjunction with dissolution and collapse of the underlying Permian rocks.

The quartzose unit consists primarily of fragments of quartz and igneous rocks cemented by calcium carbonate. This unit is laterally contiguous throughout the Pecos River Valley and is generally less than 250 feet thick. The quartzose unit unconformably overlies Permian Rocks and lower quartzose gravels are commonly used for groundwater production.

Permian Artesian Group

The Permian Artesian Group is comprised of five formations (from shallowest to deepest): the Tansill, Yates, Seven Rivers, Queen and Grayburg, Formations. The Tansill and Yates Formations outcrop at the surface east of the Pecos River and are not present in the vicinity of the refinery.

The uppermost Permian formation in the Artesia area is the Seven Rivers Formation, which outcrops east of the Pecos River. This eastward-dipping formation is eroded and buried by the valley fill alluvium at a depth of 300 feet in the area between the river and the refinery. Nearer the refinery, the formation thins and disappears farther west. Where the formation is present, it consists of a sequence of evaporites, carbonates, gypsum and shale with isolated sand and fractured anhydrite/gypsum lenses. An examination of available borehole logs by IT Corporation in the mid-80s provided no indication that the Seven Sisters formation is present at any depth beneath the refinery. All lithologic logs of wells completed in the refinery area describe unconsolidated alluvial deposits from depths of about 20 feet to over 250 feet.

In the area of the refinery, the Queen and Grayburg formations have been mapped as a single unit by geologists as consisting of about 700 feet of interbedded dolomite and calcareous dolomite, gypsum, fine-grained sandstone, carbonates, siltstone and mudstone. In Locations where the Seven Rivers Formation is absent, the upper portion of the Queen acts as a confining bed between the deep artesian aquifer and the valley fill aquifer.

San Andres Formation

The San Andres formation lies beneath the Grayburg and Queen Formations and immediately above the Precambrian crystalline basement rocks. The San Andres Formation is composed mainly of limestone and dolomite containing irregularly and erratic solution cavities, which range up to several feet in diameter. Its thickness is greater than 700 feet. The upper portion of the formation is composed of oolitic dolomite with some anhydrite cement.

2.6 Regional Groundwater

The principal aquifers in the Artesia area are within the San Andres Formation and the valley fill alluvium. Within the valley fill alluvium in the vicinity of the refinery process area is a near-surface water-bearing zone, apparently limited in vertical extent that is shallow with respect to the surface and also exhibits artesian properties at some monitoring wells. The deeper carbonate aquifer is referred to as the *deep artesian aquifer*, whereas the water-bearing zones of the shallower alluvial fill aquifer are referred to as the *valley fill aquifer.* Adjacent to the refinery, the first water-bearing zone in the valley fill aquifer is referred to as the *near-surface saturated zone.*

Near-Surface Saturated Zone

Lithologic logs from monitor wells installed near the refinery process area document a near-surface saturated zone overlying the main valley fill alluvium and containing water of variable quality in fractured caliche and sand and gravel lenses at depths of 15 to 30 feet. This water is under artesian pressure for at least some or most of the year with static water levels 3 to 5 feet above the saturated zones. Locally, this uppermost water zone is likely connected to Eagle Creek west of the refinery and most likely discharges to marshes and shallow alluvium along the west side of the Pecos River. The most probable sources of the water are thought to be recharge from Eagle Creek and lawn watering runoff from the grass-covered urban park that occupies the Eagle Creek Channel immediately upstream of the refinery. The water in the near surface saturated zone is highly variable in quality, volume, areal extent and saturated thickness. Concentrations of total dissolved solids exceeding 2,000 mg/L and sulfate exceeding 500 mg/L have been recorded on the northwest side of the refinery near the North Colony Landfarm.

Valley Fill Aquifer

Quaternary alluvial deposits of sand, silt, clay, and gravel are the main components of the valley fill aquifer. These sediments are about 300 feet thick in the area between the city of Artesia near the refinery and the Pecos River. The three principal units in the valley fill are the carbonate gravel, clay and quartzose.

The carbonate gravel unit, described in an earlier section, is the uppermost alluvial unit in the valley fill. Coarse-grained gravels deposited in the major tributaries to the Pecos River grade to calcareous silts and thin zones of caliche in the interstream areas. Near the surface, groundwater is localized in thin discontinuous gravel beds typical of braided channel material deposited during flood events originating in the foothills and Sacramento Mountains to the west.

Valley fill wells tap from one to five water-producing zones. Thicknesses of up to 170 feet have been reported for water-production zones, but most are less than 20 feet. Producing zones are principally sand and gravel separated by less permeable lenses of silt and clay. Wells in the valley fill range from 40 to 60 feet below ground level and the formation yields water containing 500 to 1,500 ppm TDS (Total Dissolved Solids). The average transmissibility of the alluvium has been estimated at 100,000 to 150,000 gallons per day per square foot.

Recharge of the shallow valley fill aquifer is generally attributed to irrigation return flow from pumpage of the aquifers and from infiltration from the Pecos River. In areas of the valley where the San Andres and valley fill aquifers hydraulically connected in the subsurface, water tends to flow up from the deep to the shallow aquifer except in areas of heavy San Andres pumpage. The general direction of groundwater flow in the valley fill aquifer follows the regional stratigraphic dip eastward toward the Pecos River, then southward subparallel to the river. Above Artesia, the river has been a gaining stream for most of the period of record. The potentiometric surface of the shallow aquifer slopes gently east and southeast, following regional stratigraphic dips. However, south of Artesia in the vicinity and immediately east of Highway 285, heavy pumping between 1938 and 1975 reversed the hydraulic gradient. In this area the surface forms a shallow trough due to extensive water use for irrigation.

Adjacent to the Pecos River, the valley fill alluvium contains groundwater beginning at a depth of 6 – 12 feet. The alluvium is predominately silty sand, which possibly contains lenses of higher permeability material. Groundwater flow is subparallel to the Pecos River Valley and is generally toward the river, although during periods of high river flow, the hydraulic gradient may be away from the river into the alluvium.

Silt and clay deposits in the valley fill aquifer are not continuous, but occur as isolated lenses, generally overlying the quartzose unit. Most logs of wells located immediately to the north and east of the refinery show considerable thicknesses of clays or clay mixtures. However, these clays may be more closely related to the fine-grained materials of the carbonate gravel unit found in the interstream areas between the major drainageways.

The thickness of these clay/gypsum mixtures ranges from 20 to 160 feet. The intervals of occurrence differ from well to well, and thin zones or gravels are interspersed in the upper 100 feet. Drillers seeking deep artesian water drill through the valley fill zone and usually log large intervening zones as "clay and cap". This lack of detail makes it difficult to correlate specific zones of coarse-grained sediments within the silt and clay deposits.

The quartzose unit is considered the primary production unit in the valley fill aquifer. Away from the Pecos River, the unit consists of fragments of sandstone, quartzite, quartz chert, igneous and carbonate rocks. The fragments range from medium grained (1/4 mm) to pebble size 916mm) and are commonly cemented with calcium carbonate. By contrast, in the vicinity of the river, the unit contains principally medium to coarse uncemented quartz grains.

Deep Artesian Aquifer

The deep artesian aquifer is closely related to the Permian San Andres Limestone and generally consists of one or more water producing zones of variable permeability located in the upper portion of the carbonate rocks. However, in the Artesia area, the producing interval rises stratigraphically and includes the lower sections of the overlying Grayburg and Queen formations. Beneath the refinery, the depth to the top of the producing interval is about 440 feet. The Seven Rivers Formation and the other members of the Artesia Group are generally considered confining beds although some pumpage occurs locally from fractures and secondary porosity in the lower Grayburg and Queen members.

The deep artesian aquifer has been extensively developed for industrial, municipal and agricultural use. The quality of water from this aquifer ranges from 500 ppm to more than 5,000 ppm total dissolved solids (TDS) depending on location. In the Artesia area, water is generally derived from depths ranging from 850 feet to 1,250 feet below ground surface. The aquifer recharge is in the Sacramento Mountains to the west of Artesia. Extensive use of this aquifer in recent decades has lowered the potentiometric head in the aquifer in some locations to 50 to 80 feet below ground level, although extensive rainfall in some years may bring the water levels in come wells close to the surface.

3. SCOPE OF SERVICES

This section provides a summary of activities performed during the investigation event and describes the procedures used. A summary table of borings installed, soil and groundwater samples obtained, QA/QC samples taken and analyses performed can be found in Table 2.

3.1 Health and Safety Considerations

Sampling activities were conducted in Level D person protective equipment (PPE). Borings and monitor wells were not located in active processing areas and Navajo had only general Health and Safety requirements that were required to be incorporated into the H&S plan. Members of the field team were required to view a 30-minute safety video and undergo facility-specific safety orientation to work on the refinery site.

Navajo expressed a concern about the potential for lead to be present in some soil borings. As a precaution, the sampling crews wore dust masks in dusty conditions in addition to other Level D PPE.

Power lines were present over TMD from near the refinery to Bolton Road. The power utility advised that the minimum height of the lines (at the lowest point between towers) should not be less than 30 feet. OSHA regulations require a minimum working distance of 10 feet between equipment and power lines. According to the driller (ESN), the maximum height of the drill rig mast was 13 feet, providing 17 feet clearance between the mast and the power lines, which meets the OSHA minimum distance requirements. ***Nonetheless, extreme caution was exercised when raising the mast and working under the power lines.***

None of the safety measures taken affected or limited the execution of the workplan.

3.2 Background Borings

Soil samples from 10 background borings were collected and submitted for analysis of RCRA metals, fraction organic carbon, particle size and pH to establish area-wide background concentrations. Borings were installed in areas not impacted by facility operations in the vicinity of the refinery, Three-Mile Ditch and the Evaporation Ponds. Samples were collected from the surface to groundwater interface, based on lithologies observed during boring installation. The specific proposed background sample locations were submitted to NMED for approval prior to sampling.

Locations of background borings are located on maps in Figure 3 and Figure 4.

3.3 Three-Mile Ditch Borings and Groundwater

The scope of work for Three-Mile Ditch is summarized as follows:

- Installed and sampled 30 borings at 500' intervals along Three Mile Ditch.
- Installed and sampled 8 additional borings at locations east of Bolton Road.
- Two to four soil samples were submitted for analysis from each boring.
- Obtained groundwater for analysis from all 38 borings.
- Groundwater samples from MW-1, -8, -9, -15, -16, -20, -21, and –25 through 29 (12 wells total) were obtained and analyzed.

Figure 3 provides a map of Three-Mile Ditch showing boring and monitor well locations. Table 3A provides GPS coordinates and visual references for Three-Mile Ditch borings.

3.4 Evaporation Pond Borings and Groundwater

The scope of work for the Evaporation Ponds is summarized as follows:

- Installed and sampled 75 borings within the Evaporation Ponds:
  - 12 borings within Pond 1 (groundwater sampled from 3 borings)
  - 25 borings within Pond 2 (groundwater sampled from 5 borings)
  - 12 borings within Pond 3 (groundwater sampled from 3 borings)
  - 21 borings within Pond 5 (groundwater sampled from 5 borings)
  - 5 borings within Pond 6 (groundwater sampled from 1 boring).
- Installed and sampled 6 borings outside the berms south of former Ponds 1, 2 and 3 (groundwater sampled from all 6 borings).
- Boring locations were placed to include influent outfalls and downgradient portions of each evaporation pond.
- For Evaporation Pond 1, a minimum of six (6) samples were collected from undisturbed soils located directly below the disturbed soils. Three of these samples were collected from borings closest to the former Pond 1 outfall.
- Two to four soil samples were submitted for analysis from each borining.
- Groundwater samples from 17 selected borings in the evaporation ponds (as noted in the first bullet) and from each boring outside the berms were obtained and analyzed.
- Groundwater samples were collected from 19 existing monitoring wells associated with the Evaporation Ponds (OCD-1, -2A, -3, -4, -5, -6, 7AR and 8A; MW-2A, -3, -4A, -5A, -6A, -7, -10, -11A, -18A, -19 and -22A.

Figure 2 and Figure 3 provides a map of the Evaporation Ponds showing boring and monitor well locations. Table 3B provides GPS coordinates and visual references for Evaporation Pond borings.

3.5 Investigation Methods

3.5.1 Boring Installation and Abandonment

ESN Drillers out of Albuquerque was contracted for installation of the borings. Direct-push (geoprobe-type) technology was used for installing most of the borings. However, a rig capable of both direct push and auger drilling was used and in a few instances the boring was placed using an auger due to site conditions or depth.

Borings were advanced to a depth of five feet below the maximum depth of contamination as detected by field screening. Borings sampled for groundwater were extended five feet into the saturated zone. Temporary PVC tubing was used in most borings to keep the hole open to sample groundwater. Upon completion of sampling activities, the temporary PVC tubing was pulled and the boring grouted back to the surface.

3.5.2 Boring Soil Samples

Soil samples were collected every two feet from the ground surface to the maximum depth of the boring. Samples were field screened with a PID, through visual observations of staining and by odor. A maximum of four samples and a minimum of two samples were obtained from each boring for laboratory analysis.

Background soil samples were analyzed for RCRA metals, Fraction Organic Carbon, particle size and pH.

Soil samples from TMD and the EPs were analyzed for Diesel Range Organics (DRO), VOCs and RCRA metals using USEPA methods 8015B, 8260B and 6010 series, respectively. If DRO was detected in a soil sample at a concentration greater than 2000 mg/kg the sample was analyzed for SVOCs by method 8270C.

3.5.3 Boring Groundwater Samples

Groundwater was obtained from selected borings in each pond as well as from each of the six borings outside the berms to the south of Ponds 1, 2 and 3. Groundwater samples were also obtained from each boring installed in Three-Mile Ditch. Borings from which groundwater was obtained were advanced to 5 feet below the groundwater table. Groundwater samples collected from the borings were collected using a disposable bailer or Geoprobe Screen Point Sampler.

Groundwater from the Evaporation Ponds and Three Mile Ditch borings was analyzed for SVOCs (PAHs – polyaromatic hydrocarbons), BTEX and Total Dissolved Solids (TDS) using USEPA methods 8310, 8021C and 160.1, respectively. Samples collected within 50 feet of the former outfalls in Evaporation Ponds 2 and 5 were analyzed for VOCs using EPA method 8260B.

3.5.4 Monitor Well Groundwater Samples

Groundwater samples were collected from 31 existing monitoring wells associated with the Evaporation Ponds and Three Mile Ditch (OCD-1, -2A, -3, -4, -5, -6, 7AR and 8A; MW-1, -2A, -3, -4A, -5A, -6A, -7, -8, -9, -10, -11A, -15, -16, -18A, -19, -20, -21, -22A, -25, -26, -27, -28 and -29) using low-flow sampling methods.

The samples were submitted for laboratory analysis for VOCs, SVOCs, RCRA metals, major cations/anions (Ca, Mg, K, Na, Fe, Mn, Cl, Fl, sulfates, nitrates/nitrites) and other general water quality parameters (specific conductance, ph, TDS) using USEPA methods 8260B, 8270C, 6010 and 160.1, respectively. Prior to sampling, water levels were measured.

3.6 QA/QC Samples

Field duplicates, field blanks, equipment rinsate blanks, and trip blanks were obtained for quality assurance in accordance with the workplan at the following rates for soil and groundwater samples submitted to the laboratory for analysis:

- Field Duplicates – 10%
- Field Blanks – one per day
- Equipment Rinsate Blanks – 10% (minimum of one per day)
- Trip Blanks (groundwater only) – one per shipping container with samples intended for VOC analyses

Table 2 provides a listing of all QA/QC samples, corresponding boring or groundwater sample, if appropriate, and analyses performed. Results for duplicate samples are reported with sample data in Tables 6 – 14 (see Sample Data Tables). Results for other QC samples is located with the lab reports in Appendix G.

3.7 Investigation Derived Waste

Investigation Derived Waste (IDW) includes drill cuttings, water (decontamination, groundwater) disposable equipment and other refuse generated during the course of the investigation. All drill cuttings and water were stored in 55-gallon drums. Investigation Derived Waste (IDW) was minimized due to the small size of the Geoprobe samples.

The soils generated by the Geoprobe and not sent for analysis were bagged in plastic bags and stored in 55 gallon steel drums supplied by Navajo Refinery. When approximately 1/2 to 2/3 full, refinery personnel transported the drums to the hazardous drum storage area at the refinery for disposal. Three or four partially full drums of soil waste were generated.

Waste water, primarily derived from the decontamination of equipment and instruments, was also collected in 55 gallon steel drums supplied by Navajo Refinery and disposed in the refinery waste water system.

4. FIELD INVESTIGATION RESULTS

This section provides a summary of the field procedures used and the results of field investigation activities.

All field activities were carried out between June 7 and July 30, 2004. Specific dates borings were installed and soil or groundwater samples obtained are listed in Table 2. Weather was generally hot and dry, however there were several days when rain affected access or caused sampling to be delayed.

4.1 Surface Conditions

The Navajo Refinery facility is located on the east side of the City of Artesia in the broad Pecos River Valley of Eastern New Mexico. The average elevation of the city is 3,380 feet above mean sea level. The plain on which Artesia lies slopes eastward at about 30 feet per mile. Surface drainage is dominated by small ephemeral creeks and arroyos that flow eastward to the Pecos River, located three miles east of the city. Surface features can be noted on the Facility Location Map in Figure 1 as well as the aerial photographs in Appendix 1.

Natural surface drainage at the facility is to the north and east. The major drainage in the immediate area of the site is Eagle Creek, an ephemeral watercourse normally flowing only following rain events, that runs southwest to northeast through the process area of the refinery and then eastward to the Pecos River. Upstream of the refinery, Eagle Creek functions as a major stormwater conveyance for the community. It also drains outlying areas west of the city and is periodically scoured by intense rain events.

The elevation of Eagle Creek is 3,360 feet at its entrance to the refinery and decreases to approximately 3,305 feet at its confluence with the Pecos River. A large portion of the refinery is within the 100-year floodplain of Eagle Creek. However, Eagle Creek has been channelized from west of Artesia to the Pecos River to help control and minimize flood events. In the vicinity of the refinery, the Eagle Creek channel has been cemented to provide further protection during flood events. A check dam was also constructed west of Artesia along Eagle Creek. At this time most of the city and the refinery have been effectively removed from the floodplain.

Three-Mile Ditch parallels the south side of Eagle Creek for most of the distance from the refinery to the ponds. About one mile from the ponds, as the ditch approaches the Pecos River, its course shifts away from Eagle Creek, turning southeast toward the Evaporation Ponds. From east of Haldeman Road to the point where TMD turns southeast toward the ponds, a relatively deep, wooded, ravine lies to the south of TMD.

Portions of Three-Mile Ditch and the Evaporation Ponds lie within the Pecos River floodplain. However, the construction of flood control dams upstream of the Evaporation Ponds has reduced the risk of flooding although tributary streams can contribute heavy flow from severe thunderstorm events. The New Mexico Water Quality Control Commission (WQCC) groundwater discharge permit issued for the Evaporation Ponds by the New Mexico Oil Conservation Division required that they be able to withstand a 100-year flood event and there is no recollection by current long-time Navajo employees of the ponds being breached by a flood event. The EP berms remain in place to protect the interior of the ponds from rising floodwaters.

Vegetation along TMD is sparse, consisting primarily of small trees, mesquite and scrub brush. Vegetation is even sparser around the EPs, consisting of isolated clumps of scrub brush except along the edges of the Pecos River where dense salt cedar occurs. In recent years the state has sprayed to kill most the salt cedars. Vegetation is beginning to grow inside the ponds, becoming more dense in the easterly portions of Ponds 2 and 5 and in Ponds 3 and 6.

There are no surface structures along TMD or near the EPs. The pipeline Navajo installed to convey waste water to the injection wells when the ponds were taken out of service, parallels the historic location of TMD. Several oil and gas pipeline markers indicate the presence of pipelines that run parallel to or intersect the historic location of TMD. Near the refinery, west of Bolton Road, large electric transmission line towers parallel TMD.

East of the refinery, TMD is located on private property (three different owners) requiring access through locked gates. Most of the property near TMD west of Haldeman Road is used for agricultural purposes although the land immediately adjacent to TMD is not cultivated or otherwise used. East of Haldeman Road, most of the adjacent property is used for grazing cattle. Navajo owns the property around the Evaporation Ponds, which is fenced and locked to prevent access. The Navajo property is not used for agricultural, ranching or other purposes and there are no nearby residences or other structures.

4.2 Exploratory Drilling Investigations

Boring locations for Three-Mile Ditch are shown on Figure 2 with GPS coordinates and other references provided in Table 3A. Boring locations for the Evaporation Ponds are shown on Figure 4 with GPS coordinates provided in Table 3B. Boring locations for the background borings are shown on Figures 2 – 3 with GPS coordinates provided in Table 3B.

The following subsections describe the method for installing borings and types of equipment used, field screening, logging procedures, decontamination procedures and site conditions. Additional information regarding boring and sampling methodology can be found in Appendix B.

4.2.1 Boring Methodology

Soil borings were drilled using a Geoprobe track mounted unit. The machine drilled by the direct push method. A hollow steel rod was driven into the ground either by the unit's hydraulic system, or by air impact. The unit took a 1 inch diameter core in a disposable plastic sleeve. Each cored interval was 5 feet. There were no drill cuttings. The soil borings were plugged with bentonite chips after sampling was completed.

Core recovery varied from the entire 5 foot interval to no recovery. However, 2 to 4 feet of soil was recovered on most core runs. If the soil was dry and crumbly, there was often poor core recovery. If the soil was wet and plastic, normally, there was good recovery.

The drilling and sampling procedure was consistent for all boring locations. The Geoprobe machine was driven onto the drill site and set up. The Geologist's pickup was driven to the site with the testing instrument and sampling supplies. The geoprobe would push a 5 foot pipe joint interval. The plastic sleeve would be extracted. The sides of the core tube would be slit with a knife or box cutter and the core and tube would be given to the geologist. The drill crew would insert a new core tube into the rod string and advance the hole by either hydraulically pushing the rod or by air hammering the string in the hole another five feet. The hole would be advanced in this manor until the water table had been reached. Then the hole would be abandoned as described in Section 4.4 if the well was to be a soil boring only, or advanced until the driller and geologist agreed that the well would produce enough water to be sampled. If the well was to be water sampled, 1" threaded, flush joint tubing and screen was installed to total depth. The screened interval extended from the total depth of the well to above the water table. The screen had a 0.010 slot size to prevent sand from entering the well bore while sampling was occurring.

4.2.2 Sampling and Field Screening

Before each soil boring was begun, the title block of the well log was completed by the geologist. The ambient photo ionization detector (PID) reading and the latitude and longitude of the soil boring from a GPS instrument were recorded. When the geologist received the core, it would be inspected and the estimated length and description recorded on the well log. After the lithology had been described, the core was divided into intervals and bagged and sealed in quart Ziplock freezer bags. After drilling was completed sample bags were individually opened to the extent necessary to insert the PID probe and the head space photo ionization detector reading was recorded for each sample. Based on the PID reading, visual observation and odor, the soil samples for that boring were chosen and placed in 2 oz or 4 oz glass jars, labeled and then placed in a cooler with ice. Fresh nitrile gloves were used each time samples were handled to prevent cross contamination. PID readings and field screening observations are recorded on the boring logs in Appendix D.

4.2.3 Boring Logs

Samples were logged in the following standard manner:

- Lithology was described.
- Color was described using the Munsell Color Chart.
- Grain size was described if it was visible.
- Roundness was described for clastic rocks.
- Sorting and hardness were described if they were properties of the sample. Moisture content was described.
- Bedding, fractures, and other lithologic constituents were described if they were evident.

The most common lithology was clay. With clay, the only physical characteristics which can be described in the field are: color, hardness or plasticity, and bedding or inclusions. Boring logs are provided in Appendix D.

4.2.4 Decontamination Procedures

Following completion of each boring, drilling equipment was decontaminated. Since only the drill rods came in contact with the sides of the borings, the drilling and internal rods were washed in a bath of environmental soap and water then rinsed with distilled water. Decontamination fluids were contained and placed in a 55 gallon drum for later disposal in the plant waste water treatment system. The sample only touched the tip of the drill rod, which was cleaned as above, and the disposable plastic sleeve. The sleeves were destroyed in the sampling process. Used sleeves were discarded in the plant trash.

4.2.5 Site Conditions

Site conditions affected the investigations to a minor extent. The most extensive affects were caused by the heat and humidity. Temperatures varied from the seventies to over 105 degrees. Humidity varied from around 20% to saturated in thunderstorms. These two factors affected the photo ionization detector (PID). It was calibrated with ambient air and 100 ppm isobutylene each morning before sampling began. However, it tended to drift throughout the day. Recorded PID readings are consistent for samples obtained from an individual boring but not necessarily between borings.

4.3 Subsurface Conditions

Soils in the vicinity of TMD and the EPs are primarily of the Pima and Karro series. The Pima and Karro soils have similar properties. Pima soils are deep, well drained, dark colored, calcareous soils, which occur on floodplains of narrow drainageways (e.g. – Eagle Creek). These soils have moderate shrink-swell potential and were subject to periodic flooding. Runoff from Pima soils is slow, permeability is moderately low and the water-holding capacity is high. The effective rooting depth is greater than five feet and the water table is deeper than five feet.

The Karro soils are highly calcareous. Calcium carbonate typically accumulates at a depth of about 45 inches. These soils are found on level to gently sloping terrains and are susceptible to wind erosion. Runoff is slow and water-holding capacity is high. Permeability is moderate and the effective rooting depth and depth to groundwater are both over five feet.

Based on previous studies (See Table 1) in the vicinity of the refinery, permeable near-surface sediments to depths of 25-35 feet consist of thin discontinuous zones of clayey sands and gravels bounded by thicker zones of fine grained silts, clays and indurated caliche. Below this level, deep borings and drillers logs document thick zones of expansive clays and clay-gypsum mixtures from 20 to 160 feet thick before reaching the first producing water zone. Wells completed in this zone range from 120 to 300 feet deep.

Near the ponds, surface sediments to about 70 feet are fine-to-medium grained sands with some coarser gravel zones. Thin interbedded clay zones from several inches to about six inches thick are present in the upper 20 feet with occasional thicker zones to about two feet.

During this investigation it was found that the soil was generally similar through out the area with red clays, some sand and pink to white caliche. The entire area is in the flood plane of Eagle Creek or the Pecos River. None of these soil borings were observed to penetrate the Permian redbeds below the river deposits.

No soil borings encountered any pipelines or subsurface structures. Numerous pipelines cross the path of the investigation. Most of these are clearly marked. The drilling crew felt that at least one pipeline traversed below the evaporation ponds from east to west. Anyone excavating in the area of this investigation should be extremely careful. There are numerous pipelines carrying crude oil into the refinery and refined products out of the refinery. In addition, the Three-Mile Ditch passes by the Artesia Sewage treatment plant and its associated sewer lines.

4.4 Monitor Well Construction; Boring Abandonment

No permanent wells were installed or plugged during this investigation. No permanent wells were plugged during this investigation.

Soil borings that were not sampled for groundwater were plugged by filling the 2 inch diameter well bores with bentonite chips and hydrating them. A one-foot wood, grade stake was placed in the top of the boring so it could be relocated if necessary

Borings to be sampled for water were drilled to a depth deep enough to produce water in sufficient quantity to be sampled. The drill rods were pulled out of the hole by the Geoprobe unit and 1" threaded, flush-joint tubing and screen was installed to total depth. The screened interval extended from the total depth of the well to above the water table. The screen had a 0.010 slot size to prevent sand from entering the well bore while sampling was occurring.

Following groundwater sampling, the tubing and screen was pulled from the borings, which was then filled with bentonite chips. The tubing was placed in the plant trash for disposal.

4.5 Groundwater Conditions

When drilling during this investigation, the water table was assumed to have been penetrated when the recovered core became saturated with water. The most common soil unit was red clay. Most of the water produced by these soil borings is believed to derive from fractures in the clay with thin sand lenses as a secondary source.

Water levels were measured in each monitor well and boring prior to sampling. The depth to water from the established measuring point for each well or boring was measured using a battery-powered water level indicator. Each monitoring well was measured at the top of casing (TOC) from the north side of the well casing. Each boring hole was measured at the ground surface from the north side of the hole. Along TMD, the near subsurface is dominated by fine-grained silts and clays and the boring logs do not provide good information on depth to groundwater.

The depth to ground water noted while installing the borings along Three-Mile Ditch varied from 15 to 20 feet on the western end near the refinery to 5 feet at the eastern end near the Pecos River and the ponds. Upon sampling groundwater from borings within one to two days after completing the boring, groundwater depths were often several feet shallower than noted in the boring logs, leading to the conclusion that the upper most zone is partially confined. Wet clay and groundwater was encountered as shallow as 2.5 feet in the pond borings.

Locations of borings and monitor wells are provided in Figure 2 and Figure 3. Water level measurements in monitor wells and borings are provided in Tables 3C and 3D.

4.5.1 Three-Mile Ditch

During previous studies (see Table 1), groundwater flow direction near TMD was mapped and shows water movement from Eagle Creek into the near-surface saturated zone (NSSZ) along the section of the creek from the refinery to just east of Bolton Road. East of Bolton Road, the direction of movement was generally parallel to the ditch, eastward to the vicinity of the Pecos River. The NSSZ in the vicinity of the TMD is too fine-grained and discontinuous to provide a viable source of water. Previous reports indicated the average TDS of 15 monitor wells along the TMD was in excess of 6,000 mg/L and results from this study were consistent with that finding.

Groundwater depths in the Phase 3 RFI report were reported to range from about 8 feet to 10 feet along most of length of TMD from the refinery to the point where it turns southeast away from Eagle Creek. Near Haldeman Road however, depths were 12 – 17 feet. Groundwater depths measured in monitor wells during this investigation were consistent with those findings. The previous report indicated groundwater depths of about 11 feet to 13 feet from the Ponds west to Eagle Creek. Groundwater depths during this study were somewhat shallower at 8 feet to 11 feet.

The hydraulic gradient reported in the earlier Phase 3 RFI report was approximately 0.004 foot/foot from near the refinery to just east of Bolton Road. From east of Bolton Road to west of Haldeman Road, the reported gradient was 0.006 foot/foot. From Haldeman road to the Ponds and Pecos River, the gradient flattens to 0.002 foot/foot or less.

4.5.2 Evaporation Pond Area

Groundwater mapping in the vicinity of the Evaporation Ponds during the Phase 2 RFI in 1992-1993 (see Table 1) showed horizontal movement of groundwater in a southeasterly direction from the ponds to a discharge area south and east of the ponds near U.S. Highway 82. The area is identified on topographic maps as a marshy area. Based on a comparison of groundwater elevations in shallow wells to elevations in wells screened at lower depths in the valley fill alluvium, the Phase 2 RFI concluded that a significant upward vertical gradient existed. This upward gradient was noted in previous U.S. Geological Survey and New Mexico State Engineer Office studies of the Pecos River. They describe this reach of the Pecos River to about one-mile south of the Highway 82 bridge as a natural discharge zone for the shallow valley fill aquifer.

Groundwater depths in the Phase 3 RFI report measured from 1993 to 1995 were reported to range from about 6.8 feet to 11.7 feet, averaging 8.9 feet. Groundwater depths measured in the same monitor wells during this investigation were slightly deeper, ranging from about 7.1 feet to 11.9 feet and averaging 9.2 feet. This would be consistent with removal of hydraulic influence from the ponds since they are now empty. The hydraulic gradient reported in the earlier Phase 3 RFI report was approximately 0.001 foot/foot in the area south of the ponds.

4.6 Surface Water Conditions

4.6.1 Three-Mile Ditch and Eagle Creek

Three-Mile Ditch parallels the south side of Eagle Creek along most of its length from the refinery to a location about a half-mile northeast of Haldeman Road, where TMD turns southeast away from Eagle Creek and heads to the Evaporation Ponds. Most of the area along TMD is relatively flat with a gentle slope toward Eagle Creek. Along this length of TMD, stormwater would run off to Eagle Creek during rain events heavy enough to generate runoff.

East of Haldeman Road where TMD turns away from Eagle Creek, a dry ravine parallels TMD to the south for a short distance, to a point about a half-mile west of the Evaporation Ponds. Based on aerial photos this ravine runs east to the Pecos River. Although not directly observed, it is reasonable to assume that over this length, some runoff from TMD may flow to the ravine.

In the 1990 RFI Phase I study (Table 1, Reference 2) sediment samples were obtained from five locations in Eagle Creek. Analysis of the samples revealed no evidence of contamination. No volatiles were detected in any samples. Two semivolatiles, bis(2-ethylhexyl)phthalate and di-n-butylphthalate, were detected at 0.81 mg/kg and 1.7 mg/kg respectively in one sample. The report concluded they were most likely laboratory contaminants. Metal concentrations were typically within background range although one sample had a lead concentration of 69 mg/kg.

During the Phase 2 RFI (Table 1, Reference 6), two additional sediment samples were collected from Eagle Creek, downstream from Bolton Road. Except for detectable levels of oil and grease (500 mg/kg and 1,300 mg/kg), volatiles and semivolatiles did not exceed detection limits. Chrome was detected at 64 mg/kg and lead at 92 mg/kg.

4.6.2 Evaporation Ponds and the Pecos River

The Evaporation Pond berms remain in place. Rain falling inside the ponds will be retained by the berms and there is no runoff. The area inside the berms is relatively flat with little or no ponding of stormwater. Runoff outside the bermed areas will be toward the Pecos River.

Sediment sampling from the Pecos River at four locations near the EPs during the Phase 3 RFI (see Table 1) did not detect any volatile or semivolatile organics. Metals were not detected above background concentrations except for one sample at a pipeline crossing 4,800 downstream, which had a slightly elevated concentration of arsenic.

Additional descriptions of surface water features can be found in Section 4.1.

4.7 Material Testing Results

Soil samples from the background borings were tested for the following parameters by a soil test laboratory:

- Soil pH – ASTM D4972
- Particle Size – ASTM D422
- Organic Content – ASTM D2941
- Moisture Content – ASTM D2216
- Atterberg Limits – ASTM D4318

Soil pH and particle size, used to determine soil type and amount of clay present, have an influence on the leachability of many metals and are used to calculate Kd values for Soil-to-Groundwater screening levels. In a similar fashion, the fraction organic carbon (FOC) can have an influence on the leachability of some organic compounds.

Soil pH, particle size and fraction organic carbon for 24 Background samples are presented in Table 6A.

- Soil pH averaged 8.0 with a range for 24 samples from 7.4 to 8.6. There was little variation spatially or with depth.
- Based on particle size distribution, the typical soil is classified as a silty clay with some sand. On average, the soil composition was:
  - 21.5% sand (0.075 mm – 5 mm)
  - 53.5% silt (0.005 mm – 0.074mm)
  - 23.1% clay (< 0.005 mm)

  There was a moderate amount of variation in particle size distribution.
- Fraction Organic Carbon (FOC) averaged 4.25% with a range of 1.1% to 8.8%.

Complete soil test results for these properties can be found in Appendix E.

5. REGULATORY CRITERIA

5.1 Required Analyses

Based upon the analysis requirements in Appendix A of the Navajo RCRA Post-Closure Permit, and discussions with NMED, the following analyses were approved by NMED.

Soils:

- DRO (diesel range organics) – Method 8015B
- VOC (volatile organic compounds) – Method 8260B
- SVOC (semivolatile organic compounds) – Method 8270C and Method 8310 (if DRO was > 2000mg/kg)
- RCRA Metals – Method 6010 (As, Ba, Cd, Cr, Pb, Hg, Se, Ag); Method 7471 (Hg)

Boring Groundwater:

- SVOC/PAH (polyaromatic hydrocarbons) – Method 8310
- BTEX (benzene, toluene, ethylbenzene, xylenes) – Method 8021C
- VOC – Method 8260B (samples within 50 feet of outfall to Evaporation Ponds 2 and 5)
- TDS (total dissolved solids) – Method 160.1

Monitor Well Groundwater:

- VOC – Method 8260B
- SVOC – Method 8270
- RCRA metals – Method 6010/Method 7471
- Other Metals – Method 6010 (Sb, Be, Cd, Fe, Mn, Ni, V, Zn)
- Cyanide – Method 335.2
- Major Cations– Method 6010 (Ca, Mg, K, Na)
- Major Anions – Method 325.2(Cl); Method 300.0 (Fl); Method 375.4 (sulfates); Method 353.2 (nitrates/nitrites)
- TDS – Method 160.1

Additional information regarding analytes, methods and detection limits can be found in Appendix F. Specific analytical results are presented in Table 6 through Table 14. Only compounds that were detected are presented in the Tables. Complete analytical results are provided in Appendix H.

5.2 New Mexico Soil Screening Levels

New Mexico has prepared risk-based soil screening levels for the purpose of identifying appropriate clean-up levels for soils (*Technical Background Document for Development of Soil Screening Levels, Revision 2.0;* New Mexico Environment Department, Hazardous Waste Bureau; February, 2004). Navajo has followed guidance in the referenced document to determine those compounds that exceed the screening levels and for which additional evaluation, risk assessment or cleanup may be required. New Mexico soil screening levels are based on achieving a 10^{-5} risk for individual carcinogens and a hazard quotient of 1 for non-carcinogens.

Soil screening values are presented in the guidance document for four scenarios:

- Residential Exposure,
- Industrial/Occupational Exposure,
- Construction Worker Exposure, and
- DAF 20 (protection of groundwater from soil to groundwater leaching).

The Evaporation Ponds are on property owned and controlled by Navajo. No industrial activity currently takes place on the site and none is anticipated in the future because of its location three miles from the refinery and in the Pecos River floodplain. Three-Mile Ditch extends from refinery property along Eagle Creek for most of its distance to the Evaporation Ponds, crossing agricultural property owned by three different individuals. There are no residences near the Evaporation Ponds or three-Mile Ditch and none would be expected in the future because of the proximity to the flood plain of Eagle Creek or the Pecos River.

Given the setting and potential exposure scenarios for Three-Mile Ditch and the Evaporation Ponds, concentration levels for detected compounds in this investigation have been compared with the lower of the Industrial/Occupational screening level or the DAF 20 screening level. This value is referred to as the Critical Soil Screening Value (CSSL). A table of these values, along with the Construction Worker values, is provided as Table 5A. Cadmium is the only compound analyzed in this investigation where the Construction Worker SSL is lower than either the Industrial/Occupational or DAF 20.

The lead value for DAF 20 presented in the NMED guidance document table (9.17 mg/kg) is incorrect, due to an erroneous Kd value used in the calculation. Navajo has discussed this issue with NMED who agrees the correct DAF 20 value should be 900 mg/kg. Because this value is higher than the Industrial/Occupation value of 750 mg/kg, the lower Industrial/Occupation value is used in the comparisons.

The NMED SSL table lists specific values for chromium VI and chromium III; however the analysis performed is for total chromium. Chrome in the ditch and evaporation ponds that is elevated above background could have come from a variety of sources including the crude oil itself, metallurgy of the equipment, catalysts and possibly historical usage of chrome-containing water treatment chemicals. Water treatment chemicals would have been the only potential source of chromium VI and its use was discontinued over a decade ago. Chromium VI reduces in the environment over time to chromium III, particularly in neutral to basic environments such as the soils in the Artesia area. While it is unlikely any chromium VI would still exist, EPA guidance and practice assumes a 1:6 ratio of chromium VI to chromium III. The detail data tables provide the analysis results for total chromium, however Table 7D, Table 8B, and the occurrence summary tables also give a value for chromium VI calculated using the 1:6 ratio.

In some cases, the sample quantitation limit (SQL) exceeds the CSSL. After conferring with NMED, it was agreed that in these cases, a value of one-half the SQL would be used for comparison with the CSSL and for calculating the 95% Upper Confidence Limit (UCL) for a group of data for comparison with the CSSL.

5.3 New Mexico Groundwater Standards

Analytical values for groundwater sampled from monitor wells or borings were compared to the New Mexico groundwater standards in Table 5B. These standards are for drinking water and are either the New Mexico Water Quality Standard (WQS) found in NMAC 20.6.2.3103 or the Federal Maximum Contaminant Levels (MCL) where a different New Mexico standard does not exist. For compounds where neither a New Mexico nor a Federal standard exists, the standard used by NMED is the USEPA Region 9 PRG for tapwater (EPA9TAP). Throughout this report, the term Groundwater Standard (GWS) is used to denote the appropriate groundwater standard used for comparison with groundwater concentrations.

6. SITE CONTAMINATION

This section provides a brief description of sampling methodology for soils and groundwater and then presents the results for laboratory analysis of the samples.

6.1 Soil Sampling

All borings were installed, and soil samples collected, between June 7 and July 30, 2004. Boring locations are identified in Figure 1 (TMD) and Figure 2 (Evaporation Ponds).

6.1.1 Background Boring Locations

Ten background boring locations were identified and approved by NMED. Four of these locations were near the refinery, three were along Three-Mile Ditch and four surround the Evaporation Ponds. Locations for background borings are shown on Figure 1 and are described below.

BSB-1. Between Bolton Road and Haldeman Road south of TMD (off-site property owner).

BSB-2. Between Haldeman Road (Hwy 229) and the ponds, southwest of where TMD turns southeast from Eagle Creek (off-site property owner).

BSB-3. West-southwest of the ponds, south of where Three Mile Ditch (TMD) enters Pond 1 (on Navajo Property).

BSB-4. South of the Evaporation Ponds (the "ponds"), between MW-10 and MW-19 (on Navajo Property).

BSB-5. East-southeast of the ponds, between the ponds and the Pecos River (on Navajo Property).

BSB-6. North-northeast of the ponds, between the ponds and the Pecos River (on Navajo Property).

BSB-7. Northwest of the refinery between the railroad tracks and Main St, northwest of the North Colony Landfarm (off-site property owner - Navajo has a monitor well at this location).

BSB-8. North of the refinery, just south of East Richey Ave (on Navajo property).

BSB-9. Between the refinery and Bolton Rd, south of TMD (on Navajo property).

BSB-10. East of the refinery, just east of Bolton Rd and north of Hwy 82 (off-site property owner).

Background boring samples are designated as **BSB - # (depth)**, where # denotes the sequential sample number (e.g. – BSB-1 (0-2.5')).

6.1.2 Three-Mile Ditch Boring Locations

Thirty borings were installed at approximate 500' intervals along Three Mile Ditch (9 borings between the refinery and Bolton Road; 8 borings from Bolton Road to Haldeman Road; 13 borings east of Haldeman Road to the Evaporation Ponds). Eight (8) additional borings were installed at locations east of Bolton Road (16 borings total at 250 foot intervals between Bolton Road and Haldeman Road).

Borings from TMD were designated as **TMD – # (depth)**, where the number is sequential beginning with TMD-1 nearest the refinery and ending with TMD-38 near the Evaporation Ponds (e.g. – TMD-1 (2.5 – 5')).

6.1.3 Evaporation Pond Boring Locations

Eighty-one (81) borings were installed within the Evaporation Ponds and on the south side of the pond berms:

- 12 borings within Pond 1 (3 borings to groundwater)
- 25 borings within Pond 2 (5 borings to groundwater
- 12 borings within Pond 3 (3 borings to groundwater)
- 21 borings within Pond 5 (5 borings to groundwater)
- 5 borings within Pond 6 (1 boring to groundwater)
- 6 borings outside the berms south of former Ponds 1 and 2 (all to groundwater)

An additional five borings were to be installed in Pond 6 if field screening identified any potential contamination. Field screening results within Pond 6 were negative so these samples were not necessary.

For Evaporation Pond 1, a minimum of six samples were to be collected from undisturbed soils located directly below the disturbed soils. Three of these samples were to be collected from borings closest to the former Pond 1 outfall. Visual examination was not able to identify any difference between "disturbed" and deeper "undisturbed" soil intervals. At least two and generally three samples were taken from each boring in Pond 1, terminating upon encounter with groundwater.

Borings from the Evaporation Ponds were designated as **EP "pond number" - # (depth)** (e.g. – EP1 - 2(5-7.5')). Borings from south of the berms have the designation **EPB - # (depth)** (e.g. – EPB-3 (7.5-10')).

6.1.4 Sample Selection Criteria

The following samples from each boring were submitted for laboratory chemical analysis:

- from the first collected interval, usually 0-1 foot to 0-2.5 feet;
- from any observed sludge or sediment layer;
- from the interval in the native soil, or below obviously contaminated soil, having the highest PID reading (if any); and
- from 5 feet below the deepest positive PID reading, observation of visual staining or noticeable hydrocarbon odor, but not deeper than just above the saturated zone (water table interface).

Additional conditions that applied to selecting samples for analysis included:

- If field screening indicated contamination extended into the saturated zone, the boring was continued to a depth that field screening indicated was no longer contaminated but only the sample from just above the saturated zone was be submitted for analysis.
- For borings from which a groundwater sample was taken, a soil sample was taken from just above the saturated zone.

If no staining, odor or PID detection was observed (or was observed only in the surface sample), a sample was taken from both the surface and the 5-6 foot interval and the boring was terminated at that depth (unless it was a boring identified for groundwater sampling). Many of the pond wells encountered groundwater as shallow as 2.5 feet so both the 0-2.5 foot and the 2.5 - 5 foot samples were submitted for analysis.

6.1.5 Soil Sample Field Screening

All boring soil samples were obtained from the coring tube which recovered core continuously as the drill rods were advanced by direct push. The screening criteria used to select samples for analysis were those listed in the Workplan document, slightly modified to reflect the fact that core recoveries were sometimes less than complete. In those cases, a sample from another interval was selected.

Soil samples were visually inspected as they were recovered from the coring tube. Any odor or staining was noted and logged and the samples bagged in Ziploc bags. The headspace in the bags was tested with the PID and results recorded on the core log. As outlined in Section 6.1.4 above, field screening results were used to identify samples to submit for analysis as appropriate.

6.2 Groundwater Sampling

All borings were installed, and boring groundwater samples collected, between June 9 and July 30, 2004. Groundwater from borings was generally sampled within one day after completing the boring. Monitor wells were sampled between June 8 and June 18. Boring and monitor well locations are identified in Figure 1 (TMD) and Figure 2 (Evaporation Ponds).

6.2.1 Groundwater Sampling Locations

Groundwater was obtained for analysis from all 38 borings installed in TMD and 12 existing monitor wells located along TMD (MW-1, -8, -9, -15, -16, -20, -21, and –25 through 29)

Groundwater samples were obtained from 17 selected borings in the evaporation ponds and from each boring outside the evaporation pond south berms as noted:

- Evaporation Pond 1; EP1-1, -9, -10
- Evaporation Pond 2; EP2-1, -6, -12, -20, -25
- Evaporation Pond 3; EP3-4, -5, -9
- Evaporation Pond 5; EP5-1, -5, -9, -16, -21
- Evaporation Pond 6; EP6-3
- South of Evaporation Pond Berms; EPB-1, -2, -3, -4, -5, -6

Groundwater samples were collected from 19 existing monitoring wells associated with the Evaporation Ponds (OCD-1, -2A, -3, -4, -5, -6, 7AR and 8A; MW-2A, -3, -4A, -5A, -6A, -7, -10, -11A, -18A, -19 and -22A.

6.2.2 Groundwater Sampling Methodology

This subsection describes methods used to collect groundwater samples from open borings and existing monitor wells. Additional information is provided in Appendix C. Prior to sampling, each boring hole had five feet of screen and an appropriate amount of PVC pipe placed in the hole. A Geoprobe Screen Point Sampler was used to collect the groundwater sample from the boring.

Prior to sampling, each monitor well or boring was purged at a low flow rate. This was achieved by pumping groundwater in such a manner as to minimize drawdown until monitored field parameters stabilized in the purge water. A 2-inch air-driven bladder pump was used for the low-flow purging procedure. A new disposable bladder was installed on the pump prior to placing the pump in each well for purposes of minimizing cross-contamination. In addition, each well used disposable tubing. Stabilization of the groundwater was established by monitoring field parameters (see following subsection 6.2.3).

The equipment used for the field measurements was calibrated at least once during each day of the sampling event. Field parameters were collected with an YSI 556 MPS multi-meter. Low-flow purging continued until the field measurements of pH, temperature, specific conductance, oxidation-reduction potential and dissolved oxygen of the purged water stabilizes within a specified range of the previous measurements. The specified limits for pH and dissolved oxygen are plus or minus 0.2 units, specific conductance is plus or minus 0.02 units and oxidation-reduction potential is plus or minus 20 units. During purging, water levels were measured to monitor drawdown in the well.

Field documentation included field forms (see Appendix C) as well as required field notes. Well sampling logs were used to record the field parameters previously discussed. In addition, color, odor, appearance, pumping rate, pump settings, purge times, sampling times and any other pertinent information was recorded. All information related to a sampling event was recorded in a bound field notebook. Information recorded in the field notes include the project, location, date, time, name and identity of sampling personnel and all other pertinent notes.

The groundwater removed from each monitoring well during purging was containerized in a labeled drum then disposed of by Navajo personnel within the Navajo Refinery (see Section 3.7). All sampling personnel wore disposable latex gloves while collecting and handling samples. The gloves were replaced prior to collection of each sample in order to ensure that field-induced cross-contamination did not affect the results of the investigation.

All reusable sampling and gauging equipment was decontaminated prior to coming in contact with the sample media to minimize the potential for cross-contamination of samples. This equipment includes all down hole well gauging devices and pumps used for purging the wells.

Disposable sampling equipment was not decontaminated. It was only used for one sample and then appropriately disposed after sample collection. This equipment includes bladders and tubing.

Reusable sampling equipment was scrubbed thoroughly with brushes using a laboratory-grade detergent solution. The equipment was then rinsed with distilled water by submerging and/or spraying.

6.2.3 Groundwater General Chemistry – Field Measurements

Results for field purging parameters and other field measurements are presented in Table 4.

6.3 Sample Handling

All sample containers were labeled with the boring or monitor well identification number, site identification, analyses to be performed, preservatives used, date and time of sample collection and name of sampler. This information was written with indelible ink.

After sample collection, all samples were kept cold (at 4°C) and transported to the laboratory by overnight courier under standard custody protocols. The samples were placed in re-sealable bags and packed in a cooler containing ice in sufficient quantity to maintain the temperature at 4°C. An absorbent material such as vermiculite was used in the cooler to prevent or minimize the likelihood of container breakage. The cooler was also secured using reinforced shipping tape.

Proper chain-of-custody (COC) documentation accompanied the samples from the field to the analytical laboratory. The COC forms were signed by each party handling the samples, from sampler to the laboratory, to document the possession of the samples at all times. Individuals relinquishing and receiving the samples were required to sign, date and note the time of transfer on the COC form. The COC documentation also contains data and information for each sample, including sample identification, well number, date and time of sample collection, preservatives used and the analyses to be performed. Chain of Custody forms are provided in Appendix G.

In addition, all sample coolers were sealed using a signed custody seal to prevent tampering or provide direct evidence in the event of tampering.

6.4 QA/QC Samples

Field duplicates, field blanks, equipment rinsate blanks, and trip blanks were obtained for quality assurance in accordance with the workplan at the following rates for soil, sediment and groundwater samples submitted to the laboratory for analysis:

- Field Duplicates – 10% (soil and groundwater)
- Field Blanks – one per day (groundwater only)
- Equipment Rinsate Blanks – 10% (soil and groundwater; minimum of one per day)
- Trip Blanks – one per shipping container with samples intended for VOC analyses (groundwater only)

Table 2 provides a listing of all QA/QC samples, corresponding boring or groundwater sample, if appropriate, and analyses performed.

Field blanks were generated by filling sample containers in the field with distilled water and submitting the samples with the groundwater samples to the analytical laboratory for the appropriate analyses.

Equipment rinsate blanks were generated by rinsing distilled water through unused sampling equipment. The rinsate sample was then placed n the appropriate sample container and submitted with the groundwater samples to the analytical laboratory for the appropriate analyses.

Trip blanks accompanied laboratory sample bottles during shipping to site, storage of containers, collection of samples, and shipping to the laboratory for all groundwater VOCs samples. Trip blanks were prepared by the analytical laboratory prior to the sampling event.

Results for duplicate analyses are provided with the corresponding primary sample in the data tables (Table 6 through Table 14).

6.5 Presentation of Analytical Results

The remainder of this section presents analytical results for the investigation. Table 6 through Table 14 provide both summary data for each unit as well as individual sample data. Laboratory analytical reports and Chain of Custody forms are provided in Appendix G.

6.5.1 Occurrence Summary Tables

The Occurrence Summary Table is intended to provide the reader with a quick summary and understanding for all samples of a particular media (soil, boring groundwater or monitor well groundwater) obtained from a unit. The Occurrence Summary tables present the following information:

- **Constituent**; only constituents which were detected are shown. The concentration units are provided and are generally mg/kg or µg/kg for soils, µg/L for groundwater organics and mg/L for groundwater metals and water quality parameters.

- **Frequency**; indicates the total number of samples analyzed and the number of samples in which that constituent was detected, along with percent detects.

- **Range of SQL**; the minimum and maximum Sample Quantitation Limits (SQL) for the samples analyzed. The value is highlighted in yellow if it exceeds the critical soil screening level or groundwater quality standard.

- **Range of Detects**; the minimum and maximum detected values. Detected concentrations that exceed the critical soil screening level or groundwater quality standard are highlighted in red.

- **Total Range**; the minimum and maximum SQL or Detected concentrations.

- **Average Detected**; the arithmetic average of detected samples only. An average that exceeds the critical soil screening level or groundwater quality standard is highlighted in red.

- **Mean**; the arithmetic average for all samples using ½ the SQL value for non-detects. The value is highlighted in red if it exceeds the critical soil screening level or groundwater quality standard.

- **UCL**; the 95 percent upper confidence limit for the mean (one tailed) assuming a normal distribution and using ½ the SQL value for non-detects.

The value is highlighted in red if it exceeds the critical soil screening level or groundwater quality standard. For small sample sizes (less than 8-10) the UCL may not be appropriate and may not be provided. The UCL will be highlighted in red if it exceeds the critical soil screening value or water quality standard.

- **Critical SSL or Groundwater Standard**; for soil samples, the Critical Soil Screening Value (CSSL) is the lower of the Industrial/Occupational value or the DAF-20 soil-to-groundwater value. For water samples, the Groundwater Standard (GWS) is the New Mexico Water Quality Standard, Federal Maximum Contaminant Limit (MCL) or USEPA Region 9 tap water standard.

- **Critical SSL or Groundwater Standard Source;** identifies the source of the CSSL or GWS that sample results are being compared to.

6.5.2 Sample Data Tables

The accompanying Sample Data Tables provide analytical results for each sample in the unit of interest and make it possible to determine individual sample characteristics. The following information is provided in the Data Table for each sample:

- **Sample Identification;** the sample identifier, depth (if a boring soil sample) and date of sampling are provided.

- **Analyte;** individual analytes are listed in groups (VOCs, SVOCs, metals, etc). Only constituents which were detected in at least one sample are shown on the table. Concentration units are provided and are generally mg/kg for soils, µg/l for groundwater organics and mg/L for groundwater metals and water quality parameters.

- **Critical SSL or Groundwater Standard and Source;** for soil samples, the Critical Soil Screening Value (CSSL) is the lower of the Industrial/Occupational value or the DAF-20 soil-to-groundwater value. For water samples, the Groundwater Standard (GWS) is the New Mexico Water Quality Standard, Federal Maximum Contaminant Limit (MCL) or USEPA Region 9 tap water standard. The source of the standard is listed.

- **Result;** the concentration for the listed analyte, if detected. If not detected, the Result will be the SQL. A result with a red highlight means that the analyte was detected above the indicated CSSL or GWS. A yellow highlight means the analyte was not detected, but that the SQL exceeds the indicated CSSL or GWS.

- **Qualifier;** if the constituent was not detected, a "U" qualifier will indicate that the listed result is the SQL. A "J" qualifier indicates that the analyte was detected below the SQL and the result is an estimated value.

- **SQL;** the lowest level that the analyte could be detected and accurately quantified. SQL will vary between samples due to individual sample characteristics, constituent concentrations and interference from other compounds.

6.6 Analytical Results for Background Borings

Results for the ten (10) background borings are presented in Table 6. A total of 24 samples were analyzed. Background borings were analyzed only for metals, as well as the parameters discussed in Section 4.7.

None of the average, mean or UCL values for the eight analyzed metals exceeded the NM SSL and not all metals were detected in all samples.

The only metals detected in all 24 samples were chromium and lead. Lead was detected in the surface sample from boring location 7 (BSB-7) at a concentration of 118 mg/kg, almost five times higher than the next highest sample concentration of 22.9 mg/kg, and nine times higher than the average in all other samples. This boring location is located northwest of the plant, between a highway and railroad. We suspect that surface soils at this location may have been impacted from highway traffic or potentially the railway. Results for this sample were not used in preparing the summary information in Table 6B.

Chromium ranged from 3.44 to 21.7 mg/kg. Although the average, mean and UCL did not exceed the NM SSL, four individual samples from thee borings exceeded the CSSL of 19.2 mg/kg for chromium VI, ranging up to 21.7 mg/kg, although it is highly unlikely that the detected chromium was chromium VI. No other individual samples had any metal concentration that exceeded the CSSL. The three borings with exceedances were BSB-1, BSB-9 and BSB-10, all located east of the refinery, near Bolton Road or between Bolton Road and Haldeman Road.

Barium and selenium were the next two most detected metals with 23 and 19 detects respectively. Barium concentrations ranged up to 213 mg/kg with a mean of 130 mg/kg and a UCL of 150 mg/kg compared with the CSSL of 823 mg/kg.

Selenium concentrations ranged from 1.45 mg/kg up to 5.1 mg/kg, very close to the CSSL of 5.17 mg/kg. The 5.1 mg/kg sample came from BSB-10, near Bolton Road and Highway 82 in a pecan orchard. BSB-10 was also one of the borings with a chrome concentration that exceeded the CSSL.

Arsenic and cadmium were detected in 8 and 6 samples respectively, at levels well below the CSSLs. The least detected metals were Silver (four detections) and Mercury (one detection). The Mercury was detected in BSB-7, the same boring as the high lead level discussed above.

6.7 Analytical Results for Three-Mile Ditch

TMD boring samples are sequentially numbered beginning at the Refinery with TMD-1 and ending at the Evaporation Ponds (EPs) with TMD-38. TMD-1 through TMD-4 are located on Refinery property. One hundred one (101) soil samples were analyzed from 38 borings along Three-Mile Ditch. Groundwater samples were obtained from all 38 borings and 12 nearby monitor wells. Analytical results for Three-Mile Ditch are presented in Table 7. A summary of samples where at least one analyte exceeded the CSSL or GWS is provided in Table 7B.

6.7.1 Boring Soil Samples

Diesel Range Organics (DRO)

DRO results are presented in Table 7A and 7G. DRO was detected in 64% of the soil samples ranging from 122 mg/kg to 18,900 mg/kg. The 2,000 mg/kg CSSL was exceeded in 17 samples from 14 boring locations (see Table 7B). The greatest concentration of exceedances was in borings near the Evaporation Ponds (EPs); however, locations where exceedances occurred were scattered the length of the ditch as noted:

On Refinery property:	TMD-3;
Halfway between the Refinery and Bolton Road:	TMD-7;
Just east of Bolton Road:	TMD-10, -11;
1,200ft to 1,500ft east of Bolton Road:	TMD-17, -18,-19;
750ft east of Haldeman Rd to where TMD veers SE:	TMD-27;-29; and,
About a half-mile west of the EPs to the EPs:	TMD-33, -35, -36, -37, and 38.

Most of the exceedances were in the range of 2,000 to 8,480 mg/kg; however the 0-1 foot samples from TMD-33 and TMD-35 were about 18,000 mg/kg. Because the hold time for the SVOC analysis was exceeded for these samples, they were re-re-sampled and re-tested for DRO as well as SVOC. The second samples from these same locations had less than 2,000 mg/kg DRO indicating that DRO concentrations are extremely variable even over a relatively small area.

Table 7C identifies DRO concentrations by depth. DRO in excess of the 2,000 mg/kg SSL is primarily confined to near surface (0 – 2.5ft) soils. Thirteen of the 17 total exceedances occurred in the near surface soils at 13 of the 14 boring locations (all except TMD-37). Three exceedances occurred in the 5 – 10 ft samples from three different borings (TMD-17, -19 and – 37) and one exceedance occurred at 10-12.5 ft (TMD-36).

Average and geometric mean concentrations for the analyzed samples decrease substantially with depth:

	DRO Concentration (mg/kg)	
Sample Depth (feet)	**Average**	**Geometric Mean**
0 – 2.5	2,461	839
2.5 - 5	297	169
5 - 10	787	164
10 - 20	688	88

The average and mean results for samples deeper than 0 – 2.5 feet are biased high since the sampling methodology specifically required sampling the most contaminated intervals.

Organics

Results for organic analyses are presented in Table 7A and 7G. Thirteen (13) volatile and 13 semi-volatile compounds were detected. Only two volatile and one semi-volatile compounds were detected at concentrations above the CSSL:

- 1,1,2,2,-Tetrachloroethane (1 detect ["J"value], 1 above CSSL) in TMD-1 (20-22');
- Benzene (7 detects, 2 above CSSL) in TMD-17 (7-9') and TMD-36 (10-12'); and,
- Naphthalene (1 detect in duplicate, 1 above CSSL) in TMD-17 (7-9').

Two volatile and three semi-volatile compounds had SQLs above the CSSL for some samples:

- 1,1,2,2,-Tetrachloroethane (1 detect, 1 SQL above CSSL) in TMD-1 (14-15');
- Methylene Chloride (32 detects, 1 SQL above CSSL) in TMD-1 (14-15');
- Benzo(a)anthracene (4 detects, 1 SQL above CSSL) in TMD-38 (0-2.5');
- Benzo(a)pyrene (1 detect, 4 SQL above CSSL) in TMD-33 (0-2.5") (5-7'), -35 (0-2.5') -36 (0-2.5') and – 38 (0-2.5'); and,
- Naphthalene (1 detect, 19 SQLs above CSSL).

A summary of detects and SQLs above the CSSL is provided in Table 7B. The SQL for Naphthalene was elevated above the CSSL for almost all SVOC analyses performed on samples where the DRO was 2,000 mg/kg or greater. The CSSL for all organics other than benzo(a)pyrene are for DAF 20 soil-to-groundwater. None of the detected organic levels, or detection levels, exceeded the SSL for Industrial/Occupational or Construction Worker exposure.

Metals

Boring samples were analyzed for eight (8) RCRA metals. Sample results are provided in Table 7A and 7G. A summary of the four metal concentrations that exceeded the CSSL is presented in Table 7B.

Arsenic was detected just above the CSSL (17.7 mg/kg) in four (4) samples from four (4) borings at concentrations from 17.9 mg/kg to 29.4 mg/kg (1.7 X the CSSL). In one sample (TMD-19 0-2.5ft) the concentration was 71.9 mg/kg (4 X the CSSL). The average, mean and 95% UCL are all below the CSSL.

Selenium was detected just above the CSSL (5.1 mg/kg) in 13 samples from 12 borings at concentrations from 5.2 mg/kg to 9.7 mg/kg (1.9 X the CSSL). In one sample (TMD-19 0-2.5ft) the concentration was 28.3 mg/kg (5.5 X the CSSL). The average, mean and 95% UCL are all below the CSSL.

Total chromium was detected above the CSSL (19.2 mg/kg for chromium VI) in many of the samples. Table 7D provides a listing of samples where total chromium exceeded the CSSL and a conversion to chrome VI and chrome III concentrations using a 1:6 ratio (see discussion in Section 5.2). When using the 1:6 ratio of chromium VI to chromium III, 17 samples from 17 borings exceed the CSSL; 16 are below 100 mg/kg, one is at 225 mg/kg (TMD-19 0-2.5'). The average, mean and 95% UCL are all below the CSSL when assuming the 1:6 ratio of chromium VI to chromium III.

Lead was detected above the CSSL (750 mg/kg) in eight (8) samples from seven (7) locations. Six of the exceedances ranged from 1,130 mg/kg to 2,590 mg/kg (3.5 X the CSSL). One sample from TMD-1 inside the Refinery fence had 7,580 mg/kg. The sample from TMD-11 had a result of 15,800 mg/kg. The average, mean and 95% UCL are all below the CSSL. As shown in Table 7C, all soil exceedances for lead were located in the near-surface (0-2.5') soils.

The CSSL used for the above four metals is the DAF 20 Soil-to-Groundwater level, except for arsenic, where it is the lower Industrial/Occupational exposure SSL. Arsenic concentrations exceed the DAF 20 SSL only at boring TMD 19 (71.9 mg/kg detected , 58.3 mg/kg DAF 20 SSL). Chromium VI and selenium concentrations do not exceed the industrial/occupational or construction worker SSLs.

6.7.2 Boring Groundwater Samples

Analytical results for groundwater samples from the borings are presented in Table 7E and 7H. Table 7B summarizes compounds that exceeded the GWS.

Benzene was the only VOC detected in the groundwater and it was present in six (6) borings. Concentrations from five (5) of the borings were above the CSSL of 5.0 µg/L, at concentrations ranging from 17.5 µg/L to 75.4 µg/L. The maximum DRO at three of these borings exceeded 2,000 mg/kg (TMD-19, -27, and – 36). The maximum DRO concentrations at the other two locations were 122 mg/kg (TMD-25) and 1040 mg/kg (TMD-1).

Naphthalene was detected in one boring water (TMD-1) above the standard, where benzene also exceeded the standard.

Groundwater from TMD-19 exceeded standards for seven semi-volatiles. Groundwater from this boring also exceeded the standard for benzene and the maximum DRO in the soil was 7,430 mg/kg.

Two semi-volatiles (chrysene and benzo(a)anthracene) exceeded the standard in groundwater from TMD-38. The maximum DRO in the soil was 2,650 mg/kg, but the benzene standard was not exceeded.

6.7.3 Monitor Well Groundwater Samples

Monitor well results are presented in Table 7F and Table 7I. Monitor wells are listed from west to east down Three-Mile Ditch for ease in locating them on Figure 2.

Water from many of the wells exhibited poor general water quality including high levels of nitrate/nitrite, calcium, sodium, iron, and manganese. Total Dissolved Solids ranged from 3,140 mg/L to 8,510 mg/L with an average of 5,700 mg/L. Nitrates/ nitrites were elevated with a maximum value of 32.4 mg/L and an average of 9.1 mg/L, most likely due to fertilizers used in the surrounding agricultural operations.

Four VOCs (benzene, cumene, MTBE and methylene chloride) were detected in one to four monitor well groundwater samples (MW-8, -21, -9 and -15). All but one detection (MTBE) were "J" values (detected below the SQL) and none were above the GWSs.

The SQL for bis(2-ethylhexyl)phthalate and 2,2'-oxybis(1-chloropropane) exceeded the GWS in all samples. 2,2'-oxybis(1-chloropropane) was detected above the CSSL in MW-21. MW-21 is located near TMD-16, which did not have exceedances for DRO or organics in the soil or boring groundwater.

Samples from Monitor Wells 8 and 9 exhibited exceedances for chromium and iron; the sample from Monitor Well 8 additionally exceeded the standard for vanadium and manganese. Monitor Well 1R also exceeded the GWS for iron and manganese. These older wells were cased with stainless steel and the results are consistent with corroding stainless steel pipe. Previous results on samples from these wells in prior studies and monitoring events have also indicated the effects of deteriorating pipe.

The GWS of 50.0 µg/L for selenium was slightly exceeded in samples from Monitor Wells 8, 21, 9 and 29. Results ranged from 50.6 µg/L to 84.0 µg/L. These monitor wells are close together and in sequence about 1,250 feet to 2,000 feet east of Bolton Road. They are located near TMD borings 15 through 18. Soil from borings TMD-15 and -17 also exhibited slightly elevated selenium levels. Additionally, TMD-17 had DRO levels exceeding 2,000 mg/kg in both surface soils and soils from 5 feet to 9 feet below grade.

6.8 Analytical Results for Evaporation Pond 1

Thirty five (35) soil samples were analyzed from twelve borings in Evaporation Pond 1 (EP-1). Analytical results for EP-1 are presented in Table 8. Groundwater samples were obtained from three of the borings.

6.8.1 Boring Soil Samples

Diesel Range Organics (DRO)

DRO results are presented in Table 8A and 8D. DRO was detected in 66% of the soil samples ranging from 129 mg/kg to 55,200 mg/kg. The 2,000 mg/kg CSSL was exceeded in 14 samples from 9 boring locations. The highest concentrations were located in the near-surface (0-2.5 ft) samples and none of the exceedances occurred at depths greater than five feet:

Diesel Range Organic Concentration, mg/kg

Sample ID	0-2.5 ft	2.5-5 ft	5-10 ft	10-25 ft
EP1-1	***55,200***	***4,280***		38.9
EP1-2	376		129	38.4
EP1-3	***49,400***	***4,850***		147
EP1-4	***18,900***		167	39.9
EP1-5	***6,780***	41.7		40.1
EP1-6	***9,740***	***17,700***		
EP1-7	587			
EP1-8	417		40.3	46.8
EP1-9	***2,740***		1,920	
EP1-10	***19,300***	***10,300***		42.8
EP1-11	***3,020***			40.4
EP1-12	***4,700***	***32,800***		
AVERAGE:	***14,270***	***11,662***	564	54.3

The average value from the surface to five (5) feet exceeded 2,000mg/kg, however no sample greater than five feet exceeded the 2,000 mg/kg CSSL. The four borings where DRO was not detected above the CSSL were not concentrated in one area of the pond but were scattered.

The results for samples deeper than 0 – 2.5 feet are biased high since the sampling methodology specifically required sampling the most contaminated intervals.

The 95% UCL for all samples was 14,000 mg/kg, exceeding the CSSL of 2,000 mg/kg.

Organics

Results for organic analyses are presented in Table 8A and 8D. Twelve (12) volatile and 12 semi-volatile compounds were detected. Only three volatile and two semi-volatile compounds were detected at concentrations above the CSSL:

- Acetone (26 detects, 2 above CSSL);
- Benzene (6 detects, 5 above CSSL);
- Bromodichloromethane (1 detect above CSSL);
- Dibenzofuran (2 detects, 1 above CSSL); and,
- Naphthalene (1 detect above CSSL, but below the SQL)

One volatile and two semi-volatile compounds had SQLs above the CSSL for some samples:

- Bromodichloromethane (1 detect, 8 SQLs above CSSL);
- Benzo(a)anthracene (1 detect, 10 SQLs above CSSL);
- Naphthalene (1 detect, 12 SQLs above CSSL).

The SQL for Naphthalene was elevated above the CSSL for almost all SVOC analyses performed on samples where the DRO was 2,000 mg/kg or greater.

The 95% UCL exceeded the appropriate CSSL for the four following organic compounds:

- Benzene (1.4 X CSSL);
- Bromodichloromethane (1.2 X the CSSL), due to elevated SQLs;
- Benzo(a)anthracene (1.3 X the CSSL), due to elevated SQLs; and,
- Naphthalene (5.6 X the CSSL) due to elevated SQLs.

Metals

Boring samples were analyzed for eight (8) RCRA metals. Sample results are provided in Table 8A and 8D. Two metals were detected above the CSSL.

Arsenic was detected above the CCSSL (17.7 mg/kg) in four (4) samples from four (4) borings at concentrations from 17.8 mg/kg to 40.3. mg/kg (2.3 X the CSSL). The average, mean and 95% UCL are all below the CSSL. All arsenic exceedances were in the 0-2.5 ft interval.

Total chromium was detected above the CSSL (19.2 mg/kg for chromium VI) in many of the samples. Table 8B provides a listing of samples where total chromium exceeded the CSSL and a conversion to chrome VI and chrome III concentrations using a 1:6 ratio (see discussion in Section 5.2). When using the 1:6 ratio of chromium VI to chromium III, 10 samples from 9 borings exceed the CSSL; 8 are below 100 mg/kg, the highest was at 166 mg/kg. The average and mean are below the CSSL. The 95% UCL for all samples was 30 mg/kg, exceeding the CSSL of 19.2 mg/kg (1.6 X the CSSL), when assuming the 1:6 ratio of chromium VI to chromium III.

No other metals, including lead were detected above the CSSL.

6.8.2 Boring Groundwater Samples

Analytical results for groundwater samples from the EP-1 borings are presented in Table 8C and 8E. Groundwater from three borings (EP1-1, -9, -10) was analyzed for BTEX and polyaromatic hydrocarbons (PAHs). EP1-1 and -10 are on the downgradient side of the pond. EP1-9 is upgradient.

Benzene was detected in groundwater from one sample, EP1-1, at 30.2 µg/L, above the GWS of 5.0 µg/L. It was not detected in the other samples at a SQL of 0.04 µg/L.

Ethylbenzene, xylenes and toluene were detected in EP1-1 and EP1-9 but not above the respective GWS.

Anthracene, fluorene, phenanthrene and pyrene were detected in two of the three samples but not above the respective GWSs.

6.9 Analytical Results for Evaporation Pond 2

Fifty-eight (58) soil samples were analyzed from 25 borings in Evaporation Pond 2 (EP-2). Borings were placed in an arc pattern at increasing distances from the southwest corner, which was the original influent location. Soil results are presented for borings EP2-1 through EP2-15, which were closest to the influent location, and EP2-16 through 25. Analytical results for EP-2 are presented in Table 9. Groundwater samples were obtained from five of the borings.

6.9.1 Boring Soil Samples for EP2-1 through EP2-15

Diesel Range Organics (DRO)

DRO results are presented in Table 9A and 9D. DRO was detected in 93% of the soil samples ranging from 148 mg/kg to 76,000 mg/kg. The 2,000 mg/kg CSSL was exceeded in 26 samples from 14 boring locations. The highest concentrations were located in the 0 – 5 foot intervals. There were some exceedances at 5 – 7.5 feet and one at 7.5 - 10 feet:

Diesel Range Organic Concentration, mg/kg

Sample ID	0-2.5 ft	2.5-5 ft	5-7.5 ft	7.5-10 ft
EP2-1	***5190***	***17100***		322
EP2-2	***18800***		363	
EP2-3	***10100***	***14700***	451	
EP2-4	***63900***	***9430***		577
EP2-5	***13200***	***20100***		207
EP2-6	***76000***		***7790***	39.5
EP2-7	***6600***	***25200***		
EP2-8	654		***2780***	38.1
EP2-9	***3200***	***15200***	148	
EP2-10	177		385	
EP2-11	***74000***			***12700***
EP2-12	***3550***		***3690***	
EP2-13	***14500***	***35900***		
EP2-14	***26300***		***6920***	
EP2-15	***14100***	***13300***	150	
AVERAGE:	***22018***	***18866***	***2519***	***2313*** (w/o -11 236)

The 95% UCL for all samples was 19,000 mg/kg, exceeding the CSSL of 2,000 mg/kg.

Organics

Results for organic analyses are presented in Table 9A and 9D. Thirteen (13) volatile and 26 semi-volatile compounds were detected. Eight (8) volatile and 12 semi-volatile compounds were detected at concentrations above the CSSL. The following compounds were detected above the CSSL in more than one sample:

- Benzene (11 detects, 8 above the CSSL);
- Ethylbenzene (27 detects, 4 above the CSSL);
- Tetrachloroethene (3 detects, 3 above the CSSL);
- 2,4-Dinitrophenol (3 detects, 2 above the CSSL);
- Benzo(a)anthracene (2 detects, 2 above CSSL);
- Naphthalene (6 detect, 5 above CSSL); and,
- Pentachlorophenol (3 detects, 3 above the CSSL, all "J" values).

Several volatile and semi-volatile compounds had elevated SQLs above the CSSL for some samples.

The 95% UCL exceeded the appropriate CSSL for two VOCs (benzene and methylene chloride) and 10 semi-volatile compounds. Other than benzene, the exceedance by the 95% UCL can be attributed to elevated SQLs.

Metals

Boring samples were analyzed for eight (8) RCRA metals. Sample results are provided in Table 9A and 9D. Three metals were detected above the CSSL.

Arsenic was detected above the CSSL (17.7 mg/kg) in nine (9) samples from eight (8) borings at concentrations from 18.0 mg/kg to 38.0 mg/kg (2.1 X the CSSL). The average, mean and 95% UCL are all below the CSSL. All but one arsenic exceedance was in the 0-2.5 ft interval.

Total chromium was detected above the CSSL (19.2 mg/kg for chromium VI) in many of the samples. Table 8B provides a listing of samples where total chromium exceeded the CSSL and a conversion to chrome VI and chrome III concentrations using a 1:6 ratio (see discussion in Section 5.2). When using the 1:6 ratio of chromium VI to chromium III, 14 samples from 13 borings exceed the CSSL; 10 are below 100 mg/kg, the highest was 175 mg/kg. The average and mean are below the CSSL. The 95% UCL for all samples was 38.6 mg/kg, exceeding the CSSL of 19.2 mg/kg (2.0 X the CSSL), when assuming the 1:6 ratio of chromium VI to chromium III.

Selenium exceeded the CSSL (5.16 mg/kg) in one sample that was at 7.28 mg/kg (1.4 X the CSSL). Average and 95% UCL concentrations are below the CSSL.

No other metals, including lead were detected above the CSSL.

6.9.2 Boring Soil Samples for EP2-16 through EP2-25

Diesel Range Organics (DRO)

DRO results are presented in Table 9B and 9E. DRO was detected in 45% of the soil samples ranging from 148 mg/kg to 2,800 mg/kg. The 2,000 mg/kg CSSL was exceeded in only one sample from EP2-19 at 0 – 2.5 feet. The next highest results were 1,120 and 544 mg/kg.

The 95% UCL for all samples was 510 mg/kg, below the CSSL of 2,000 mg/kg.

Organics

Results for organic analyses are presented in Table 9B and 9E. The only VOC detected was Acetone in four samples, all below the CSSL.

Because the DRO was less than 2,000 in all but one sample, SVOC analysis was run on only that one sample. SQLs were elevated above the CSSL for most of the SVOC compounds.

Metals

Boring samples were analyzed for eight (8) RCRA metals. Sample results are provided in Table 9B and 9E. Two metals were detected above the CSSL.

Arsenic was detected above the CSSL (17.7 mg/kg) in two (2) samples from two borings at concentrations of 22.1 mg/kg and 36.3 mg/kg (2.1 X the CSSL). The average, mean and 95% UCL are all below the CSSL. The arsenic exceedances were in the 0-2.5 ft interval.

Total chromium was detected above the CSSL (19.2 mg/kg for chromium VI) in three of the samples. Table 8B provides a listing of samples where total chromium exceeded the CSSL and a conversion to chrome VI and chrome III concentrations using a 1:6 ratio (see discussion in Section 5.2). When using the 1:6 ratio of chromium VI to chromium III, none of the samples exceeded the CSSL for chromium VI.

No other metals, including lead were detected above the CSSL.

6.9.3 Boring Groundwater Samples

Analytical results for groundwater samples from the EP-2 borings are presented in Table 9C and 9F. Groundwater from five borings (EP2-1, -6, -12, -20, -25) was analyzed for BTEX, VOC and polyaromatic hydrocarbons (PAHs). EP2-1, -6, -12, and -20 are on the downgradient side of the pond. EP2-25 is upgradient.

Benzene was detected in groundwater from four samples (EP2-1, -6, -12, and -20) at concentrations from 6.44 µg/L to 78.5 µg/L, above the GWS of 5.0 µg/L. It was not detected in the upgradient sample at a SQL of 0.04 µg/L.

Ethylbenzene, xylenes and toluene were detected in two to four of the samples but not above the respective GWS. They were not detected in the upgradient sample from EP2-25.

Four other VOCs were also detected in EP2-1 and EP2-6, although they were not above the GWS:

- Methyl Ethyl Ketone
- Acetone
- Carbon Disulfide
- MTBE

Chrysene, fluorene, and phenanthrene were detected in groundwater from EP2-1, below the GWS, but not in groundwater from the other sampled borings. The SQL for dibenz(a,h)anthracene was elevated above the GWS in all samples.

6.10 Analytical Results for Evaporation Pond 5

Forty-eight (48) soil samples were analyzed from 21 borings in Evaporation Pond 5 (EP-5). Borings were placed in an arc pattern at increasing distances from the northwest corner, which was the original influent location. Soil results are presented for borings EP5-1 through EP5-3, which were closest to the influent location, and EP5-4 through 21. Analytical results for EP-5 are presented in Table 10. Groundwater samples were obtained from five of the borings.

6.10.1 Boring Soil Samples for EP5-1 through EP5-3

Diesel Range Organics (DRO)

DRO results for these three borings are presented in Table 10A and 10D. DRO was detected in 83% of the soil samples ranging from less than 39.4 mg/kg to 75,500 mg/kg. The 2,000 mg/kg CSSL was exceeded in four samples from all three boring locations. The exceedance was in both depth ranges (0 – 2.5 feet and 2.5 – 5 feet) in boring EP5-1 and only in the 0 – 2.5 foot samples from EP5-2 and EP5-3.

Organics

Results for organic analyses are presented in Table 10A and 10D. Four (4) volatiles and 33 semi-volatile compounds were detected, all from the EP5-1 boring. One (1) volatile was detected above the CSSL in the 0-2.5 foot sample and 13 semi-volatile compounds were detected at concentrations above the CSSL in the 2.5 – 5 foot sample.

The semi-volatile compounds also had elevated SQLs above the CSSL for the other samples in this set. Because of the small sample set, the use of 95% UCL concentrations for comparison with the CSSL is not appropriate.

Metals

Boring samples were analyzed for eight (8) RCRA metals. Sample results are provided in Table 10A and 10D. Two metals were detected above the CSSL.

Arsenic was detected above the CSSL (17.7 mg/kg) in one (1) sample from EP5-3 at a concentration of 18.0 mg/kg to 19.9 mg/kg (11 X the CSSL).

Total chromium was detected above the CSSL (19.2 mg/kg for chromium VI) in two of the samples. Table 8B provides a listing of samples where total chromium exceeded the CSSL and a conversion to chrome VI and chrome III concentrations using a 1:6 ratio (see discussion in Section 5.2). When using the 1:6 ratio of chromium VI to chromium III, none of the samples exceed the CSSL.

Selenium exceeded the CSSL (5.16 mg/kg) in four samples ranging from 6.32 mg/kg to70.5 mg/kg (4.0 X the CSSL).

No other metals, including lead were detected above the CSSL.

6.10.2 Boring Soil Samples for EP5-4 through EP5-21

Diesel Range Organics (DRO)

DRO results are presented in Table 10B and 10E. DRO was detected in 26% of the soil samples ranging from 138 mg/kg to 1,700 mg/kg. There were no exceedances of the 2,000 mg/kg CSSL. The highest result of 1,700 mg/kg occurred in the 0 – 2.5 foot sample from boring EP5-4, the closest boring of this set to the influent point of the pond. The 95% UCL for all samples was 270 mg/kg, below the CSSL of 2,000 mg/kg.

Organics

Results for organic analyses are presented in Table 10B and 10E. Five (5) VOCs were detected but only one, ethylene dichloride, was above the CSSL in two samples from two borings. The 95% UCL did not exceed the CSSL.

Because the DRO was less than 2,000 in all samples, SVOC analysis was not run on any of the samples.

Metals

Boring samples were analyzed for eight (8) RCRA metals. Sample results are provided in Table 10B and 10E. One metal was detected above the CSSL.

Total chromium was detected above the CSSL (19.2 mg/kg for chromium VI) in six of the samples. Table 8B provides a listing of samples where total chromium exceeded the CSSL and a conversion to chrome VI and chrome III concentrations using a 1:6 ratio (see discussion in Section 5.2). When using the 1:6 ratio of chromium VI to chromium III, none of the samples exceeded the CSSL for chromium VI.

Selenium occurred above the CSSL (5.17 mg/kg) in 18 samples, ranging from 5.4 mg/kg to 16.7 mg/kg (3.2 X the CSSL). The average, mean and 95% UCL all slightly exceeded the CSSL.

No other metals, including lead were detected above the CSSL.

6.10.3 Boring Groundwater Samples

Analytical results for groundwater samples from the EP-5 borings are presented in Table 10C and 10F. Groundwater from five borings (EP5-1, -5, -9, -16, -21) was analyzed for BTEX, VOC and polyaromatic hydrocarbons (PAHs). EP5-1, -5, -9 and-16 are on the downgradient side of the pond. EP5-21 is upgradient.

Seven VOCs were detected in groundwater from EP5-1 and EP5-5, the borings closest to the influent point, although they were not above the GWS:

- Acetone,
- Benzene,
- Carbon Disulfide,
- Ethylbenzene,
- Xylenes, and
- Toluene.

Fluorene, phenanthrene and pyrene were detected in groundwater from EP5-1, below the GWS, but were not detected in the other sampled borings. The SQL for dibenz(a,h)anthracene was elevated above the GWS in all samples.

6.11 Analytical Results for Evaporation Ponds 3 and 6

Twenty seven (27) soil samples were analyzed from 12 borings in Evaporation Pond 3 (EP-3) and 12 soil samples were analyzed from 5 borings in Evaporation Pond 6 (EP6). Analytical results for EP-3 are presented in Table 11. Results for EP-6 are in Table 12 Groundwater samples were obtained from three borings in EP3 and one boring in EP6.

6.11.1 Boring Soil Samples

Diesel Range Organics (DRO)

DRO was not detected in any samples from EP3 or EP6.

Organics

Results for organic analyses are presented in Table 11A, 11C, 12A and 12 B. Five (5) volatile compounds were detected with none above the CSSL.

- Ethylene dichloride (EP3 and EP6);
- Acetone (EP3 and EP6);
- Chloroform (EP3 and EP6);
- Methylene Chloride (EP3 and EP6); and,
- Tetrachloroethene (EP3 only)

None of the samples were analyzed for SVOCs since none of them exceeded the CSSL for DRO.

Metals

Boring samples were analyzed for eight (8) RCRA metals. Sample results are provided in Table 11A, 11C, 12A and 12 B. Two metals were detected above the CSSL

Arsenic was detected above the CSSL (17.7 mg/kg) in one (1) sample from EP3-5 at a concentration of 41.1 mg/ (2.3 X the CSSL).

Total chromium was detected above the CSSL (19.2 mg/kg for chromium VI) in two of the samples from EP3 and two samples from EP6. Table 8B provides a listing of samples where total chromium exceeded the CSSL and a conversion to chrome VI and chrome III concentrations using a 1:6 ratio (see discussion in Section 5.2). When using the 1:6 ratio of chromium VI to chromium III, none of the samples exceed the CSSL.

Selenium exceeded the CSSL (5.16 mg/kg) in two samples from EP3, ranging from 5.76 to 8.18 mg/kg (1.6 X the CSSL).

No other metals, including lead were detected above the CSSL.

6.11.2 Boring Groundwater Samples

Analytical results for groundwater samples from the EP3 and EP6 borings are presented in Table 11B, 11D and 12C. Groundwater from three borings in EP3 (EP3-4, -5, and-9) and one boring in EP6 (EP6-3) was analyzed for BTEX, VOC and polyaromatic hydrocarbons (PAHs).

No VOCs or SVOCs were detected in the groundwater samples.

6.12 Analytical Results for Borings South of Evaporation Pond Berms

Thirteen (13) soil samples were analyzed from 6 borings south of Evaporation Pond 1, Evaporation Pond 2 and Evaporation Pond 3. Analytical results are presented in Table 13. Groundwater samples were obtained from all six borings.

6.12.1 Boring Soil Samples

Diesel Range Organics (DRO)

Results for DRO analyses are in Table 13A and 13C. DRO was detected in two of the samples at concentrations of 419 mg/kg and 131 mg/kg, below the CSSL of 2,000 mg/kg.

Organics

Results for organic analyses are presented in Table 13A and 13C. Seven (7) volatile compounds were detected, all below the SQL and none above the CSSL.

- Ethylene dichloride;
- Methyl Ethyl Ketone;
- Acetone;
- Benzene;
- Chloroform;
- Methylene Chloride; and,
- Tetrachloroethene.

None of the samples were analyzed for SVOCs since none of them exceeded the CSSL for DRO.

Metals

Boring samples were analyzed for eight (8) RCRA metals. Sample results are provided in Table 13A and 13C. No metals were detected above the CSSL.

Total chromium was detected above the CSSL (19.2 mg/kg for chromium VI) in three of the samples. Table 8B provides a listing of samples where total chromium exceeded the CSSL and a conversion to chrome VI and chrome III concentrations using a 1:6 ratio (see discussion in Section 5.2). When using the 1:6 ratio of chromium VI to chromium III, none of the samples exceed the CSSL.

No other metals, including lead were detected above the CSSL.

6.12.2 Boring Groundwater Samples

Analytical results for groundwater samples from the area south of the EP1, EP2 and EP3 berms are presented in Table 13B and 13D. Groundwater from six borings was analyzed for BTEX and polyaromatic hydrocarbons (PAHs).

Benzene, toluene, ethylbenzene or xylenes were detected in groundwater from every boring, although most of the detections were below the SQL and the GWS. Benzene was the only compound detected above the GWS, in EPB-1, EPB-3, EPB-4 and EPB-5. Only xylenes below the SQL were detected in groundwater from EPB-6.

Two or three SVOCs (anthracene, fluorene and pyrene) were detected in EPB-3 and EPB-4. Only fluorene was detected above the SQL however, in EPB-3.

6.13 Evaporation Pond Area Groundwater

Seven existing monitor wells upgradient from the Evaporation Ponds and 12 existing wells downgradient from the ponds were sampled and analyzed.

Evaporation Pond area monitor well results are presented in Table 14. Information for upgradient wells are presented in Table 14A and Table 14C; downgradient wells are in Table 14B and Table 14D.

Water from many of the wells exhibited poor general water quality including high levels of nitrate/nitrite, calcium, sodium, iron, and manganese.

6.13.1 Upgradient Wells

TDS in the upgradient wells ranged up to 19,200 mg/L with an average of 7,600 mg/L and a 95% UCL of 12,000 mg/L, well over the 10,000 mg/L limit for application of MCLs as the water quality standard. The maximum nitrate/nitrite concentration was 0.798 mg/L considerably less than the average of 9.1 mg/L for wells along TMD. Sulfate concentrations ranged up to 3,710 mg/L with an average of 2,700 mg/L, somewhat less than along TMD (4,410 mg/L max, 3,100 average).

Two VOCs (acetone and carbon disulfide) were detected in two to four boring groundwater samples, but not above the GWS.

No SVOC compounds were detected from the upgradient wells.

The only metals detected above GWSs were iron and manganese, which were exceeded for every well except MW-11A.

6.13.2 Downgradient Wells

TDS in the downgradient wells ranged up to 18,300 mg/L with an average of 8,400 mg/L and a 95% UCL of 11,000 mg/L, about the same as the upgradient wells and over the 10,000 mg/L limit for application of MCLs as the water quality standard. The maximum nitrate/nitrate concentration was 0.596 mg/L, less than the upgradient well average and significantly less than TMD wells. Sulfate concentrations ranged up to a maximum of 12,900 mg/L and an average of 6,000 mg/L, exceeding the levels found in the upgradient wells.

Up to eleven VOCs were detected in most of the downgradient boring groundwater samples, but only chloromethane in one well was above the GWS. The most detected VOC was Carbon Disulfide, found in 10 of the wells. The next most frequently

detected compound was MTBE, found in 5 wells. All remaining VOCs were detected in only one or two wells. Benzene was detected only in one well.

Bis(2-ethylhexyl)phthalate was detected above GWSs in 2 wells. Acenaphthylene was detected above the GWS in one well. The SQL for bis(2-ethylhexyl)phthalate, 2,2'-oxybis(1-chloropropane) and acenaphthylene exceeded the GWS in all samples.

Anthracene and/or fluorene were detected in two wells, below the GWS.

The GWS of 100 µg/L for arsenic was slightly exceeded in six wells, at concentrations ranging from 118 µg/L to 176 µg/L. Most of the wells were immediately east or south of the ponds. Groundwater from MW-3 however, immediately south of EP1, had only 47.9 µg/L while MW-22A, much further south, had 118 µg/L. The 95% UCL for arsenic was 120 µg/L, slightly exceeding the GWS.

The GWS of 50.0 µg/L for selenium was slightly exceeded in one sample from Monitor Well 18A, at 50.3 µg/L.

Water quality standards for iron and manganese were exceeded in every well except MW-18A.

6.14 Sample Analysis Issues

The following quality issues were noted with regard to sample analyses.

- Hold times for SVOC analysis were initially exceeded for the following soil samples:
  - TMD-33 (0-1') – re-sampled
  - TMD-35 (0-1') – re-sampled
  - TMD-36 (0-2.5') – re-sampled, and (10-12.5') – not re-sampled
  - TMD-37 (7.5-10) – not re-sampled
  - EP1-3 (0-2.5') – re-sampled

  Samples from these borings were originally obtained on June 17. Hold times were missed because the lab was waiting for DRO results from these samples to determine whether SVOC analyses were required. It was not determined by the lab that hold times for SVOC analyses on these samples had been exceeded until the drill rig had been released from the site.

  Additional near surface samples were obtained for these locations as noted above in late July. New samples from the deeper intervals of TMD-36 and TMD-37 were not obtained since the drill rig was not available. Results presented in the accompanying tables are for the re-samples where they were obtained, or for the original sample if it was not possible to obtain a new sample. Analyses for other parameters (metals, VOCs) were accomplished within the allowable hold time.

- The VOC sample from MW-21, obtained on June 9, was misplaced and not located until after the hold time had elapsed. The well was re-sampled on July 16 and the sample analyzed for VOC.

- The following boring soil and groundwater samples exceeded temperature limits for 8260 VOC or 8021 BTEX analyses when received by the laboratory:
  - TMD-4, -21, -23, -26, -27, -28, -29, -30, -31, -32 (all boring groundwater for 8021 BTEX)
  - TMD-4 (0-1') and (10-12'), TMD-33 (0-1') and (5-7'), and TMD-34 (0-1') and (2.5-5') (all soil samples for 8260 VOC)

  All of these samples were obtained on Thursday, June 17 except for groundwater samples from TMD-21 (obtained late afternoon June 16) and TMD-4 (obtained Friday morning June 18). Samples were shipped on Friday,

June 18 for next-day Saturday delivery to the lab. However, they were not delivered to the lab until Monday, June 21. When received by the lab, temperatures in the coolers ranged up to 20°C compared to the required temperature range of 2°-6°C. The lab noted that all containers were intact and cooled the samples back down to 3°.

Navajo's consultant spoke with David Cobrain at the NMED about the issue to determine if re-sampling would be required by the NMED. All borings had been backfilled with bentonite following groundwater sampling, so re-sampling would have required drilling a new boring. For most of these boring locations other soil or groundwater VOC data was available, along with VOC analyses from nearby monitor wells. Therefore, Mr. Cobrain allowed the results to be used without re-sampling as long as the deviation from the temperature standard was noted.

- Both 1-liter samples of boring water from TMD-14 and the field blank FB-5GW (obtained on June 16 and shipped June 17), submitted for 8310 PAH analysis, were broken when received by the lab. Therefore the PAH analysis was not performed on these samples.

7. SUMMARY AND CONCLUSIONS

7.1 Three-Mile Ditch

7.1.1 Summary of Analytical Results

A summary of the analytical results for Three-Mile Ditch samples is presented in the following bulleted list (see also Table 7B):

- DRO in excess of 2,000 mg/kg was found in 14 out of 38 boring locations at various locations along the ditch and was confined to the top 2.5 feet in all but 4 locations. The only areas where two or more consecutive boring locations exhibited DRO over 2,000 mg/kg were two locations east of Bolton Road (TMD-10 and -11 and TMD-17, -18 and -19) and just west of the Evaporation Ponds (TMD-35, -36, -37 and -38). Most of the DRO over 2,000 mg/kg is less than about 7,500 mg/kg. Two samples (TMD-33 and –35) had concentrations near 18,000 mg/kg. However, a re-sample of these boring locations resulted in DRO concentrations less than 2,000 mg/kg. This would seem to indicate that in this area the DRO concentrations are highly variable and localized.

- Although DRO may be present, it generally does not contain organic compounds at concentrations above the CSSL. Only two VOCs were identified in any of the samples at concentrations above the CSSL, and those were at depths greater than seven (7) feet. Benzene was found in two samples (TMD-17 and –36) at 154 µg/kg and 112 µg/kg (compared with the CSSL of 28.3 µg/kg). 1,1,2,2-tetrachloroethane was quantified in one sample (TMD-1) at 1.33 µg/kg (compared with the CSSL of 0.34 µg/kg), but was below the SQL. None of the VOC values exceed the industrial/occupational or construction worker SSLs.

- Naphthalene is the only SVOC detected above the CSSL and that was in one duplicate sample (TMD-17), at a depth of 7 feet. Naphthalene is also the only SVOC that consistently had a SQL elevated above the CSSL. Benzo(a)pyrene and benzo(a)anthracene had SQLs above the CSSL in only four samples and one sample respectively. No other SVOCs were detected or had elevated SQLs. Although there were some individual exceedances of the CSSL, only the detection limit value for benzo(a)pyrene exceeded the industrial/ occupational or construction worker SSL.

- Total chromium was detected in many of the samples, and while greater than background concentrations for total chrome, it is unlikely that it exists as chromium VI at levels that exceed the CSSL. Assuming a 1:6 ratio for chrome VI to chrome III results in 17 borings with concentrations in excess of the CSSL of 19.2 mg/kg. All but one of these estimated chromium VI concentrations is five times or less the CSSL. The estimated chromium VI concentration in boring TMD-19 is 225 mg/kg. This concentration exceeds the construction worker SSL, but not the industrial/occupational SSL.

- Other than chromium, selenium is the most frequently detected metal above the CSSL, found in 13 borings. However, all but one of these detected concentrations is less than twice the CSSL of 5.1 mg/kg, ranging from 5.2 mg/kg to 9.7 mg/kg. The highest selenium concentration is located at TMD-19 at a concentration of 28.3 mg/kg, less than six times greater than the CSSL. None of the selenium concentrations exceed the industrial/occupational or construction worker SSLs.

- Arsenic was identified in five borings above the CSSL, however four of these samples were less than twice the CSSL of 17.7 mg/kg, ranging from 17.9 mg/kg to 29.4 mg/kg. The CSSL for arsenic is the industrial/occupational SSL. The highest arsenic concentration was located at TMD-19 at a concentration of 71.9 mg/kg, still only four times the CSSL and less than the construction worker SSL. This is the only arsenic detection that exceeded the DAF 20 soil-to-groundwater SSL.

- Lead is present in seven borings at concentrations above the CSSL of 750 mg/kg, as well as the industrial/occupational or construction worker SSL of 900 mg/kg. At five of these locations, the lead concentration is less than four times the CSSL, ranging from 1,130 mg/kg to 2,590 mg/kg. At TMD-1, well within the Refinery, the concentration is 7,850 mg/kg (~10X the CSSL). The highest concentration of 15,200 mg/kg is at TMD-19.

- With only one exception (selenium in TMD-17 at 7-9'), all metals detected above the CSSL were present at depths shallower than 2.5 – 3 feet. Although the DRO is also found primarily at this depth, there is no consistent correlation between DRO greater than 2,000 mg/kg and elevated metal concentrations. For example, lead is present above the CSSL in four borings where the DRO is greater than 2,000 mg/kg, but is also present in three borings where DRO is less than 2,000 mg/kg. Most of the samples with DRO greater than 2,000 mg/kg do not have lead levels above the CSSL.

- Few organics were detected in groundwater from the borings at levels of concern. Benzene was the only VOC detected above the GWS of 5 µg/L, in 5 borings ranging from 17.5 µg/L to 75.4 µg/L. The two highest concentrations were found in boring TMD-1 and TMD-19. Three borings also had one SVOC detected above the GWS (TMD-1, -36 and -38), two of which also had an elevated concentration of benzene. Multiple SVOCs were detected above the GWS in one boring – TMD-19. There is no identifiable correlation between higher DRO concentrations and benzene concentrations in the boring groundwater.

- Monitor well results confirm that TMD has had little or no impact on organics in groundwater. From one to three VOCs were detected in four monitor wells, and all but one (MTBE in MW-21) were "J" values below the GWS. Only one SVOC (2,2'-oxybis(1-chloropropane)) was detected above the GWS, also in MW-21.

- Monitor well results also indicate that TMD has had little impact on metals in the groundwater. The only metal that exceeded the GWS was selenium in four monitor wells at levels from 50.6 µg/L to 84.0 µg/L, slightly above the GWS of 50.0 µg/L. The average selenium level in groundwater from these four wells is 68.0 µg/L, only somewhat higher than the average of 36.4 µg/L for all other monitor wells along TMD. Three of the monitor wells that had VOC detections also had selenium above the GWS and are adjacent to one another – MW-8, -21 and 9. These three wells are located between borings TMD-15 and TMD-18. TMD-15 exhibited exceedances of the CSSL in the soil for selenium as well as arsenic and lead. TMD-17 exhibited exceedances in the soil for selenium as well as benzene. TMD-18 did not exceed the CSSL or GWS criteria, but TMD-19 did exceed CSSLs for selenium (the highest concentration observed in any boring samples), arsenic and chromium as well as GWSs for benzene and SVOCs.

- General water quality along TMD is relatively poor with TDS concentrations averaging 5,700 mg/L and a maximum near 8,500 mg/L. Nitrates/nitrites are also elevated from agricultural operations, with the average concentration of 9.1 mg/L being nine times the GWS of 1.0 mg/L.

7.1.2 Conclusions

Analytical results demonstrate that historic use of Three-Mile Ditch has resulted in limited and isolated impacts that may be of concern, given the current and future land use. While organics are present in the form of DRO, few specific organic compounds were identified at concentrations above acceptable risk-based concentrations in soils or groundwater and these occurred at only a few locations. Four metals were identified above risk-based screening levels in some boring soils, but almost all of these were within two to five times the CSSL and only one metal, selenium, was found in groundwater slightly above acceptable drinking water standards.

DRO concentrations alone should not form the basis for decisions regarding the potential need for any remediation since analytical results indicate there is no correlation between DRO concentrations and the presence of specific organic compounds or metals. Further, groundwater along TMD is of poor quality with average TDS levels near 6,000 mg/L and nitrates/nitrates up to 32 mg/L from agricultural operations making minor exceedances for selenium relatively inconsequential.

In addition to considering individual compounds or groups of compounds, the totality of the information should also be considered to determine if there may be areas of potential concern. The presence of only one or two compounds may not be of significance depending on the concentration, but multiple exceedances in the same area could indicate a potential issue that may need to be addressed. Conclusions regarding each segment of Three-Mile Ditch are presented below:

- **TMD-1.** TMD-1 had exceedances for lead in the soil and benzene and naphthalene in the boring water. However, this location is near the center of refinery property just east of Truck Bypass Road. Groundwater beneath much of the refinery has been impacted from multiple sources and there is no reason to believe that the groundwater exceedances were due to TMD soils since the DRO at this location is only a maximum of 1,040 mg/kg. Downgradient samples at TMD-2 and TMD-3 did not exhibit elevated levels for lead, so the lead at this location does not appear to be mobile. Worker exposure to lead within the refinery is controlled by the refinery health and safety program. There is no reason for further action at this time on this section of TMD.

- **TMD-2 to TMD-10.** This section of TMD extends from within the refinery to just east of Bolton Road. Three borings exceed the CSSL for DRO at concentrations up to 5,140 mg/kg. There is one exceedance for lead and three exceedances for arsenic along this section, all at different locations and all less

than twice the CSSL. There were no exceedances of GWSs in the boring groundwater. No further action is warranted on this section of TMD.

- **TMD-11.** The highest concentration of lead along TMD was found at this location (15,200 mg/kg), more than five times higher than any other location except TMD-1. Chromium and selenium exceedances are just above the CSSL but do not exceed the industrial/occupational or construction worker SSLs. The DRO concentration is 5,080 mg/kg. There were no exceedances in the boring groundwater or in groundwater from nearby monitor well MW-20. Limited soil removal is probably warranted at this location due to the lead level.

- **TMD-12 to TMD-15.** Four of the five borings along this section exhibited lead concentrations of 1,350 mg/kg to 2,590 mg/kg, less than four times the CSSL of 750 mg/kg. Selenium levels in two borings and arsenic in one boring were just above the CSSL. The selenium concentrations do not exceed the industrial or construction worker SSLs and the arsenic concentration does not exceed the DAF 20 soil-to-groundwater SSL. None of the borings had DRO concentrations above 2,000 mg/kg. Groundwater from borings at these locations did not have any exceedances. Although there is no indication that groundwater along this section of ditch is impacted and the lead exceedances are minimal, soil removal along this section may be prudent.

- **TMD-16 to TMD-19.** Monitor wells MW-8, MW-21, MW-9 and MW-29 are located along this section of TMD and all have concentrations of selenium elevated above the GWS. MW-21, nearest TMD-16 also had an exceedance for one SVOC. Maximum DRO levels in TMD-17, -18 and -19 range from 3,220 mg/kg to 7,430 mg/kg and TMD-17 soil exceeded the standard for benzene, naphthalene and selenium. The highest observed values for arsenic, chromium and selenium occurred in TMD-19 soils and groundwater from the boring also indicated benzene and SVOCs above the GWS. No lead above the CSSL was observed for this section. Given the more extensive nature of constituents that exceed the CSSL or GWS along this section, limited soil removal may be warranted at this location.

- **TMD-20 to TMD-31.** DRO above 2,000 mg/kg was found in only two of the twelve borings along this section - TMD-27 and TMD-29 at 3,030 – 3,430 mg/kg. No VOCs or SVOCs were detected in the soils above the CSSL although benzene did exceed the GWS in groundwater from TMD-25 and TMD-27. However, no VOCs or SVOCs were detected in groundwater from monitor wells along this section (MW-28, -27, -16, and -26). Lead is above the CSSL in TMD-24 (1,830 mg/kg) and selenium is present in four of the

borings at less than twice the CSSL (but less than the industrial or construction worker SSL), but neither metal is above the GWS in nearby monitor wells. No further action is warranted along this section.

- **TMD-33 to TMD-35.** The original samples from TMD-33 and TMD-35 indicated DRO at 18,900 mg/kg and 17,800 mg/kg. No VOCs were detected in those samples. The hold time for SVOC analysis on these samples was missed, so the boring locations were re-sampled, this time with DRO results at 809 and 1,810 mg/kg – more consistent with the 671 mg/kg concentration in TMD-34. Selenium is present in TMD-33 at levels just above the CSSL (from analysis of the original high-DRO samples) but below the industrial and construction worker SSL. No metals are present above the GWS in the groundwater from nearby monitor well MW-25 and no VOCs or SVOCs were detected. Although the original samples did indicate high levels of DRO, the resample results are more consistent with other results. Additionally, analysis of the original high-DRO samples did not indicate the presence of VOCs or SVOCs or metals above a level of concern. No further action is warranted along this section.

- ***TMD 36 to TMD-38.*** These three borings are near the historical discharge point to Evaporation Pond 1. DRO ranged from 665 to 2,650 mg/kg in near-surface soils with the highest concentration of 8,480 mg/kg found at 10 – 12 feet in TMD 36. Benzene above the CSSL is present in soil from TMD-36 at the 10-12 foot level and benzene and chrysene above the GWS was present in water from this boring. Benzo(a)anthracene was detected above the GWS in groundwater sampled from TMD-38. No other VOCs or SVOCs were detected above the CSSLs although some SVOCs had elevated SQLs. Selenium above the CSSL was detected only in TMD-37 but is below the industrial or construction worker SSL . MW-15, located near TMD-36 and TMD-37 had detectable levels of benzene and MTBE considerably below the GWS. Since surface soils do not contain any constituents above the industrial or construction worker SSLs, and groundwater from nearby MW-15 does not indicate any impacts, no further action is warranted for this section of TMD.

7.2 Evaporation Ponds

7.2.1 Summary of Analytical Results

A summary of the analytical results for Evaporation Pond samples is presented in the following bulleted list:

- **Evaporation Pond 1.** DRO was present above the 2,000 mg/kg standard in most of the soil samples from five feet or less throughout the pond, averaging about 13,000 mg/kg for that depth range. DRO is not present above the SSL at depths greater than five feet. Benzene was detected above the CSSL in five samples. There were only 1-2 detections for four other organics above the CSSL (including acetone, which is probably a laboratory artifact). The 95% UCL for benzene exceeded the CSSL by a factor of 1.4X. The 95% UCL for three semivolatiles exceeded the CSSL due to elevated detection limits (SQLs) for these compounds. None of the organics exceeded the industrial or construction worker SSLs.

  Arsenic and chromium were the only metals detected above the CSSL. The average and 95% UCL concentrations for arsenic are below the CSSL and it was not detected above the DAF 20 soil-to-groundwater SSL or the construction worker SSL. Assuming a 1:6 ratio of chromium VI to chromium III results in the 95% UCL exceeding the CSSL although it is unlikely this quantity is actually chromium VI. Even total chromium concentrations did not exceed the industrial or construction worker SSLs for chromium VI.

  Benzene was detected in only one boring groundwater sample, above the GWS. Ethylbenzene, xylenes, toluene and four semivolatile compounds were also detected in two groundwater samples, but at concentrations below the GWS.

- **Evaporation Pond 2 (Borings 2 through 15).** DRO was present above the 2,000 mg/kg standard in all but one of the soil samples from five feet deep or less, in three borings to 7.5 feet and in one boring to 10 feet. DRO concentrations are somewhat higher than EP1, averaging about 20,000 mg/kg from the surface to five feet and about 2,500mg/kg from five to ten feet.

  Benzene was detected above the CSSL in eight samples. There were 2 – 5 detections above the CSSL for each of six other organics and several semivolatiles had SQLs elevated above the CSSL. The 95% UCL for benzene exceeded the CSSL by a factor of about 10X. The 95% UCL for ten semivolatiles exceeded the CSSL due to elevated detection limits (SQLs) for

these compounds. None of detected values or SQLs for organics exceeded the industrial or construction worker SSLs.

Arsenic, chromium and selenium were detected above the CSSL. The average and 95% UCL concentrations for arsenic and selenium are below the CSSL. Assuming a 1:6 ratio of chromium VI to chromium III results in the 95% UCL exceeding the CSSL by a factor of 2X, although it is unlikely this quantity is actually chromium VI. Arsenic was not detected above the DAF 20 soil-to-groundwater SSL or the construction worker SSL. Neither chromium nor selenium was detected at concentrations above the industrial or construction worker SSLs.

Benzene was detected in the four downgradient boring groundwater samples, at concentrations above the GWS. Ethylbenzene, xylenes, toluene, four additional volatiles (MEK, acetone, carbon disulfide and MTBE) and three semivolatile compounds were also detected in one to four of the downgradient groundwater samples, but at concentrations below the GWS.

- **Evaporation Pond 5 (Borings 1 through 3).** DRO was present above the 2,000 mg/kg standard in each of the near-surface (0 – 2.5 feet) soil samples and in boring EP5-1 at 2.5 – 5 feet. DRO concentrations are about the same as EP2, averaging about 18,000 mg/kg from the surface to five feet.

  Benzene was not detected in any of the samples. One volatile (tetrachloroethene) was detected above the CSSL in the 0-2.5 foot sample and 13 semivolatile compounds were detected at concentrations above the CSSL in the 2.5 – 5 foot sample. Because of the small sample set, the use of 95% UCL concentrations for comparison with the CSSL is not appropriate. Except for benzo(a)pyrene, none of the detected values or SQLs for organics exceeded the industrial or construction worker SSLs.

  Arsenic, total chromium and selenium were detected above the CSSL. The average concentration for arsenic is below the CSSL. Assuming a 1:6 ratio of chromium VI to chromium III results in no exceedances for chromium VI. Arsenic was not detected above the DAF 20 soil-to-groundwater SSL or the construction worker SSL. Neither chromium nor selenium was detected at concentrations above the industrial or construction worker SSLs.

  Seven volatile compounds were detected in groundwater two of the five borings closest to the historic discharge point. Three semivolatiles were detected in groundwater from the boring closest to the discharge point. None of the compounds exceeded the WQS.

- **Pond 3, Pond 6 and Remaining Areas of Pond 2 and Pond 5.** Minor amounts of DRO were detected in the remaining areas of Pond 2 (boring locations EP2-16 through -25) and Pond 5 (boring locations EP5-4 through -21). Only one sample from Pond 2 exceeded the DRO SSL and DRO averages were 510 mg/kg in Pond 2 and 270 mg/kg in Pond 5. No DRO was detected in Pond 3 or Pond 6. A total of eight different VOCs (but not benzene) were detected in Pond 2, Pond 5, Pond 3 and Pond 6, but only ethylene dichloride was detected above the CSSL in two borings from Pond 5 (the average and 95% UCL were less than the CSSL).

  Arsenic was detected above the CSSL in three samples from Pond 2 and Pond 5. The average, mean and 95% UCL are all below the CSSL. Total chromium was detected above the CSSL for chromium VI in thirteen samples from all of the ponds. When using the 1:6 ratio of chromium VI to chromium III, none of the samples exceeded the CSSL for chromium VI. Eighteen samples from Pond 5 and two samples from Pond 3 slightly exceeded the CSSL for selenium. The average and 95% for selenium in Pond 5 slightly exceeds the CSSL.

  No organics were detected in groundwater from the sampled upgradient borings in EP2 and EP5 or any of the groundwater sampled from borings in EP3 and EP6.

- **South of Evaporation Pond Berms.** DRO was detected in two borings south of the Pond 1 and Pond 2 berms at concentrations of 419 mg/kg and 131 mg/kg – less than the CSSL of 2,000 mg/kg. Similar to Ponds 3 and 6, seven VOCs were detected, all below the CSSL. Many of these may be laboratory artifacts (e.g. - acetone, chloroform, methylene chloride).

  No metals were detected above the CSSL.

  Benzene, toluene, ethylbenzene or xylenes were detected in groundwater from each of the six boring, although most of the detections were below the SQL and the GWS. Three SVOCs (anthracene, fluorene and pyrene) were detected below the GWS in EPB-3 and EPB-4, south of EP2. Benzene was the only compound detected above the GWS, in four borings south of Pond 1 and Pond 2.

- **Upgradient Evaporation Pond Area Monitoring Wells.** Two VOCs (acetone and carbon disulfide) were detected in several borings, but not above the GWS. No SVOCs were detected. General water quality is very poor with TDS averaging 7,600 mg/L and reaching a high of 19,200 mg/L with a 95% UCL of 12,000 mg/L. Iron and manganese levels exceeded GWSs.

- **Downgradient Evaporation Pond Area Monitoring Wells.** The only organic detected above the GWS was chloromethane, detected in one well. Carbon disulfide was the only other organic detected in this well.

  Carbon disulfide was present in 10 of the 12 wells and was the only organic detected in one well southeast of EP6 (OCD-6). The two wells most distant from the ponds (MW-10 and MW-19) had no detectable organics and no metals above GWSs.

  MTBE was present in four wells immediately south of Pond 2 and east of Pond 3. The only other organics detected in these wells were carbon disulfide, acetone and chloromethane.

  The five remaining wells indicated the presence of up to six additional organic constituents (benzene, ethylbenzene, toluene, xylenes, cumene and methylene chloride). Four of these wells (MW-6A, MW-3, MW-4 and MW-22) lie in a line extending southeast from Pond 1. Only acetone, methylene chloride, MTBE and carbon disulfide were detected in MW-22, the most distant of these wells. In MW-18, about the same distance from the ponds as MW-22, only benzene was detected.

  The groundwater standard for arsenic was slightly exceeded in six wells directly east and south of the ponds. Somewhat surprisingly, groundwater from the two wells directly south of EP1 did not exceed the standard and had some of the lowest concentrations found in any of the evaporation pond area wells. The standard for selenium was exceeded in only one well, MW-18, southeast of the ponds.

- General water quality is very poor with TDS averaging 8,400 mg/L and reaching a high of 18,300 mg/L with a 95% UCL of 11,000 mg/L. Iron and manganese levels exceeded GWSs in all but one well (MW-18).

7.2.2 Conclusions

Evaporation Pond Area Groundwater. Four or five wells immediately downgradient from Pond 1 have minor levels of organic constituents below the GWS. The only exceedance of the GWS is for chloromethane , in one well, and arsenic, in six of the downgradient wells. However, the two wells immediately downgradient from Pond 1 do not have arsenic present above the WQS. The low level of organics and the distribution of the arsenic exceedances suggest that the ponds are not a continuing source of contamination to area groundwater.

General water quality for groundwater in the vicinity of the ponds is very poor. With an average TDS of about 8,000 mg/L, and the 95% UCL for TDS in upgradient and downgradient wells at 12,000 mg/L, groundwater in the area arguably exceeds the 10,000 mg/L level for application of drinking water standards. The land around the ponds and downgradient from the ponds is owned by Navajo and there is no risk from exposure by someone using that groundwater source.

Pond 1 and Discharge Areas of Pond 2 and Pond 5. Conditions in Pond 1 and the areas near the historical discharge points to Pond 2 (boring locations EP2-1 to EP2-15) and Pond 5 (boring locations EP5-1 to EP5-3) are similar and have had little affect on groundwater. Pond 1 encompasses approximately 15 acres. The area covered by the identified boring locations in Pond 2 extends about 300 feet from the historical discharge point at the southwest corner of the pond. The last row of borings (EP2-12, -13, -14 and -15) are just outside (to the northeast) of a berm constructed in 1997 when Pond 2 was temporarily placed back into service until the ponds were taken out of service in 1999. The area covered by the boring locations in Pond 5 extends about 50 feet from the historical discharge point at the northwest corner.

DRO exceeds the 2,000 mg/kg SSL in most of these pond areas to a depth of about five feet although somewhat deeper areas are affected in Pond 2. DRO averages 13,000 mg/kg in Pond 1 and 18,000 -20,000 mg/kg in Pond 2 and Pond 5. Although characterized by relatively high DRO levels, exceedance of CSSLs by specific organics is infrequent. Benzene was detected above the CSSL in five samples from Pond 1 and eight samples from Pond 2 with the 95%UCL in both ponds exceeding the CSSL. Benzene was not detected in Pond 3. Methylene chloride was detected above the CSSL in Pond 2 and the 95% UCL exceeds the CSSL. However, since methylene chloride is not commonly used in refineries this is likely a laboratory artifact.

Several other organics were detected in Pond 1 and Pond 2 at concentrations above the CSSL, but only in a few borings. Elevated detection levels for three semivolatiles in Pond 1 and 10 semivolatiles in Pond 2 caused the 95% UCL to exceed the CSSL. In Pond 5, one volatile (tetrachloroethene) and 13 semivolatiles were detected in one boring at concentrations above the CSSL.

Arsenic concentrations greater than the CSSL were identified in each of the three ponds, however, the average and 95% UCL concentrations did not exceed the CSSL. The 95% UCL for estimated chromium VI concentrations (based on a 1:6 ratio of chromium VI to chromium III), exceeded the CSSL in Pond 1 and Pond 2, but not Pond 5. It is unlikely however that actual chromium VI concentrations are this high. Some selenium concentrations in Pond 2 and Pond 5 exceeded the CSSL but the 95% UCL for selenium in Pond 2 did not exceed the GWS. There were insufficient samples to calculate a 95% UCL for Pond 5.

The CSSL for most organics and metals is the DAF 20 soil-to-groundwater SSL. Other than arsenic, no concentrations for any detected organic compound or metals, or SQLs, exceeded the industrial/commercial or construction worker SSLs. The CSSL for arsenic is the industrial/commercial SSL – no value for arsenic exceeded the DAF-20 soil-to-groundwater SSL or the construction worker SSL.

Although several organics were detected in pond soils above the CSSL, or had SQLs elevated above the CSSL, few organics were detected above the GWS in groundwater from the borings. Only benzene in one boring from Pond 1 and four borings from Pond 2 exceeded the GWS. Ethyl benzene, toluene and xylenes, as well as several other volatile and semivolatile compounds were detected, but none were above the WQS.

BTEX and several SVOCs were detected in groundwater obtained from borings just to the south of the Pond 1, Pond 2 and Pond 3. Only benzene exceeded the GWS in four of these borings.

Monitor wells immediately downgradient from Pond 1 and Pond 3 did indicate the presence of BETX compounds as well as three semivolatiles, however none were above the WQS. Some downgradient wells did exceed the WQS for arsenic. One well, over 1500 feet southeast of the ponds also showed an exceedance of the WQS for selenium.

Although soils in Pond 1 and the discharge areas of Pond 2 and Pond 5 have high levels of DRO with the presence of some organics, the levels have not impacted groundwater above GWSs for any distance downgradient from the ponds. Elevated levels of arsenic in some downgradient wells would suggest that there may have been

some impact from arsenic in the past, although it is not clear the source was necessarily the ponds. Since the ponds are now dry they should not pose a source of continuing leaching or release to groundwater. In any case, the poor quality of groundwater would suggest that the water is sufficiently high in TDS that drinking water standards should not apply. No remediation of these pond areas appears warranted.

Other Pond Areas. The remaining areas of Pond 2 and Pond 5, as well as Pond 3, Pond 6 and the area just to the south of the berms indicated the occasional presence of low level VOCs. None of the detected organics exceeded the applicable GWS. Several detections of arsenic and selenium exceeded the CSSL, however only the 95% UCL for selenium in Pond 3 exceeds the CSSL. No organics were detected in groundwater from borings in these pond areas. There is no contamination in these ponds that require remediation.

8. RECOMMENDATIONS

8.1 Three-Mile Ditch

No additional investigation or delineation of Three-Mile Ditch is necessary. Based on this investigation, Navajo proposes to prepare a workplan for limited soil removal from an area just west of TMD-11, extending east past TMD-19, a length of approximately 2,500 feet. Remediation of this area would consist of removing soils from an area about 10 feet wide to a depth of 2.5 – 3 feet. Removed soils will be placed in Evaporation Pond 2, near the southwest corner and the excavated area of TMD backfilled with clean soil.

Following soil removal, selected existing monitor wells along TMD should be monitored semiannually for three years for BTEX, naphthalene, lead and selenium as well as general water quality parameters, TDS and nitrates/nitrites. At the end of three years, results will be evaluated to determine groundwater trends and if monitoring can be terminated.

8.2 Evaporation Ponds

This investigation indicates that the closed ponds pose little to no risk and are not impacting groundwater above a level of concern. Therefore, no remediation or engineering controls are necessary for the closed ponds. Navajo will prepare a post-closure plan to maintain the pond area to include deed recordation; maintenance of dikes, fences and signs; and routine inspections. The post-closure plan will also include a plan to monitor evaporation pond wells on a semi-annual or annual basis.

TABLES

TABLES

TABLE 1

REFERENCES AND PREVIOUS INVESTIGATION REPORTS

Table 1

Previous Studies, Reports, and Plans For Three-Mile Ditch and the Evaporation Ponds

1. *RCRA Preliminary Assessment Report - Navajo Refining, Artesia, New Mexico*; U.S.EPA Region VI, Dallas Texas; April 1986.

2. *RCRA Facility Investigation Three-Mile Ditch and Evaporation Ponds, Phase I* (Revised); Navajo Refinery, Artesia, New Mexico; prepared for U.S. EPA, Region VI, Dallas, TX. Mariah and Associates, Inc., October 1990 and December 1990.

3. *RCRA Facility Investigation Workplan Three-Mile Ditch and Evaporation Ponds* (Revised); Navajo Refinery, Artesia, New Mexico; prepared for U.S. EPA, Region VI, Dallas, TX. K. W. Brown Environmental Services, June 1992 (original submitted December 1990; revised May 1991).

4. *Evaporation Ponds (2-6) Evaluation Report*; Navajo Refinery, Artesia, New Mexico; prepared for U.S. EPA, Region VI, Dallas, TX. ENSR, September 1993.

5. *Pond 2 Closure and Post-Closure Care Approach*; Navajo Refinery, Artesia, New Mexico; prepared for U.S. EPA, Region VI, Dallas, TX. ENSR, October 1993.

6. *RCRA Facility Investigation Three-Mile Ditch and Evaporation Ponds, Phase II Report*, (Revised); Navajo Refinery, Artesia, New Mexico; prepared for U.S. EPA, Region VI, Dallas, TX. K. W. Brown Environmental Services, November 1993 (original submitted April 1993).

7. *RCRA Facility Investigation Phase III Workplan Three-Mile Ditch and Evaporation Ponds*; Navajo Refinery, Artesia, New Mexico; prepared for U.S. EPA, Region VI, Dallas, TX. RE/SPEC Inc., July 1994.

8. *Evaporation Pond 1 Corrective Measures Study Workplan* (Revised); Navajo Refinery, Artesia, New Mexico; prepared for U.S. EPA, Region VI, Dallas, TX. RE/SPEC Inc., August 1995 (original submittal August 1994; revised, December 1994).

9. *RCRA Facility Investigation Phase III Report Three-Mile Ditch and Evaporation Ponds* (Revised); Navajo Refinery, Artesia, New Mexico; prepared for U.S. EPA, Region VI, Dallas, TX. RE/SPEC Inc., January 1996 (original submitted April 1995, revised October 1995).

Table 1
(cont.)

Previous Studies, Reports, and Plans For Three-Mile Ditch and the Evaporation Ponds

10. *Proposed Workplan for Removal of Surficial Waste Deposits at Three-Mile Ditch (Revised) Attachment 2, RFI Phase III report Three-Mile Ditch and Evaporation Pond*; Navajo Refinery, Artesia, New Mexico; prepared for U.S. EPA, Region VI, Dallas, TX. RE/SPEC Inc., January 31, 1996.

11. *Supplemental Pond 1 Soil Sampling Data, Evaporation Pond 1 Corrective Measures Study Workplan*; Navajo Refinery, Artesia, New Mexico; prepared for U.S. EPA, Region VI, Dallas, TX. Navajo Refining Co., January 31, 1996.

12. *Navajo Pond 1 CMS Workplan, Supplemental Soil Sampling Analysis*; Navajo Refining Co., Artesia, New Mexico; prepared for U.S. EPA, Region VI, Dallas, TX. Navajo Refining Co., April 18, 1996.

13. *Evaporation Ponds (2 – 6) Closure Plan*; Navajo Refining Co., Artesia, New Mexico; prepared for U.S. EPA, Region VI, Dallas, TX. ENSR, August 1996 (original submitted March 1995, revised June 1995).

14. *Application for HSWA Permit Modification to Decommission Three-Mile Ditch and Evaporation Ponds*; Navajo Refining Co., Artesia, New Mexico. ENSR, January 1997 (draft, not submitted).

15. *Executive Summary: Consolidated RFI/CMS Report for Three-Mile Ditch and Evaporation Ponds;* Navajo Refining Co., Artesia, New Mexico; prepared for New Mexico Environment Department. Foster Wheeler Environmental Corp., December 1997.

TABLE 2

BORING AND SAMPLE LIST

TABLE 2

SAMPLE LIST

SAMPLE LOCATION	Boring Soil Samples	Depth	Date Sampled	Date Shipped	Diesel Range Organics(DRO)	SVOC (EPA 8270C) [if DRO is ≥ 2000 then sample will be analyzed for SVOC]	VOCs (EPA 8260B)	RCRA Metals (EPA 6010)	FOC, Particle Size and pH	Boring/Monitor Well Groundwater Samples	Date Sampled	Date Shipped	PAHs (EPA 8310)	BTEX (EPA 8021C)	TDS (EPA 160.1)	SVOCs (EPA 8270c)	VOCs (EPA 8260B)	Metals (EPA 6010) +Cations: CA, Mg, K, NA, Fe, MN	Cyanide	Anions (Cl, Fl, Sulfates) nitrate/nitrite	General Water Quality Parameters (Specific Conductance, pH, TDS))	Comments
BACKGROUND BORINGS																						
BSB-1	4	0-1 5-7 9-11 13-15	15-Jun	16-Jun				4	4													
BSB-2	2	0-2.5 5-7.5	22-Jun	22-Jun				2	2													
BSB-3	2	0-2.5 5-7.5	22-Jun	22-Jun				2	2													
BSB-4	2	0-2.5 5-7.5	23-Jun	23-Jun				2	2													
BSB-5	2	0-2.5 5-7.5	23-Jun	23-Jun				2	2													
BSB-6	2	0-2.5 5-7.5	22-Jun	22-Jun				2	2													
BSB-7	3	0-2.5 5-7.5 10-12.5	30-Jun	1-Jul				3	3													
BSB-8	2	0-2.5 5-7.5	30-Jun	1-Jul				2	2													
BSB-9	2	0-2.5 2.5-5	16-Jul	19-Jul				2	2													
BSB-10	3	0-2.5 5-7.5 10-12.5	16-Jul	19-Jul				3	3													
TOTAL BSB	**24**					**0**	**0**	**24**	**24**													

TABLE 2
SAMPLE LIST

	SOIL SAMPLES										GROUNDWATER SAMPLES													
SAMPLE LOCATION	Boring Soil Samples	Depth	Date Sampled	Date Shipped	Diesel Range Organics(DRO)	SVOC (EPA 8270C) [if DRO is ≥ 2000 then samples will be analyzed for SVOC]	VOCs (EPA 8260B)	RCRA Metals (EPA 6010)	FOC, Particle Size and pH	Boring/Monitor Well Groundwater Samples	Date Sampled	Date Shipped	PAHs (EPA 8310)	BTEX (EPA 8021C)	TDS (EPA 160.1)	SVOCs (EPA 8270c)	VOCs (EPA 8260B)	Metals (EPA 6010) +Cations: CA, Mg, K, NA, Fe, MN	Cyanide	Anions (Cl, Fl, Sulfates)	nitrate/nitrite	General Water Quality Parameters (Specific Conductance, pH, TDS)	Comments
THREE MILE DITCH																								
TMD-1	4	0-1 7-9 14-15 20-22	9-Jun	10-Jun	296 ND ND 1040	0	4	4			1	9-Jun	10-Jun	1	1	1								
TMD-2	2	0-1 12-14	10-Jun	10-Jun	ND ND	0	2	2			1	11-Jun	11-Jun	1	1	1								
TMD-2											1	22-Jun	22-Jun	1	1	1								
TMD-3	2	0-1 3-5	10-Jun	10-Jun	3250 225	1	2	2			1	10-Jun	10-Jun	1	1	1								
TMD-4	2	0-1 10-12	17-Jun	18-Jun	208 149	0	2	2			1	18-Jun	18-Jun	1	1	1								VOC temp out of range
TMD-5	2	0-1 3-5	10-Jun	10-Jun	828 1780	0	2	2			1	11-Jun	11-Jun	1	1	1								
TMD-6	2	0-1 3-5	10-Jun	11-Jun	359 164	0	2	2			1	11-Jun	11-Jun	1	1	1								
TMD-7	4	0-1 3-5 9-11 13-15	10-Jun	11-Jun	4740 335 ND ND	1	4	4			1	11-Jun	11-Jun	1	1	1								
TMD-8	2	0-2.5 2.5-5	10-Jun	11-Jun	168 ND	0	2	2			1	11-Jun	11-Jun	1	1	1								
TMD-9	2	0-2.5 2.5-5	11-Jun	11-Jun	633 ND	0	2	2			1	11-Jun	11-Jun	1	1	1								
TMD-10	4	0-2 2.5-5 5-7 10-11	11-Jun	11-Jun	5140 ND ND 207	1	4	4			1	14-Jun	15-Jun	1	1	1								
TMD-11	2	0-2.5 2.5-5	11-Jun	11-Jun	5080 207	1	2	2			1	14-Jun	15-Jun	1	1	1								
TMD-12	4	0-1 1-3 5-7 11-13	11-Jun	11-Jun	1570 1880 131 ND	0	4	4			1	14-Jun	15-Jun	1	1	1								
TMD-13	4	0-1 4-6 6-8 12-14	14-Jun		ND 208 ND ND	0	4	4			1	14-Jun	15-Jun	1	1	1								
TMD-14	3	0-1 5-7 13-15	14-Jun		226 1900 ND	0	3	3			1	14-Jun	15-Jun		1	1								both 8310 bottles broken
TMD-15	3	0-2.5 5-7 7-9	14-Jun		1240 ND ND	0	3	3			1	15-Jun	15-Jun	1	1	1								
TMD-16	2	0-1 3-5	15-Jun		329 ND	0	2	2			1	15-Jun	15-Jun	1	1	1								
TMD-17	3	0-2.5 7-9 13-15	15-Jun		3220 2670 ND	2	3	3			1	15-Jun	15-Jun	1	1	1								
TMD-18	3	0-2.5 5-7 7-9	15-Jun		6140 352 722	1	3	3			1	15-Jun	15-Jun	1	1	1								
TMD-19	3	0-2.5 5-7 13-15	15-Jun		7430 5700 ND	2	3	3			1	16-Jun	16-Jun	1	1	1								
TMD-20	2	0-2.5 5-7	15-Jun		1250 ND	0	2	2			1	16-Jun	16-Jun	1	1	1								
TMD-21	2	0-2.5 5-7	15-Jun		230 ND	0	2	2			1	16-Jun	18-Jun	1	1	1								GW VOC temp out of range
TMD-22	2	0-1 5-7	15-Jun		ND ND	0	2	2			1	22-Jun	22-Jun	1	1	1								
TMD-23	2	0-1 5-7	16-Jun		ND ND	0	2	2			1	17-Jun	18-Jun	1	1	1								GW VOC temp out of range
TMD-24	2	0-2.5 7-9	16-Jun		427 ND	0	2	2			1	28-Jun	29-Jun	1	1	1								
TMD-25	2	0-2.5 10-12.5	16-Jun		122 ND	0	2	2			1	29-Jun	29-Jun	1	1	1								
TMD-26	2	0-2.5 7.5-10	16-Jun		257 ND	0	2	2			1	17-Jun	18-Jun	1	1	1								GW VOC temp out of range

TABLE 2

SAMPLE LIST

SAMPLE LOCATION	Boring Soil Samples	Depth	Date Sampled	Date Shipped	Diesel Range Organics(DRO)	SVOC (EPA 8270C) [if DRO is ≥ 2000 then sample will be analyzed for SVOC]	VOCs (EPA 8260B)	RCRA Metals (EPA 6010)	FOC, Particle Size and pH	Boring/Monitor Well Groundwater Samples	Date Sampled	Date Shipped	PAHs (EPA 8310)	BTEX (EPA 8021C)	TDS (EPA 160.1)	SVOCs (EPA 8270c)	VOCs (EPA 8260B)	Metals (EPA 6010) +Cations: CA, Mg, K, NA, Fe, MN	Cyanide	Anions (Cl, Fl, Sulfates)	nitrate/nitrite	General Water Quality Parameters (Specific Conductance, pH, TDS))	Comments
THREE MILE DITCH																							
TMD-27	2	0-2.5 2.5-5	16-Jun		3430 209	1	2	2			1	17-Jun	18-Jun	1	1	1								GW VOC temp out of range
TMD-28	2	0-2.5 5-7.5	16-Jun		1550 115	0	2	2			1	17-Jun	18-Jun	1	1	1								GW VOC temp out of range
TMD-29	2	0-1 9-10	17-Jun		2620 146	1	2	2			1	17-Jun	18-Jun	1	1	1								GW VOC temp out of range
TMD-30	2	0-1 5-7	17-Jun		156 ND	0	2	2			1	17-Jun	18-Jun	1	1	1								GW VOC temp out of range
TMD-31	2	0-2.5 7.5-10	17-Jun		576 ND	0	2	2			1	17-Jun	18-Jun	1	1	1								GW VOC temp out of range
TMD-32	2	0-2.5 2.5-5	17-Jun		461 ND	0	2	2			1	17-Jun	18-Jun	1	1	1								GW VOC temp out of range
TMD-33	2	0-1 5-7	22-Jul 17-Jun	18-Jun	18900 636	1	2	2			1	21-Jun	22-Jun	1	1	1								*holding time missed for* SVOC on 0-1ft; resampled 7/22
TMD-34	2	0-1 2.5-5	17-Jun	18-Jun	671 249	0	2	2			1	21-Jun	22-Jun	1	1	1								
TMD-35	2	0-1 7-9	22-Jul 21-Jun	22-Jun	17800 356	1	2	2			1	23-Jun	23-Jun	1	1	1								holding time missed for SVOC on 0-1ft; resampled 7/22
TMD-36	3	0-2.5 10-12.5 17.5-20	22-Jul 21-Jun	22-Jun	2580 8480 188	2	3	3			1	24-Jun	24-Jun	1	1	1								holding time missed for SVOC; resampled 0-2.5ft on 7/22
TMD-37	3	0-2.5 7.5-10 15-17.5	22-Jul 21-Jun	22-Jun	665 2370 ND	1	3	3			1	24-Jun	24-Jun	1	1	1								holding time missed for SVOC; not resampled
TMD-38	2	0-2.5 5-7.5	23-Jun	24-Jun	2650 226	J	2	2			1	24-Jun	24-Jun	1	1	1								
TOTAL TMD	**93**				**93**	**17**	**93**	**93**			**39**			**38**	**39**	**39**								

TABLE 2
SAMPLE LIST

SAMPLE LOCATION	SOIL SAMPLES: Boring Soil Samples	Depth	Date Sampled	Date Shipped	Diesel Range Organics(DRO)	SVOC (EPA 8270C) [if DRO is > 2000 then sample will be analyzed for SVOC]	VOCs (EPA 8260B)	RCRA Metals (EPA 6010)	FOC, Particle Size and pH	GROUNDWATER SAMPLES: Boring/Monitor Well Groundwater Samples	Date Sampled	Date Shipped	PAHs (EPA 8310)	BTEX (EPA 8021C)	TDS (EPA 160.1)	SVOCs (EPA 8270c)	VOCs (EPA 8260B)	Metals (EPA 6010) +Cations: CA, Mg, K, NA, Fe, MN	Cyanide	Anions (Cl, Fl, Sulfates)	nitrate/nitrite	General Water Quality Parameters (Specific Conductance, pH, TDS))	Comments
EVAPORATION POND 1																							
EP1-1	3	0-5 2.5-5 12.5-15	23-Jun	24-Jun	55200 4280 ND	2	3	3		1	24-Jun	24-Jun	1	1	1								
EP1-2	3	0-2.5 7.5-10 17.5-20	23-Jun	23-Jun	376 129 ND	0	3	3															
EP1-3	3	0-2.5 2.5-5 12.5-15	22-Jul 22-Jun	23-Jun	49500 4850 147	2	3	3															holding time missed for SVOC; resampled 0-2.5ft on 7/22
EP1-4	3	0-2.5 7.5-10 22.5-25	23-Jun	23-Jun	18900 167 ND	1	3	3															
EP1-5	3	0-2.5 2.5-5 10-12.5	22-Jun	23-Jun	6780 ND ND	1	3	3															
EP1-6	2	0-2.5 2.5-5	24-Jun	24-Jun	9740 17700	1	2	2															
EP1-7	2	0-2.5 2.5-5	23-Jun	24-Jun	587 163	0	2	2															
EP1-8	3	0-2.5 5-7.5 12.5-15	22-Jun	23-Jun	417 ND ND	0	3	3															
EP1-9(EPB1-9)	2	0-2.5 5-7.5	23-Jun	24-Jun	2740 1920	1	2	2		1	24-Jun	24-Jun	1	1	1								
EP1-10(EPB1-10)	3	0-2.5 2.5-5 22.5-25	23-Jun	24-Jun	19300 10300 ND	2	3	3		1	24-Jun	24-Jun	1	1	1								
EP1-11	3	0-2.5 15-17.5 17.5-20	22-Jun	23-Jun	3020 ND ND	1	3	3															
EP1-12	2	0-2.5 2.5-5	23-Jun	24-Jun	4700 32800	2	2	2															
TOTAL EP1	**32**				**32**	**13**	**32**	**32**		**3**			**3**	**3**	**3**								

TABLE 2

SAMPLE LIST

SAMPLE LOCATION	Boring Soil Samples	Depth	Date Sampled	Date Shipped	Diesel Range Organics(DRO)	SVOC (EPA 8270C) (if DRO is ≥ 2000 then sample will be analyzed for SVOC)	VOCs (EPA 8260B)	RCRA Metals (EPA 6010)	FOC, Particle Size and pH	Boring/Monitor Well Groundwater Samples	Date Sampled	Date Shipped	PAHs (EPA 8310)	BTEX (EPA 8021C)	TDS (EPA 160.1)	SVOCs (EPA 8270c)	VOCs (EPA 8260B)	Metals (EPA 6010) +Cations: CA, Mg, K, NA, Fe, MN	Cyanide	Anions (Cl, Fl, Sulfates)	nitrate/nitrite	General Water Quality Parameters (Specific Conductance, pH, TDS))	Comments
EVAPORATION POND 2																							
EP2-1(EPB2-1)	3	0-2.5 2.5-5 7.5-10	25-Jun	25-Jun	5190 17100 322	2	3	3		1	25-Jun	25-Jun	1		1		1						
EP2-2	2	0-2.5 5-7.5	25-Jun	25-Jun	18800 363	1	2	2															
EP2-3	3	0-2.5 2.5-5 5-7.5	25-Jun	25-Jun	10100 14700 451	2	3	3															
EP2-4	3	0-2.5 2-2.5? 7.5-10	25-Jun	25-Jun	63900 9430 577	2	3	3															
EP2-5	3	0-2.5 2.5-5 7.5-10	25-Jun	25-Jun	13200 20100 207	2	3	3															
EP2-6(EPB2-6)	3	0-2.5 5-7.5 7.5-10	25-Jun	25-Jun	76000 7790 ND	2	3	3		1	25-Jun	25-Jun	1		1		1						
EP2-7	2	0-2.5 2.5-5	28-Jun	29-Jun	6600 25200	2	2	2															
EP2-8	3	0-2.5 7.5-10 15-17.5	28-Jun	29-Jun	654 2780 ND	1	3	3															
EP2-9	3	0-2.5 2.5-5 5-7.5	28-Jun	29-Jun	3200 15200 148	2	3	3															
EP2-10	2	0-2.5 5-7.5	25-Jun	25-Jun	177 385	0	2	2															
EP2-11	2	0-2.5 7.5-10	28-Jun	29-Jun	74000 12700	2	2	2															
EP2-12	2	0-2.5 5-7.5	12-Jul	14-Jul	3550 3690	2	2	2		1	14-Jul	15-Jul	1	1	1								
EP2-13	2	0-2.5 2.5-5	12-Jul	14-Jul	14500 35900	2	2	2															
EP2-14	2	0-2.5 7.5-10	12-Jul	14-Jul	26300 6920	2	2	2															
EP2-15	3	0-2.5 2.5-5 7.5-10	12-Jul	14-Jul	14100 13000 150	2	3	3															
EP2-16	2	0-2.5 2.5-5	12-Jul	14-Jul	544 ND	0	2	2															
EP2-17	2	0-2.5 2.5-5	12-Jul	14-Jul	ND ND	0	2	2															
EP2-18	2	0-2.5 2.5-5	12-Jul	14-Jul	ND ND	0	2	2															
EP2-19	2	0-2.5 2.5-5	12-Jul	14-Jul	2800 ND	1	2	2															
EP2-20	2	0-2.5 5-7.5	12-Jul	14-Jul	186 ND	0	2	2		1	14-Jul	14-Jul	1	1	1								
EP2-21	2	0-2.5 2.5-5	12-Jul	14-Jul	161 ND	0	2	2															
EP2-22	2	0-2.5 2.5-5	12-Jul	14-Jul	129 ND	0	2	2															
EP2-23	2	0-2.5 2.5-5	12-Jul	14-Jul	140 ND	0	2	2															
EP2-24	2	0-2.5 2.5-5	13-Jul	14-Jul	327 195	0	2	2															
EP2-25	2	0-2.5 2.5-5	13-Jul	14-Jul	981 ND	0	2	2		1	14-Jul	14-Jul	1	1	1								
TOTAL EP2	**58**				**58**	**27**	**58**	**58**		**5**			**5**	**3**	**5**		**2**						

TABLE 2
SAMPLE LIST

SAMPLE LOCATION	Boring Soil Samples	Depth	Date Sampled	Date Shipped	Diesel Range Organics(DRO)	SVOC (EPA 8270C) [if DRO is > 2000 then sample will be analyzed for SVOC]	VOCs (EPA 8260B)	RCRA Metals (EPA 6010)	FOC, Particle Size and pH	Boring/Monitor Well Groundwater Samples	Date Sampled	Date Shipped	PAHs (EPA 8310)	BTEX (EPA 8021C)	TDS (EPA 160.1)	SVOCs (EPA 8270c)	VOCs (EPA 8260B)	Metals (EPA 6010) +Cations: CA, Mg, K, NA, Fe, MN	Cyanide	Anions (Cl, Fl, Sulfates)	nitrate/nitrite	General Water Quality Parameters (Specific Conductance, pH, TDS))	Comments
EVAPORATION POND 3																							
EP3-1	2	0-2.5			ND																		
		2.5-5	15-Jul	16-Jul	ND	0	2	2															
EP3-2	2	0-2.5			ND																		
		2.5-5	15-Jul	16-Jul	ND	0	2	2															
EP3-3	2	0-2.5			ND																		
		2.5-5	15-Jul	16-Jul	ND	0	2	2															
EP3-4	2	0-2.5			ND																		
		2.5-5	15-Jul	16-Jul	ND	0	2	2		1	16-Jul	16-Jul	1	1	1								
EP3-5	2	0-2.5			ND																		
		2.5-5	15-Jul	16-Jul	ND	0	2	2		1	15-Jul	15-Jul	1	1	1								
EP3-6	2	0-2.5			ND																		
		2.5-5	15-Jul	16-Jul	ND	0	2	2															
EP3-7	2	0-2.5			ND																		
		2.5-5	15-Jul	16-Jul	ND	0	2	2															
EP3-8	2	0-2.5			ND																		
		2.5-5	15-Jul	16-Jul	ND	0	2	2															
EP3-9	2	0-2.5			ND																		
		2.5-5	15-Jul	16-Jul	ND	0	2	2		1	16-Jul	16-Jul	1	1	1								
EP3-10	2	0-2.5			ND																		
		2.5-5	15-Jul	16-Jul	ND	0	2	2															
EP3-11	2	0-2.5			ND																		
		2.5-5	15-Jul	16-Jul	ND	0	2	2															
EP3-12	2	0-2.5			ND																		
		2.5-5	15-Jul	16-Jul	ND	0	2	2															
TOTAL EP3	**24**				**24**	**0**	**24**	**24**		**3**			**3**	**3**	**3**		**0**						
EVAPORATION POND 5																							
EP5-1	2	0-2.5			3200																		
		2.5-5	13-Jul	14-Jul	24700	2	2	2		1	14-Jul	14-Jul	1		1		1						
EP5-2	2	0-2.5			2470																		
		2.5-5	13-Jul	14-Jul	154	1	2	2															
EP5-3	2	0-2.5			75500																		
		5-7.5	30-Jun	1-Jul	ND	1	2	2															
EP5-4	2	0-2.5			1700																		
		2.5-5	13-Jul	14-Jul	ND	0	2	2															
EP5-5	2	0-2.5			576																		
		2.5-5	13-Jul	14-Jul	ND	0	2	2		1	14-Jul	14-Jul	1		1		1						
EP5-6	2	0-2.5			931																		
		2.5-5	13-Jul	14-Jul	ND	0	2	2															
EP5-7	2	0-2.5			188																		
		2.5-5	13-Jul	14-Jul	ND	0	2	2															
EP5-8	2	0-2.5			1350																		
		2.5-5	13-Jul	14-Jul	ND	0	2	2															
EP5-9	2	0-2.5			ND																		
		2.5-5	14-Jul	15-Jul	ND	0	2	2		1	14-Jul	14-Jul	1	1	1								
EP5-10	2	0-2.5			ND																		
		2.5-5	14-Jul	15-Jul	ND	0	2	2															
EP5-11	2	0-2.5			258																		
		2.5-5	13-Jul	14-Jul	ND	0	2	2															
EP5-12	2	0-2.5			ND																		
		2.5-5	14-Jul	15-Jul	ND	0	2	2															
EP5-13	2	0-2.5			ND																		
		2.5-5	14-Jul	15-Jul	ND	0	2	2															
EP5-14	2	0-2.5			309																		
		2.5-5	14-Jul	15-Jul	ND	0	2	2															
EP5-15	2	0-2.5			ND																		
		2.5-5	14-Jul	15-Jul	ND	0	2	2															
EP5-16	2	0-2.5			ND																		
		2.5-5	14-Jul	15-Jul	ND	0	2	2		1	15-Jul	15-Jul	1	1	1								
EP5-17	2	0-2.5			355																		
		2.5-5	14-Jul	15-Jul	ND	0	2	2															
EP5-18	2	0-2.5			ND																		
		2.5-5	14-Jul	15-Jul	ND	0	2	2															
EP5-19	2	0-2.5			263																		
		2.5-5	14-Jul	15-Jul	ND	0	2	2															
EP5-20	2	0-2.5			ND																		
		2.5-5	14-Jul	15-Jul	ND	0	2	2															
EP5-21	2	0-2.5			113																		
		2.5-5	14-Jul	15-Jul	ND	0	2	2		1	15-Jul	15-Jul	1	1	1								
TOTAL EP5	**42**				**42**	**4**	**42**	**42**		**5**			**5**	**3**	**5**		**2**						

TABLE 2
SAMPLE LIST

SAMPLE LOCATION	Boring Soil Samples	Depth	Date Sampled	Date Shipped	Diesel Range Organics(DRO)	SVOC (EPA 8270C) [if DRO is ≥ 2000 then sample will be analyzed for SVOC]	VOCs (EPA 8260B)	RCRA Metals (EPA 6010)	FOC, Particle Size and pH	Boring/Monitor Well Groundwater Samples	Date Sampled	Date Shipped	PAHs (EPA 8310)	BTEX (EPA 8021C)	TDS (EPA 160.1)	SVOCs (EPA 8270c)	VOCs (EPA 8260B)	Metals (EPA 6010) +Cations: CA, Mg, K, NA, Fe, MN	Cyanide	Anions (Cl, Fl, Sulfates)	nitrate/nitrite	General Water Quality Parameters (Specific Conductance, pH, TDS))	Comments
EVAPORATION POND 6																							
EP6-1	2	0-2.5 2.5-5	16-Jul	19-Jul	ND ND	0	2	2															
EP6-2	2	0-2.5 2.5-5	16-Jul	19-Jul	ND ND	0	2	2															
EP6-3	2	0-2.5 2.5-5	16-Jul	19-Jul	ND ND	0	2	2			1	16-Jul	17-Jul	1	1	1							
EP6-4	2	0-2.5 2.5-5	16-Jul	19-Jul	ND ND	0	2	2															
EP6-5	2	0-2.5 2.5-5	16-Jul	19-Jul	ND ND	0	2	2															
TOTAL EP6	**10**				**10**	**0**	**10**	**10**			**1**			**1**	**1**	**1**		**0**					
SOUTH OF EVAPORATION POND BERMS																							
EPB-1	2	0-2.5 5-7.5	29-Jun	29-Jun	ND ND	0	2	2			1	30-Jun	30-Jun	1	1	1							
EPB-2	2	0-2.5 5-7.5	29-Jun	29-Jun	131 ND	0	2	2			1	30-Jun	30-Jun	1	1	1							
EPB-3	2	0-2.5 5-7.5	29-Jun	29-Jun	419 ND	0	2	2			1	30-Jun	30-Jun	1	1	1							
EPB-4	2	0-2.5 5-7.5	29-Jun	29-Jun	ND ND	0	2	2			1	30-Jun	30-Jun	1	1	1							
EPB-5	2	0-2.5 5-7.5	29-Jun	29-Jun	ND ND	0	2	2			1	30-Jun	30-Jun	1	1	1							
EPB-6	2	0-2.5 2.5-5.5	29-Jun	29-Jun	ND ND	0	2	2			1	30-Jun	30-Jun	1	1	1							
TOTAL EPB	**12**				**12**	**0**	**12**	**12**			**6**			**6**	**6**	**6**							

TABLE 2

SAMPLE LIST

SAMPLE LOCATION	SOIL SAMPLES											GROUNDWATER SAMPLES													
	Boring Soil Samples	Depth	Date Sampled	Date Shipped	Diesel Range Organics(DRO)	SVOC (EPA 8270C) [if DRO is ≥ 2000 then sample will be analyzed for SVOC]	VOCs (EPA 8260B)	RCRA Metals (EPA 6010)	FOC, Particle Size and pH	Boring/Monitor Well Groundwater Samples	Date Sampled	Date Shipped	PAHs (EPA 8310)	BTEX (EPA 8021C)	TDS (EPA 160.1)	SVOCs (EPA 8270c)	VOCs (EPA 8260B)	Metals (EPA 6010) +Cations: CA, Mg, K, NA, Fe, MN	Cyanide	Anions (Cl, Fl, Sulfates, nitrate/nitrite	General Water Quality Parameters (Specific Conductance, pH, TDS))	Comments
MONITOR WELLS																								
MW-1											1	11-Jun	11-Jun	1			1	/	1	1	1	1	1	
MW-2A											1	15-Jul	16-Jul	1			1	/	1	1	1	1	1	
MW-3											1	16-Jun	17-Jun	1			1	/	1	1	1	1	1	
MW-4A											1	15-Jun	15-Jun	1			1	/	1	1	1	1	1	
MW-5A											1	15-Jun	15-Jun	1			1	/	1	1	1	1	1	
MW-6A											1	16-Jun	17-Jun	1			1	/	1	1	1	1	1	
MW-7A											1	15-Jun	15-Jun	1			1	/	1	1	1	1	1	
MW-8											1	9-Jun	10-Jun	1			1	/	1	1	1	1	1	
MW-9											1	10-Jun	10-Jun	1			1	/	1	1	1	1	1	
MW-10											1	17-Jun	17-Jun	1			1	/	1	1	1	1	1	
MW-11A											1	15-Jun	15-Jun	1			1	/	1	1	1	1	1	
MW-15											1	11-Jun	11-Jun	1			1	/	1	1	1	1	1	
MW-16											1	10-Jun	11-Jun	1			1	/	1	1	1	1	1	
MW-18A											1	16-Jun	17-Jun	1			1	/	1	1	1	1	1	
MW-19											1	17-Jun	17-Jun	1			1	/	1	1	1	1	1	
MW-20											1	9-Jun	10-Jun	1			1	/	1	1	1	1	1	
MW-21											1	9-Jun	10-Jun	1			1	/	1	1	1	1	1	missed VOA Hold time: resampled for VOAs on 7/16
MW-22A											1	16-Jun	17-Jun	1			1	/	1	1	1	1	1	
MW-25											1	17-Jun	17-Jun	1			1	/	1	1	1	1	1	
MW-26											1	11-Jun	11-Jun	1			1	/	1	1	1	1	1	
MW-27											1	17-Jun	17-Jun	1			1	/	1	1	1	1	1	
MW-28											1	10-Jun	10-Jun	1			1	/	1	1	1	1	1	
MW-29											1	10-Jun	10-Jun	1			1	/	1	1	1	1	1	
OCD-1											1	14-Jun	15-Jun	1			1	/	1	1	1	1	1	
OCD-2A											1	14-Jun	15-Jun	1			1	/	1	1	1	1	1	
OCD-3											1	14-Jun	15-Jun	1			1	/	1	1	1	1	1	
OCD-4											1	15-Jun	15-Jun	1			1	/	1	1	1	1	1	
OCD-5											1	15-Jun	15-Jun	1			1	/	1	1	1	1	1	
OCD-6											1	16-Jun	17-Jun	1			1	/	1	1	1	1	1	
OCD-7AR											1	16-Jun	17-Jun	1			1	/	1	1	1	1	1	
OCD-8A											1	15-Jun	15-Jun	1			1	/	1	1	1	1	1	
TOTAL MW/OCD											**31**			**31**	**0**	**0**	**31**	**31**	**31**	**31**	**31**	**31**	**31**	

TABLE 2

SAMPLE LIST

SAMPLE LOCATION	SOIL SAMPLES: Boring Soil Samples	Depth	Date Sampled	Date Shipped	Diesel Range Organics(DRO)	SVOC (EPA 8270C) (if DRO is ≥ 2000 then sample will be analyzed for SVOC)	VOCs (EPA 8260B)	RCRA Metals (EPA 6010)	FOC, Particle Size and pH	GROUNDWATER SAMPLES: Boring/Monitor Well Groundwater Samples	Date Sampled	Date Shipped	PAHs (EPA 8310)	BTEX (EPA 8021C)	TDS (EPA 160.1)	SVOCs (EPA 8270c)	VOCs (EPA 8260B)	Metals (EPA 6010) +Cations: CA, Mg, K, NA, Fe, MN	Cyanide	Anions (Cl, Fl, Sulfates)	nitrate/nitrite	General Water Quality Parameters (Specific Conductance, pH, TDS))	Comments
QA/QC - SOILS																							
Duplicates																							
EP-81(TMD-3 3-5')	1		9-Jun	10-Jun	319		1	1															
EP-82(TMD-13 6-8')	1		11-Jun	15-Jun	ND		1	1															
DUP-3(TMD-17 7-9')	1		15-Jun	15-Jun	4060	1	1	1															
DUP-4(TMD-18 7-9')	1		15-Jun	15-Jun	467		1	1															
DUP-5(TMD-23 5-7')	1		16-Jun	16-Jun	ND		1	1															
DUP-6(TMD-28 5-7')	1		17-Jun	17-Jun	ND		1	1															
DUP-7(TMD-33 5-7')	1		17-Jun	18-Jun	160		1	1															
DUP-7(TMD-37 7-	1		21-Jun	22-Jun	5190	1	1	1															
DUP-8(EP1-11 17-20"	1		22-Jun	23-Jun	ND		1	1															
DUP-9(EP1-2 17-20')	1		23-Jun	23-Jun	ND		1	1															
DUP-10(EP1-7 2-5')	1		23-Jun	24-Jun	186		1	1															
DUP-11(EP2-1 7-10')	1		25-Jun	25-Jun	2510	1	1	1															
DUP-12(EP2-8 15-17"	1		25-Jun	25-Jun	3890	1	1	1															
DUP2-12(EP2-8 15-17	1		28-Jun	29-Jun	ND		1	1															
DUP-13(EPB-5 5-7')	1		29-Jun	29-Jun	ND		1	1															
DUP-14(EP2-12 5-7')	1		12-Jul	14-Jul	5030	1	1	1															
DUP-15(EP2-20 5-7')	1		12-Jul	14-Jul	ND		1	1															
DUP-16(EP2-25 2-5')	1		13-Jul	14-Jul	ND		1	1															
DUP-17(EP5-4 2-5')	1		13-Jul	14-Jul	ND		1	1															
DUP-18(EP5-5 2-5')	1		13-Jul	14-Jul	ND		1	1															
DUP-19(EP5-9 2-5')	1		14-Jul	15-Jul	ND		1	1															
DUP-20(EP5-13 2-5')	1		14-Jul	15-Jul	ND		1	1															
DUP-21(EP5-15 2-5')	1		14-Jul	15-Jul	ND		1	1															
DUP-22(EP5-21 2-5)	1		14-Jul	15-Jul	390		1	1															
DUP2-23(EP3-5 2-5')	1		15-Jul	16-Jul	ND		1	1															
DUP-24(EP3-7 2-5')	1		15-Jul	16-Jul	ND		1	1															
DUP-25(EP3-4 0-2')	1		15-Jul	16-Jul	ND		1	1															
DUP-26(EP6-3 2-5')	1		16-Jul	19-Jul	ND		1	1															
DUP-27(EP6-4 2-5')	1		16-Jul	19-Jul	ND		1	1															
TOTAL DUP	**29**				**29**	**5**	**29**	**29**	**0**														
Equip Blanks																							
EB-1S(TMDGW)										1	10-Jun	10-Jun	1	1	1								
EB-2S(TMDGW)										1	16-Jun	16-Jun	1	1	1								
EB-3S(TMDGW)										1	17-Jun	18-Jun	1	1	1								VOC temp out of range
EB-4S										1	21-Jun	22-Jun	1	1	1								
EB-5S										1	22-Jun	22-Jun	1	1	1								
EB-6S										1	23-Jun	23-Jun	1	1	1								
B-7S(EP1)										1	24-Jun	24-Jun	1	1	1								
EB-8S (EP2)										1	25-Jun	25-Jun	1	1	1								
EB-9S(EP2)										1	28-Jun	29-Jun	1	1	1								
EB-10S(EPGW)										1	12-Jul	14-Jul	1	1	1								
EB-11S(EPGW)										1	13-Jul	14-Jul	1	1	1								
EB-12S(EPGW)										1	13-Jul	14-Jul	1	1	1								
EB-13S(EPGW)										1	13-Jul	14-Jul	1	1	1								
EB-14S(EPGW)										1	14-Jul	14-Jul	1	1	1								
EB-15S(EPGW)										1	15-Jul	16-Jul	1	1	1								
EB-16S(EPGW)										1	16-Jul	16-Jul	1	1	1								
TOTAL EB	**16**									**16**			**16**	**16**	**16**								

TABLE 2
SAMPLE LIST

SAMPLE LOCATION	SOIL SAMPLES: Boring Soil Samples	Depth	Date Sampled	Date Shipped	Diesel Range Organics(DRO)	SVOC (EPA 8270C) [if DRO is ≥ 2000 then sample will be analyzed for SVOC]	VOCs (EPA 8260B)	RCRA Metals (EPA 6010)	FOC, Particle Size and pH	GROUNDWATER SAMPLES: Boring/Monitor Well Groundwater Samples	Date Sampled	Date Shipped	PAHs (EPA 8310)	BTEX (EPA 8021C)	TDS (EPA 160.1)	SVOCs (EPA 8270c)	VOCs (EPA 8260B)	Metals (EPA 6010) +Cations: CA, Mg, K, NA, Fe, MN	Cyanide	Anions (Cl, Fl, Sulfates)	nitrate/nitrite	General Water Quality Parameters (Specific Conductance, pH, TDS))	Comments
QA/QC - Boring GW																							
Duplicates																							
DUP-1BW(TMD-10)										1	14-Jun	15-Jun	1	1	1								
DUP-2BW(TMD-14)										1	15-Jun	15-Jun	1	1	1								
DUP-3BW(TMD-19)										1	16-Jun	16-Jun	1	1	1								
DUP-4BW(EP2-6)										1	25-Jun	25-Jun	1	1	1								
DUP-5BW(EPB-4)										1	30-Jun	30-Jun	1	1	1								
DUP-6BW(EP3-9)										1	16-Jul	16-Jul	1	1	1								
TOTAL DUP										**6**			**6**	**6**	**6**								
Equip Blanks																							
EB-1BW(TMD-10)										1	14-Jun	15-Jun	1	1	1								
EB-2BW(TMD-14)										1	15-Jun	15-Jun	1	1	1								
EB-3BW(TMD-19)										1	16-Jun	16-Jun	1	1	1								
EB-4BW(EP2-6)										1	25-Jun	25-Jun	1	1	1								
EB-5BW(EPB-4)										1	30-Jun	30-Jun	1	1	1								
EB-6BW(EP3-9)										1	16-Jul	16-Jul	1	1	1								
TOTAL EB										**6**			**6**	**6**	**6**								
Field Blanks																							
FB-1BW(TMD-10)										1	14-Jun	15-Jun	1	1	1								
FB-2BW(TMD-14)										1	15-Jun	15-Jun	1	1	1								
FB-3BW(TMD-19)										1	16-Jun	16-Jun	1	1	1								
FB-4BW(EP2-6)										1	25-Jun	25-Jun	1	1	1								
FB-5BW(EPB-4)										1	30-Jun	30-Jun	1	1	1								
FB-6BW(EP3-9)										1	16-Jul	16-Jul	1	1	1								
TOTAL FB										**6**			**6**	**6**	**6**								

TABLE 2
SAMPLE LIST

SAMPLE LOCATION	SOIL SAMPLES: Boring Soil Samples	Depth	Date Sampled	Date Shipped	Diesel Range Organics(DRO)	SVOC (EPA 8270C) (if DRO is ≥ 2000 then sample will be analyzed for SVOC)	VOCs (EPA 8260B)	RCRA Metals (EPA 6010)	FOC, Particle Size and pH	GROUNDWATER SAMPLES: Boring/Monitor Well Groundwater Samples	Date Sampled	Date Shipped	PAHs (EPA 8310)	BTEX (EPA 8021C)	TDS (EPA 160.1)	SVOCs (EPA 8270c)	VOCs (EPA 8260B)	Metals (EPA 6010) +Cations: CA, Mg, K, NA, Fe, MN	Cyanide	Anions (Cl, Fl, Sulfates)	nitrate/nitrite	General Water Quality Parameters (Specific Conductance, pH, TDS))	Comments
QA/QC - MW GW																							
Duplicates																							
DUP-1GW (not taken)																							
DUP-2GW (MW-29)										1	10-Jun	10-Jun	1			1	1	1	1	1	1	1	
DUP-3GW)MW-26)										1	11-Jun	11-Jun	1			1	1	1	1	1	1	1	
DUP-4GW (OCD-1)										1	14-Jun	15-Jun	1			1	1	1	1	1	1	1	
DUP-5GW (OCD-4)										1	15-Jun	15-Jun	1			1	1	1	1	1	1	1	
DUP-6GW (OCD-8A)										1	15-Jun	15-Jun	1			1	1	1	1	1	1	1	
DUP-7GW (MW-6A)										1	16-Jun	17-Jun	1			1	1	1	1	1	1	1	
DUP-8GW (OCD-7AR)										1	16-Jun	17-Jun	1			1	1	1	1	1	1	1	
DUP-9GW (MW-22A)										1	16-Jun	17-Jun	1			1	1	1	1	1	1	1	
DUP-10GW (MW-25)										1	17-Jun	17-Jun	1			1	1	1	1	1	1	1	
TOTAL DUP										9			9			9	9	9	9	9	9	9	
Equipment Blanks																							
EB-1GW (MW-29)										1	10-Jun	10-Jun	1			1	1	1	1	1	1	1	
EB-2GW (MW-26)										1	11-Jun	11-Jun	1			1	1	1	1	1	1	1	
EB-3GW (OCD-1)										1	14-Jun	15-Jun	1			1	1	1	1	1	1	1	
EB-4GW (OCD-4)										1	15-Jun	15-Jun	1			1	1	1	1	1	1	1	
EB-5GW (OCD-8A)										1	15-Jun	15-Jun	1			1	1	1	1	1	1	1	
EB-6GW (MW-6A)										1	16-Jun	17-Jun	1			1	1	1	1	1	1	1	
EB-7GW (OCD-7AR)										1	16-Jun	17-Jun	1			1	1	1	1	1	1	1	
EB-8GW (MW-22A)										1	16-Jun	17-Jun	1			1	1	1	1	1	1	1	
EB-9GW (MW-19)										1	17-Jun	17-Jun	1			1	1	1	1	1	1	1	
TOTAL EB										9			9	0	0	9	9	9	9	9	9	9	
Field Blanks																							
FB-1GW (MW-29)										1	10-Jun	10-Jun	1			1	1	1	1	1	1	1	
FB-2GW (MW-26)										1	11-Jun	11-Jun	1			1	1	1	1	1	1	1	
FB-3GW (OCD-1)										1	14-Jun	15-Jun	1			1	1	1	1	1	1	1	
FB-4GW (OCD-4)										1	15-Jun	15-Jun	1			1	1	1	1	1	1	1	
FB-5GW (MW-6A)										1	16-Jun	17-Jun	ns sx			1	1	1	1	1	1	1	broken bottle; insufficient sample for 8310 sample lost by lab
FB-6GW (missing)																							
FB-7GW (MW-19)										1	17-Jun	17-Jun	1			1	1	1	1	1	1	1	
TOTAL FB										6			5	0	0	6	6	6	6	6	6	6	
Trip Blanks																							
Trip blank (MW)										1	10-Jun	10-Jun					1						
Trip blank (MW)										1	11-Jun	11-Jun					1						
Trip blank (MW)										1	15-Jun	15-Jun					1						
Trip blank (MW)										1	17-Jun	17-Jun					1						
Trip blank(MW)										1	16-Jul	19-Jul					1						
Trip blank(TMDGW)										1	16-Jun	16-Jun		1									
Trip blank(TMDGW)										1	17-Jun	18-Jun		1									VOC temp out of range
Trip blank(EPGW)										1	22-Jun	22-Jun		1									
Trip blank(EPGW)										1	23-Jun	23-Jun		1									
Trip blank(EPGW)										1	24-Jun	24-Jun		1									
Trip blank(EPGW)										1	25-Jun	25-Jun		1									
Trip blank(EPGW)										1	29-Jun	29-Jun		1									
Trip blank(EPBGW)										1	30-Jun	30-Jun		1									
Trip blank(EPGW)										1	14-Jul	14-Jul		1									
Trip blank(EPGW)										1	15-Jul	15-Jul		1									
Trip blank(EPGW)										1	16-Jul	16-Jul		1									
TOTAL TB										16				11			5						

TABLE 3

BORING AND MONITOR WELL INFORMATION

3A Three-Mile Ditch Boring Locations

3B Evaporation Pond Boring Locations

3C Depth to Groundwater in Monitor Wells

3D Depth to Groundwater in Borings

Table 3A

Three Mile Ditch Boring Locations

BORING NO. OR OTHER REFERENCE	GPS COORD	APPROXIMATE DISTANCE TO NEXT BORING OR REFERENCE	BORING NO. OR OTHER REFERENCE	COMMENT
Truck Bypass Rd		50'	TMD-1	
TMD-1	N32° 51' 10.3" W104° 23' 34.4"	485'	TMD-2	TMD-1 on north side of ditch
TMD-2	N32° 51' 12.6" W104° 23' 28.4"	50'	fence	TMD-1 and -2 on south side of fence
fence		135'	TMD-3	
TMD-3	N32° 51' 12.9" W104° 23' 26.1"	500'	TMD-4	
TMD-4	N32° 51' 12.5" W104° 23' 19.0"	370'	primary facility security fence	Chain-link/barbed wire fence
security fence		130'	TMD-5	TMD-5 and subsequent borings on north side of barbed wire fence
TMD-5	N32° 51' 13.2" W104° 23' 12.1"	420'	TMD-6	
TMD-6	N32° 51' 13.1" W104° 23' 06.1"	380'	TMD-7	
TMD-7	N32° 51' 13.1" W104° 23' 00.7"	480'	TMD-8	
TMD-8	N32° 51' 13.0" W104° 22' 53.9"	435'	TMD-9	
TMD-9	N32° 51' 13.1" W104° 22' 47.8"	423'	Bolton Rd	distance measured to fence on west side of Bolton Rd.
Bolton Rd		25'	TMD-10	distance measured from fence on east side of Bolton Rd.
TMD-10	N32° 51' 11.8" W104° 22' 41.3"	455'	TMD-11	MW-20 to south between TMD-10 and -11
TMD-11	N32° 51' 07.8" W104° 22' 36.8"	224'	TMD-12	
TMD-12	N32° 51' 06.5" W104° 22' 34.1"	225'	TMD-13	
TMD-13		200'	TMD-14	
TMD-14		250'	TMD-15	
TMD-15		225'	TMD-16	MW-8 to north between TMD-15 and -16
TMD-16	N32° 51' 01.7" W104° 22' 22.8"	225'	TMD-17	MW-21 north of TMD-16
TMD-17	N32° 51' 01.1" W104° 22' 20.5"	200'	TMD-18	MW-9 northwest of TMD-17 MW-29 southwest of TMD-18
TMD-18	N32° 51' 01.0" W104° 22' 17.7"	209'	TMD-19	
TMD-19	N32° 51' 01.5" W104° 22' 14.7"	468'	TMD-20	
TMD-20	N32° 51' 04.6" W104° 22' 09.5"	470'	TMD-21	

Table 3A

Three Mile Ditch Boring Locations

BORING NO. OR OTHER REFERENCE	GPS COORD	APPROXIMATE DISTANCE TO NEXT BORING OR REFERENCE	BORING NO. OR OTHER REFERENCE	COMMENT
TMD-21	N32° 51' 07.4" W104° 22' 04.9"	500'	TMD-22	
TMD-22	N32° 51' 10.8" W104° 22' 00.2"	480'	TMD-23	MW-28 southwest of TMD-23
TMD-23	N32° 51' 14.3" W104° 21' 55.3"	450'	fence	
fence		30'	TMD-24	
TMD-24	N32° 51' 15.0" W104° 21' 50.5"	500'	TMD-25	
TMD-25	N32° 51' 15.8" W104° 21' 43.4"	400'	Haldeman Rd	Distance measured from fence on west side of Haldeman Rd.
Haldeman Rd		300"	TMD-26	MW-27 to south between fence and TMD-26
TMD-26	N32° 51' 16.8" W104° 21' 36.1"	500'	TMD-27	
TMD-27	N32° 51' 20.8" W104° 21' 30.2"	500'	TMD-28	
TMD-28	N32° 51' 26.4" W104° 21' 22.2"	500'	TMD-29	MW-16 southeast of TMD-28
TMD-29	N32° 51' 30.1" W104° 21' 17.2"	500'	TMD-30	MW-26 to northwest of TMD-30
TMD-30	N32° 51' 31.6" W104° 21' 10.4"	500'	TMD-31	
TMD-31	N32° 51' 29.2" W104° 21' 03.1"	500'	TMD-32	
TMD-32	N32° 51' 27.1" W104° 20' 56.7"	500'	TMD-33	
TMD-33	N32° 51' 25.8" W104° 20' 49.7"	500'	TMD-34	
TMD-34	N32° 51' 25.6" W104° 20' 44.9"	50'	fence	
fence		600'	fence	MW-25 located to south and between these two fence lines
fence		30'	TMD-35	
TMD-35	N32° 51' 21.4" W104° 20' 36.4"	500'	TMD-36	MW-1 northwest of TMD-36
TMD-36	N32° 51' 19.1" W104° 20' 30.2"	500'	TMD-37	MW-15 south between TMD-36 and -37
TMD-37	N32° 51' 17.5" W104° 20' 24.5"	250'	TMD-38	
TMD-38	N32° 51' 16.4" W104° 20' 21.3"	30'	fenceline	
fenceline		30'	Evaporation Pond 1	

Table 3B

Evaporation Pond and Background Boring Locations

Boring Number	GPS Coordinate
Evaporation Pond 1	
EP1-1	N32° 51' 15.9" W104° 20' 16.6"
EP1-2	N32° 51' 15.8" W104° 20' 13.3"
EP1-3	N32° 51' 17.8" W104° 20' 14.8"
EP1-4	N32° 51' 15.7" W104° 20' 10.4"
EP1-5	N32° 51' 17.8" W104° 20' 13.0"
EP1-6	N32° 51' 20.8" W104° 20' 11.1"
EP1-7	N32° 51' 15.6" W104° 20' 07.5"
EP1-8	N32° 51' 17.9" W104° 20' 10.1"
EP1-9	N32° 51' 20.7" W104° 20' 07.8"
EP1-10	N32° 51' 15.4" W104° 20' 04.5"
EP1-11	N32° 51' 18.5" W104° 20' 07.3"
EP1-12	N32° 51' 20.4" W104° 20' 05.0"
Evaporation Pond 2	
EP2-1	N32° 51' 15.0" W104° 20' 03.5"
EP2-2	N32° 51' 15.0" W104° 20' 02.8"
EP2-3	N32° 51' 15.3" W104° 20' 02.9"
EP2-4	N32° 51' 15.6" W104° 20' 03.1"
EP2-5	N32° 51' 15.6" W104° 20' 03.7"
EP2-6	N32° 51' 15.6" W104° 20' 02.8"
EP2-7	N32° 51' 15.8" W104° 20' 02.6"
EP2-8	N32° 51' 16.4" W104° 20' 03.0"
EP2-9	N32° 51' 15.8" W104° 20' 02.8"
EP2-10	N32° 51' 16.1" W104° 20' 03.6"
EP2-11	N32° 51' 15.7" W104° 20' 02.6"
EP2-12	N32° 51' 14.9" W104° 20' 01.4"
EP2-13	N32° 51' 15.8" W104° 20' 01.7"
EP2-14	N32° 51' 16.4" W104° 20' 02.5"
EP2-15	
EP2-16	N32° 51' 17.0" W104° 19' 57.4"
EP2-17	N32° 51' 18.4" W104° 19' 58.9"
EP2-18	N32° 51' 19.2" W104° 20' 00.6"
EP2-19	N32° 51' 19.4" W104° 20' 03.3"
EP2-20	N32° 51' 18.4" W104° 19' 54.5"
EP2-21	N32° 51' 20.7" W104° 19' 55.7"
EP2-22	N32° 51' 22.0" W104° 19' 58.4"
EP2-23	N32° 51' 22.4" W104° 20' 01.7"
EP2-24	N32° 51' 22.8" W104° 19' 50.9"
EP2-25	N32° 51' 25.1" W104° 19' 56.3"
Background Borings	
BSB-1	N32° 50' 59.8" E104° 22' 17.0"
BSB-2	N32° 51' 26.1" W104° 21' 16.8"
BSB-3	N32° 51' 13.2" W104° 20' 24.9"
BSB-4	N32° 50' 45.6" W104° 19' 52.1"
BSB-5	N32° 51' 15.9" W104° 19' 26.2"
BSB-6	N32° 51' 48.6" W104° 19' 34.4"
BSB-7	N32° 51' 06.4" W104° 23' 53.1"
BSB-8	N32° 51' 21.5" W104° 23' 35.1"
BSB-9	N32° 51' 00.8" W104° 22' 57.0"
BSB-10	N32° 50' 34.9" W104° 22' 41.1"

Boring Number	GPS Coordinate
Evaporation Pond 3	
EP3-1	N32° 51' 28.0" W104° 19' 57.9"
EP3-2	N32° 51' 32.0" W104° 19' 57.5"
EP3-3	N32° 51' 27.7" W104° 19' 51.9"
EP3-4	N32° 51' 32.1" W104° 19' 52.3"
EP3-5	N32° 51' 20.9" W104° 19' 45.9"
EP3-6	N32° 51' 25.6" W104° 19' 47.0"
EP3-7	N32° 51' 29.8" W104° 19' 48.3"
EP3-8	N32° 51' 33.9" W104° 19' 49.6"
EP3-9	N32° 51' 22.2" W104° 19' 42.2"
EP3-10	N32° 51' 25.9" W104° 19' 42.5 "
EP3-11	N32° 51' 29.8" W104° 19' 41.9"
EP3-12	N32° 51' 34.4" W104° 19' 42.0"
Evaporation Pond 5	
EP5-1	N32° 51' 22.1" W104° 20' 09.4"
EP5-2	N32° 51' 21.6" W104° 20' 08.6"
EP5-3	N32° 51' 22.3" W104° 20' 08.6"
EP5-4	N32° 51' 22.7" W104° 20' 09.3"
EP5-5	N32° 51' 22.9" W104° 20' 08.2"
EP5-6	N32° 51' 21.6" W104° 20' 06.9"
EP5-7	N32° 51' 23.5" W104° 20' 07.0"
EP5-8	N32° 51' 24.2" W104° 20' 08.3"
EP5-9	N32° 51' 21.7" W104° 20' 04.9"
EP5-10	N32° 51' 23.9" W104° 20' 06.2"
EP5-11	N32° 51' 25.4" W104° 20' 07.4"
EP5-12	N32° 51' 22.2" W104° 20' 03.7"
EP5-13	N32° 51' 24.2" W104° 20' 03.3"
EP5-14	N32° 51' 25.6" W104° 20' 05.1"
EP5-15	N32° 51' 27.0" W104° 20' 05.9"
EP5-16	N32° 51' 25.6" W104° 20' 02.0"
EP5-17	N32° 51' 26.0" W104° 20' 03.9"
EP5-18	N32° 51' 29.2" W104° 20' 04.8"
EP5-19	N32° 51' 28.1" W104° 20' 01.9"
EP5-20	N32° 51' 30.8" W104° 20' 03.6"
EP5-21	N32° 51' 32.5" W104° 20' 02.5"
Evaporation Pond Berms	
EPB-1	N32° 51' 14.5" W104° 20' 17.8"
EPB-2	N32° 51' 14.2" W104° 20' 10.0"
EPB-3	N32° 51' 14.4" W104° 20' 03.5"
EPB-4	N32° 51' 14.9" W104° 19' 56.4"
EPB-5	N32° 51' 19.5" W104° 19' 49.6"
EPB-6	N32° 51' 20.4" W104° 19' 39.7"
Evaporation Pond 6	
EP6-1	N32° 51' 35.2" W104° 19' 56.3"
EP6-2	N32° 51' 36.9" W104° 19' 51.6"
EP6-3	N32° 51' 37.8" W104° 19' 47.0"
EP6-4	N32° 51' 38.2" W104° 19' 42.4"
EP6-5	N32° 51' 36.9" W104° 19' 36.7"

Table 3C
Depth to Groundwater in Monitor Wells

Well ID	Date	Elevation (TOC)	Water Level (BTOC)	Water Level Elevation (ft)
MW-1R	06/11/04	3311.56	10.30	3301.26
MW-2A	06/16/04	3309.80	10.30	3299.50
MW-3	06/16/04	3310.00 *	8.70	3301.30
MW-4A	06/15/04	3309.57	11.19	3298.38
MW-5A	06/15/04	3305.87	7.18	3298.69
MW-6A	06/16/04	3310.67	11.80	3298.87
MW-7A	06/15/04	3304.73	7.00	3297.73
MW-8	06/09/04	3335.26	8.58	3326.68
MW-9	06/10/04	3335.05	9.01	3326.04
MW-10	06/17/04	3301.50 *	5.20	3295.30
MW-11A	06/15/04	3307.46	9.01	3298.45
MW-15	06/11/04	3310.93	11.27	3299.66
MW-16	06/10/04	3315.47	8.55	3306.92
MW-18A	06/16/04	3305.36	9.80	3295.56
MW-19	06/17/04	3302.50 *	8.01	3294.49
MW-20	06/09/04	3340.00	9.24	3330.76
MW-21	06/09/04	3336.18	9.95	3326.23
MW-22A	06/16/04	3304.14	7.61	3296.53
MW-25	06/17/04	3310.32	8.80	3301.52
MW-26	06/11/04	3314.30	8.51	3305.79
MW-27	06/17/04	3320.13	12.84	3307.29
MW-28	06/10/04	3327.24	16.45	3310.79
MW-29	06/10/04	3334.29	11.60	3322.69
OCD-1	06/14/04	3310.00 *	11.78	3298.22
OCD-2A	06/14/04	3310.99	11.85	3299.14
OCD-3	06/14/04	3310.00 *	12.35	3297.65
OCD-4	06/15/04	3310.00 *	11.61	3298.39
OCD-5	06/15/04	3310.00 *	9.90	3300.10
OCD-6	06/16/04	3310.00 *	10.60	3299.40
OCD-7AR	06/16/04	3307.05	9.45	3297.60
OCD-8A	06/15/04	3306.66	9.00	3297.66

* Estimated Elevation from Topographic map and Elevations in proximity to wells.

Table 3D
Depth to Groundwater in Borings

Well ID	Date	Water Level (BGL)
Three-Mile Ditch		
TMD-1	06/09/04	6.54
TMD-2	06/11/04	10.61
TMD-3	06/10/04	4.57
TMD-4	06/18/04	12.75
TMD-5	06/11/04	6.20
TMD-6	06/11/04	5.27
TMD-7	06/11/04	5.63
TMD-8	06/11/04	5.24
TMD-9	06/11/04	4.82
TMD-10	06/14/04	5.02
TMD-11	06/14/04	6.26
TMD-12	06/14/04	6.31
TMD-13	06/14/04	6.37
TMD-14	06/15/04	5.91
TMD-15	06/15/04	6.16
TMD-16	06/15/04	6.49
TMD-17	06/15/04	5.28
TMD-18	06/15/04	8.61
TMD-19	06/16/04	9.06
TMD-20	06/16/04	10.81
TMD-21	06/16/04	13.17
TMD-22	06/16/04	12.79
TMD-23	06/16/04	12.75
TMD-24	06/28/04	12.59
TMD-25	06/28/04	19.43
TMD-26	06/17/04	9.93
TMD-27	06/17/04	8.47
TMD-28	06/17/04	6.57
TMD-29	06/17/04	5.45
TMD-30	06/17/04	6.77
TMD-31	06/17/04	4.76
TMD-32	6/17/2004	4.14
TMD-33	6/21/2004	7.80
TMD-34	6/21/2004	5.44
TMD-35	6/23/2004	9.60
TMD-36	6/23/2004	9.60
TMD-37	6/23/2004	10.68
TMD-38	6/25/2004	9.82

Well ID	Date	Water Level (BGL)
Evaporation Pond 1		
EP1-1	6/25/2004	7.15
EP1-9	6/25/2004	6.54
EP1-10	6/25/2004	12.70
Evaporation Pond 2		
EP2-1	6/25/2004	10.58
EP2-6	6/25/2004	6.47
EP2-12	7/14/2004	6.87
EP2-20	7/14/2004	6.15
EP2-25	7/14/2004	8.23
Evaporation Pond 3		
EP3-4	7/16/2004	7.76
EP3-5	7/15/2004	6.86
EP3-9	7/16/2004	6.31
Evaporation Pond 5		
EP5-1	7/14/2004	9.21
EP5-5	7/14/2004	7.10
EP5-9	7/15/2004	5.53
EP5-16	7/15/2004	6.55
EP5-21	7/15/2004	5.67
Evaporation Pond 6		
EP6-3	7/16/2004	7.71
South of EP Berms		
EPB-1	6/30/2004	8.64
EPB-2	6/30/2004	7.41
EPB-3	6/30/2004	6.59
EPB-4	6/30/2004	5.33
EPB-5	6/30/2004	5.91
EPB-6	6/30/2004	5.65

TABLE 4

GROUNDWATER FIELD MEASUREMENTS

TABLE 4
Groundwater Field Measurements

Well ID	Date	Time	Water Level (BTOC)	DO (mg/L)	ORP (MV)	pH (su)	TEMP (°C)	COND (ms/cm)
MW-1R	6/11/2004	10:40	10.31	0.24	-117	7.15	21.71	7.22
MW-2A	7/15/2004	11:30	NR	NR	NR	NR	NR	NR
MW-3	6/16/2004	11:50	8.72	0.25	-35	7.45	22.28	7.70
MW-4A	6/15/2004	15:15	11.22	0.19	-96	7.59	25.44	7.55
MW-5A	6/15/2004	13:25	7.18	0.15	-138	7.67	30.22	24.86
MW-6A	6/16/2004	10:40	11.81	0.15	-128	8.01	23.25	6.10
MW-7A	6/15/2004	14:15	7.05	0.16	-121	7.77	22.43	12.73
MW-8	6/9/2004	17:15	8.60	0.20	38.5	6.55	21.24	6.43
MW-9	6/10/2004	9:35	9.10	0.66	21.81	5.51	20.67	6.34
MW-10	6/17/2004	8:55	5.26	0.47	-21	7.53	20.70	7.30
MW-11A	6/15/2004	9:55	9.05	0.22	-62	7.37	22.10	33.06
MW-15	6/11/2004	11:35	11.28	0.17	37.5	6.77	22.68	7.71
MW-16	6/10/2004	18:15	8.60	0.25	97.8	5.53	21.58	4.48
MW-18A	6/16/2004	15:55	9.83	0.15	55	7.46	23.69	26.86
MW-19	6/17/2004	10:25	8.03	0.12	-89	7.71	22.40	6.71
MW-20	6/9/2004	16:05	10.11	0.31	75.3	6.00	24.10	6.73
MW-21	6/9/2004	18.15	10.02	0.68	42.7	6.87	24.23	6.28
MW-22A	6/16/2004	17:55	7.63	0.11	-132	7.78	29.70	8.60
MW-25	6/17/2004	11:25	8.83	1.10	81	7.45	20.89	13.61
MW-26	6/11/2004	9:10	8.57	0.10	177	6.89	18.86	4.92
MW-27	6/17/2004	12:35	12.87	0.42	45	7.56	22.60	3.55
MW-28	6/10/2004	14:20	16.59	0.30	125.3	5.83	22.20	4.53
MW-29	6/10/2004	10:35	11.66	3.17	160.3	6.85	20.09	6.02
OCD-1	6/14/2004	12:05	11.80	0.30	89.2	6.31	23.98	16.30
OCD-2A	6/14/2004	15:25	11.86	0.20	-50	7.40	23.53	10.33
OCD-3	6/14/2004	16:25	12.37	1.28	-21	7.60	24.70	7.89
OCD-4	6/15/2004	8:40	11.63	0.20	103	5.76	20.77	21.78
OCD-5	6/15/2004	10:55	9.92	0.17	-106	7.90	20.40	18.96
OCD-6	6/16/2004	13:10	10.62	0.33	-88	7.47	23.04	15.77
OCD-7AR	6/16/2004	14:10	9.48	0.15	-100	7.69	22.88	12.76
OCD-8A	6/15/2004	11:55	9.00	0.13	-133	7.57	22.83	13.62

NR - Not Recorded

TABLE 5

REGULATORY CRITERIA

5A New Mexico Soil Screening Levels

5B New Mexico Groundwater Standards

Table 5A
NEW MEXICO SOIL SCREENING LEVELS (SSL)

VALUE shaded cells represent the lowest value

Chemical	Industrial/Occupational Soil (mg/kg)	Construction Worker Soil (mg/kg)	DAF 20 (mg/kg)
Acenaphthene	3.48E+04	1.44E+04	7.98E+01
Acetaldehyde	3.42E+02	3.08E+02	6.63E-03
Acetone	1.00E+05	1.00E+05	2.06E+00
Acrylonitrile	1.15E+01	5.22E+01	1.32E-04
Acetophenone	1.31E+03	1.31E+03	0.00E+00
Acrolein	6.70E-01	6.01E-01	1.68E-04
Aldrin	1.12E+00	6.99E+00	2.94E-01
Aluminum	1.00E+05	1.44E+04	1.50E+05
Anthracene	2.64E+05	8.53E+04	1.60E+03
Antimony	4.54E+02	1.24E+02	5.42E+00
Arsenic	1.77E+01	8.52E+01	5.83E+01
Barium	7.83E+04	1.44E+03	8.23E+02
Benzene	7.36E+01	1.57E+02	2.83E-02
Benzidine	8.33E-02	7.09E-01	0.00E+00
Benzo(a)anthracene	2.34E+01	2.14E+02	1.10E+00
Benzo(a)pyrene	2.34E+00	2.14E+01	6.12E+00
Benzo(b)fluoranthene	2.34E+01	2.14E+02	3.40E+00
Benzo(k)fluoranthene	2.34E+02	2.14E+03	3.40E+01
Beryllium	2.25E+03	5.62E+01	6.32E+01
α–BHX	3.99E+00	3.00E+01	4.43E-04
β–BHX	1.40E+01	5.39E+01	1.52E-03
γ–BHX	1.93E+01	8.09E+01	7.09E-03
1,1-Biphenyl	8.90E+01	8.90E+01	7.12E+01
Bis(2-chloroethyl) ether	5.95E+00	9.09E+01	3.75E-05
Bis(2-chloroisopropyl) ether	6.19E+03	4.24E+03	1.41E-03
Bis(2-ethylhexyl) phthalate	1.37E+03	4.66E+03	2.17E+03
Bis(chloromethyl) ether	1.10E-02	2.11E-01	1.77E-07
Boron	6.16E+04	4.26E+00	0.00E+00
Bromobenzene	1.22E+02	1.09E+02	2.06E-01
Bromodichloromethane	5.13E+02	1.05E+03	9.28E-04
Bromomethane	2.92E+01	2.52E+01	3.67E-02
1,3-Butadiene	2.13E+00	4.11E+00	2.63E-04
2-Butanone (MEK)	2.10E+03	1.88E+03	6.63E+00
tert-Butyl methyl ether (MTBE)	3.18E+03	4.07E+04	4.67E-02
n-Butylbenzene	6.20E+01	6.20E+01	2.13E+01
sec-Butylbenzene	6.05E+01	6.05E+01	1.71E+01
tert-Butylbenzene	1.06E+02	1.06E+02	1.69E+01
Cadmium	8.60E+03	4.74E-03	7.52E+00
Carbon disulfide	2.14E+04	1.34E+04	7.52E+00
Carbon tetrachloride	7.75E+00	9.06E+00	5.74E-02
Chlordane	7.19E+01	1.30E+02	7.21E+00
2-Chloroacetophenone	1.48E-01	1.33E-01	8.70E-04
2-Chloro-1,3-butadiene	2.05E+01	1.84E+01	1.10E-01

Table 5A
NEW MEXICO SOIL SCREENING LEVELS (SSL)

VALUE shaded cells represent the lowest value

Chemical	Industrial/Occupational Soil (mg/kg)	Construction Worker Soil (mg/kg)	DAF 20 (mg/kg)
1-Chloro-1,1-difluoroethane	1.00E+05	1.00E+05	1.27E+03
Chlorobenzene	2.42E+02	2.42E+02	1.03E+00
1-Chlorobutane	2.91E+02	2.91E+02	1.89E+01
Chlorodifluoromethane	1.00E+05	1.00E+05	1.24E+03
Chloroethane	1.38E+03	1.38E+03	2.23E-02
Chloroform	8.52E+00	1.88E+01	4.90E-01
Chloromethane	4.77E+01	2.53E+02	1.00E-02
β-Χηλορονανπηταλενε	2.58E+04	1.40E+04	2.52E+01
o-Chloronitrobenzene	6.23E+00	5.54E+00	7.96E-04
p-Chloronitrobenzene	5.09E+01	4.15E+01	6.37E-03
2-Chlorophenol	8.07E+02	5.47E+02	4.62E-01
2-Chloropropane	6.89E+02	6.89E+02	8.68E-01
o-Chlorotoluene	7.74E+02	6.46E+02	1.02E+00
Chromium III	1.00E+05	1.00E+05	1.98E+08
Chromium VI	3.40E+03	1.80E+02	1.92E+01
Chrysene	2.34E+03	2.14E+04	1.10E+02
Cobalt	2.05E+04	6.10E+01	4.52E+01
Copper	4.54E+04	1.24E+04	7.03E+02
Crotonaldehyde	1.67E+01	5.18E+01	3.06E-04
Cumene (isopropylbenzene)	2.73E+03	2.32E+03	7.29E+00
Cyanide	2.27E+04	6.19E+03	7.75E-01
Cyanogen	8.22E+02	7.11E+02	1.11E+00
Cyanogen bromide	1.85E+03	1.60E+03	2.54E+00
Cyanogen chloride	1.03E+03	8.88E+02	1.39E+00
DDD	1.11E+02	8.29E+02	8.40E+00
DDE	7.81E+01	5.85E+02	2.68E+01
DDT	7.81E+01	1.38E+02	1.58E+01
Dibenz(a,h)anthracene	2.34E+00	2.14E+01	1.05E+00
Dibenzofuran	3.17E+03	1.09E+03	5.70E+00
1,2-Dibromo-3-chloropropane	1.32E+01	1.19E+01	2.02E-04
Dibromochloromethane	3.79E+02	1.39E+03	2.28E-03
1,2-Dibromoethane	3.36E-01	2.47E+00	4.23E-04
1,4-Dichloro-2-butene	3.17E-01	7.14E+00	5.78E-06
1,2-Dichlorobenzene	1.16E+02	1.16E+02	8.93E+00
1,3-Dichlorobenzene	7.39E+01	5.70E+01	1.22E-01
1,4-Dichlorobenzene	8.14E+01	8.14E+01	1.65E+00
3,3-Dichlorobenzidine	4.26E+01	3.71E+02	3.76E-03
Dichlorodifluoromethane	2.05E+02	2.05E+02	5.70E+00
1,1-Dichloroethane	1.22E+03	1.22E+03	1.21E-01
1,2-Dichloroethane	1.26E+01	5.33E+01	1.98E-02
cis-1,2-Dichloroethene	2.67E+02	2.28E+02	3.37E-01
trans-1,2-Dichloroethene	3.98E+02	3.44E+02	5.82E-01
1,1-Dichloroethene	6.86E+02	6.01E+02	3.84E-02

Table 5A
NEW MEXICO SOIL SCREENING LEVELS (SSL)

VALUE shaded cells represent the lowest value

Chemical	Industrial/Occupational Soil (mg/kg)	Construction Worker Soil (mg/kg)	DAF 20 (mg/kg)
2,4-Dichlorophenol	2.05E+03	6.99E+02	2.45E-01
1,2-Dichloropropane	3.64E+01	3.28E+01	7.89E-04
1,3-Dichloropropene	2.98E+01	8.38E+01	2.56E-03
Dicyclopentadiene	2.13E+00	1.92E+00	9.02E-03
Dieldrin	1.20E+00	1.02E+01	2.71E-03
Diethyl phthalate	1.00E+05	1.00E+05	3.48E+02
Dimethyl phthalate	1.00E+05	1.00E+05	3.31E+03
Di-n-butyl phthalate	6.84E+04	2.33E+04	3.67E+03
2,4-Dimethylphenol	1.37E+04	4.66E+03	8.54E-01
2,4-Dinitrotoluene	1.37E+03	4.66E+02	4.54E-01
1,2-Diphenylhydrazine	2.39E+01	2.04E+02	1.95E-03
Endosulfan	4.10E+03	1.40E+03	1.49E+01
Endrin	2.05E+02	6.99E+01	7.45E-01
Epichlorohydrin	5.90E+01	5.01E+01	6.93E-03
Ethyl acetate	1.00E+05	2.06E+04	2.83E+01
Ethyl acrylate	6.62E+02	4.52E+03	1.18E-02
Ethyl chloride	1.38E+03	7.48E+04	2.23E-02
Ethyl ether	1.89E+03	1.89E+03	4.53E+00
Ethyl methacrylate	5.18E+01	5.18E+01	2.85E+01
Ethylbenzene	2.54E+04	5.71E+05	1.05E+01
Ethylene oxide	7.39E+00	1.08E+02	8.23E-05
Fluoranthene	2.44E+04	8.73E+03	4.82E+03
Fluorene	2.94E+04	1.06E+04	1.00E+02
Furan	1.88E+01	1.63E+01	2.58E-02
Heptachlor	4.26E+00	3.63E+01	0.00E+00
Hexachlorobenzene	1.20E+01	1.02E+02	1.65E+00
Hexachloro-1,3-butadiene	1.37E+02	4.66E+01	1.62E+00
Hexachlorocyclopentadiene	4.10E+03	4.31E+02	3.00E+02
Hexachloroethane	6.84E+02	2.33E+02	2.74E-01
n-Hexane	3.80E+01	3.80E+01	1.46E+01
HMX	3.42E+04	1.17E+04	0.00E+00
Hydrogen cyanide	7.31E+01	6.53E+01	2.40E-02
Indeno(1,2,3-c,d)pyrene	2.34E+01	2.14E+02	9.58E+00
Iron	1.00E+05	9.29E+04	6.54E+01
Isobutanol	2.22E+04	2.22E+04	9.39E+00
Isophorone	2.02E+04	4.66E+04	3.38E-01
Lead	7.50E+02	7.50E+02	9.00E+02
Lead (tetraethyl-)	6.84E-02	2.38E-02	0.00E+00
Maleic hydrazide	1.57E+03	1.57E+03	1.57E+01
Manganese	2.18E+04	1.48E+02	1.05E+00
Mercury (elemental)	3.41E+02	8.44E+01	0.00E+00
Mercury (methyl)	6.84E+01	2.38E+01	0.00E+00
Methacrylonitrile	2.00E+01	1.28E+01	3.39E-03

Table 5A
NEW MEXICO SOIL SCREENING LEVELS (SSL)

VALUE shaded cells represent the lowest value

Chemical	Industrial/Occupational Soil (mg/kg)	Construction Worker Soil (mg/kg)	DAF 20 (mg/kg)
Methomyl	2.83E+02	2.49E+02	1.13E+00
Methyl acetate	1.00E+05	1.00E+05	2.06E+03
Methyl acrylate	3.12E+02	2.75E+02	9.24E+00
Methyl isobutyl ketone	6.90E+03	6.90E+03	1.16E+00
Methyl methacrylate	2.83E+03	2.83E+03	5.29E+00
Methyl styrene (alpha)	2.16E+02	2.16E+02	6.18E+00
Methyl styrene (mixture)	2.16E+02	2.16E+02	8.62E-01
Methylcyclohexane	7.63E+03	6.87E+03	2.69E+02
Methylene bromide	4.54E+02	3.74E+02	2.56E-01
Methylene chloride	4.40E+02	2.55E+03	1.69E-02
Molybdenum	5.68E+03	1.55E+03	4.03E+02
Naphthalene	9.83E+01	9.83E+01	3.93E-01
Nickel	2.25E+04	5.61E+02	2.61E+02
Nitrate	1.00E+05	1.00E+05	0.00E+00
Nitrite	1.00E+05	3.10E+04	0.00E+00
Nitrobenzene	1.36E+02	7.89E+01	1.80E-02
Nitroglycerin	1.37E+03	1.19E+04	0.00E+00
N-Nitrosodiethylamine	1.28E-01	1.09E+00	0.00E+00
N-Nitrosodimethylamine	3.76E-01	3.20E+00	2.31E-05
N-Nitrosodi-n-butylamine	6.67E-01	1.16E+01	2.24E-05
N-Nitrosodiphenylamine	3.91E+03	3.40E+04	5.89E-01
N-Nitrosopyrrolidine	9.12E+00	7.77E+01	0.00E+00
m-Nitrotoluene	5.57E+02	5.57E+02	3.24E-01
o-Nitrotoluene	5.57E+02	5.57E+02	3.24E-01
p-Nitrotoluene	5.57E+02	5.57E+02	3.24E-01
Pentachlorobenzene	5.47E+02	1.86E+02	2.00E+01
Pentachlorophenol	1.00E+02	1.03E+03	2.11E-02
Phenanthrene	2.05E+04	6.99E+03	7.62E+01
Phenol	1.00E+05	6.99E+04	2.11E-02
Polychlorinatedbiphenyls	0.00E+00	0.00E+00	0.00E+00
Aroclor 1016	8.26E+00	1.50E+01	0.00E+00
Aroclor 1221	8.26E+00	7.61E+01	0.00E+00
Aroclor 1232	8.26E+00	7.61E+01	0.00E+00
Aroclor 1242	8.26E+00	7.61E+01	0.00E+00
Aroclor 1248	8.26E+00	7.61E+01	0.00E+00
Aroclor 1254	8.26E+00	4.28E+00	0.00E+00
Aroclor 1260	8.26E+00	7.61E+01	0.00E+00
n-Propylbenzene	5.32E+01	5.32E+01	2.13E+01
Propylene oxide	9.01E+01	7.91E+02	9.05E-04
Pyrene	3.13E+04	9.05E+03	5.68E+02
RDX	1.74E+02	6.99E+02	0.00E+00
Selenium	5.68E+03	1.55E+03	5.17E+00
Silver	5.68E+03	1.55E+03	8.47E+00

Table 5A
NEW MEXICO SOIL SCREENING LEVELS (SSL)

VALUE shaded cells represent the lowest value

Chemical	Industrial/Occupational Soil (mg/kg)	Construction Worker Soil (mg/kg)	DAF 20 (mg/kg)
Strontium	1.00E+05	1.00E+05	4.06E+03
Styrene	4.19E+02	4.19E+02	2.70E+00
1,2,4,5-Tetrachlorobenzene	2.05E+02	6.99E+01	0.00E+00
1,1,1,2-Tetrachloroethane	1.03E+02	8.55E+02	2.66E-03
1,1,2,2-Tetrachloroethane	1.36E+01	2.56E+02	3.40E-04
Tetrachloroethene	2.46E+01	9.76E+01	6.44E-03
Thallium	7.49E+01	2.04E+01	2.85E+00
Toluene	2.48E+02	2.48E+02	6.80E+00
Toxaphene	1.74E+01	1.48E+02	4.71E-01
Tribromomethane	4.02E+03	6.02E+03	6.02E-01
1,1,2-Trichloro-1,2,2-trifluoroet	1.00E+05	1.00E+05	0.00E+00
1,2,4-Trichlorobenzene	8.53E+02	8.53E+02	3.98E+00
1,1,1-Trichloroethane	5.51E+02	5.51E+02	4.98E-01
1,1,2-Trichloroethane	2.70E+01	1.75E+02	2.47E-02
Trichloroethene	1.59E+00	3.41E+01	4.66E-02
Trichlorofluoromethane	9.59E+02	9.59E+02	2.27E+01
2,4,5-Trichlorophenol	6.84E+04	2.33E+04	1.85E+02
2,4,6-Trichlorophenol	6.84E+01	2.33E+01	5.32E-02
1,1,2-Trichloropropane	8.61E+01	7.49E+01	2.30E-01
1,2,3-Trichloropropane	1.59E+01	1.69E+01	4.17E-05
1,2,3-Trichloropropene	6.67E+01	5.85E+01	2.23E-01
Triethylamine	2.31E+02	2.08E+02	4.12E-02
1,2,4-Trimethylbenzene	1.91E+02	1.71E+02	1.38E+00
1,3,5-Trimethylbenzene	6.89E+01	6.89E+01	3.44E-01
2,4,6-Trinitrotoluene	3.42E+02	2.17E+02	0.00E+00
Vanadium	7.95E+03	2.17E+03	8.07E+02
Vinyl acetate	3.49E+03	3.12E+03	1.46E+00
Vinyl bromide	2.06E+01	1.85E+01	7.86E-04
Vinyl chloride (Child)			
Vinyl chloride (adult)	1.30E+01	1.74E+02	6.49E-03
m-Xylene	8.00E+01	8.00E+01	1.63E+02
o-Xylene	9.86E+01	9.86E+01	1.47E+02
p-Xylene	1.24E+02	1.24E+02	1.58E+02
Xylenes	1.32E+02	1.32E+02	1.01E+01
Zinc	1.00E+05	9.29E+04	1.24E+04

Table 5B
NEW MEXICO GROUNDWATER STANDARDS

Chemical	NM standard (GWs) (mg/L)	Source for selection of standard*
Acenaphthene	3.70E-01	EPA9TAP
Acetaldehyde	1.70E-03	EPA9TAP
Acetone	6.10E-01	EPA9TAP
Acrylonitrile	3.90E-05	EPA9TAP
Acetophenone		
Acrolein	4.20E-05	EPA9TAP
Aldrin	4.00E-06	EPA9TAP
Aluminum	5.00E+00	NMED
Anthracene	1.80E+00	EPA9TAP
Antimony	6.00E-03	MCL
Arsenic	1.00E-01	NMED
Barium	1.00E+00	NMED
Benzene	5.00E-03	MCL
Benzidine	2.90E-07	EPA9TAP
Benzo(a)anthracene	9.20E-05	EPA9TAP
Benzo(a)pyrene	2.00E-04	MCL
Benzo(b)fluoranthene	9.20E-05	EPA9TAP
Benzo(k)fluoranthene	9.20E-04	EPA9TAP
Beryllium	4.00E-03	MCL
α-BHC	1.10E-05	EPA9TAP
β-BHC	3.70E-05	EPA9TAP
γ-BHC	2.00E-04	MCL
1,1-Biphenyl	3.00E-01	EPA9TAP
Bis(2-chloroethyl) ether	9.80E-06	EPA9TAP
Bis(2-chloroisopropyl) ether	2.70E-04	EPA9TAP
Bis(2-ethylhexyl) phthalate	4.80E-03	EPA9TAP
Bis(chloromethyl) ether	5.20E-08	EPA9TAP
Boron	7.50E-01	NMED
Bromobenzene	2.00E-02	EPA9TAP
Bromodichloromethane	1.80E-04	EPA9TAP
Bromomethane	8.70E-03	EPA9TAP
1,3-Butadiene	1.10E-05	EPA9TAP
2-Butanone (MEK)	1.90E+00	EPA9TAP
tert-Butyl methyl ether (mtbe)	1.30E-02	EPA9TAP
n-Butylbenzene	2.40E-01	EPA9TAP
sec-Butylbenzene	2.40E-01	EPA9TAP
tert-Butylbenzene	2.40E-01	EPA9TAP
Cadmium	5.00E-03	MCL
Carbon disulfide	1.00E+00	EPA9TAP
Carbon tetrachloride	5.00E-03	MCL
Chlordane	2.00E-03	MCL
2-Chloroacetophenone	5.20E-05	EPA9TAP
2-Chloro-1,3-butadiene	1.40E-02	EPA9TAP
1-Chloro-1,1-difluoroethane	8.70E+01	EPA9TAP
Chlorobenzene	1.00E-01	MCL
1-Chlorobutane	2.40E+00	EPA9TAP

Table 5B
NEW MEXICO GROUNDWATER STANDARDS

Chemical	NM standard (GWs) (mg/L)	Source for selection of standard*
Chlorodifluoromethane	8.50E+01	EPA9TAP
Chloroethane	4.60E-03	EPA9TAP
Chloroform	1.00E-01	NMED
Chloromethane	1.50E-03	EPA9TAP
β-Chloronaphthalene	4.90E-01	EPA9TAP
o-Chloronitrobenzene	1.50E-04	EPA9TAP
p-Chloronitrobenzene	1.20E-03	EPA9TAP
2-Chlorophenol	3.00E-02	EPA9TAP
2-Chloropropane	1.70E-01	EPA9TAP
o-Chlorotoluene	1.20E-01	EPA9TAP
Chromium III	5.50E+00	EPA9TAP
Chromium VII	5.00E-02	NMED
Chrysene	9.20E-03	EPA9TAP
Cobalt	5.00E-02	NMED
Copper	1.00E+00	NMED
Crotonaldehyde	5.90E-06	EPA9TAP
Cumene (isopropylbenzene)	6.60E-01	EPA9TAP
Cyanide	2.00E-01	NMED/MCL
Cyanogen	2.40E-01	EPA9TAP
Cyanogen bromide	5.50E-01	EPA9TAP
Cyanogen chloride	3.00E-01	EPA9TAP
DDD	2.80E-04	EPA9TAP
DDE	2.00E-04	EPA9TAP
DDT	2.00E-04	EPA9TAP
Dibenz(a,h)anthracene	9.20E-06	EPA9TAP
Dibenzofuran	2.40E-02	EPA9TAP
1,2-Dibromo-3-chloropropane	4.80E-05	EPA9TAP
Dibromochloromethane	1.30E-04	EPA9TAP
1,2-Dibromoethane	1.00E-04	NMED
1,4-Dichloro-2-butene	1.20E-06	EPA9TAP
1,2-Dichlorobenzene	6.00E-01	MCL
1,3-Dichlorobenzene	5.50E-03	EPA9TAP
1,4-Dichlorobenzene	7.50E-02	MCL
3,3-Dichlorobenzidine	1.50E-04	EPA9TAP
Dichlorodifluoromethane	3.90E-01	EPA9TAP
1,1-Dichloroethane	2.50E-02	NMED
1,2-Dichloroethane	5.00E-03	MCL
cis-1,2-Dichloroethene	7.00E-02	MCL
trans-1,2-Dichloroethene	1.00E-01	MCL
1,1-Dichloroethene	5.00E-03	NMED
2,4-Dinitrophenol	7.30E-02	EPA9TAP
1,2-Dichloropropane	1.60E-04	EPA9TAP
1,3-Dichloropropene	4.00E-04	EPA9TAP
Dicyclopentadiene	4.20E-04	EPA9TAP
Dieldrin	4.20E-06	EPA9TAP

Table 5B
NEW MEXICO GROUNDWATER STANDARDS

Chemical	NM standard (GWs) (mg/L)	Source for selection of standard*
Diethyl phthalate	2.90E+01	EPA9TAP
Dimethyl phthalate	3.65E+02	EPA9TAP
Di-n-butyl phthalate	3.60E+00	EPA9TAP
2,4-Dichlorophenol	1.10E-01	EPA9TAP
2,4-Dinitrotoluene	7.30E-02	MCL/EPA9TAP
1,2-Diphenylhydrazine	8.40E-05	EPA9TAP
Endosulfan	2.20E-01	EPA9TAP
Endrin	2.00E-03	MCL
Epichlorohydrin	2.00E-03	EPA9TAP
Ethyl acetate	5.50E+00	EPA9TAP
Ethyl acrylate	2.30E-04	EPA9TAP
Ethyl chloride	4.60E-03	EPA9TAP
Ethyl ether	1.20E+00	EPA9TAP
Ethyl methacrylate	5.50E-01	EPA9TAP
Ethylbenzene	7.00E-01	MCL
Ethylene oxide	2.40E-05	EPA9TAP
Fluoranthene	1.50E+00	EPA9TAP
Fluorene	2.40E-01	EPA9TAP
Furan	6.10E-03	EPA9TAP
Heptachlor	1.50E-05	EPA9TAP
Hexachlorobenzene	1.00E-03	MCL
Hexachloro-1,3-butadiene	1.00E-03	MCLG
Hexachlorocyclopentadiene	5.00E-02	MCL
Hexachloroethane	4.80E-03	EPA9TAP
n-Hexane	3.50E-01	EPA9TAP
HMX		
Hydrogen cyanide	6.20E-03	EPA9TAP
Indeno(1,2,3-c,d)pyrene	9.20E-05	EPA9TAP
Iron	1.00E+00	NMED
Isobutanol	1.80E+00	EPA9TAP
Isophorone	7.10E-02	EPA9TAP
Lead	5.00E-02	NMED
Lead (tetraethyl-)	3.60E-06	EPA9TAP
Maleic hydrazide	3.00E+00	EPA9TAP
Manganese	2.00E-01	NMED
Mercury (elemental)	2.00E-03	MCL
mercury (methyl)	3.60E-03	EPA9TAP
Methacrylonitrile	1.00E-03	EPA9TAP
Methomyl	1.50E-01	EPA9TAP
Methyl acetate	6.01E+02	EPA9TAP
Methyl acrylate	1.80E-01	EPA9TAP
Methyl isobutyl ketone	1.60E-01	EPA9TAP
Methyl methacrylate	1.40E+00	EPA9TAP
Methyl styrene (alpha)	4.30E-01	EPA9TAP
Methyl styrene (mixture)	6.00E-02	EPA9TAP

Table 5B
NEW MEXICO GROUNDWATER STANDARDS

Chemical	NM standard (GWs) (mg/L)	Source for selection of standard*
Methylcyclohexane	5.20E+00	EPA9TAP
Methylene bromide	6.10E-02	EPA9TAP
Methylene chloride	4.30E-03	EPA9TAP
Molybdenum	1.00E+00	NMED
Naphthalene	6.20E-03	EPA9TAP
Nickel	2.00E-01	NMED
Nitrate	1.00E+01	NMED/MCL
Nitrite	1.00E+00	MCL/EPA9TAP
Nitrobenzene	3.40E-03	EPA9TAP
Nitrogylcerin	4.80E-03	EPA9TAP
N-Nitrosodiethylamine	4.50E-07	EPA9TAP
N-nitrosodimethylamine	1.30E-06	EPA9TAP
N-nitrosodi-*n*-butylamine	2.00E-06	EPA9TAP
N-nitrosodiphenylamine	1.40E-02	EPA9TAP
N-Nitrosopyrrolidine	3.20E-05	EPA9TAP
m-Nitrotoluene	6.10E-02	EPA9TAP
o-Nitrotoluene	6.10E-02	EPA9TAP
p-Nitrotoluene	6.10E-02	EPA9TAP
Pentachlorobenzene	2.90E-02	EPA9TAP
Pentachlorophenol	1.00E-03	MCL
Phenanthrene	1.80E-01	Surrogate (Pyrene)
Phenol	5.00E-03	NMED
Polychlorinatedbiphenyls (PC	5.00E-04	MCL
Aroclor 1016	5.00E-04	MCL
Aroclor 1221	5.00E-04	MCL
Aroclor 1232	5.00E-04	MCL
Aroclor 1242	5.00E-04	MCL
Aroclor 1248	5.00E-04	MCL
Aroclor 1254	5.00E-04	MCL
Aroclor 1260	5.00E-04	MCL
n-Propylbenzene	2.40E-01	EPA9TAP
Propylene oxide	2.20E-04	EPA9TAP
Pyrene	1.80E-01	EPA9TAP
RDX	6.10E-04	EPA9TAP
Selenium	5.00E-02	NMED/MCL
Sliver	5.00E-02	NMED
Strontium	2.20E+00	EPA9TAP
Styrene	1.00E-01	MCL
1,2,4,5-Tetrachlorobenzene	1.10E-02	EPA9TAP
1,1,1,2-Tetrachloroethane	4.30E-04	EPA9TAP
1,1,2,2-Tetrachloroethane	5.50E-05	EPA9TAP
Tetrachloroethene	6.60E-04	EPA9TAP
Thallium	2.00E-03	MCL
Toluene	7.20E-01	EPA9TAP
Toxaphene	6.10E-05	EPA9TAP

Table 5B
NEW MEXICO GROUNDWATER STANDARDS

Chemical	NM standard (GWs) (mg/L)	Source for selection of standard*
Tribromomethane	1.00E-01	MCL
1,1,2-Trichloro-1,2,2-trifluoroethane		
1,2,4-Trichlorobenzene	7.00E-02	MCL
1,1,1-Trichloroethane	6.00E-02	NMED
1,1,2-Trichloroethane	5.00E-03	MCL
Trichloroethene	5.00E-03	MCL
Trichlorofluoromethane	1.30E+00	EPA9TAP
2,4,5-Trichlorophenol	3.60E+00	EPA9TAP
2,4,6-Trichlorophenol	3.60E-03	EPA9TAP
1,1,2-Trichloropropane	3.00E-02	EPA9TAP
1,2,3-Trichloropropane	5.60E-06	EPA9TAP
1,2,3-Trichloropropene	3.00E-02	EPA9TAP
Triethylamine	1.20E-02	EPA9TAP
1,2,4-Trimethylbenzene	1.20E-02	EPA9TAP
1,3,5-Trimethylbenzene	1.20E-02	EPA9TAP
2,4,6-Trinitrotoluene	2.20E-03	EPA9TAP
Vanadium	2.60E-01	EPA9TAP
Vinyl acetate	4.10E-01	EPA9TAP
Vinyl bromide	1.00E-04	EPA9TAP
Vinyl chloride (child)	1.00E-03	NMED
Vinyl chloride (adult)	1.00E-03	NMED
m-Xylene	1.00E+01	MCL
o-Xylene	1.00E+01	MCL
p-Xylene	1.00E+01	MCL
Xylenes	6.20E-01	NMED
Zinc	1.00E+01	NMED

*MCL - Federal/EPA Maximum Contaminant Level (MCL)
as posted September 2003

*NMED- New Mexico Water Quality Commission Standards, 2002, 20.6.2NMAC - lesser of domestic water supply, irrigation or human health.

*EPA9TAP - USEPA Region 9 PRGs for tapwater-the lower of either integrated inhalation/ingestion cancer risk of 1 E-06 or of integrated inhalation/ ingestion for chronic (Health quotient =1)

TABLE 6

BACKGROUND BORINGS RESULTS

6A Material Testing Results on Background Boring Samples

6B Occurrence Summary Data

6C Individual Sample Data

Table 6A
Material Testing Results on Background Boring Samples

Depth	Parameter	Background Boring ID										Average by Depth
		BSB-1	BSB-2	BSB-3	BSB-4	BSB-5	BSB-6	BSB-7	BSB-8	BSB-9	BSB-10	
0-2.5 feet	Soil pH	8.02	8.44	8.35	8.08	7.43	7.87	7.73	7.82	7.65	7.66	7.9
	% Organic Carbon	4.35	8.8	2.2	2.9	3.9	2.5	4.1	4.4	4.4	5.8	4.3
	% Sand (0.075-5mm)	31.9	13.9	45.3	2.7	19.3	7.5	25.4	18	5.3	10.2	18.0
	% Silt (0.005-0.075 mm)	42.1	84.3	42.7	86.3	56.5	89.5	43.5	49.5	44.3	43.6	58.2
	% Clay (<0.005 mm)	26	2	12	11	24.1	3	18.4	32.6	50.4	46.3	22.6
5-8 feet	Soil pH	7.48	8.11	8.59	7.8	7.96	8.2	8.12	8.02	7.77	7.88	8.0
	% Organic Carbon	5.65	7.4	6.7	3.4	3.9	1.1	4.1	5.7	3.5	2.85	4.4
	% Sand (0.075-5mm)	21.3	19.3	19.5	19.8	6.5	86.8	23	26.6	20.9	24.7	26.8
	% Silt (0.005-0.075 mm)	51.2	75.3	77.3	75	54.7	10.2	73	43.1	41.2	31.1	53.2
	% Clay (<0.005 mm)	27.5	5.3	3.2	5.3	38.9	3	3.2	30.3	37.9	44.2	19.9
9-12.5 feet	Soil pH	8.05						8.06			7.49	7.9
	% Organic Carbon	3.95						3			3.65	3.5
	% Sand (0.075-5mm)	19.2						21.7			19.9	20.3
	% Silt (0.005-0.075 mm)	51.6						44			34.2	43.3
	% Clay (<0.005 mm)	29.2						34.3			42.8	35.4
13-15 feet	Soil pH	8.22										8.2
	% Organic Carbon	1.6										1.6
	% Sand (0.075-5mm)	7.1										7.1
	% Silt (0.005-0.075 mm)	41.1										41.1
	% Clay (<0.005 mm)	51.7										51.7
Average by Boring	Soil pH	7.9	8.3	8.5	7.9	7.7	8.0	8.0	7.9	7.7	7.7	8.0
	% Organic Carbon	3.9	8.1	4.5	3.2	3.9	1.8	3.7	5.1	4.0	4.1	3.5
	% Sand (0.075-5mm)	19.9	16.6	32.4	11.3	12.9	47.2	23.4	22.3	13.1	18.3	18.0
	% Silt (0.005-0.075 mm)	46.5	79.8	60.0	80.7	55.6	49.9	53.5	46.3	42.8	36.3	49.0
	% Clay (<0.005 mm)	33.6	3.65	7.6	8.2	31.5	3.0	18.6	31.5	44.2	44.4	32.4

mm Millimeter.

Table-6B. Occurrence Summary for Background Soil Borings, Total Soil Data, Navajo Refinery, Artesia, New Mexico.

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Critical SSL mg/kg	SSL Source
Metals (mg/kg)										
Arsenic	8 / 24	33%	0.261 - 0.56	0.87 - 4.5	0.261 - 4.5	2.3	0.9	1.30E+00	1.77E+01	NMED SSL
Barium	23 / 24	96%	0.068 - 0.07	20 - 213	0.068 - 213	130	130	1.50E+02	8.23E+02	NMED-DAF20
Cadmium	6 / 24	25%	0.116 - 0.25	0.42 - 0.874	0.116 - 0.874	0.58	0.21	2.90E-01	7.52E+00	NMED-DAF20
Chromium	24 / 24	100%	NA	3.44 - [illegible]	3.44 - [illegible]	12	12	1.40E+01	1.92E+01	NMED-DAF20
(as Chromium VI)								2.00E+00	1.92E+01	NMED-DAF20
Lead[(a)]	23 / 23	100%	NA	2.39 - 22.9	2.39 - 22.9	9.1	9.1	1.10E+01	7.50E+02	NMED SSL
Selenium	19 / 24	79%	0.445 - 0.61	1.45 - 5.1	0.445 - 5.1	3.1	2.5	3.10E+00	5.17E+00	NMED-DAF20
Silver	4 / 24	17%	0.046 - 0.1	0.9 - 1.8	0.046 - 1.8	1.3	0.24	4.10E-01	8.47E+00	NMED-DAF20
Mercury	1 / 24	4%	0.0109 - 0.02	0.05	0.0109 - 0.05	0.05	0.009	1.20E-02	3.41E+02	NMED SSL

(a) Lead value of 108 mg/kg for BSB-7 (0-2.5 feet below ground surface) has been excluded from the statistics in this table.

	Shading indicates that the value exceeds the applicable Soil Screening Level.
Average Detect	Arithmetic average of the detected samples only.
DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
Mean	Arithmetic average of the total number of samples, using proxy concentrations (1/2 the SQL), for non-detects.
NA	Not applicable.
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10^{-5} risk (2003-2004).
SQL	Practical sample quantitation limits for the non-detects.
UCL	95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution (1/2 SQL used for non-detects).

Table-6B. Occurrence Summary for Background Soil Borings, Total Soil Data, Navajo Refinery, Artesia, New Mexico.

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Critical SSL mg/kg	SSL Source
Metals (mg/kg)										
Arsenic	8 / 24	33%	0.261 - 0.56	0.87 - 4.5	0.261 - 4.5	2.3	0.9	1.30E+00	1.77E+01	NMED SSL
Barium	23 / 24	96%	0.068 - 0.07	20 - 213	0.068 - 213	130	130	1.50E+02	8.23E+02	NMED-DAF20
Cadmium	6 / 24	25%	0.116 - 0.25	0.42 - 0.874	0.116 - 0.874	0.58	0.21	2.90E-01	7.52E+00	NMED-DAF20
Chromium	24 / 24	100%	NA	3.44 - 21.7	3.44 - 21.7	12	12	1.40E+01	1.92E+01	NMED-DAF20
(as Chromium VI)								2.00E+00	1.92E+01	NMED-DAF20
Lead[a]	23 / 23	100%	NA	2.39 - 22.9	2.39 - 22.9	9.1	9.1	1.10E+01	7.50E+02	NMED SSL
Selenium	19 / 24	79%	0.445 - 0.61	1.45 - 5.1	0.445 - 5.1	3.1	2.5	3.10E+00	5.17E+00	NMED-DAF20
Silver	4 / 24	17%	0.046 - 0.1	0.9 - 1.8	0.046 - 1.8	1.3	0.24	4.10E-01	8.47E+00	NMED-DAF20
Mercury	1 / 24	4%	0.0109 - 0.02	0.05	0.0109 - 0.05	0.05	0.009	1.20E-02	3.41E+02	NMED SSL

[a] Lead value of 108 mg/kg for BSB-7 (0-2.5 feet below ground surface) has been excluded from the statistics in this table.

	Shading indicates that the value exceeds the applicable Soil Screening Level.
Average Detect	Arithmetic average of the detected samples only.
DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
Mean	Arithmetic average of the total number of samples, using proxy concentrations (1/2 the SQL), for non-detects.
NA	Not applicable.
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10^{-5} risk (2003-2004).
SQL	Practical sample quantitation limits for the non-detects.
UCL	95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution (1/2 SQL used for non-detects).

Table-6C. Background Soil Borings, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	BSB-1											
			Date	6/15/2004			6/15/2004			6/15/2004			6/15/2004		
			Depth	(0-1')			(5-7')			(9-11')			(13-15')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
Metals (mg/kg)															
Arsenic	1.77E+01	NMED SSL		0.483	U	0.483	0.559	U	0.559	0.425	U	0.425	0.305	U	0.305
Barium	8.23E+02	NMED-DAF20		87		0.107	123		0.124	123		0.0945	0.0677	U	0.0677
Cadmium	7.52E+00	NMED-DAF20		0.215	U	0.215	0.248	U	0.248	0.19	U	0.19	0.135	U	0.135
Chromium	1.92E+01	NMED-DAF20		8.52		0.129	20.5		0.15	10.2		0.113	5.23		0.0813
Lead	7.50E+02	NMED SSL		8.15		0.236	6.59		0.274	4.14		0.208	3.08		0.148
Selenium	5.17E+00	NMED-DAF20		4.5		0.677	3.88		0.783	2.64		0.595	4.02		0.426
Silver	8.47E+00	NMED-DAF20		0.0859	U	0.0859	0.0994	U	0.0994	0.0756	U	0.0756	0.0542	U	0.0542
Mercury	3.41E+02	NMED SSL		0.0148	U	0.0148	0.0152	U	0.0152	0.0128	U	0.0128	0.0128	U	0.0128

Analyte	Critical SSL	SSL Source	ID #	BSB-2						BSB-3					
			Date	6/22/2004			6/22/2004			6/22/2004			6/22/2004		
			Depth	(0-2.5')			(5-7.5')			(0-2.5')			(5-7.5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
Metals (mg/kg)															
Arsenic	1.77E+01	NMED SSL		0.49	U	0.49	0.393	U	0.393	0.315	U	0.315	1.59		0.441
Barium	8.23E+02	NMED-DAF20		136		0.109	122		0.0873	163		0.0702	206		0.098
Cadmium	7.52E+00	NMED-DAF20		0.218	U	0.218	0.175	U	0.175	0.141	U	0.141	0.196	U	0.196
Chromium	1.92E+01	NMED-DAF20		14.3		0.13	12.6		0.105	7.52		0.0842	13.2		0.118
Lead	7.50E+02	NMED SSL		9.84		0.239	7.85		0.192	6.19		0.155	8.37		0.215
Selenium	5.17E+00	NMED-DAF20		4.06		0.686	3.84		0.551	1.8		0.442	3.26		0.616
Silver	8.47E+00	NMED-DAF20		0.087	U	0.087	0.0699	U	0.0699	0.0562	U	0.0562	0.0784	U	0.0784
Mercury	3.41E+02	NMED SSL		0.0166	U	0.0166	0.0179	U	0.0179	0.014	U	0.014	0.0143	U	0.0143

Qualifier Key
U = Not detected: analysis for the analyte was performed ,
but the analyte was not detected above the level of the SQL.
J = Estimated: The analyte was detected and identified.
The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.

Table-6C. Background Soil Borings, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	BSB-4						BSB-5					
			Date	6/23/2004			6/23/2004			6/23/2004			6/23/2004		
			Depth	(0-2.5')			(5-7.5')			(0-2.5')			(5-7.5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
Metals (mg/kg)															
Arsenic	1.77E+01	NMED SSL		0.359	U	0.359	0.418	U	0.418	0.868		0.292	1.32		0.409
Barium	8.23E+02	NMED-DAF20		147		0.0798	106		0.0929	190		0.0649	208		0.0907
Cadmium	7.52E+00	NMED-DAF20		0.159	U	0.159	0.186	U	0.186	0.13	U	0.13	0.181	U	0.181
Chromium	1.92E+01	NMED-DAF20		10.4		0.0957	7.74		0.111	10.7		0.0779	13.1		0.109
Lead	7.50E+02	NMED SSL		6.71		0.176	4.81		0.204	8.06		0.142	9.24		0.2
Selenium	5.17E+00	NMED-DAF20		2.71		0.503	2.72		0.586	1.69		0.409	3.85		0.572
Silver	8.47E+00	NMED-DAF20		0.0639	U	0.0639	0.0743	U	0.0743	0.0519	U	0.0519	0.0726	U	0.0726
Mercury	3.41E+02	NMED SSL		0.0157	U	0.0157	0.0156	U	0.0156	0.0138	U	0.0138	0.0148	U	0.0148

Analyte	Critical SSL	SSL Source	ID #	BSB-6					
			Date	6/22/2004			6/22/2004		
			Depth	(0-2.5')			(5-7.5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL
Metals (mg/kg)									
Arsenic	1.77E+01	NMED SSL		0.328	U	0.328	0.261	U	0.261
Barium	8.23E+02	NMED-DAF20		181		0.0729	104		0.058
Cadmium	7.52E+00	NMED-DAF20		0.146	U	0.146	0.116	U	0.116
Chromium	1.92E+01	NMED-DAF20		9.09		0.0875	3.44		0.0697
Lead	7.50E+02	NMED SSL		6.68		0.16	2.39		0.128
Selenium	5.17E+00	NMED-DAF20		2.28		0.46	1.45		0.366
Silver	8.47E+00	NMED-DAF20		0.0584	U	0.0584	0.0464	U	0.0464
Mercury	3.41E+02	NMED SSL		0.0143	U	0.0143	0.0147	U	0.0147

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.

Table-6C. Background Soil Borings, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	BSB-7								
			Date	6/30/2004			6/30/2004			6/30/2004		
			Depth	(0-2.5')			(5-7.5')			(10-12.5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
Metals (mg/kg)												
Arsenic	1.77E+01	NMED SSL		0.317	U	0.317	0.345	U	0.345	0.437	U	0.437
Barium	8.23E+02	NMED-DAF20		154		0.0706	137		0.0768	19.6		0.0973
Cadmium	7.52E+00	NMED-DAF20		0.874		0.141	0.593		0.153	0.195	U	0.195
Chromium	1.92E+01	NMED-DAF20		11.2		0.0847	7.75		0.0921	10.9		0.117
Lead	7.50E+02	NMED SSL		108		0.156	6.81		0.169	5.7		0.214
Selenium	5.17E+00	NMED-DAF20		0.445	U	0.445	0.483	U	0.483	0.613	U	0.613
Silver	8.47E+00	NMED-DAF20		1.32		0.0565	1.79		0.0613	0.0778	U	0.0778
Mercury	3.41E+02	NMED SSL		0.0502		0.0139	0.0109	U	0.0109	0.0163	U	0.0163

Analyte	Critical SSL	SSL Source	ID #	BSB-8					
			Date	6/30/2004			6/30/2004		
			Depth	(0-2.5')			(5-7.5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL
Metals (mg/kg)									
Arsenic	1.77E+01	NMED SSL		1.3		0.333	2.02		0.383
Barium	8.23E+02	NMED-DAF20		140		0.0741	65		0.0851
Cadmium	7.52E+00	NMED-DAF20		0.666		0.148	0.17	U	0.17
Chromium	1.92E+01	NMED-DAF20		14.4		0.0889	10.8		0.102
Lead	7.50E+02	NMED SSL		22.9		0.163	7.85		0.187
Selenium	5.17E+00	NMED-DAF20		0.467	U	0.467	0.536	U	0.536
Silver	8.47E+00	NMED-DAF20		1.04		0.0592	0.9		0.068
Mercury	3.41E+02	NMED SSL		0.0136	U	0.0136	0.0165	U	0.0165

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.

Table-6C. Background Soil Borings, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	BSB-9					
			Date	7/16/2004			7/16/2004		
			Depth	(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL
Metals (mg/kg)									
Arsenic	1.77E+01	NMED SSL		4.52		0.394	4.24		0.314
Barium	8.23E+02	NMED-DAF20		155		0.0875	213		0.0698
Cadmium	7.52E+00	NMED-DAF20		0.457		0.175	0.448		0.139
Chromium	1.92E+01	NMED-DAF20		20.5		0.105	21.7		0.0838
Lead	7.50E+02	NMED SSL		19.7		0.193	15.1		0.153
Selenium	5.17E+00	NMED-DAF20		3.01		0.551	2.68		0.44
Silver	8.47E+00	NMED-DAF20		0.07	U	0.07	0.0558	U	0.0558
Mercury	3.41E+02	NMED SSL		0.0182	U	0.0182	0.0156	U	0.0156

Analyte	Critical SSL	SSL Source	ID #	BSB-10								
			Date	7/16/2004			7/16/2004			7/16/2004		
			Depth	(0-2.5')			(5-7.5')			(10-12.5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
Metals (mg/kg)												
Arsenic	1.77E+01	NMED SSL		2.57		0.369	0.272	U	0.272	0.337	U	0.337
Barium	8.23E+02	NMED-DAF20		153		0.0821	87.2		0.0605	29.7		0.0751
Cadmium	7.52E+00	NMED-DAF20		0.416		0.164	0.12	U	0.12	0.15	U	0.15
Chromium	1.92E+01	NMED-DAF20		20.8		0.0985	9.24		0.0725	14.6		0.0901
Lead	7.50E+02	NMED SSL		22.6		0.18	6.17		0.133	10.4		0.165
Selenium	5.17E+00	NMED-DAF20		5.06		0.517	2.42		0.381	3.67		0.473
Silver	8.47E+00	NMED-DAF20		0.0656	U	0.0656	0.0484	U	0.0484	0.0601	U	0.0601
Mercury	3.41E+02	NMED SSL		0.0148	U	0.0148	0.0164	U	0.0164	0.0185	U	0.0185

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.

TABLE 7

THREE-MILE DITCH ANALYTICAL RESULTS

7A Boring Soils Occurrence Summary

7B Boring Groundwater Occurrence Summary

7C Monitor Wells Groundwater Occurrence Summary

7D Boring Soils Sample Data

7E Boring Groundwater Sample Data

7F Monitor Well Groundwater Sample Data

Table 7A. Occurrence Summary for Three Mile Ditch, Total Soil Data, Navajo Refinery, Artesia, New Mexico.

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Critical SSL mg/kg	SSL Source
TPH - Diesel Range Organics (C10-C28)	65 / 101	64%	34.4 - 54.8	122 - 18900	34.4 - 18900	2200	1400	1.90E+03	2.00E+03	NMED SSL
Volatile Organic Compounds (mg/kg)										
1,1,2,2-Tetrachloroethane	1 / 101	1%	0.000412 - 0.0437	0.00133	0.000412 - 0.0437	0.0013	0.0005	8.70E-04	3.40E-04	NMED-DAF20
1,2-Dichloroethane (Ethylene dichloride)	12 / 101	12%	0.000327 - 0.0143	0.00142 - 0.00334	0.000327 - 0.0143	0.0022	0.0005	7.00E-04	1.98E-02	NMED-DAF20
2-Butanone (Methyl ethyl ketone)	4 / 101	4%	0.00281 - 0.0685	0.00839 - 0.01510	0.00281 - 0.0685	0.011	0.0027	3.30E-03	6.63E+00	NMED-DAF20
4-Methyl-2-pentanone (MIBK)	1 / 101	1%	0.000898 - 0.0175	0.00782	0.000898 - 0.0175	0.0078	0.0008	9.80E-04	1.16E+00	NMED-DAF20
Acetone (2-Propanone, Dimethyl ketone)	22 / 101	22%	0.00291 - 0.441	0.00987 - 0.82800	0.00291 - 0.828	0.19	0.045	6.90E-02	2.06E+00	NMED-DAF20
Benzene	7 / 101	7%	0.000325 - 0.0105	0.00119 - 0.15400	0.000325 - 0.154	0.06	0.004	8.00E-03	2.83E-02	NMED-DAF20
Carbon disulfide	15 / 101	15%	0.000401 - 0.0221	0.00139 - 0.21600	0.000401 - 0.216	0.049	0.008	1.30E-02	7.52E+00	NMED-DAF20
Ethylbenzene	14 / 101	14%	0.000271 - 0.00042	0.00242 - 3.51000	0.000271 - 3.51	0.49	0.07	1.30E-01	1.05E+01	NMED-DAF20
Isopropylbenzene (Cumene)	12 / 101	12%	0.000348 - 0.000555	0.00223 - 6.63000	0.000348 - 6.63	1	0.12	2.40E-01	7.29E+00	NMED-DAF20
m,p-Xylene	13 / 101	13%	0.000476 - 0.00264	0.00227 - 8.43000	0.000476 - 8.43	1.8	0.23	4.40E-01	8.00E+01	NMED SSL
Methylene chloride (Dichloromethane)	32 / 101	32%	0.000465 - 0.111	0.00115 - 0.00911	0.000465 - 0.111	0.0024	0.0015	2.50E-03	1.69E-02	NMED-DAF20
o-Xylene	14 / 101	14%	0.00026 - 0.000403	0.00184 - 2.75000	0.00026 - 2.75	0.64	0.09	1.60E-01	9.86E+01	NMED SSL
Toluene	14 / 101	14%	0.000238 - 0.00037	0.00115 - 1.34000	0.000238 - 1.34	0.26	0.036	6.70E-02	6.80E+00	NMED-DAF20
Semi Volatile Organic Compounds (mg/kg)										
2-Methylnaphthalene	2 / 19	11%	0.57 - 3.68	1.79 - 4.93	0.57 - 4.93	3.4	1	1.60E+00	-	-
Acenaphthene	1 / 19	5%	0.264 - 2.71	0.58	0.264 - 2.71	0.58	0.6	7.70E-01	7.98E+01	NMED-DAF20
Anthracene	7 / 19	37%	0.273 - 2.71	0.33 - 3.94	0.273 - 3.94	1.7	1.1	1.50E+00	1.60E+03	NMED-DAF20
Benzo(a)anthracene	4 / 19	21%	0.256 - 2.29	0.38 - 1.06	0.256 - 2.29	0.69	0.6	7.70E-01	1.10E+00	NMED-DAF20
Benzo(a)pyrene	1 / 19	5%	0.276 - 2.71	0.45	0.276 - 2.71	0.45	0.6	7.80E-01	2.34E+00	NMED SSL
Carbazole	1 / 19	5%	0.449 - 2.9	2.37	0.449 - 2.9	2.4	0.9	1.10E+00	6.0E+00	Region 6-DAF20
Chrysene	4 / 19	21%	0.311 - 2.37	0.58 - 1.60	0.311 - 2.37	1	1	9.30E-01	1.10E+02	NMED-DAF20
Dibenzofuran	2 / 19	11%	0.267 - 2.71	2.24 - 4.31	0.267 - 4.31	3.3	0.9	1.30E+00	5.70E+00	NMED-DAF20
Fluoranthene	4 / 19	21%	0.386 - 2.71	0.61 - 2.20	0.386 - 2.71	1.2	0.9	1.10E+00	4.82E+03	NMED-DAF20
Fluorene	4 / 19	21%	0.24 - 2.71	1.45 - 5.95	0.24 - 5.95	3.2	1.2	1.70E+00	1.00E+02	NMED-DAF20
Naphthalene	1 / 19	5%	0.899 - 5.81	2.53	0.899 - 5.8	2.5	1.4	1.70E+00	3.93E-01	NMED-DAF20
Phenanthrene	3 / 19	16%	0.262 - 2.71	1.64 - 35.20	0.262 - 35	15	3	6.20E+00	7.62E+01	NMED-DAF20
Pyrene	5 / 19	26%	0.332 - 2.58	0.80 - 7.64	0.332 - 7.6	4.2	1.7	2.50E+00	5.68E+02	NMED-DAF20
Metals (mg/kg)										
Arsenic	73 / 101	72%	0.275 - 0.546	0.973 - 71.9	0.275 - 71.9	8	5.6	7.10E+00	1.77E+01	NMED SSL
Barium	99 / 101	98%	0.0668 - 0.0749	22.600 - 475.0	0.0668 - 475	150	140	1.60E+02	8.23E+02	NMED-DAF20
Cadmium	57 / 101	56%	0.119 - 0.23	0.402 - 1.9	0.119 - 1.86	0.74	0.5	5.20E-01	7.52E+00	NMED-DAF20
Chromium	101 / 101	100%	NA	4.340 - 1580.0	4.34 - 1580	87	87	1.20E+02	1.92E+01	NMED-DAF20
(as ChromiumVI)						12	12	1.71E+01	1.92E+01	NMED-DAF20
Lead	101 / 101	100%	NA	2.920 - 15200.0	2.92 - 15200	420	420	7.10E+02	7.50E+02	NMED-DAF20
Selenium	79 / 101	78%	0.385 - 0.706	0.924 - 28.3	0.385 - 28.3	4.0	3.2	3.70E+00	5.17E+00	NMED-DAF20
Silver	14 / 101	14%	0.0476 - 0.097	0.683 - 4.4	0.0476 - 4.35	1.6	0.24	3.50E-01	8.47E+00	NMED-DAF20
Mercury	31 / 101	31%	0.0128 - 0.0237	0.046 - 4.8	0.0128 - 4.77	0.54	0.17	2.60E-01	3.41E+02	NMED SSL

Shading indicates that the SQL exceeds the applicable Soil Screening Level.

Shading indicates that the value exceeds the applicable Soil Screening Level.

Average Detect — Arithmetic average of the detected samples only.

DAF-20 — NMED Soil screening Level for Soil-to-Groundwater (2004).

Mean — Arithmetic average of the total number of samples, using proxy concentrations (1/2 the SQL), for non-detects.

ND — Not detected.

NA — Not applicable.

NMED SSL — New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).

Region 6 — EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10^{-5} risk (2003-2004).

SQL — Practical sample quantitation limits for the non-detects.

TPH — Total petroleum hydrocarbons

UCL — 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution (1/2 SQL used for non-detects).

\- — No SSL available.

Table 7B

Three-Mile Ditch

Summary of Critical Soil Screening Levels and Groundwater Standard Exceedances

	Boring Soils											Boring Groundwater		
	DRO	VOCs (µg/kg)			SVOCs (µg/kg)			Metals (mg/kg)				VOC (µg/L)	SVOC (µg/L)	
Screening Level	(mg/kg)	1,1,2,2-Tetrachloroethane	Benzene	Methylene Chloride	Naphthalene	Benzo(a)pyrene	Benzo(a)anthracene	Arsenic	Chromium VI	Lead	Selenium	Benzene	Naphthalene	Other SVOCs
DAF-20 SSL	2000	0.34	28.3	16.9	393	6120	1100	58.3	19.2	900	5.1			
INDUSTRIAL SSL	2000	13,600	73,600	440,000	98,300	2,340	23,400	17.7	180	750	5,683			
NM GWPS												5.0	62	
SAMPLE ID														
TMD1 (0-1)	[296]								57.3	7850		72.7	21.9	
TMD1 (14-15)	[1040]	43.7(U)		111(U)						[6.1]				
TMD1 (20-22)	[38.3]	1.33(J)								[6.4]				
TMD3 (0-1)	3250				977(U)			29.4		[233]				
TMD7 (0-1)	4740				4540(U)				48.9	1130				
TMD8 (0-2.5)	[168]								49	[578]				
TMD8 (2.5-5)	[41.2]							25.3		[16.5]				
TMD9 (0-2.5)	[633]							17.9		[69]				
TMD10 (0-2.5)	5140				899(U)				32.7	[17.1]				
TMD11 (0-2.5)	5080				4980(U)				23.4	15200	5.22			
TMD12 (0-1)	[1570]								26.6	2590				
TMD12 (1-3)	[1880]									1350				
TMD12 (11-13)	[39.2]									[5.63]	7.71			
TMD13 (0-1)	[40.7]									1970				
TMD15 (0-2.5)	[1240]							18.3	63	2540	6.16			
TMD17 (0-2.5)	3220				1640(U)				33.4	[432]	7.14			
TMD17 (7-9)	2670		154		1160(U) 2530dup					[11.7]	5.8			
TMD18 (0-2.5)	6140				4890(U)					[37.7]				
TMD19 (0-2.5)	7430				5810(U)			71.9	225.7	[697]	28.3	75.4	17(U)	***
TMD19 (5-7)	5700				1090(U)					[10.2]				
TMD20 (0-2.5)	[1250]								24.1	[595]	8.27			
TMD24 (0-2.5)	[42.7]									1830				
TMD25	122											17.5		
TMD27 (0-2.5)	3430				1810(U)				24.4	[55.1]	9.69	43.8		
TMD29 (0-1)	3030				1910(U)				97.6	[295]	7.25			
TMD31 (0-2.5)	[713]								56.4	[293]	7.02			
TMD33 (0-1)	18900								98.7	[215]	9.01			
TMD33 (0-2.5)	[809]				2500(U)	2500(U)								
TMD35 (0-1)	17800								42	[100]	5.93			
TMD35 (0-2)	[1810]				2500(U)	2500(U)								
TMD36 (0-2.5)	2580								33.4	[118]	5.75	21.4		*
TMD36 (0-2.5)	[1920]				2500(U)	2500(U)								
TMD36 (10-12.5)	8480		112							[11.3]				
TMD37 (0-2.5)	[665]									[37.9]	6.2			
TMD37 (7.5-10)	2370				1020(U)					[7.44]				
TMD38 (0-2.5)	2650				2710(U)	2500(U)	2290(U)		35.9	[42.3]				**

Soil Screening Values (lowest or critical value is in bold)

DAF 20 SSL: The NMED Soil Screening Level for Soil-to-Groundwater

Industrial SSL: NMED Soil Screening Level for Industrial/Occupational Exposure (The value for a construction worker is provided for Chromium VI since it is lower)

NM GWPS: The New Mexico Groundwater Protection Standard (See Table 5A)

Red Shading indicates detected value exceeds SSL/WQS. Only the highest chromium value is shaded since it is likley actual chrome VI concentrations are less.

[ ] Values in brackets do not exceed SSL.

* Chyrsene was detected at 12.7 ug/L.

** Benzo(a)anthracene was detected at 0.564 ug/L.

*** Several PAHs were detected above groundwater standards; compounds and detected concentratations in ug/L include the following: benzo(a)anthracene (649) benzo(a)pyrene (4.98), chrysene (122), indeno(1,2,3-cd)pyrene (4.39), phenanthrene (384), pyrene (468), and benzo(ghi)perylene (36.5) .

Values in parentheses are the CSSL or Groundwater Standard.

Indicates values were not detected above the method detection limit.

VOC: Volatile organic compounds. SVOC: Semi-volatile organic compounds.

ug/kg: Micrograms per kilogram. mg/kg: Milligrams per kilogram. ug/L: Micrograms per liter.

Table 7C
Three Mile Ditch - DRO and Lead Concentration with Depth

(CSSL is in parenthesis)

Boring ID	0 - 2.5 feet		2.5 - 5 feet		5 - 10 feet		10 - 20 feet	
	DRO (2000 mg/kg)	Lead (750 mg/kg)	DRO (2000 mg/kg)	Lead (750 mg/kg)	DRO (2000 mg/kg)	Lead (750 mg/kg)	DRO (2000 mg/kg)	Lead (750 mg/kg)
TMD-1	296	7850			42.8	12.9	1040	6.1
							38.3	6.4
TMD-2	40	699					44.9	6.76
TMD-3	3250	233	225	45.8				
			319	28				
TMD-4	208	574					149	3.21
TMD-5	828	344	1780	31.6				
TMD-6	359	18.8	164	18.3				
TMD-7	4740	1130	335	137	37.7	5.09	46.9	9.23
TMD-8	168	578	41.2	16.5				
TMD-9	633	69	41.1	19.5				
TMD-10	5140	556	207	17.1	40.6	11.2	37.6	2.92
TMD-11	5080	15200	207	119				
TMD-12	1570	2590			131	16.8	39.2	5.63
	1880	1350						
TMD-13	40.7	1970	208	194	43.5	15.8	37.8	5.93
					43.3	12.5		
TMD-14	226	192			1900	14.4	42.6	6.71
TMD-15	1240	2540			40.6	10.8		
					39.1	4.85		
TMD-16	329	178	49.2	13.9				
TMD-17	3220	432			2670	11.7	54.8	22.4
					4060	8.57		
TMD-18	6140	37.7			352	11.2		
					722	8.36		
					467	7.22		
TMD-19	7430	697			5700	10.2	42	4.67
TMD-20	1250	595			42.2	14.4		
TMD-21	230	106			36.7	3.87		
TMD-22	35.6	56.5			40	8.38		
TMD-23	48.8	14.7			41.2	4.06		
					41.1	4.81		
TMD-24	427	1830			38.6	5.62		
TMD-25	122	8.79					34.4	3.48
TMD-26	257	135			42.2	9.51		
TMD-27	3430	55.1	286	10.4				
TMD-28	1840	108			149	6.17		
					41.8	7.16		
TMD-29	3030	295			189	5.31		
TMD-30	187	8.91			42.2	33.7		
TMD-31	713	293			42.4	13.1		
TMD-32	537	21.3	42.2	20				
TMD-33	18900	215			636	17		
	809				160	13.6		
TMD-34	671	18.3	249	19.5				
TMD-35	17800	100			356	16		
TMD-36	2580	118					8480	11.3
	1920						188	5.21
TMD-37	665	37.9			2370	7.44	42.7	3.62
					5190	6.14		
TMD-38	2650	42.3			226	17.3		
average	2461	1059	297	49	787	11	688	7
mean	839	216	169	31	164	10	88	6
max value	18900	15200	1780	194	5700	33.7	8480	22.4
min value	35.6	8.79	41.1	10.4	36.7	3.87	34.4	2.92
Exceedances (excluding Dupes)	13	8	0	0	3	0	1	0

shading indicates value exceeds SSL

Table 7D. Total Chromium Values as Chromium VI and Chromium III[1]
Three Mile Ditch, Navajo Refinery, Artesia, NM.

ID #	Depth		Total Chromium as Cr^{+6}[2] *(mg/kg)*	Chromium as $1Cr^{+6}$: $6Cr^{+3}$ Cr^{+6} *(mg/kg)*	Cr^{+3} *(mg/kg)*
		NMED SSL[3] :	1.92E+01	1.92E+01	1.00E+05
TMD-1	(0-1')		401	57.3	343.7
TMD-2	(0-1')		38	5.4	32.6
	(12-14')		20.4	2.9	17.5
TMD-3	(0-1')		48.6	6.9	41.7
TMD-4	(0-1')		59.8	8.5	51.3
TMD-5	(0-1')		56.4	8.1	48.3
	(3-5')		47.2	6.7	40.5
TMD-6	(0-1')		20.8	3.0	17.8
	(3-5')		23	3.3	19.7
TMD-7	(0-1')		342	48.9	293.1
	(3-5')		40.6	5.8	34.8
TMD-8	(0-2.5')		343	49.0	294.0
	(2.5-5')		20.7	3.0	17.7
TMD-9	(0-2.5')		25.2	3.6	21.6
TMD-10	(0-2.5')		229	32.7	196.3
	(2.5-5')		21.7	3.1	18.6
TMD-11	(0-2.5')		164	23.4	140.6
	(2.5-5')		19.8	2.8	17.0
TMD-12	(0-1')		186	26.6	159.4
	(1-3')		62	8.9	53.1
TMD-13	(0-1')		21.2	3.0	18.2
	(4-6')		22.5	3.2	19.3
TMD-14	(0-1')		20.9	3.0	17.9
	(13-15')		20.8	3.0	17.8
TMD-15	(0-2.5')		441	63.0	378.0
TMD-16	(0-1')		21.6	3.1	18.5
TMD-17	(0-2.5')		234	33.4	200.6
TMD-18	(0-2.5')		102	14.6	87.4
TMD-19	(0-2.5')		1580	225.7	1354.3
TMD-20	(0-2.5')		169	24.1	144.9
	(5-7')		20.2	2.9	17.3
TMD-24	(0-2.5')		94.3	13.5	80.8
TMD-26	(0-2.5')		51.9	7.4	44.5
TMD-27	(0-2.5')		171	24.4	146.6
	(2.5-5')		21.5	3.1	18.4
TMD-28	(0-2.5')		133	19.0	114.0
TMD-29	(0-1')		683	97.6	585.4
TMD-30	(5-7')		28.9	4.1	24.8
TMD-31	(0-2.5')		395	56.4	338.6
TMD-32	(0-2.5')		28	4.0	24.0
	(2.5-5')		27.2	3.9	23.3
TMD-33	(0-1')		691	98.7	592.3
	(5-7')		25.9	3.7	22.2
	Dup-7		22.7	3.2	19.5
TMD-34	(0-1')		32	4.6	27.4
	(2.5-5')		29.4	4.2	25.2
TMD-35	(0-1')		294	42.0	252.0
	(7-9')		21.8	3.1	18.7
TMD-36	(0-2.5')		234	33.4	200.6
TMD-37	(0-2.5')		121	17.3	103.7
TMD-38	(0-2.5')		251	35.9	215.1
	(5-7.5')		22.3	3.2	19.1

(1) Laboratory measured values are as total chromium, not speciated. Due to the probable source of the Chromium (crude oil, metallurgy, catalysts, and water treatment chemicals) and the time any $Chromium^{+6}$ has had to degrade to $Chromium^{+3}$, it is likely that most, if not all, the Chromium is present as $Chromium^{+3}$. The 1:6 ratio of Cr^{+6} to Cr^{+3} used on this table is based on EPA guidance and practice.

(2) Values are provided only for the samples where Total Chromium exceeds the SSL.

(3) Soil Screening Value (SSL) for Cr^{+6} is DAF 20 for soil-to- groundwater leaching. SSL for Cr^{+3} is the Industrial/Occupational and Construction Worker value.

Shading indicates the value exceeds the Soil Screening Level

mg/kg milligrams per kilogram

Table 7E

Occurrence Summary for Three Mile Ditch Boring Groundwater Samples, Navajo Refinery, Artesia, New Mexico.

Concentrations are reported in milligrams per liter (mg/L).

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Groundwater Standard (mg/L)	Standard Source
BTEX										
Benzene	6 / 41	15%	0.00004	0.01750 - 0.08860	0.00004 - 0.0886	0.05300	0.00780	0.01400	5.0E-03	MCL
Ethylbenzene	4 / 41	10%	0.00005	0.00754 - 0.04000	0.00005 - 0.04	0.02300	0.00220	0.00430	7.0E-01	MCL
m,p-Xylene	5 / 41	12%	0.00007	0.00837 - 0.21000	0.00007 - 0.21	0.11000	0.01300	0.02500	1.0E+01	MCL
o-Xylene	4 / 41	10%	0.00009	0.01170 - 0.05340	0.00009 - 0.0534	0.03400	0.00330	0.00640	1.0E+01	MCL
Toluene	6 / 41	15%	0.00005	0.01410 - 0.03990	0.00005 - 0.0399	0.02800	0.00420	0.00700	7.2E-01	EPA9TAP
Semi Volatile Organic Compounds										
Anthracene	3 / 40	8%	0.00002 - 0.00029	0.00315 - 0.04220	0.00002 - 0.0422	0.01600	0.00120	0.00300	1.8E+00	EPA9TAP
Benzo(a)anthracene	3 / 40	8%	0.00003 - 0.00031	0.00056 - 0.64900	0.00003 - 0.649	0.23000	0.01700	0.04400	9.2E-05	EPA9TAP
Benzo(a)pyrene	1 / 40	3%	0.00002 - 0.00020	0.00498	0.00002 - 0.00498	0.00500	0.00014	0.00035	2.0E-04	MCL
Benzo(g,h,i)perylene	1 / 40	3%	0.00002 - 0.00040	0.03650	0.00002 - 0.0365	0.03700	0.00094	0.00250	-	-
Chrysene	4 / 40	10%	0.00002 - 0.00004	0.00111 - 0.12200	0.00002 - 0.122	0.03500	0.00350	0.00870	9.2E-03	EPA9TAP
Fluoranthene	3 / 40	8%	0.00002 - 0.03500	0.00274 - 0.04070	0.00002 - 0.0407	0.02700	0.00250	0.00490	1.5E+00	EPA9TAP
Fluorene	6 / 40	15%	0.00004 - 0.00005	0.00085 - 0.14400	0.00004 - 0.144	0.03000	0.00450	0.01100	2.4E-01	EPA9TAP
Indeno(1,2,3-cd)pyrene	1 / 40	3%	0.00002 - 0.00020	0.00439 - 0.00439	0.00002 - 0.0044	0.00440	0.00012	0.00031	9.2E-05	EPA9TAP
Naphthalene	2 / 40	5%	0.00004 - 0.01700	0.02190 - 0.16600	0.00004 - 0.166	0.09400	0.00500	0.01200	6.2E-03	EPA9TAP
Phenanthrene	5 / 40	13%	0.00002	0.00023 - 0.38400	0.00002 - 0.384	0.08300	0.01000	0.02700	1.8E-01	Surrogate(pyrene)
Pyrene	4 / 40	10%	0.00004 - 0.00017	0.01790 - 0.46800	0.00004 - 0.468	0.14000	0.01400	0.03300	1.8E-01	EPA9TAP

Shaded value indicates that the SQL exceeds the Groundwater Standard.

Shaded value indicates that the value exceeds the Groundwater Standard.

Average Detect — Arithmetic average of the detected samples only.

MCL — Federal/EPA Maximum Contaiminant Level (MCL).

EPA9TAP — USEPA Region 9 PRGs for tapwater.

Mean — Arithmetic average of the total number of samples, using proxy concentrations for non-detects.

NMED — New Mexico Water Quality Commission Standards, 2002.

NA — Not applicable.

ND — Not detected.

SQLs — Practical sample quantitation limits for the non-detects.

UCL — 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution. (1/2 SQL value used for non-detects)

\- — No Groundwater Standard available.

Table 7F. Occurrence Summary for Monitoring Well Groundwater Samples, Three Mile Ditch, Navajo Refinery, Artesia, New Mexico.

Concentrations are reported in milligrams per liter (mg/L).

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Groundwater Standard (mg/L)	Standard Source
Semi Volatile Organic Compounds (8270)										
2,2'-oxybis(1-Chloropropane)	1 / 12	8%	0.00147	0.0251	0.00147 - 0.0251	0.025	0.0034	0.007	2.7E-04	EPA9TAP
Semi Volatile Organic Compounds (8310)										
Volatile Organic Compounds (8260)										
Benzene	1 / 12	8%	0.00086	0.00476 - 0.00476	0.00086 - 0.00476	0.0048	0.0012	0.0018	5.0E-03	MCL
Isopropylbenzene (Cumene)	1 / 12	8%	0.00071	0.00289	0.000707 - 0.00289	0.0029	0.00089	0.0012	6.6E-01	EPA9TAP
Methyl tert-butyl ether (MTBE)	4 / 12	33%	0.00097	0.0013 - 0.00782	0.00097 - 0.00782	0.0033	0.0018	0.0028	1.3E-02	EPA9TAP
Methylene chloride (Dichloromethane)	1 / 12	8%	0.00145	0.00196 - 0.00196	0.00145 - 0.00196	0.002	0.0015	0.0016	4.3E-03	EPA9TAP
Inorganics										
Fluoride	11 / 12	92%	0.5 - 0.50000	9.8	0.5 - 9.8	7	6.4	7.6	-	-
Chloride	12 / 12	100%	NA	3280	202 - 3280	830	830	1300	-	-
Total Cyanide	1 / 12	8%	0.00400	0.0123	0.004 - 0.0123	0.012	0.0047	0.0059	2.0E-01	NMED/MCL
Nitrate/Nitrite	10 / 12	83%	0.03000	32.4	0.03 - 32.4	9.1	7.6	13	1.0E+00	MCL/EPA9TAP
Sulfate	12 / 12	100%	NA	4410	1950 - 4410	3100	3100	3500	-	-
Total Dissolved Solids (TDS)	11 / 12	92%	-	3,140 8510	0 - 8510	5700	5200	6300	-	-
Metals										
Arsenic	2 / 12	17%	0.00444	0.0224 - 0.0614	0.00444 - 0.0614	0.042	0.011	0.019	1.0E-01	NMED
Chromium	2 / 12	17%	0.00444	0.221 - 4.77	0.00444 - 4.77	2.5	0.42	1.3	5.0E-02	NMED
Lead	1 / 12	8%	0.00266	0.00362 - 0.00362	0.00266 - 0.00362	0.0036	0.0027	0.0029	5.0E-02	NMED
Nickel	1 / 12	8%	0.00525	0.113	0.00525 - 0.113	0.11	0.014	0.03	2.0E-01	NMED
Selenium	12 / 12	100%	0.00000	0.0308 - 0.084	0.0308 - 0.084	0.047	0.047	0.056	5.0E-02	NMED/MCL
Vanadium	2 / 12	17%	0.00155	0.066 - 0.399	0.00155 - 0.399	0.23	0.04	0.099	2.6E-01	EPA9TAP
Calcium	12 / 12	100%	NA	424 - 1050	424 - 1050	600	600	680	-	-
Iron	10 / 12	83%	0.01850	0.125 - 22.1	0.0185 - 22.1	3.9	3.3	6.7	1.0E+00	NMED
Magnesium	12 / 12	100%	NA	113 - 693	113 - 693	360	360	450	-	-
Manganese	11 / 12	92%	0.00291	0.026 - 2.67	0.00291 - 2.67	1.3	1.2	1.8	2.0E-01	NMED
Potassium	12 / 12	100%	NA	1.64 - 14	1.64 - 14	7.3	7.3	9.6	-	-
Sodium	12 / 12	100%	NA	297 - 2110	297 - 2110	710	710	970	-	-

	Shaded value indicates that the SQL exceeds the Groundwater Standard.
	Shaded value indicates that the value exceeds the standard for Groundwater.
Average Detect	Arithmetic average of the detected samples only.
MCL	Federal/EPA Maximum Contaiminant Level (MCL).
EPA9TAP	USEPA Region 9 PRGs for tapwater.
Mean	Arithmetic average of the total number of samples, using proxy concentrations for non-detects.
NA	Not applicable.
ND	Not detected.
NMED	New Mexico Water Quality Commission Standards, 2002.
SQLs	Practical sample quantitation limits for the non-detects.
UCL	95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution.
-	No Groundwater Standard available.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-1												TMD-2					
			Date	6/9/2004			6/9/2004			6/9/2004			6/9/2004			6/10/2004			6/10/2004		
			Depth	(0-1')			(7-9')			(14-15')			(20-22')			(0-1')			(12-14')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		296		37.1	42.8	U	42.8	1040		38.6	38.3	U	38.3	40	U	40	44.9	U	44.9
VOCs (ug/kg)																					
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.444	U	0.444	0.512	U	0.512	43.7	U	43.7	1.33	J	0.458	0.479	U	0.479	0.537	U	0.537
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		3.34	J	0.353	1.67	J	0.407	14.3	U	14.3	1.57	J	0.364	0.381	U	0.381	0.427	U	0.427
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.03	U	3.03	3.5	U	3.5	68.5	U	68.5	3.13	U	3.13	3.27	U	3.27	3.66	U	3.66
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		0.968	U	0.968	1.12	U	1.12	17.5	U	17.5	0.999	U	0.999	1.04	U	1.04	1.17	U	1.17
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.14	U	3.14	16.2		3.63	441	U	441	57.6		3.24	3.39	U	3.39	30		3.8
Benzene	2.83E+01	NMED-DAF20		0.342	U	0.342	0.394	U	0.394	10.5	U	10.5	0.353	U	0.353	0.369	U	0.369	0.413	U	0.413
Carbon disulfide	7.52E+03	NMED-DAF20		0.433	U	0.433	0.499	U	0.499	22.1	U	22.1	1.39	J	0.447	0.467	U	0.467	0.523	U	0.523
Ethylbenzene	1.05E+04	NMED-DAF20		0.285	U	0.285	0.329	U	0.329	3510		13.5	0.294	U	0.294	0.307	U	0.307	0.344	U	0.344
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.376	U	0.376	0.434	U	0.434	6630		11.8	0.388	U	0.388	0.405	U	0.405	0.455	U	0.455
m,p-Xylene	8.00E+04	NMED SSL		0.501	U	0.501	0.578	U	0.578	8260		23.3	0.517	U	0.517	0.541	U	0.541	0.606	U	0.606
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		1.8	J	0.501	3.53	J	0.578	111	U	111	0.517	U	0.517	1.72	J	0.541	0.606	U	0.606
o-Xylene	9.86E+04	NMED SSL		0.273	U	0.273	0.315	U	0.315	1160		14.4	0.282	U	0.282	0.295	U	0.295	0.331	U	0.331
Toluene	6.80E+03	NMED-DAF20		1.2	J	0.251	0.289	U	0.289	625		12.8	0.259	U	0.259	0.27	U	0.27	0.303	U	0.303
SVOCs (ug/kg)																					
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		8.35		0.401	0.369	U	0.369	0.275	U	0.275	0.315	U	0.315	4.04		0.307	1.1		0.337
Barium	8.23E+02	NMED-DAF20		155		0.089	84.2		0.0821	45.9		0.0611	76.5		0.0699	158		0.0683	0.0749	U	0.0749
Cadmium	7.52E+00	NMED-DAF20		1.41		0.178	0.613		0.164	0.449		0.122	0.402		0.14	1.86		0.136	0.15	U	0.15
Chromium	1.92E+01	NMED-DAF20		401		0.107	12.8		0.0986	5.77		0.0733	7.86		0.0839	38		0.0819	20.4		0.0898
Lead	7.50E+02	NMED SSL		7850		0.196	12.9		0.181	6.1		0.134	6.4		0.154	699		0.15	6.76		0.165
Selenium	5.17E+00	NMED-DAF20		0.56	U	0.56	0.518	U	0.518	0.385	U	0.385	0.441	U	0.441	0.43	U	0.43	0.471	U	0.471
Silver	8.47E+00	NMED-DAF20		1.72		0.0712	1.07		0.0657	1.42		0.0488	0.96		0.0559	4.35		0.0545	0.0599	U	0.0599
Mercury	3.41E+02	NMED SSL		1.49		0.0372	0.0139	U	0.0139	0.0186	U	0.0186	0.0156	U	0.0156	0.39		0.0167	0.0187	U	0.0187

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-3									TMD-4						TMD-5					
			Date	6/10/2004			6/10/2004			6/10/2004			6/17/2004			6/17/2004			6/10/2004			6/10/2004		
			Depth	(0-1')			(3-5')			EP-B1			(0-1')			(10-12')			(0-1')			(3-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		3250		38.6	225		48.3	319		39.3	208		38.4	149		39.4	828		35.6	1780		41.8
VOCs (ug/kg)																								
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.462	U	0.462	0.578	U	0.578	0.47	U	0.47	0.46	U	0.46	0.472	U	0.472	0.425	U	0.425	0.501	U	0.501
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		1.42	J	0.367	0.459	U	0.459	0.374	U	0.374	0.366	U	0.366	0.375	U	0.375	1.77	J	0.338	3.2	J	0.398
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.15	U	3.15	9.78	J	3.94	3.21	U	3.21	3.14	U	3.14	3.22	U	3.22	8.39	J	2.9	3.41	U	3.41
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1.01	U	1.01	1.26	U	1.26	1.03	U	1.03	1	U	1	1.03	U	1.03	0.927	U	0.927	1.09	U	1.09
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.27	U	3.27	4.09	U	4.09	3.33	U	3.33	3.25	U	3.25	3.34	U	3.34	3.01	U	3.01	3.54	U	3.54
Benzene	2.83E+01	NMED-DAF20		0.355	U	0.355	0.444	U	0.444	0.362	U	0.362	0.354	U	0.354	0.363	U	0.363	0.327	U	0.327	0.385	U	0.385
Carbon disulfide	7.52E+03	NMED-DAF20		0.45	U	0.45	0.563	U	0.563	0.458	U	0.458	0.448	U	0.448	0.459	U	0.459	0.414	U	0.414	0.488	U	0.488
Ethylbenzene	1.05E+04	NMED-DAF20		0.296	U	0.296	0.37	U	0.37	0.302	U	0.302	0.295	U	0.295	0.302	U	0.302	0.273	U	0.273	0.321	U	0.321
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.391	U	0.391	0.489	U	0.489	0.398	U	0.398	0.389	U	0.389	0.399	U	0.399	0.36	U	0.36	0.424	U	0.424
m,p-Xylene	8.00E+04	NMED SSL		0.521	U	0.521	0.652	U	0.652	0.531	U	0.531	0.519	U	0.519	0.532	U	0.532	0.48	U	0.48	0.565	U	0.565
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		3.27	J	0.521	1.87	J	0.652	0.531	U	0.531	0.519	U	0.519	0.532	U	0.532	1.24	J	0.48	1.39	J	0.565
o-Xylene	9.86E+04	NMED SSL		0.284	U	0.284	0.356	U	0.356	0.29	U	0.29	0.283	U	0.283	0.29	U	0.29	0.262	U	0.262	0.308	U	0.308
Toluene	6.80E+03	NMED-DAF20		0.26	U	0.26	0.326	U	0.326	0.265	U	0.265	0.259	U	0.259	0.266	U	0.266	0.24	U	0.24	0.282	U	0.282
SVOCs (ug/kg)																								
Acenaphthene	7.98E+04	NMED-DAF20		287	U	287	NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		333	J	274	NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		278	U	278	NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		299	U	299	NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		338	U	338	NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		291	U	291	NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		420	U	420	NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		261	U	261	NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		977	U	977	NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		285	U	285	NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		360	U	360	NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene	-	-		619	U	619	NT			NT			NT			NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		488	U	488	NT			NT			NT			NT			NT			NT		
Metals (mg/kg)																								
Arsenic	1.77E+01	NMED SSL		29.4		0.321	7.63		0.433	3		0.344	3.57		0.363	0.324	U	0.324	2.51		0.292	3.24		0.348
Barium	8.23E+02	NMED-DAF20		145		0.0712	159		0.0961	117		0.0764	131		0.0808	118		0.0719	129		0.0649	146		0.0773
Cadmium	7.52E+00	NMED-DAF20		1.3		0.142	0.844		0.193	0.903		0.153	0.493		0.162	0.144	U	0.144	0.727		0.13	0.686		0.154
Chromium	1.92E+01	NMED-DAF20		48.6		0.0856	16.6		0.115	11.7		0.0916	59.8		0.0969	6.66		0.0863	56.4		0.0779	47.2		0.0928
Lead	7.50E+02	NMED SSL		233		0.157	45.8		0.212	28		0.168	574		0.178	3.21		0.158	344		0.143	31.6		0.171
Selenium	5.17E+00	NMED-DAF20		0.45	U	0.45	0.606	U	0.606	0.481	U	0.481	1.89		0.508	2.77		0.453	0.409	U	0.409	0.488	U	0.488
Silver	8.47E+00	NMED-DAF20		0.057	U	0.057	1.12		0.077	1.7		0.061	0.0646	U	0.0646	0.0576	U	0.0576	0.956		0.0519	0.0619	U	0.0619
Mercury	3.41E+02	NMED SSL		0.046		0.0157	0.0187	U	0.0187	0.016	U	0.016	0.14		0.016	0.0145	U	0.0145	0.165		0.0157	0.0205	U	0.0205

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-6						TMD-7											
			Date	6/10/2004			6/10/2004			6/10/2004			6/10/2004			6/10/2004			6/10/2004		
			Depth	(0-1')			(3-5')			(0-1')			(3-5')			(9-11')			(13-15')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		359		38	164		45.7	4740		35.9	335		39.9	37.7	U	37.7	46.9	U	46.9
VOCs (ug/kg)																					
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.455	U	0.455	0.546	U	0.546	0.429	U	0.429	0.477	U	0.477	0.451	U	0.451	0.561	U	0.561
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.362	U	0.362	0.434	U	0.434	2.23	J	0.341	0.379	U	0.379	0.359	U	0.359	0.446	U	0.446
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.1	U	3.1	3.73	U	3.73	2.93	U	2.93	3.26	U	3.26	3.08	U	3.08	3.83	U	3.83
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		0.992	U	0.992	1.19	U	1.19	0.935	U	0.935	1.04	U	1.04	0.984	U	0.984	1.22	U	1.22
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.22	U	3.22	3.87	U	3.87	3.04	U	3.04	3.38	U	3.38	3.19	U	3.19	3.97	U	3.97
Benzene	2.83E+01	NMED-DAF20		0.35	U	0.35	0.42	U	0.42	0.33	U	0.33	0.367	U	0.367	0.347	U	0.347	0.432	U	0.432
Carbon disulfide	7.52E+03	NMED-DAF20		0.443	U	0.443	0.532	U	0.532	0.418	U	0.418	0.465	U	0.465	0.44	U	0.44	0.547	U	0.547
Ethylbenzene	1.05E+04	NMED-DAF20		0.292	U	0.292	0.35	U	0.35	0.275	U	0.275	0.306	U	0.306	0.289	U	0.289	0.36	U	0.36
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.385	U	0.385	0.462	U	0.462	0.363	U	0.363	0.404	U	0.404	0.382	U	0.382	0.475	U	0.475
m,p-Xylene	8.00E+04	NMED SSL		0.513	U	0.513	0.616	U	0.616	0.484	U	0.484	0.539	U	0.539	0.509	U	0.509	0.633	U	0.633
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.513	U	0.513	1.78	J	0.616	3.36	J	0.484	1.42	J	0.539	0.509	U	0.509	2.13	J	0.633
o-Xylene	9.86E+04	NMED SSL		0.28	U	0.28	0.336	U	0.336	0.264	U	0.264	0.294	U	0.294	0.278	U	0.278	0.345	U	0.345
Toluene	6.80E+03	NMED-DAF20		0.257	U	0.257	0.308	U	0.308	0.242	U	0.242	0.269	U	0.269	0.255	U	0.255	0.317	U	0.317
SVOCs (ug/kg)																					
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			1330	U	1330	NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			1460	J	1270	NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			1290	U	1290	NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			1390	U	1390	NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			1570	U	1570	NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			1350	U	1350	NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			1950	U	1950	NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			1210	U	1210	NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			4540	U	4540	NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			1320	U	1320	NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			1680	U	1680	NT			NT			NT		
2-Methylnaphthalene	-	-		NT			NT			2880	U	2880	NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			NT			2270	U	2270	NT			NT			NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		3.5		0.32	6.59		0.394	16.5		0.33	9.46		0.393	0.347	U	0.347	3.13		0.36
Barium	8.23E+02	NMED-DAF20		133		0.0712	168		0.0875	214		0.0734	128		0.0874	22.8		0.0772	33.5		0.08
Cadmium	7.52E+00	NMED-DAF20		0.684		0.142	0.82		0.175	1.45		0.146	0.878		0.175	0.845		0.154	0.16	U	0.16
Chromium	1.92E+01	NMED-DAF20		20.8		0.0854	23		0.105	342		0.088	40.6		0.105	5.18		0.0926	12.9		0.096
Lead	7.50E+02	NMED SSL		18.8		0.156	18.3		0.193	1130		0.162	137		0.192	5.09		0.17	9.23		0.176
Selenium	5.17E+00	NMED-DAF20		0.448	U	0.448	0.552	U	0.552	0.462	U	0.462	0.551	U	0.551	0.486	U	0.486	0.504	U	0.504
Silver	8.47E+00	NMED-DAF20		0.0569	U	0.0569	0.07	U	0.07	1.58		0.0586	0.0699	U	0.0699	2.4		0.0617	0.0639	U	0.0639
Mercury	3.41E+02	NMED SSL		0.0172	U	0.0172	0.0197	U	0.0197	1.55		0.0162	0.137		0.0166	0.0144	U	0.0144	0.0236	U	0.0236

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-8						TMD-9					
			Date	6/10/2004			6/10/2004			6/11/2004			6/11/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		168		39.6	41.2	U	41.2	633		37.9	41.1	U	41.1
VOCs (ug/kg)															
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.473	U	0.473	0.493	U	0.493	0.453	U	0.453	0.492	U	0.492
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		1.49	J	0.376	0.392	U	0.392	2.38	J	0.36	0.391	U	0.391
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.23	U	3.23	3.36	U	3.36	3.09	U	3.09	3.35	U	3.35
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1.03	U	1.03	1.07	U	1.07	0.988	U	0.988	1.07	U	1.07
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.35	U	3.35	3.49	U	3.49	3.21	U	3.21	3.48	U	3.48
Benzene	2.83E+01	NMED-DAF20		0.364	U	0.364	0.379	U	0.379	0.349	U	0.349	0.378	U	0.378
Carbon disulfide	7.52E+03	NMED-DAF20		0.461	U	0.461	0.48	U	0.48	0.442	U	0.442	0.479	U	0.479
Ethylbenzene	1.05E+04	NMED-DAF20		0.303	U	0.303	0.316	U	0.316	0.291	U	0.291	0.315	U	0.315
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.4	U	0.4	0.417	U	0.417	0.384	U	0.384	0.416	U	0.416
m,p-Xylene	8.00E+04	NMED SSL		0.534	U	0.534	0.556	U	0.556	0.512	U	0.512	0.555	U	0.555
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		1.76	J	0.534	1.82	J	0.556	0.512	U	0.512	0.555	U	0.555
o-Xylene	9.86E+04	NMED SSL		0.291	U	0.291	0.303	U	0.303	0.279	U	0.279	0.303	U	0.303
Toluene	6.80E+03	NMED-DAF20		0.267	U	0.267	0.278	U	0.278	0.256	U	0.256	0.277	U	0.277
SVOCs (ug/kg)															
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			NT			NT			NT		
Metals (mg/kg)															
Arsenic	1.77E+01	NMED SSL		17.3		0.341	25.3		0.327	17.9		0.278	0.973		0.411
Barium	8.23E+02	NMED-DAF20		248		0.0758	131		0.0727	168		0.0619	169		0.0914
Cadmium	7.52E+00	NMED-DAF20		1.46		0.152	1.33		0.145	1.1		0.123	0.183	U	0.183
Chromium	1.92E+01	NMED-DAF20		343		0.091	20.7		0.0872	25.2		0.0742	13.2		0.11
Lead	7.50E+02	NMED SSL		578		0.167	16.5		0.159	69		0.136	19.5		0.201
Selenium	5.17E+00	NMED-DAF20		0.478	U	0.478	0.458	U	0.458	0.39	U	0.39	3.81		0.575
Silver	8.47E+00	NMED-DAF20		1.58		0.0607	1.22		0.0582	0.943		0.0495	0.0731	U	0.0731
Mercury	3.41E+02	NMED SSL		1.15		0.0157	0.0174	U	0.0174	0.0572		0.0186	0.0193	U	0.0193

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-10												TMD-11					
			Date	6/11/2004			6/11/2004			6/11/2004			6/11/2004			6/11/2004			6/11/2004		
			Depth	(0-2.5')			(2.5-5')			(5-7')			(10-11')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		5140		35.5	207		42.6	40.6	U	40.6	37.6	U	37.6	5080		39.3	207		41.1
VOCs (ug/kg)																					
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.425	U	0.425	0.51	U	0.51	0.486	U	0.486	0.449	U	0.449	0.47	U	0.47	0.491	U	0.491
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		1.56	J	0.338	0.405	U	0.405	0.386	U	0.386	0.357	U	0.357	0.374	U	0.374	0.39	U	0.39
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		2.9	U	2.9	3.48	U	3.48	15.1		3.31	3.06	U	3.06	3.21	U	3.21	3.35	U	3.35
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		0.926	U	0.926	1.11	U	1.11	1.06	U	1.06	0.979	U	0.979	1.03	U	1.03	1.07	U	1.07
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.01	U	3.01	57.9		3.61	73.5		3.44	3.18	U	3.18	3.33	U	3.33	3.48	U	3.48
Benzene	2.83E+01	NMED-DAF20		0.327	U	0.327	0.392	U	0.392	0.374	U	0.374	0.346	U	0.346	0.362	U	0.362	0.378	U	0.378
Carbon disulfide	7.52E+03	NMED-DAF20		0.414	U	0.414	0.497	U	0.497	3.15	J	0.473	0.438	U	0.438	0.458	U	0.458	0.479	U	0.479
Ethylbenzene	1.05E+04	NMED-DAF20		0.272	U	0.272	0.327	U	0.327	22.2		0.311	0.288	U	0.288	0.302	U	0.302	0.315	U	0.315
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.359	U	0.359	0.431	U	0.431	10.6		0.411	0.38	U	0.38	0.398	U	0.398	0.416	U	0.416
m,p-Xylene	8.00E+04	NMED SSL		0.479	U	0.479	0.575	U	0.575	11.1		0.548	0.507	U	0.507	0.531	U	0.531	0.554	U	0.554
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.479	U	0.479	0.575	U	0.575	0.548	U	0.548	0.507	U	0.507	0.531	U	0.531	0.554	U	0.554
o-Xylene	9.86E+04	NMED SSL		0.261	U	0.261	0.314	U	0.314	20.3		0.299	0.276	U	0.276	0.29	U	0.29	0.302	U	0.302
Toluene	6.80E+03	NMED-DAF20		0.24	U	0.24	0.288	U	0.288	2.55	J	0.274	0.253	U	0.253	0.265	U	0.265	0.277	U	0.277
SVOCs (ug/kg)																					
Acenaphthene	7.98E+04	NMED-DAF20		264	U	264	NT			NT			NT			1460	U	1460	NT		
Anthracene	1.60E+06	NMED-DAF20		328	J	252	NT			NT			NT			1400	U	1400	NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		256	U	256	NT			NT			NT			1420	U	1420	NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		276	U	276	NT			NT			NT			1530	U	1530	NT		
Chrysene	1.10E+05	NMED-DAF20		311	U	311	NT			NT			NT			1720	U	1720	NT		
Dibenzofuran	5.70E+03	NMED-DAF20		267	U	267	NT			NT			NT			1480	U	1480	NT		
Fluoranthene	4.82E+06	NMED-DAF20		386	U	386	NT			NT			NT			2140	U	2140	NT		
Fluorene	1.00E+05	NMED-DAF20		240	U	240	NT			NT			NT			1330	U	1330	NT		
Naphthalene	3.93E+02	NMED-DAF20		899	U	899	NT			NT			NT			4980	U	4980	NT		
Phenanthrene	7.62E+04	NMED-DAF20		262	U	262	NT			NT			NT			1450	U	1450	NT		
Pyrene	5.68E+05	NMED-DAF20		332	U	332	NT			NT			NT			1840	U	1840	NT		
2-Methylnaphthalene	-	-		570	U	570	NT			NT			NT			3150	U	3150	NT		
Carbazole	6.0E+03	Region 6-DAF20		449	U	449	NT			NT			NT			2490	U	2490	NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		10.3		0.314	5.22		0.392	3.37		0.311	7.52		0.355	13.9		0.405	4.88		0.45
Barium	8.23E+02	NMED-DAF20		138		0.0698	144		0.0872	123		0.0692	22.6		0.0789	142		0.09	196		0.1
Cadmium	7.52E+00	NMED-DAF20		0.458		0.139	0.55		0.174	0.473		0.138	0.158	U	0.158	1.02		0.18	0.724		0.2
Chromium	1.92E+01	NMED-DAF20		229		0.0838	21.7		0.105	12.6		0.0831	5.16		0.0947	164		0.108	19.8		0.12
Lead	7.50E+02	NMED SSL		556		0.154	17.1		0.192	11.2		0.152	2.92		0.174	15200		0.198	119		0.22
Selenium	5.17E+00	NMED-DAF20		5.15		0.44	2.56		0.549	2.28		0.436	3.95		0.497	5.22		0.567	2.18		0.63
Silver	8.47E+00	NMED-DAF20		0.0559	U	0.0559	0.0697	U	0.0697	0.0553	U	0.0553	0.0631	U	0.0631	0.072	U	0.072	0.08	U	0.08
Mercury	3.41E+02	NMED SSL		0.499		0.0135	0.018	U	0.018	0.0176	U	0.0176	0.0173	U	0.0173	0.821		0.017	0.0198	U	0.0198

Qualifier Key
U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.
J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-12											
			Date	6/11/2004			6/11/2004			6/11/2004			6/11/2004		
			Depth	(0-1')			(1-3')			(5-7')			(11-13')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		1570		35.6	1880		39.5	131		41.7	39.2	U	39.2
VOCs (ug/kg)															
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.426	U	0.426	0.473	U	0.473	0.499	U	0.499	0.469	U	0.469
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		3.29	J	0.338	2.64	J	0.376	0.396	U	0.396	0.373	U	0.373
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		2.9	U	2.9	3.22	U	3.22	12.7	J	3.4	3.2	U	3.2
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		0.928	U	0.928	1.03	U	1.03	1.09	U	1.09	1.02	U	1.02
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.01	U	3.01	3.35	U	3.35	88.6		3.53	3.32	U	3.32
Benzene	2.83E+01	NMED-DAF20		0.328	U	0.328	0.364	U	0.364	0.384	U	0.384	14.5		0.361
Carbon disulfide	7.52E+03	NMED-DAF20		0.415	U	0.415	0.461	U	0.461	0.486	U	0.486	2.08	J	0.457
Ethylbenzene	1.05E+04	NMED-DAF20		0.273	U	0.273	0.303	U	0.303	0.32	U	0.32	94.1		0.3
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.36	U	0.36	0.4	U	0.4	0.422	U	0.422	6.25		0.397
m,p-Xylene	8.00E+04	NMED SSL		0.48	U	0.48	0.533	U	0.533	0.563	U	0.563	2.64	U	2.64
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		1.91	J	0.48	2.04	J	0.533	0.563	U	0.563	0.529	U	0.529
o-Xylene	9.86E+04	NMED SSL		0.262	U	0.262	0.291	U	0.291	0.307	U	0.307	216		0.288
Toluene	6.80E+03	NMED-DAF20		0.24	U	0.24	0.267	U	0.267	0.281	U	0.281	111		0.264
SVOCs (ug/kg)															
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			NT			NT			NT		
Metals (mg/kg)															
Arsenic	1.77E+01	NMED SSL		13		0.307	3.56		0.368	1.05		0.347	0.329	U	0.329
Barium	8.23E+02	NMED-DAF20		137		0.0682	141		0.0819	177		0.077	99.4		0.0733
Cadmium	7.52E+00	NMED-DAF20		0.814		0.136	0.974		0.164	0.68		0.153	0.147	U	0.147
Chromium	1.92E+01	NMED-DAF20		186		0.0819	62		0.0983	18.2		0.0925	7.18		0.088
Lead	7.50E+02	NMED SSL		2590		0.151	1350		0.181	16.8		0.17	5.63		0.161
Selenium	5.17E+00	NMED-DAF20		3.31		0.43	3.3		0.516	2.32		0.486	2.71		0.462
Silver	8.47E+00	NMED-DAF20		0.0546	U	0.0546	0.0656	U	0.0656	0.0616	U	0.0616	0.0587	U	0.0587
Mercury	3.41E+02	NMED SSL		4.77		0.129	0.08		0.0148	0.0165	U	0.0165	0.0139	U	0.0139

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-13														
			Date	6/14/2004			6/14/2004			6/14/2004			6/14/2004			6/14/2004		
			Depth	(0-1')			(4-6')			(6-8')			EP-82			(12-14')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		40.7	U	40.7	208		38.6	43.5	U	43.5	43.3	U	43.3	37.8	U	37.8
VOCs (ug/kg)																		
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.487	U	0.487	0.462	U	0.462	0.521	U	0.521	0.518	U	0.518	0.452	U	0.452
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.387	U	0.387	0.367	U	0.367	0.414	U	0.414	0.412	U	0.412	0.36	U	0.36
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.32	U	3.32	3.15	U	3.15	3.55	U	3.55	3.53	U	3.53	3.09	U	3.09
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1.06	U	1.06	1.01	U	1.01	1.13	U	1.13	1.13	U	1.13	0.986	U	0.986
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.45	U	3.45	3.27	U	3.27	3.68	U	3.68	3.67	U	3.67	3.2	U	3.2
Benzene	2.83E+01	NMED-DAF20		0.375	U	0.375	0.355	U	0.355	0.401	U	0.401	0.398	U	0.398	0.348	U	0.348
Carbon disulfide	7.52E+03	NMED-DAF20		0.474	U	0.474	0.45	U	0.45	0.507	U	0.507	0.505	U	0.505	0.441	U	0.441
Ethylbenzene	1.05E+04	NMED-DAF20		0.312	U	0.312	0.296	U	0.296	0.334	U	0.334	0.332	U	0.332	0.29	U	0.29
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.412	U	0.412	0.391	U	0.391	0.441	U	0.441	0.438	U	0.438	0.383	U	0.383
m,p-Xylene	8.00E+04	NMED SSL		0.549	U	0.549	0.521	U	0.521	0.587	U	0.587	0.584	U	0.584	0.51	U	0.51
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		2.98	J	0.549	3.78	J	0.521	0.587	U	0.587	0.584	U	0.584	0.51	U	0.51
o-Xylene	9.86E+04	NMED SSL		0.3	U	0.3	0.284	U	0.284	0.32	U	0.32	0.319	U	0.319	0.278	U	0.278
Toluene	6.80E+03	NMED-DAF20		0.275	U	0.275	0.261	U	0.261	0.294	U	0.294	0.292	U	0.292	0.255	U	0.255
SVOCs (ug/kg)																		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT		
2-Methylnaphthalene	-	-		NT			NT			NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			NT			NT			NT			NT		
Metals (mg/kg)																		
Arsenic	1.77E+01	NMED SSL		4.12		0.351	3.67		0.293	3.73		0.375	3.76		0.414	0.29	U	0.29
Barium	8.23E+02	NMED-DAF20		129		0.078	209		0.065	152		0.0834	178		0.0922	163		0.0645
Cadmium	7.52E+00	NMED-DAF20		0.612		0.156	0.633		0.13	0.589		0.167	0.74		0.185	0.129	U	0.129
Chromium	1.92E+01	NMED-DAF20		21.2		0.0936	22.5		0.0781	17.3		0.1	17.3		0.111	7.44		0.0774
Lead	7.50E+02	NMED SSL		1970		0.172	194		0.143	15.8		0.184	12.5		0.203	5.93		0.142
Selenium	5.17E+00	NMED-DAF20		3.34		0.492	1.29		0.41	2.85		0.526	2.2		0.58	3.32		0.406
Silver	8.47E+00	NMED-DAF20		0.0624	U	0.0624	0.0521	U	0.0521	0.0668	U	0.0668	0.0738	U	0.0738	0.0515	U	0.0515
Mercury	3.41E+02	NMED SSL		0.0713		0.0166	0.0509		0.0167	0.0192	U	0.0192	0.0203	U	0.0203	0.0186	U	0.0186

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-14									TMD-15					
			Date	6/14/2004			6/14/2004			6/14/2004			6/14/2004			6/14/2004		
			Depth	(0-1')			(5-7')			(13-15')			(0-2.5')			(5-7')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		226		36.3	1900		43.6	42.6	U	42.6	1240		40.5	40.6	U	40.6
VOCs (ug/kg)																		
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.434	U	0.434	0.521	U	0.521	0.51	U	0.51	0.484	U	0.484	0.486	U	0.486
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.345	U	0.345	0.414	U	0.414	0.405	U	0.405	0.385	U	0.385	0.387	U	0.387
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		2.96	U	2.96	3.56	U	3.56	3.48	U	3.48	3.3	U	3.3	3.32	U	3.32
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		0.947	U	0.947	1.14	U	1.14	1.11	U	1.11	1.06	U	1.06	1.06	U	1.06
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.07	U	3.07	3.69	U	3.69	3.61	U	3.61	3.43	U	3.43	3.44	U	3.44
Benzene	2.83E+01	NMED-DAF20		0.334	U	0.334	0.401	U	0.401	0.392	U	0.392	0.373	U	0.373	0.374	U	0.374
Carbon disulfide	7.52E+03	NMED-DAF20		0.423	U	0.423	0.508	U	0.508	0.497	U	0.497	0.472	U	0.472	0.474	U	0.474
Ethylbenzene	1.05E+04	NMED-DAF20		0.278	U	0.278	0.334	U	0.334	0.327	U	0.327	0.311	U	0.311	0.312	U	0.312
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.367	U	0.367	0.441	U	0.441	0.431	U	0.431	0.41	U	0.41	0.411	U	0.411
m,p-Xylene	8.00E+04	NMED SSL		0.49	U	0.49	0.588	U	0.588	0.575	U	0.575	0.547	U	0.547	0.549	U	0.549
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		3.24	J	0.49	0.588	U	0.588	1.49	J	0.575	9.11		0.547	0.549	U	0.549
o-Xylene	9.86E+04	NMED SSL		0.267	U	0.267	0.321	U	0.321	0.314	U	0.314	0.298	U	0.298	0.299	U	0.299
Toluene	6.80E+03	NMED-DAF20		0.245	U	0.245	0.294	U	0.294	0.288	U	0.288	0.273	U	0.273	0.274	U	0.274
SVOCs (ug/kg)																		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT		
2-Methylnaphthalene				NT			NT			NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			NT			NT			NT			NT		
Metals (mg/kg)																		
Arsenic	1.77E+01	NMED SSL		13.2		0.295	2.69		0.396	0.387	U	0.387	18.3		0.345	3.19		0.292
Barium	8.23E+02	NMED-DAF20		111		0.0655	200		0.088	61.6		0.086	162		0.0766	274		0.065
Cadmium	7.52E+00	NMED-DAF20		0.435		0.131	0.506		0.176	0.173	U	0.173	0.829		0.153	0.425		0.13
Chromium	1.92E+01	NMED-DAF20		20.9		0.0786	17.4		0.105	20.8		0.103	441		0.092	12.1		0.0779
Lead	7.50E+02	NMED SSL		192		0.144	14.4		0.194	6.71		0.19	2540		0.169	10.8		0.143
Selenium	5.17E+00	NMED-DAF20		2.35		0.413	2.87		0.553	1.46		0.541	6.16		0.483	2.46		0.409
Silver	8.47E+00	NMED-DAF20		0.0524	U	0.0524	0.0703	U	0.0703	0.0688	U	0.0688	0.0614	U	0.0614	0.052	U	0.052
Mercury	3.41E+02	NMED SSL		0.0175	U	0.0175	0.0201	U	0.0201	0.0174	U	0.0174	0.645		0.0149	0.0172	U	0.0172

Analyte	TMD-15					
	6/14/2004			6/14/2004		
	(7-9')					
	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	39.1	U	39.1			
VOCs (ug/kg)						
1,1,2,2-Tetrachloroethane	0.468	U	0.468			
1,2-Dichloroethane (Ethylene dichloride)	0.372	U	0.372			
2-Butanone (Methyl ethyl ketone)	3.19	U	3.19			
4-Methyl-2-pentanone (MIBK)	1.02	U	1.02			
Acetone (2-Propanone, Dimethyl ketone)	49.3		3.31			
Benzene	0.36	U	0.36			
Carbon disulfide	4.48	J	0.456			
Ethylbenzene	0.3	U	0.3			
Isopropylbenzene (Cumene)	7.49		0.396			
m,p-Xylene	0.528	U	0.528			
Methylene chloride (Dichloromethane)	0.528	U	0.528			
o-Xylene	0.288	U	0.288			
Toluene	0.264	U	0.264			
SVOCs (ug/kg)						
Acenaphthene	NT					
Anthracene	NT					
Benzo(a)anthracene	NT					
Benzo(a)pyrene	NT					
Chrysene	NT					
Dibenzofuran	NT					
Fluoranthene	NT					
Fluorene	NT					
Naphthalene	NT					
Phenanthrene	NT					
Pyrene	NT					
2-Methylnaphthalene	NT					
Carbazole	NT					
Metals (mg/kg)						
Arsenic	0.385	U	0.385			
Barium	475		0.0856			
Cadmium	0.171	U	0.171			
Chromium	7.95		0.103			
Lead	4.85		0.188			
Selenium	3.12		0.54			
Silver	0.0685	U	0.0685			
Mercury	0.018	U	0.018			

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-16						TMD-17											
			Date	6/15/2004			6/15/2004			6/15/2004			6/15/2004			6/15/2004			6/15/2004		
			Depth	(0-1')			(3-5')			(0-2.5')			(7-9')			Dup-3			(13-15')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		329		40.4	49.2	U	49.2	3220		44.5	2670		46	4060		48.8	54.8	U	54.8
VOCs (ug/kg)																					
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.483	U	0.483	0.588	U	0.588	0.532	U	0.532	2.75	U	2.75	2.92	U	2.92	0.655	U	0.655
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.384	U	0.384	0.468	U	0.468	0.423	U	0.423	2.19	U	2.19	2.32	U	2.32	0.521	U	0.521
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.3	U	3.3	4.01	U	4.01	3.63	U	3.63	18.8	U	18.8	19.9	U	19.9	4.47	U	4.47
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1.05	U	1.05	1.28	U	1.28	1.16	U	1.16	5.99	U	5.99	6.36	U	6.36	7.82	J	1.43
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.42	U	3.42	4.16	U	4.16	3.77	U	3.77	590		19.5	828		20.7	38.2		4.64
Benzene	2.83E+01	NMED-DAF20		0.372	U	0.372	0.452	U	0.452	0.409	U	0.409	154		2.12	104		2.25	0.504	U	0.504
Carbon disulfide	7.52E+03	NMED-DAF20		0.471	U	0.471	0.573	U	0.573	0.518	U	0.518	216		2.68	82.6		2.84	4.03	J	0.639
Ethylbenzene	1.05E+04	NMED-DAF20		0.31	U	0.31	0.377	U	0.377	0.341	U	0.341	1300		16.1	819		17.1	0.42	U	0.42
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.409	U	0.409	0.498	U	0.498	0.45	U	0.45	2360		14.1	1840		15	0.555	U	0.555
m,p-Xylene	8.00E+04	NMED SSL		0.545	U	0.545	0.664	U	0.664	0.6	U	0.6	8430		27.8	5340		29.5	0.739	U	0.739
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.545	U	0.545	0.664	U	0.664	2.55	J	0.6	3.1	U	3.1	3.29	U	3.29	0.739	U	0.739
o-Xylene	9.86E+04	NMED SSL		0.297	U	0.297	0.362	U	0.362	0.327	U	0.327	2750		17.2	2230		18.3	0.403	U	0.403
Toluene	6.80E+03	NMED-DAF20		0.273	U	0.273	0.332	U	0.332	0.3	U	0.3	1340		15.2	1130		16.2	0.37	U	0.37
SVOCs (ug/kg)																					
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			1650	U	1650	342	U	342	726	U	726	NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			1580	U	1580	1360	J	327	693	U	693	NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			1600	U	1600	381	J	331	817	J	704	NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			1730	U	1730	357	U	357	757	U	757	NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			1950	U	1950	580	J	403	1170	J	855	NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			1680	U	1680	346	U	346	735	U	735	NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			2420	U	2420	606	J	500	1300	J	1060	NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			1500	U	1500	1450	J	311	3040	J	660	NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			5630	U	5630	1160	U	1160	2630	J	2470	NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			1640	U	1640	9560		339	35200		720	NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			2080	U	2080	2500		429	5900		912	NT		
2-Methylnaphthalene		-		NT			NT			3570	U	3570	1790	J	738	4930	J	1570	NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			NT			2810	U	2810	582	U	582	1240	U	1240	NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		0.348	U	0.348	3.42		0.465	11.1		0.307	6.43		0.512	3.44		0.379	2.86		0.412
Barium	8.23E+02	NMED-DAF20		118		0.0774	149		0.103	138		0.0682	58.7		0.114	72.9		0.0841	38.1		0.0914
Cadmium	7.52E+00	NMED-DAF20		0.436		0.155	0.72		0.207	0.577		0.136	0.227	U	0.227	0.168	U	0.168	0.183	U	0.183
Chromium	1.92E+01	NMED-DAF20		21.6		0.0929	18.6		0.124	234		0.0819	17.2		0.137	13.5		0.101	19.2		0.11
Lead	7.50E+02	NMED SSL		178		0.171	13.9		0.228	432		0.15	11.7		0.25	8.57		0.186	22.4		0.202
Selenium	5.17E+00	NMED-DAF20		3.15		0.488	2.62		0.65	7.14		0.43	5.81		0.717	3.65		0.53	3.09		0.575
Silver	8.47E+00	NMED-DAF20		0.062	U	0.062	0.0827	U	0.0827	0.0546	U	0.0546	0.091	U	0.091	0.0672	U	0.0672	0.0731	U	0.0731
Mercury	3.41E+02	NMED SSL		0.0169	U	0.0169	0.0217	U	0.0217	0.108		0.0205	0.0175	U	0.0175	0.022	U	0.022	0.0237	U	0.0237

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-18											
			Date	6/15/2004			6/15/2004			6/15/2004			6/15/2004		
			Depth	(0-2.5')			(5-7')			(7-9')			Dup-4		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		6140		38.6	352		45.2	722		42.6	467		43.4
VOCs (ug/kg)															
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.462	U	0.462	0.54	U	0.54	0.51	U	0.51	0.519	U	0.519
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.367	U	0.367	0.429	U	0.429	0.405	U	0.405	0.413	U	0.413
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.15	U	3.15	3.68	U	3.68	3.48	U	3.48	3.54	U	3.54
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1.01	U	1.01	1.18	U	1.18	1.11	U	1.11	1.13	U	1.13
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.27	U	3.27	3.82	U	3.82	290		3.61	308		3.68
Benzene	2.83E+01	NMED-DAF20		0.355	U	0.355	0.416	U	0.416	0.392	U	0.392	0.399	U	0.399
Carbon disulfide	7.52E+03	NMED-DAF20		0.45	U	0.45	0.526	U	0.526	16.3		0.497	6.38	J	0.506
Ethylbenzene	1.05E+04	NMED-DAF20		0.296	U	0.296	0.346	U	0.346	6.58		0.327	0.333	U	0.333
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.391	U	0.391	0.457	U	0.457	87.3		0.431	9.32		0.439
m,p-Xylene	8.00E+04	NMED SSL		0.521	U	0.521	0.609	U	0.609	5.08	J	0.575	0.586	U	0.586
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		2.26	J	0.521	0.609	U	0.609	0.575	U	0.575	1.84	J	0.586
o-Xylene	9.86E+04	NMED SSL		0.284	U	0.284	0.332	U	0.332	15.8		0.314	0.32	U	0.32
Toluene	6.80E+03	NMED-DAF20		0.26	U	0.26	0.305	U	0.305	1.86	J	0.288	0.293	U	0.293
SVOCs (ug/kg)															
Acenaphthene	7.98E+04	NMED-DAF20		1440	U	1440	NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		1370	U	1370	NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		1390	U	1390	NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		1500	U	1500	NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		1690	U	1690	NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		1450	U	1450	NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		2100	U	2100	NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		1310	U	1310	NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		4890	U	4890	NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		1420	U	1420	NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		1800	U	1800	NT			NT			NT		
2-Methylnaphthalene		-		3090	U	3090	NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		2440	U	2440	NT			NT			NT		
Metals (mg/kg)															
Arsenic	1.77E+01	NMED SSL		0.386	U	0.386	3.1		0.395	4.07		0.397	1.12		0.399
Barium	8.23E+02	NMED-DAF20		98.6		0.0858	267		0.0877	77.8		0.0884	64.1		0.0888
Cadmium	7.52E+00	NMED-DAF20		0.455		0.172	0.176	U	0.176	0.176	U	0.176	0.177	U	0.177
Chromium	1.92E+01	NMED-DAF20		102		0.103	19.1		0.105	13.9		0.106	12.6		0.107
Lead	7.50E+02	NMED SSL		37.7		0.188	11.2		0.193	8.36		0.195	7.22		0.196
Selenium	5.17E+00	NMED-DAF20		3.65		0.54	2.56		0.553	2.95		0.557	3.21		0.559
Silver	8.47E+00	NMED-DAF20		0.0686	U	0.0686	0.0701	U	0.0701	0.0707	U	0.0707	0.071	U	0.071
Mercury	3.41E+02	NMED SSL		0.0174	U	0.0174	0.0157	U	0.0157	0.0184	U	0.0184	0.0181	U	0.0181

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-19									TMD-20						TMD-21					
			Date	6/15/2004			6/15/2004			6/15/2004			6/15/2004			6/15/2004			6/15/2004			6/15/2004		
			Depth	(0-2.5')			(5-7')			(13-15')			(0-2.5')			(5-7')			(0-2.5')			(5-7')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		7430		45.9	5700		43.1	42	U	42	1250		49	42.2	U	42.2	230		43.1	36.7	U	36.7
VOCs (ug/kg)																								
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.549	U	0.549	2.58	U	2.58	0.503	U	0.503	0.586	U	0.586	0.505	U	0.505	0.515	U	0.515	0.439	U	0.439
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.436	U	0.436	2.05	U	2.05	0.399	U	0.399	0.466	U	0.466	0.402	U	0.402	0.41	U	0.41	0.349	U	0.349
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.74	U	3.74	17.6	U	17.6	3.43	U	3.43	4	U	4	3.45	U	3.45	3.51	U	3.51	2.99	U	2.99
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1.2	U	1.2	5.62	U	5.62	1.1	U	1.1	1.28	U	1.28	1.1	U	1.1	1.12	U	1.12	0.956	U	0.956
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.88	U	3.88	639		18.3	64.7		3.56	4.15	U	4.15	3.58	U	3.58	3.65	U	3.65	3.1	U	3.1
Benzene	2.83E+01	NMED-DAF20		0.422	U	0.422	1.98	U	1.98	0.387	U	0.387	0.451	U	0.451	0.389	U	0.389	0.396	U	0.396	1.19	J	0.337
Carbon disulfide	7.52E+03	NMED-DAF20		0.534	U	0.534	194		2.51	6.19	J	0.49	0.571	U	0.571	0.492	U	0.492	0.502	U	0.502	0.427	U	0.427
Ethylbenzene	1.05E+04	NMED-DAF20		0.352	U	0.352	75		1.65	0.322	U	0.322	0.376	U	0.376	0.324	U	0.324	0.33	U	0.33	65.6		0.281
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.464	U	0.464	463		2.18	0.425	U	0.425	0.496	U	0.496	0.427	U	0.427	0.436	U	0.436	4.24	J	0.371
m,p-Xylene	8.00E+04	NMED SSL		0.619	U	0.619	91		2.91	0.567	U	0.567	0.662	U	0.662	0.57	U	0.57	0.581	U	0.581	178		0.495
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		2.39	J	0.619	2.91	U	2.91	0.567	U	0.567	0.662	U	0.662	0.57	U	0.57	0.581	U	0.581	0.495	U	0.495
o-Xylene	9.86E+04	NMED SSL		0.338	U	0.338	139		1.59	0.309	U	0.309	0.361	U	0.361	0.311	U	0.311	0.317	U	0.317	2	J	0.27
Toluene	6.80E+03	NMED-DAF20		0.309	U	0.309	16.3	J	1.46	0.284	U	0.284	0.331	U	0.331	0.285	U	0.285	0.291	U	0.291	0.247	U	0.247
SVOCs (ug/kg)																								
Acenaphthene	7.98E+04	NMED-DAF20		1710	U	1710	577	J	321	NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		3390	J	1630	306	U	306	NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		1650	U	1650	517	J	311	NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		1780	U	1780	335	U	335	NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		2010	U	2010	769	J	378	NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		1730	U	1730	2240		325	NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		2490	U	2490	852	J	469	NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		1550	U	1550	2340		292	NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		5810	U	5810	1090	U	1090	NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		1690	U	1690	1640	J	318	NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		2140	U	2140	4100		403	NT			NT			NT			NT			NT		
2-Methylnaphthalene	-	-		3680	U	3680	692	U	692	NT			NT			NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		2900	U	2900	2370		546	NT			NT			NT			NT			NT		
Metals (mg/kg)																								
Arsenic	1.77E+01	NMED SSL		71.9		0.428	8.13		0.392	0.367	U	0.367	0.546	U	0.546	5.09		0.442	3.98		0.38	0.436	U	0.436
Barium	8.23E+02	NMED-DAF20		151		0.0951	87		0.087	27.2		0.0816	178		0.121	122		0.0982	123		0.0847	135		0.097
Cadmium	7.52E+00	NMED-DAF20		0.705		0.19	0.175	U	0.175	0.164	U	0.164	0.931		0.242	0.585		0.197	0.169	U	0.169	0.193	U	0.193
Chromium	1.92E+01	NMED-DAF20		1580		0.114	19		0.104	9.13		0.0978	169		0.146	20.2		0.118	16.2		0.102	5.28		0.116
Lead	7.50E+02	NMED SSL		697		0.21	10.2		0.192	4.67		0.179	595		0.266	14.4		0.216	106		0.186	3.87		0.214
Selenium	5.17E+00	NMED-DAF20		28.3		0.599	2.74		0.548	3.3		0.514	8.27		0.764	1.38		0.618	2.97		0.534	5.1		0.611
Silver	8.47E+00	NMED-DAF20		0.0761	U	0.0761	0.0696	U	0.0696	0.0652	U	0.0652	0.097	U	0.097	0.0785	U	0.0785	0.0678	U	0.0678	0.0776	U	0.0776
Mercury	3.41E+02	NMED SSL		1.56		0.0198	0.0159	U	0.0159	0.0186	U	0.0186	0.192		0.0217	0.0187	U	0.0187	0.0186	U	0.0186	0.015	U	0.015

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-22						TMD-23									TMD-24					
			Date	6/15/2004			6/15/2004			6/15/2004			6/15/2004			6/15/2004			6/16/2004			6/16/2004		
			Depth	(0-1')			(5-7')			(0-1')			(5-7')			Dup-5			(0-2.5')			(7-9')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		35.6	U	35.6	40	U	40	48.8	U	48.8	41.2	U	41.2	41.1	U	41.1	427		36.9	38.6	U	38.6
VOCs (ug/kg)																								
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.426	U	0.426	0.479	U	0.479	0.584	U	0.584	0.493	U	0.493	0.491	U	0.491	0.442	U	0.442	0.462	U	0.462
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.338	U	0.338	0.381	U	0.381	0.464	U	0.464	0.392	U	0.392	0.39	U	0.39	0.351	U	0.351	0.367	U	0.367
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		2.9	U	2.9	3.27	U	3.27	3.98	U	3.98	3.36	U	3.36	3.35	U	3.35	3.01	U	3.01	3.15	U	3.15
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		0.928	U	0.928	1.04	U	1.04	1.27	U	1.27	1.07	U	1.07	1.07	U	1.07	0.963	U	0.963	1.01	U	1.01
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.01	U	3.01	3.39	U	3.39	4.13	U	4.13	3.49	U	3.49	3.48	U	3.48	3.13	U	3.13	3.27	U	3.27
Benzene	2.83E+01	NMED-DAF20		0.328	U	0.328	0.369	U	0.369	0.449	U	0.449	0.379	U	0.379	0.378	U	0.378	0.34	U	0.34	0.355	U	0.355
Carbon disulfide	7.52E+03	NMED-DAF20		0.415	U	0.415	0.467	U	0.467	0.569	U	0.569	0.48	U	0.48	0.479	U	0.479	0.43	U	0.43	0.45	U	0.45
Ethylbenzene	1.05E+04	NMED-DAF20		0.273	U	0.273	0.307	U	0.307	0.374	U	0.374	0.316	U	0.316	2.42	J	0.315	0.283	U	0.283	0.296	U	0.296
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.36	U	0.36	0.405	U	0.405	0.494	U	0.494	0.417	U	0.417	0.416	U	0.416	0.374	U	0.374	0.391	U	0.391
m,p-Xylene	8.00E+04	NMED SSL		0.48	U	0.48	0.541	U	0.541	0.659	U	0.659	0.556	U	0.556	2.27	J	0.554	0.498	U	0.498	0.521	U	0.521
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.48	U	0.48	0.541	U	0.541	0.659	U	0.659	0.556	U	0.556	0.554	U	0.554	0.498	U	0.498	0.521	U	0.521
o-Xylene	9.86E+04	NMED SSL		0.262	U	0.262	0.295	U	0.295	0.359	U	0.359	0.303	U	0.303	3.74	J	0.302	0.272	U	0.272	0.284	U	0.284
Toluene	6.80E+03	NMED-DAF20		0.24	U	0.24	0.27	U	0.27	0.329	U	0.329	0.278	U	0.278	1.98	J	0.277	0.249	U	0.249	0.261	U	0.261
SVOCs (ug/kg)																								
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT			NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
Metals (mg/kg)																								
Arsenic	1.77E+01	NMED SSL		3.02		0.431	0.373	U	0.373	1.27		0.397	0.384	U	0.384	0.417	U	0.417	10.9		0.411	4.1		0.36
Barium	8.23E+02	NMED-DAF20		297		0.0957	94.3		0.083	183		0.088	154		0.0855	27		0.0926	126		0.0914	64		0.0801
Cadmium	7.52E+00	NMED-DAF20		0.505		0.191	0.166	U	0.166	0.642		0.177	0.171	U	0.171	0.185	U	0.185	0.619		0.182	0.16	U	0.16
Chromium	1.92E+01	NMED-DAF20		17.1		0.115	13.7		0.0996	19.1		0.106	7.37		0.103	7.61		0.111	94.3		0.11	7.68		0.0961
Lead	7.50E+02	NMED SSL		56.5		0.211	8.38		0.183	14.7		0.193	4.06		0.188	4.81		0.204	1830		0.2	5.62		0.177
Selenium	5.17E+00	NMED-DAF20		2.73		0.604	2.75		0.523	3.17		0.555	4.48		0.539	2.69		0.583	3.85		0.575	2.18		0.505
Silver	8.47E+00	NMED-DAF20		0.0766	U	0.0766	0.0665	U	0.0665	0.0705	U	0.0705	0.0684	U	0.0684	0.0741	U	0.0741	0.073	U	0.073	0.0641	U	0.0641
Mercury	3.41E+02	NMED SSL		0.016	U	0.016	0.0161	U	0.0161	0.0199	U	0.0199	0.0163	U	0.0163	0.0174	U	0.0174	0.385		0.0146	0.0161	U	0.0161

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-25						TMD-26						TMD-27					
			Date	6/16/2004			6/16/2004			6/16/2004			6/16/2004			6/16/2004			6/16/2004		
			Depth	(0-2.5')			(10-12.5')			(0-2.5')			(7.5-10')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		122		36.7	34.4	U	34.4	257		36.2	42.2	U	42.2	3430		35.7	286		44.7
VOCs (ug/kg)																					
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.439	U	0.439	0.412	U	0.412	0.433	U	0.433	0.505	U	0.505	0.427	U	0.427	0.534	U	0.534
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.349	U	0.349	0.327	U	0.327	0.344	U	0.344	0.402	U	0.402	0.34	U	0.34	0.425	U	0.425
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		2.99	U	2.99	2.81	U	2.81	2.95	U	2.95	3.45	U	3.45	2.91	U	2.91	3.64	U	3.64
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		0.956	U	0.956	0.898	U	0.898	0.943	U	0.943	1.1	U	1.1	0.931	U	0.931	1.16	U	1.16
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.1	U	3.1	2.91	U	2.91	3.06	U	3.06	3.58	U	3.58	3.02	U	3.02	3.78	U	3.78
Benzene	2.83E+01	NMED-DAF20		0.337	U	0.337	17.7		0.317	0.333	U	0.333	0.389	U	0.389	0.329	U	0.329	0.411	U	0.411
Carbon disulfide	7.52E+03	NMED-DAF20		0.427	U	0.427	0.401	U	0.401	0.422	U	0.422	0.492	U	0.492	0.416	U	0.416	0.521	U	0.521
Ethylbenzene	1.05E+04	NMED-DAF20		0.281	U	0.281	17.5		0.264	0.277	U	0.277	21.4		0.324	0.274	U	0.274	0.342	U	0.342
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.371	U	0.371	0.348	U	0.348	0.366	U	0.366	0.427	U	0.427	0.361	U	0.361	0.452	U	0.452
m,p-Xylene	8.00E+04	NMED SSL		0.495	U	0.495	88.6		0.465	0.488	U	0.488	57		0.57	0.482	U	0.482	0.603	U	0.603
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.495	U	0.495	0.465	U	0.465	0.488	U	0.488	0.57	U	0.57	0.482	U	0.482	0.603	U	0.603
o-Xylene	9.86E+04	NMED SSL		0.27	U	0.27	26.5		0.253	0.266	U	0.266	5.48	J	0.311	0.263	U	0.263	0.329	U	0.329
Toluene	6.80E+03	NMED-DAF20		0.247	U	0.247	150		0.232	0.244	U	0.244	0.285	U	0.285	0.241	U	0.241	0.301	U	0.301
SVOCs (ug/kg)																					
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			531	U	531	NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			974	J	507	NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			515	U	515	NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			554	U	554	NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			625	U	625	NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			538	U	538	NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			777	U	777	NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			483	U	483	NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			1810	U	1810	NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			527	U	527	NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			667	U	667	NT		
2-Methylnaphthalene		-		NT			NT			NT			NT			1150	U	1150	NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			NT			NT			NT			904	U	904	NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		0.357	U	0.357	0.301	U	0.301	3.44		0.301	0.448	U	0.448	12.5		0.32	0.363	U	0.363
Barium	8.23E+02	NMED-DAF20		98		0.0792	0.0668	U	0.0668	136		0.0668	160		0.0996	172		0.0711	161		0.0805
Cadmium	7.52E+00	NMED-DAF20		0.159	U	0.159	0.134	U	0.134	0.698		0.133	0.199	U	0.199	0.142	U	0.142	0.473		0.162
Chromium	1.92E+01	NMED-DAF20		12.6		0.0951	6.6		0.0801	51.9		0.0802	14		0.12	171		0.0853	21.5		0.0967
Lead	7.50E+02	NMED SSL		8.79		0.174	3.48		0.147	135		0.148	9.51		0.219	55.1		0.157	10.4		0.177
Selenium	5.17E+00	NMED-DAF20		2.62		0.499	2.11		0.421	2.54		0.422	3.8		0.628	9.69		0.448	3.11		0.508
Silver	8.47E+00	NMED-DAF20		0.0633	U	0.0633	0.0534	U	0.0534	0.683		0.0535	0.0797	U	0.0797	0.057	U	0.057	0.0645	U	0.0645
Mercury	3.41E+02	NMED SSL		0.0169	U	0.0169	0.0158	U	0.0158	0.141		0.0148	0.0194	U	0.0194	0.145		0.0172	0.0162	U	0.0162

Qualifier Key
U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.
J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-28									TMD-29					
			Date	6/16/2004			6/16/2004			6/16/2004			6/17/2004			6/17/2004		
			Depth	(0-2.5')			(5-7.5')			Dup-6			(0-1')			(9-10')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		1840		38.5	149		42.2	41.8	U	41.8	3030		37.7	189		42.3
VOCs (ug/kg)																		
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.461	U	0.461	0.505	U	0.505	0.501	U	0.501	0.451	U	0.451	0.506	U	0.506
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.366	U	0.366	0.401	U	0.401	0.398	U	0.398	0.358	U	0.358	0.402	U	0.402
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.14	U	3.14	3.44	U	3.44	3.41	U	3.41	3.08	U	3.08	3.45	U	3.45
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1	U	1	1.1	U	1.1	1.09	U	1.09	0.983	U	0.983	1.1	U	1.1
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.26	U	3.26	3.57	U	3.57	3.54	U	3.54	3.19	U	3.19	87.4		3.58
Benzene	2.83E+01	NMED-DAF20		0.355	U	0.355	0.388	U	0.388	18.1		0.385	0.347	U	0.347	0.389	U	0.389
Carbon disulfide	7.52E+03	NMED-DAF20		0.449	U	0.449	0.492	U	0.492	0.488	U	0.488	0.439	U	0.439	1.78	J	0.493
Ethylbenzene	1.05E+04	NMED-DAF20		0.296	U	0.296	0.323	U	0.323	63.8		0.321	0.289	U	0.289	0.324	U	0.324
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.39	U	0.39	0.427	U	0.427	2.23	J	0.424	0.382	U	0.382	0.428	U	0.428
m,p-Xylene	8.00E+04	NMED SSL		0.52	U	0.52	0.569	U	0.569	268		0.565	0.509	U	0.509	0.571	U	0.571
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.52	U	0.52	0.569	U	0.569	0.565	U	0.565	2.23	J	0.509	0.571	U	0.571
o-Xylene	9.86E+04	NMED SSL		0.284	U	0.284	0.31	U	0.31	9.99		0.308	0.277	U	0.277	0.311	U	0.311
Toluene	6.80E+03	NMED-DAF20		0.26	U	0.26	1.99	J	0.285	0.282	U	0.282	0.254	U	0.254	0.285	U	0.285
SVOCs (ug/kg)																		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			561	U	561	NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			535	U	535	NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			543	U	543	NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			585	U	585	NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			660	U	660	NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			568	U	568	NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			820	U	820	NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			510	U	510	NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			1910	U	1910	NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			556	U	556	NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			704	U	704	NT		
2-Methylnaphthalene		-		NT			NT			NT			1210	U	1210	NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			NT			NT			954	U	954	NT		
Metals (mg/kg)																		
Arsenic	1.77E+01	NMED SSL		0.976		0.324	0.428	U	0.428	0.516	U	0.516	11.2		0.51	0.436	U	0.436
Barium	8.23E+02	NMED-DAF20		94.4		0.0721	60.9		0.0951	103		0.115	168		0.113	78		0.0968
Cadmium	7.52E+00	NMED-DAF20		0.458		0.144	0.19	U	0.19	0.23	U	0.23	0.707		0.227	0.193	U	0.193
Chromium	1.92E+01	NMED-DAF20		333		0.0865	10.1		0.114	12.7		0.137	683		0.136	8.85		0.116
Lead	7.50E+02	NMED SSL		108		0.158	6.17		0.21	7.16		0.252	295		0.25	5.31		0.213
Selenium	5.17E+00	NMED-DAF20		4.48		0.454	3.4		0.599	4.59		0.723	7.25		0.714	2.88		0.61
Silver	8.47E+00	NMED-DAF20		0.0577	U	0.0577	0.0761	U	0.0761	0.0917	U	0.0917	0.0906	U	0.0906	0.0774	U	0.0774
Mercury	3.41E+02	NMED SSL		0.503		0.0157	0.016	U	0.016	0.0171	U	0.0171	0.492		0.0177	0.0187	U	0.0187

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-30						TMD-31						TMD-32					
			Date	6/17/2004			6/17/2004			6/17/2004			6/17/2004			6/17/2004			6/17/2004		
			Depth	(0-1')			(5-7')			(0-2.5')			(7.5-10')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		187		39	42.2	U	42.2	713		40.4	42.4	U	42.4	537		38	42.2	U	42.2
VOCs (ug/kg)																					
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.467	U	0.467	0.505	U	0.505	0.483	U	0.483	0.507	U	0.507	0.455	U	0.455	0.505	U	0.505
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.371	U	0.371	0.401	U	0.401	0.384	U	0.384	0.403	U	0.403	0.361	U	0.361	0.402	U	0.402
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.19	U	3.19	3.44	U	3.44	3.3	U	3.3	3.46	U	3.46	3.1	U	3.1	3.45	U	3.45
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1.02	U	1.02	1.1	U	1.1	1.05	U	1.05	1.11	U	1.11	0.991	U	0.991	1.1	U	1.1
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.31	U	3.31	32.7		3.57	3.42	U	3.42	3.59	U	3.59	3.22	U	3.22	3.58	U	3.58
Benzene	2.83E+01	NMED-DAF20		0.359	U	0.359	0.388	U	0.388	0.372	U	0.372	0.39	U	0.39	0.35	U	0.35	0.389	U	0.389
Carbon disulfide	7.52E+03	NMED-DAF20		0.455	U	0.455	0.492	U	0.492	0.471	U	0.471	0.494	U	0.494	0.443	U	0.443	0.492	U	0.492
Ethylbenzene	1.05E+04	NMED-DAF20		0.299	U	0.299	0.323	U	0.323	0.31	U	0.31	0.325	U	0.325	4.91	J	0.291	0.324	U	0.324
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.395	U	0.395	0.427	U	0.427	0.409	U	0.409	0.429	U	0.429	0.385	U	0.385	0.427	U	0.427
m,p-Xylene	8.00E+04	NMED SSL		0.527	U	0.527	0.569	U	0.569	0.545	U	0.545	0.572	U	0.572	15.6		0.513	0.57	U	0.57
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.527	U	0.527	0.569	U	0.569	1.65	J	0.545	0.572	U	0.572	0.513	U	0.513	0.57	U	0.57
o-Xylene	9.86E+04	NMED SSL		0.287	U	0.287	0.31	U	0.31	0.297	U	0.297	0.312	U	0.312	1.84	J	0.28	0.311	U	0.311
Toluene	6.80E+03	NMED-DAF20		0.263	U	0.263	0.285	U	0.285	0.273	U	0.273	0.286	U	0.286	0.256	U	0.256	0.285	U	0.285
SVOCs (ug/kg)																					
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		1.34		0.359	4.56		0.448	10.9		0.387	4.83		0.505	9.91		0.486	4.18		0.373
Barium	8.23E+02	NMED-DAF20		126		0.0799	169		0.0995	243		0.086	221		0.112	162		0.108	146		0.083
Cadmium	7.52E+00	NMED-DAF20		0.159	U	0.159	0.704		0.199	0.977		0.172	0.569		0.224	0.739		0.216	0.723		0.166
Chromium	1.92E+01	NMED-DAF20		14.6		0.0958	28.9		0.119	395		0.103	18.1		0.134	28.9		0.129	27.2		0.0996
Lead	7.50E+02	NMED SSL		8.91		0.176	33.7		0.219	293		0.19	13.1		0.247	21.3		0.238	20		0.183
Selenium	5.17E+00	NMED-DAF20		2.79		0.503	3.51		0.627	7.02		0.542	0.706	U	0.706	2.61		0.679	2.24		0.523
Silver	8.47E+00	NMED-DAF20		0.0638	U	0.0638	0.0796	U	0.0796	0.0689	U	0.0689	0.0897	U	0.0897	0.0864	U	0.0864	0.0665	U	0.0665
Mercury	3.41E+02	NMED SSL		0.0163	U	0.0163	0.019	U	0.019	0.225		0.0178	0.0164	U	0.0164	0.0153	U	0.0153	0.0161	U	0.0161

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-33												TMD-34					
			Date	6/17/2004			7/22/2004			6/17/2004			6/17/2004			6/17/2004			6/17/2004		
			Depth	(0-1')			(0-2.5')			(5-7')			Dup-7			(0-1')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		18900		40.1	809		32.6	636		46.3	160		48.4	671		39.3	249		44.4
VOCs (ug/kg)																					
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.48	U	0.48	NT			0.554	U	0.554	0.579	U	0.579	0.47	U	0.47	0.531	U	0.531
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.381	U	0.381	NT			0.44	U	0.44	0.46	U	0.46	0.373	U	0.373	0.422	U	0.422
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.27	U	3.27	NT			3.78	U	3.78	3.95	U	3.95	3.2	U	3.2	3.62	U	3.62
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1.05	U	1.05	NT			1.21	U	1.21	1.26	U	1.26	1.02	U	1.02	1.16	U	1.16
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.39	U	3.39	NT			3.92	U	3.92	4.09	U	4.09	3.33	U	3.33	3.76	U	3.76
Benzene	2.83E+01	NMED-DAF20		0.369	U	0.369	NT			0.426	U	0.426	0.445	U	0.445	0.361	U	0.361	0.408	U	0.408
Carbon disulfide	7.52E+03	NMED-DAF20		0.467	U	0.467	NT			0.54	U	0.54	0.564	U	0.564	0.458	U	0.458	0.517	U	0.517
Ethylbenzene	1.05E+04	NMED-DAF20		0.308	U	0.308	NT			0.355	U	0.355	0.371	U	0.371	0.301	U	0.301	0.34	U	0.34
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.406	U	0.406	NT			0.469	U	0.469	0.49	U	0.49	0.398	U	0.398	0.449	U	0.449
m,p-Xylene	8.00E+04	NMED SSL		0.541	U	0.541	NT			0.625	U	0.625	0.653	U	0.653	0.53	U	0.53	0.599	U	0.599
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		1.64	J	0.541	NT			0.625	U	0.625	0.653	U	0.653	0.53	U	0.53	0.599	U	0.599
o-Xylene	9.86E+04	NMED SSL		0.295	U	0.295	NT			0.341	U	0.341	0.356	U	0.356	0.289	U	0.289	0.327	U	0.327
Toluene	6.80E+03	NMED-DAF20		0.271	U	0.271	NT			0.312	U	0.312	0.326	U	0.326	0.265	U	0.265	0.299	U	0.299
SVOCs (ug/kg)																					
Acenaphthene	7.98E+04	NMED-DAF20		NT			2500	U	2500	NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			2500	U	2500	NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			2120	U	2120	NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			2500	U	2500	NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			2190	U	2190	NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			2500	U	2500	NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			2500	U	2500	NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			2500	U	2500	NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			2500	U	2500	NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			2500	U	2500	NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			2380	U	2380	NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			2500	U	2500	NT			NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			2500	U	2500	NT			NT			NT			NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		12.4		0.503	NT			3.98		0.399	6.61		0.375	4.26		0.357	7.79		0.356
Barium	8.23E+02	NMED-DAF20		240		0.112	NT			214		0.0888	149		0.0834	283		0.0793	406		0.079
Cadmium	7.52E+00	NMED-DAF20		0.224	U	0.224	NT			0.521		0.178	0.417		0.166	0.159	U	0.159	0.444		0.158
Chromium	1.92E+01	NMED-DAF20		691		0.134	NT			25.9		0.107	22.7		0.1	32		0.0951	29.4		0.095
Lead	7.50E+02	NMED SSL		215		0.246	NT			17		0.196	13.6		0.184	18.3		0.175	19.5		0.174
Selenium	5.17E+00	NMED-DAF20		9.01		0.705	NT			1.67		0.56	0.924		0.525	1.85		0.499	0.498	U	0.498
Silver	8.47E+00	NMED-DAF20		0.0894	U	0.0894	NT			0.071	U	0.071	0.0666	U	0.0666	0.0634	U	0.0634	0.0633	U	0.0633
Mercury	3.41E+02	NMED SSL		0.207		0.0161	NT			0.0182	U	0.0182	0.0197	U	0.0197	0.0145	U	0.0145	0.0176	U	0.0176

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-35									TMD-36										
			Date	6/21/2004			7/22/2004			6/21/2004			6/21/2004			7/22/2004			6/21/2004			6/21/2004		
			Depth	(0-1')			(0-2.5')			(7-9')			(0-2.5')			(0-2.5')			(10-12.5')			(17.5-20')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		17800		38.9	1810		32.6	356		42.4	2580		38	1920		32.6	8480		45	188		42.3
VOCs (ug/kg)																								
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.465	U	0.465	NT			0.507	U	0.507	0.454	U	0.454	NT			2.69	U	2.69	0.506	U	0.506
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.369	U	0.369	NT			0.403	U	0.403	0.361	U	0.361	NT			2.14	U	2.14	0.403	U	0.403
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.17	U	3.17	NT			3.46	U	3.46	3.1	U	3.1	NT			18.4	U	18.4	3.45	U	3.45
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1.01	U	1.01	NT			1.11	U	1.11	0.99	U	0.99	NT			5.87	U	5.87	1.1	U	1.1
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.29	U	3.29	NT			3.59	U	3.59	3.21	U	3.21	NT			772		19.1	57.1		3.58
Benzene	2.83E+01	NMED-DAF20		0.358	U	0.358	NT			0.39	U	0.39	0.349	U	0.349	NT			112		2.07	0.39	U	0.39
Carbon disulfide	7.52E+03	NMED-DAF20		0.453	U	0.453	NT			0.494	U	0.494	0.442	U	0.442	NT			122		2.62	30.9		0.494
Ethylbenzene	1.05E+04	NMED-DAF20		0.298	U	0.298	NT			0.325	U	0.325	0.291	U	0.291	NT			859		1.73	0.325	U	0.325
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.393	U	0.393	NT			0.429	U	0.429	0.384	U	0.384	NT			985		13.8	0.429	U	0.429
m,p-Xylene	8.00E+04	NMED SSL		0.524	U	0.524	NT			0.572	U	0.572	0.512	U	0.512	NT			374		3.04	0.571	U	0.571
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		3.43	J	0.524	NT			0.572	U	0.572	0.512	U	0.512	NT			3.04	U	3.04	0.571	U	0.571
o-Xylene	9.86E+04	NMED SSL		0.286	U	0.286	NT			0.312	U	0.312	0.279	U	0.279	NT			2390		16.9	0.312	U	0.312
Toluene	6.80E+03	NMED-DAF20		0.262	U	0.262	NT			0.286	U	0.286	0.256	U	0.256	NT			244		1.52	0.286	U	0.286
SVOCs (ug/kg)																								
Acenaphthene	7.98E+04	NMED-DAF20		NT			2500	U	2500	NT			NT			2500	U	2500	335	U	335	NT		
Anthracene	1.60E+06	NMED-DAF20		NT			2500	U	2500	NT			NT			2500	U	2500	3940		320	NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			2120	U	2120	NT			NT			2120	U	2120	1060	J	325	NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			2500	U	2500	NT			NT			2500	U	2500	446	J	349	NT		
Chrysene	1.10E+05	NMED-DAF20		NT			2190	U	2190	NT			NT			2190	U	2190	1600	J	394	NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			2500	U	2500	NT			NT			2500	U	2500	4310		339	NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			2500	U	2500	NT			NT			2500	U	2500	2200	J	490	NT		
Fluorene	1.00E+05	NMED-DAF20		NT			2500	U	2500	NT			NT			2500	U	2500	5950		305	NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			2500	U	2500	NT			NT			2500	U	2500	1140	U	1140	NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			2500	U	2500	NT			NT			2500	U	2500	332	U	332	NT		
Pyrene	5.68E+05	NMED-DAF20		NT			2380	U	2380	NT			NT			2380	U	2380	7640		421	NT		
2-Methylnaphthalene	-	-		NT			2500	U	2500	NT			NT			2500	U	2500	722	U	722	NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			2500	U	2500	NT			NT			2500	U	2500	570	U	570	NT		
Metals (mg/kg)																								
Arsenic	1.77E+01	NMED SSL		11.2		0.487	NT			1.26		0.437	8.79		0.374	NT			0.438	U	0.438	0.39	U	0.39
Barium	8.23E+02	NMED-DAF20		243		0.108	NT			184		0.097	186		0.0831	NT			139		0.0972	203		0.0866
Cadmium	7.52E+00	NMED-DAF20		0.217	U	0.217	NT			0.194	U	0.194	0.166	U	0.166	NT			0.195	U	0.195	0.173	U	0.173
Chromium	1.92E+01	NMED-DAF20		294		0.13	NT			21.8		0.117	234		0.0998	NT			15.4		0.117	7.5		0.104
Lead	7.50E+02	NMED SSL		100		0.238	NT			16		0.213	118		0.183	NT			11.3		0.214	5.21		0.191
Selenium	5.17E+00	NMED-DAF20		5.93		0.683	NT			4.55		0.611	5.75		0.524	NT			3.99		0.613	3.26		0.545
Silver	8.47E+00	NMED-DAF20		0.0867	U	0.0867	NT			0.0776	U	0.0776	0.0665	U	0.0665	NT			0.0778	U	0.0778	0.0692	U	0.0692
Mercury	3.41E+02	NMED SSL		0.114		0.0164	NT			0.0128	U	0.0128	0.27		0.0153	NT			0.0549		0.0184	0.0179	U	0.0179

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7G. Three Mile Ditch, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	TMD-37												TMD-38					
			Date	6/21/2004			6/21/2004			6/21/2004			6/21/2004			6/23/2004			6/23/2004		
			Depth	(0-2.5')			(7.5-10')			Dup-7			(15-17.5')			(0-2.5')			(5-7.5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		665		36.7	2370		40.1	5190		38.4	42.7	U	42.7	2650		35.3	226		41.5
VOCs (ug/kg)																					
1,1,2,2-Tetrachloroethane	3.40E-01	NMED-DAF20		0.439	U	0.439	0.48	U	0.48	0.46	U	0.46	0.51	U	0.51	0.422	U	0.422	0.497	U	0.497
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.349	U	0.349	0.382	U	0.382	0.366	U	0.366	0.406	U	0.406	0.335	U	0.335	0.395	U	0.395
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		2.99	U	2.99	3.28	U	3.28	3.14	U	3.14	3.48	U	3.48	2.88	U	2.88	3.39	U	3.39
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		0.956	U	0.956	1.05	U	1.05	1	U	1	1.11	U	1.11	0.92	U	0.92	1.08	U	1.08
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		9.87	J	3.1	3.4	U	3.4	3.25	U	3.25	39.9		3.61	27.5		2.99	15.9		3.52
Benzene	2.83E+01	NMED-DAF20		0.337	U	0.337	0.369	U	0.369	0.354	U	0.354	0.393	U	0.393	0.325	U	0.325	0.382	U	0.382
Carbon disulfide	7.52E+03	NMED-DAF20		0.427	U	0.427	0.468	U	0.468	0.448	U	0.448	44.6		0.497	0.411	U	0.411	0.484	U	0.484
Ethylbenzene	1.05E+04	NMED-DAF20		0.281	U	0.281	0.308	U	0.308	0.295	U	0.295	0.327	U	0.327	0.271	U	0.271	0.318	U	0.318
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.371	U	0.371	0.406	U	0.406	0.389	U	0.389	0.432	U	0.432	0.357	U	0.357	0.42	U	0.42
m,p-Xylene	8.00E+04	NMED SSL		0.495	U	0.495	0.542	U	0.542	0.519	U	0.519	0.576	U	0.576	0.476	U	0.476	0.561	U	0.561
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		1.15	J	0.495	0.542	U	0.542	0.519	U	0.519	1.81	J	0.576	1.85	J	0.476	1.61	J	0.561
o-Xylene	9.86E+04	NMED SSL		0.27	U	0.27	0.296	U	0.296	0.283	U	0.283	0.314	U	0.314	0.26	U	0.26	0.306	U	0.306
Toluene	6.80E+03	NMED-DAF20		1.15	J	0.247	0.271	U	0.271	0.259	U	0.259	3.15	J	0.288	0.238	U	0.238	0.28	U	0.28
SVOCs (ug/kg)																					
Acenaphthene	7.98E+04	NMED-DAF20		NT			299	U	299	286	U	286	NT			2710	U	2710	NT		
Anthracene	1.60E+06	NMED-DAF20		NT			285	U	285	273	U	273	NT			2710	U	2710	NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			289	U	289	277	U	277	NT			2290	U	2290	NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			312	U	312	298	U	298	NT			2710	U	2710	NT		
Chrysene	1.10E+05	NMED-DAF20		NT			352	U	352	337	U	337	NT			2370	U	2370	NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			302	U	302	290	U	290	NT			2710	U	2710	NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			437	U	437	418	U	418	NT			2710	U	2710	NT		
Fluorene	1.00E+05	NMED-DAF20		NT			272	U	272	260	U	260	NT			2710	U	2710	NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			1020	U	1020	973	U	973	NT			2710	U	2710	NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			296	U	296	284	U	284	NT			2710	U	2710	NT		
Pyrene	5.68E+05	NMED-DAF20		NT			804	J	375	359	U	359	NT			2580	U	2580	NT		
2-Methylnaphthalene	-	-		NT			644	U	644	617	U	617	NT			2710	U	2710	NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			508	U	508	486	U	486	NT			2710	U	2710	NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		6.02		0.308	5.99		0.454	0.368	U	0.368	0.347	U	0.347	4.8		0.267	3.86		0.409
Barium	8.23E+02	NMED-DAF20		149		0.0686	136		0.101	124		0.0818	88.2		0.077	167		0.0594	267		0.091
Cadmium	7.52E+00	NMED-DAF20		0.137	U	0.137	0.202	U	0.202	0.164	U	0.164	0.154	U	0.154	0.119	U	0.119	0.182	U	0.182
Chromium	1.92E+01	NMED-DAF20		121		0.0823	12.2		0.121	9.44		0.0982	4.34		0.0924	251		0.0713	22.3		0.109
Lead	7.50E+02	NMED SSL		37.9		0.151	7.44		0.222	6.14		0.18	3.62		0.169	42.3		0.131	17.3		0.2
Selenium	5.17E+00	NMED-DAF20		6.2		0.432	3.5		0.635	2.81		0.515	2.83		0.486	3.94		0.374	3.57		0.573
Silver	8.47E+00	NMED-DAF20		0.0549	U	0.0549	0.0808	U	0.0808	0.0656	U	0.0656	0.0616	U	0.0616	0.0476	U	0.0476	0.0727	U	0.0727
Mercury	3.41E+02	NMED SSL		0.0882		0.0147	0.0161	U	0.0161	0.0166	U	0.0166	0.0171	U	0.0171	0.298		0.0142	0.0167	U	0.0167

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 7H Three-Mile Ditch, Boring Groundwater Data Table, Navajo Refinery, Artesia, New Mexico

	NM standard GWs	Standard Source	ID #	TMD-1			TMD-2			TMD-3			TMD-4			TMD-5			TMD-6			TMD-7		
Analyte	(ug/L)		Date	6/9/2004			6/22/2004			6/10/2004			6/18/2004			6/11/2004			6/11/2004			6/11/2004		
BTEX				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL	ug/L	72.7		0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		40		0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05
m,p-Xylene	1.00E+04	EPA MCL		104		0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07
o-Xylene	1.00E+04	EPA MCL		11.7		0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		33.1		0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05
SVOCs																								
Anthracene	1.80E+03	EPA9TAP	ug/L	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Benzo(a)anthracene	9.20E-02	EPA9TAP		0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03
Benzo(a)pyrene	2.00E-01	MCL		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Fluoranthene	1.50E+03	EPA9TAP		0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07
Fluorene	2.40E+02	EPA9TAP		1.63		0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Indeno(1,2,3-cd)pyrene	9.20E-02	EPA9TAP		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Naphthalene	6.20E+00	EPA9TAP		21.9		0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17
Phenanthrene	1.80E+02	Surrogate(pyrene)		1.06		0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Benzo(g,h,i)perylene		-		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04

	NM standard GWs	Standard Source	ID #	TMD-8			TMD-9			TMD-10			Dup-1BW			TMD-11			TMD-12			TMD-13		
Analyte	(ug/L)		Date	6/11/2004			6/11/2004			6/14/2004			6/14/2004			6/14/2004			6/14/2004			6/14/2004		
BTEX				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL	ug/L	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05
m,p-Xylene	1.00E+04	EPA MCL		0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07
o-Xylene	1.00E+04	EPA MCL		0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05
SVOCs																								
Anthracene	1.80E+03	EPA9TAP	ug/L	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Benzo(a)anthracene	9.20E-02	EPA9TAP		0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03
Benzo(a)pyrene	2.00E-01	MCL		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Fluoranthene	1.50E+03	EPA9TAP		0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07
Fluorene	2.40E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Indeno(1,2,3-cd)pyrene	9.20E-02	EPA9TAP		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Naphthalene	6.20E+00	EPA9TAP		0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17
Phenanthrene	1.80E+02	Surrogate(pyrene)		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Benzo(g,h,i)perylene		-		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04

Qualifier Key

Shaded value indicates that the compound was not detected and 1/2 the SQL exceeds the Groundwater Standard.

Shaded value indicates that the detected concentration exceeds the Groundwater Standard.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NMED New Mexico Water Quality Commission Standards, 2002.

MCL Federal/EPA Maximum Contaiminant Level (MCL).

EPA9TAP USEPA Region 9 PRGs for tapwater.

Table 7H Three-Mile Ditch, Boring Groundwater Data Table, Navajo Refinery, Artesia, New Mexico

Analyte	NM standard GWs (ug/L)	Standard Source	ID #	TMD-14			Dup-2BW			TMD-15			TMD-16			TMD-17			TMD-18		
			Date	6/15/2004						6/15/2004			6/15/2004			6/15/2004			6/15/2004		
BTEX				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL	ug/L	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05
m,p-Xylene	1.00E+04	EPA MCL		0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	8.37		0.07	0.07	U	0.07
o-Xylene	1.00E+04	EPA MCL		0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05
SVOCs																					
Anthracene	1.80E+03	EPA9TAP	ug/L	NT			0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Benzo(a)anthracene	9.20E-02	EPA9TAP		NT			0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03
Benzo(a)pyrene	2.00E-01	MCL		NT			0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		NT			0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Fluoranthene	1.50E+03	EPA9TAP		NT			0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07
Fluorene	2.40E+02	EPA9TAP		NT			0.852		0.04	4.42		0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Indeno(1,2,3-cd)pyrene	9.20E-02	EPA9TAP		NT			0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Naphthalene	6.20E+00	EPA9TAP		NT			0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17
Phenanthrene	1.80E+02	Surrogate(pyrene)		NT			0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		NT			0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Benzo(g,h,i)perylene		-		NT			0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04

Analyte	NM standard GWs (ug/L)	Standard Source	ID #	TMD-19			Dup-3BW			TMD-20			TMD-21			TMD-22			TMD-23			TMD-24		
			Date	6/16/2004						6/16/2004			6/16/2004			6/22/2004			6/17/2004			6/28/2004		
BTEX				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL	ug/L	75.4		0.08	88.6		0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		22.3		0.1	20.9		0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05
m,p-Xylene	1.00E+04	EPA MCL		210		0.14	193		0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07
o-Xylene	1.00E+04	EPA MCL		50.2		0.18	53.4		0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		39.9		0.1	38.7		0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05
SVOCs																								
Anthracene	1.80E+03	EPA9TAP	ug/L	42.2		2	3.15		0.2	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Benzo(a)anthracene	9.20E-02	EPA9TAP		649		15	33.8		1.5	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03
Benzo(a)pyrene	2.00E-01	MCL		4.98		0.2	0.2	U	0.2	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		122		2	4.3		0.2	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Fluoranthene	1.50E+03	EPA9TAP		35	U	35	37.1		0.7	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07
Fluorene	2.40E+02	EPA9TAP		144		4	14.8		0.4	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Indeno(1,2,3-cd)pyrene	9.20E-02	EPA9TAP		4.39		0.2	0.2	U	0.2	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Naphthalene	6.20E+00	EPA9TAP		17	U	17	166		1.7	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17
Phenanthrene	1.80E+02	Surrogate(pyrene)		384		10	23.8		1	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		468		20	17.9		0.4	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Benzo(g,h,i)perylene		-		36.5		0.4	0.4	U	0.4	36.5		0.4	0.4	U	0.4	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04

Qualifier Key

Shaded value indicates that the compound was not detected and 1/2 the SQL e

Shaded value indicates that the detected concentration exceeds the Groundwat

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NMED New Mexico Water Quality Commission Standards, 2002.

MCL Federal/EPA Maximum Contaiminant Level (MCL).

EPA9TAP USEPA Region 9 PRGs for tapwater.

Table 7H Three-Mile Ditch, Boring Groundwater Data Table, Navajo Refinery, Artesia, New Mexico

Analyte	NM standard GWs (ug/L)	Standard Source	ID #	TMD-25			TMD-26			TMD-27			TMD-28			TMD-29			TMD-30			TMD-31		
			Date	6/29/2004			6/17/2004			6/17/2004			6/17/2004			6/17/2004			6/17/2004			6/17/2004		
BTEX				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL	ug/L	17.5		0.04	0.04	U	0.04	43.8		0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05
m,p-Xylene	1.00E+04	EPA MCL		0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07
o-Xylene	1.00E+04	EPA MCL		0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		14.1		0.05	0.05	U	0.05	19.4		0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05
SVOCs																								
Anthracene	1.80E+03	EPA9TAP	ug/L	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Benzo(a)anthracene	9.20E-02	EPA9TAP		0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03
Benzo(a)pyrene	2.00E-01	MCL		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	1.11		0.02	0.02	U	0.02
Fluoranthene	1.50E+03	EPA9TAP		0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	2.74		0.07	0.07	U	0.07
Fluorene	2.40E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Indeno(1,2,3-cd)pyrene	9.20E-02	EPA9TAP		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Naphthalene	6.20E+00	EPA9TAP		0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17
Phenanthrene	1.80E+02	Surrogate(pyrene)		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.232		0.02	0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	19.5		0.4	0.04	U	0.04
Benzo(g,h,i)perylene		-		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04

Analyte	NM standard GWs (ug/L)	Standard Source	ID #	TMD-32			TMD-33			TMD-34			TMD-35			TMD-36			TMD-37			TMD-38		
			Date	6/17/2004			6/21/2004			6/21/2004			6/23/2004			6/24/2004			6/24/2004			6/24/2004		
BTEX				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL	ug/L	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	21.4		0.04	0.04	U	0.04	0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	7.54		0.05	0.05	U	0.05	0.05	U	0.05
m,p-Xylene	1.00E+04	EPA MCL		0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	11.3		0.07	0.07	U	0.07	0.07	U	0.07
o-Xylene	1.00E+04	EPA MCL		0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	0.09	U	0.09	19.5		0.09	0.09	U	0.09	0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05	25.7		0.05	0.05	U	0.05	0.05	U	0.05
SVOCs																								
Anthracene	1.80E+03	EPA9TAP	ug/L	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	3.15		0.2	0.02	U	0.02	0.02	U	0.02
Benzo(a)anthracene	9.20E-02	EPA9TAP		0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.03	U	0.03	0.3	U	0.3	0.03	U	0.03	0.564		0.03
Benzo(a)pyrene	2.00E-01	MCL		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.2	U	0.2	0.02	U	0.02	0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	12.7		0.2	0.02	U	0.02	0.02	U	0.02
Fluoranthene	1.50E+03	EPA9TAP		0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	0.07	U	0.07	40.7		0.7	0.07	U	0.07	0.07	U	0.07
Fluorene	2.40E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	14.6		0.4	0.04	U	0.04	0.04	U	0.04
Indeno(1,2,3-cd)pyrene	9.20E-02	EPA9TAP		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.2	U	0.2	0.02	U	0.02	0.02	U	0.02
Naphthalene	6.20E+00	EPA9TAP		0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	0.17	U	0.17	1.7	U	1.7	0.17	U	0.17	0.17	U	0.17
Phenanthrene	1.80E+02	Surrogate(pyrene)		0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	7.5		0.2	0.02	U	0.02	0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	37.4		2	0.04	U	0.04	0.04	U	0.04
Benzo(g,h,i)perylene		-		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.4	U	0.4	0.04	U	0.04	0.04	U	0.04

Qualifier Key

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NMED New Mexico Water Quality Commission Standards, 2002

MCL Federal/EPA Maximum Contaiminant Level (MCL).

EPA9TAP USEPA Region 9 PRGs for tapwater.

Table 7I Three-Mile Ditch Monitor Well Groundwater Data Table, Navajo Refinery, Artesia, NM

Analyte	Groundwater Standard (mg/L)	Groundwater Standard (ug/L)	Standard Source	ID #	MW-20			MW-8			MW-21			MW-9			MW-29		
				Date	6/9/2004			6/9/2004			6/9/2004			6/10/2004			6/10/2004		
					Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
VOCs																			
4-Methyl-2-pentanone (MIBK)	1.60E-01	1.60E+02	EPA9TAP	ug/L	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78
Acetone (2-Propanone, Dimethyl ketone)	6.10E-01	6.10E+02	EPA9TAP		1.7	U	1.7	1.7	U	1.7	1.7	U	1.7	1.7	U	1.7	1.7	U	1.7
Benzene	5.00E-03	5.00E+00	MCL		0.86	U	0.86	0.86	U	0.86	0.86	U	0.86	0.86	U	0.86	0.86	U	0.86
Carbon disulfide	1.00E+00	1.00E+03	EPA9TAP		0.71	U	0.71	0.71	U	0.71	0.71	U	0.71	0.71	U	0.71	0.71	U	0.71
Chloromethane (Methyl chloride)	1.50E-03	1.50E+00	EPA9TAP		0.99	U	0.99	0.99	U	0.99	0.99	U	0.99	0.99	U	0.99	0.99	U	0.99
Ethylbenzene	7.00E-01	7.00E+02	MCL		0.73	U	0.73	0.73	U	0.73	0.73	U	0.73	0.73	U	0.73	0.73	U	0.73
Isopropylbenzene (Cumene)	6.60E-01	6.60E+02	EPA9TAP		0.707	U	0.707	0.707	U	0.707	0.707	U	0.707	0.707	U	0.707	0.707	U	0.707
m,p-Xylene	1.00E+01	1.00E+04	MCL		0.92	U	0.92	0.92	U	0.92	0.92	U	0.92	0.92	U	0.92	0.92	U	0.92
Methylene chloride (Dichloromethane)	4.30E-03	4.30E+00	EPA9TAP		1.45	U	1.45	1.45	U	1.45	1.96	J	1.45	1.45	U	1.45	1.45	U	1.45
o-Xylene	1.00E+01	1.00E+04	MCL		0.68	U	0.68	0.68	U	0.68	0.68	U	0.68	0.68	U	0.68	0.68	U	0.68
Toluene	7.20E-01	7.20E+02	EPA9TAP		0.47	U	0.47	0.47	U	0.47	0.47	U	0.47	0.47	U	0.47	0.47	U	0.47
Methyl tert-butyl ether (MTBE)	1.30E-02	1.30E+01	EPA9TAP		0.97	U	0.97	2.05	J	0.97	7.82		0.97	2.08	J	0.97	0.97	U	0.97
SVOCs (8270)																			
bis(2-Ethylhexyl)phthalate	4.80E-03	4.80E+00	EPA9TAP	ug/L	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8
2,2'-oxybis(1-Chloropropane)	2.70E-04	2.70E-01	EPA9TAP		1.47	U	1.47	1.47	U	1.47	25.1		1.47	1.47	U	1.47	1.47	U	1.47
SVOCs (8310)																			
Anthracene	1.80E+00	1.80E+03	EPA9TAP	ug/L	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Fluorene	2.40E-01	2.40E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Acenaphthylene	-		-		0.31	U	0.31	0.31	U	0.31	0.31	U	0.31	0.31	U	0.31	0.31	U	0.31
Inorganics																			
Nitrate/Nitrite	1.00E+00	1.00E+03	MCL/EPA9TAP	mg/L	2.51		0.15	13.1		0.3	19.3		0.6	17.6		0.6	32.4		0.3
Total Cyanide	2.00E-01	2.00E+02	NMED/MCL		0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	0.004	U	0.004
Chloride	-		-		397		3.3	555		6.6	576		6.6	587		6.6	641		6.6
Fluoride	-		-		8.2		0.5	6.5		0.5	6.3		0.5	7		0.5	5.9		0.5
Sulfate	-		-		4400		200	3600		200	3360		200	3340		200	2960		200
Total Dissolved Solids (TDS)	1.00E+04	1.00E+07	NMED/MCL		6730			6460			5940			6090			5650		
Metals																			
Arsenic	1.00E-01	1.00E+02	NMED	ug/L	4.44	U	4.44	61.4		4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44
Chromium	5.00E-02	5.00E+01	NMED		4.44	U	4.44	4770		4.44	4.44	U	4.44	221		4.44	4.44	U	4.44
Lead	5.00E-02	5.00E+01	NMED		2.66	U	2.66	3.62		2.66	2.66	U	2.66	2.66	U	2.66	2.66	U	2.66
Nickel	2.00E-01	2.00E+02	NMED		5.25	U	5.25	113		5.25	5.25	U	5.25	5.25	U	5.25	5.25	U	5.25
Selenium	5.00E-02	5.00E+01	NMED/MCL		47.8		4.49	70.4		4.49	67.1		4.49	84		4.49	50.6		4.49
Vanadium	2.60E-01	2.60E+02	EPA9TAP		1.55	U	1.55	399		1.55	1.55	U	1.55	66		1.55	1.55	U	1.55
Zinc	1.00E+01	1.00E+04	NMED		13.7	U	13.7	13.7	U	13.7	13.7	U	13.7	13.7	U	13.7	13.7	U	13.7
Iron	1.00E+00	1.00E+03	NMED		430		18.5	22100		18.5	125		18.5	1190		18.5	349		18.5
Calcium	-		-		424000		29.2	602000		29.2	552000		29.2	605000		29.2	559000		29.2
Magnesium	-		-		693000		67.7	510000		67.7	464000		67.7	495000		67.7	429000		67.7
Manganese	2.00E-01	2.00E+02	NMED		412		2.91	375		2.91	2580		2.91	2410		2.91	2.91	U	2.91
Potassium	-		-		1640		88.1	3330		88.1	2690		88.1	4030		88.1	5560		88.1
Sodium	-		-		570000		768	580000		768	439000		768	607000		768	520000		768

Qualifier Key

Shaded value indicates that the compound was not detected and 1/2 the SQL exceeds the Groundwater Standard.

Shaded value indicates that the detected concentration exceeds the Groundwater Standard.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NMED New Mexico Water (New Mexico Water Quality Commission Standards, 2002.

MCL Federal/EPA Maximu Federal/EPA Maximum Contaiminant Level (MCL).

EPA9TAP USEPA Region 9 PRC USEPA Region 9 PRGs for tapwater.

Table 7I Three-Mile Ditch Monitor Well Groundwater Data Table, Navajo Refinery, Artesia, NM

Analyte	Groundwater Standard (mg/L)	Groundwater Standard (ug/L)	Standard Source	ID # / Date	MW-28 6/10/2004			MW-27 6/17/2004			MW-16 6/10/2004			MW-26 6/11/2004			MW-25 6/17/2004		
					Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
VOCs																			
4-Methyl-2-pentanone (MIBK)	1.60E-01	1.60E+02	EPA9TAP	ug/L	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78
Acetone (2-Propanone, Dimethyl ketone)	6.10E-01	6.10E+02	EPA9TAP		1.7	U	1.7	1.7	U	1.7	1.7	U	1.7	1.7	U	1.7	1.7	U	1.7
Benzene	5.00E-03	5.00E+00	MCL		0.86	U	0.86	0.86	U	0.86	0.86	U	0.86	0.86	U	0.86	0.86	U	0.86
Carbon disulfide	1.00E+00	1.00E+03	EPA9TAP		0.71	U	0.71	0.71	U	0.71	0.71	U	0.71	0.71	U	0.71	0.71	U	0.71
Chloromethane (Methyl chloride)	1.50E-03	1.50E+00	EPA9TAP		0.99	U	0.99	0.99	U	0.99	0.99	U	0.99	0.99	U	0.99	0.99	U	0.99
Ethylbenzene	7.00E-01	7.00E+02	MCL		0.73	U	0.73	0.73	U	0.73	0.73	U	0.73	0.73	U	0.73	0.73	U	0.73
Isopropylbenzene (Cumene)	6.60E-01	6.60E+02	EPA9TAP		0.707	U	0.707	0.707	U	0.707	0.707	U	0.707	0.707	U	0.707	0.707	U	0.707
m,p-Xylene	1.00E+01	1.00E+04	MCL		0.92	U	0.92	0.92	U	0.92	0.92	U	0.92	0.92	U	0.92	0.92	U	0.92
Methylene chloride (Dichloromethane)	4.30E-03	4.30E+00	EPA9TAP		1.45	U	1.45	1.45	U	1.45	1.45	U	1.45	1.45	U	1.45	1.45	U	1.45
o-Xylene	1.00E+01	1.00E+04	MCL		0.68	U	0.68	0.68	U	0.68	0.68	U	0.68	0.68	U	0.68	0.68	U	0.68
Toluene	7.20E-01	7.20E+02	EPA9TAP		0.47	U	0.47	0.47	U	0.47	0.47	U	0.47	0.47	U	0.47	0.47	U	0.47
Methyl tert-butyl ether (MTBE)	1.30E-02	1.30E+01	EPA9TAP		0.97	U	0.97	0.97	U	0.97	0.97	U	0.97	0.97	U	0.97	0.97	U	0.97
SVOCs (8270)																			
bis(2-Ethylhexyl)phthalate	4.80E-03	4.80E+00	EPA9TAP	ug/L	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8
2,2'-oxybis(1-Chloropropane)	2.70E-04	2.70E-01	EPA9TAP		1.47	U	1.47	1.47	U	1.47	1.47	U	1.47	1.47	U	1.47	1.47	U	1.47
SVOCs (8310)																			
Anthracene	1.80E+00	1.80E+03	EPA9TAP	ug/L	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Fluorene	2.40E-01	2.40E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Acenaphthylene	-		-		0.31	U	0.31	0.31	U	0.31	0.31	U	0.31	0.31	U	0.31	0.31	U	0.31
Inorganics																			
Nitrate/Nitrite	1.00E+00	1.00E+03	MCL/EPA9TAP	mg/L	2.04		0.15	0.428		0.03	1.37		0.03	0.03	U	0.03	0.03	U	0.03
Total Cyanide	2.00E-01	2.00E+02	NMED/MCL		0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	0.0123		0.004
Chloride	-		-		353		3.3	202		3.3	351		3.3	254		3.3	3280		33
Fluoride	-		-		6.2		0.5	5.5		0.5	6.1		0.5	6.7		0.5	9.8		1
Sulfate	-		-		2290		200	3380		125	2280		200	3020		200	4410		125
Total Dissolved Solids (TDS)	1.00E+04	1.00E+07	NMED/MCL		NT			3140			4070			4710			8510		
Metals																			
Arsenic	1.00E-01	1.00E+02	NMED	ug/L	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44
Chromium	5.00E-02	5.00E+01	NMED		4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44
Lead	5.00E-02	5.00E+01	NMED		2.66	U	2.66	2.66	U	2.66	2.66	U	2.66	2.66	U	2.66	2.66	U	2.66
Nickel	2.00E-01	2.00E+02	NMED		5.25	U	5.25	5.25	U	5.25	5.25	U	5.25	5.25	U	5.25	5.25	U	5.25
Selenium	5.00E-02	5.00E+01	NMED/MCL		33.5		4.49	31.4		4.49	34.8		4.49	30.8		4.49	43.8		4.49
Vanadium	2.60E-01	2.60E+02	EPA9TAP		1.55	U	1.55	1.55	U	1.55	1.55	U	1.55	1.55	U	1.55	1.55	U	1.55
Zinc	1.00E+01	1.00E+04	NMED		13.7	U	13.7	13.7	U	13.7	13.7	U	13.7	13.7	U	13.7	13.7	U	13.7
Iron	1.00E+00	1.00E+03	NMED		1810		18.5	3070		18.5	348		18.5	18.5	U	18.5	18.5	U	18.5
Calcium	-		-		489000		29.2	602000		292	594000		29.2	453000		29.2	1050000		292
Magnesium	-		-		278000		67.7	113000		67.7	214000		67.7	378000		67.7	403000		67.7
Manganese	2.00E-01	2.00E+02	NMED		39.5		2.91	26		2.91	1400		2.91	561		2.91	2670		2.91
Potassium	-		-		7550		88.1	14000		88.1	13800		88.1	6240		88.1	12500		88.1
Sodium	-		-		368000		768	297000		768	396000		768	484000		768	2110000		768

Qualifier Key

Shaded value indicates that the compound was not detected and 1/2 t
Shaded value indicates that the detected concentration exceeds the G
U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the lev
J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate

NMED New Mexico Water C New Mexico Water Quality Commission Standards, 20
MCL Federal/EPA Maximu Federal/EPA Maximum Containinant Level
EPA9TAP USEPA Region 9 PRC USEPA Region 9 PRGs for tapwater.

Table 7I Three-Mile Ditch Monitor Well Groundwater Data Table, Navajo Refinery, Artesia, NM

Analyte	Groundwater Standard (mg/L)	Groundwater Standard (ug/L)	Standard Source	ID #	MW-1R			MW-15		
				Date	6/11/2004			6/11/2004		
					Result	Qualifier	SQL	Result	Qualifier	SQL
VOCs										
4-Methyl-2-pentanone (MIBK)	1.60E-01	1.60E+02	EPA9TAP	ug/L	1.78	U	1.78	1.78	U	1.78
Acetone (2-Propanone, Dimethyl ketone)	6.10E-01	6.10E+02	EPA9TAP		1.7	U	1.7	1.7	U	1.7
Benzene	5.00E-03	5.00E+00	MCL		0.86	U	0.86	4.76	J	0.86
Carbon disulfide	1.00E+00	1.00E+03	EPA9TAP		0.71	U	0.71	0.71	U	0.71
Chloromethane (Methyl chloride)	1.50E-03	1.50E+00	EPA9TAP		0.99	U	0.99	0.99	U	0.99
Ethylbenzene	7.00E-01	7.00E+02	MCL		0.73	U	0.73	0.73	U	0.73
Isopropylbenzene (Cumene)	6.60E-01	6.60E+02	EPA9TAP		0.707	U	0.707	2.89	J	0.707
m,p-Xylene	1.00E+01	1.00E+04	MCL		0.92	U	0.92	0.92	U	0.92
Methylene chloride (Dichloromethane)	4.30E-03	4.30E+00	EPA9TAP		1.45	U	1.45	1.45	U	1.45
o-Xylene	1.00E+01	1.00E+04	MCL		0.68	U	0.68	0.68	U	0.68
Toluene	7.20E-01	7.20E+02	EPA9TAP		0.47	U	0.47	0.47	U	0.47
Methyl tert-butyl ether (MTBE)	1.30E-02	1.30E+01	EPA9TAP		0.97	U	0.97	1.3	J	0.97
SVOCs (8270)										
bis(2-Ethylhexyl)phthalate	4.80E-03	4.80E+00	EPA9TAP	ug/L	9.8	U	9.8	9.8	U	9.8
2,2'-oxybis(1-Chloropropane)	2.70E-04	2.70E-01	EPA9TAP		1.47	U	1.47	1.47	U	1.47
SVOCs (8310)										
Anthracene	1.80E+00	1.80E+03	EPA9TAP	ug/L	0.02	U	0.02	0.02	U	0.02
Fluorene	2.40E-01	2.40E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04
Acenaphthylene	-		-		0.31	U	0.31	0.31	U	0.31
Inorganics										
Nitrate/Nitrite	1.00E+00	1.00E+03	MCL/EPA9TAP	mg/L	0.0673		0.03	2.22		0.15
Total Cyanide	2.00E-01	2.00E+02	NMED/MCL		0.004	U	0.004	0.004	U	0.004
Chloride	-		-		1460		6.6	1360		6.6
Fluoride	-		-		0.5	U	0.5	8.4		0.5
Sulfate	-		-		1950		200	2400		200
Total Dissolved Solids (TDS)	1.00E+04	1.00E+07	NMED/MCL		5460			5560		
Metals										
Arsenic	1.00E-01	1.00E+02	NMED	ug/L	4.44	U	4.44	22.4		4.44
Chromium	5.00E-02	5.00E+01	NMED		4.44	U	4.44	4.44	U	4.44
Lead	5.00E-02	5.00E+01	NMED		2.66	U	2.66	2.66	U	2.66
Nickel	2.00E-01	2.00E+02	NMED		5.25	U	5.25	5.25	U	5.25
Selenium	5.00E-02	5.00E+01	NMED/MCL		32.6		4.49	33.3		4.49
Vanadium	2.60E-01	2.60E+02	EPA9TAP		1.55	U	1.55	1.55	U	1.55
Zinc	1.00E+01	1.00E+04	NMED		13.7	U	13.7	13.7	U	13.7
Iron	1.00E+00	1.00E+03	NMED		9610		18.5	306		18.5
Calcium	-		-		585000		29.2	630000		29.2
Magnesium	-		-		198000		67.7	151000		67.7
Manganese	2.00E-01	2.00E+02	NMED		1870		2.91	2480		2.91
Potassium	-		-		7740		88.1	8980		88.1
Sodium	-		-		971000		768	1130000		768

Qualifier Key

Shaded value indicates that the compound was not detected and 1/2 t

Shaded value indicates that the detected concentration exceeds the G

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the lev

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate

NMED New Mexico Water C New Mexico Water Quality Commission Standards, 20

MCL Federal/EPA Maximu Federal/EPA Maximum Containminant Level

EPA9TAP USEPA Region 9 PRC USEPA Region 9 PRGs for tapwater.

TABLE 8

EVAPORATION POND 1

8A Boring Soils Occurrence Summary

8B Boring Groundwater Occurrence Summary

8C Boring Soils Sample Data

8D Boring Groundwater Sample Data

Table 8A. Occurrence Summary for Evaporation Pond 1, Total Soil Data, Navajo Refinery, Artesia, New Mexico

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Critical SSL mg/kg	SSL Source
TPH - Diesel Range Organics (C10-C28) (mg/kg)	23 / 35	66%	38.4 - 46.8	129 - 55200	38.4 - 55200	11000	11000	1.40E+04	2.00E+03	NMED SSL
Volatile Organic Compounds (mg/kg)										
2-Butanone (Methyl ethyl ketone)	16 / 35	46%	0.00273 - 0.0195	0.0052 - 0.21	0.00273 - 0.21	0.035	0.018	2.90E-02	6.63E+00	NMED-DAF20
4-Methyl-2-pentanone (MIBK)	3 / 35	9%	0.000874 - 0.00622	0.0018 - 0.0155	0.000874 - 0.0155	0.0088	0.0018	2.70E-03	1.16E+00	NMED-DAF20
Acetone (2-Propanone, Dimethyl ketone)	26 / 35	74%	0.00284 - 0.0036	0.0215 - 2.66	0.00284 - 2.66	0.52	0.39	5.90E-01	2.06E+00	NMED-DAF20
Benzene	6 / 35	17%	0.000308 - 0.0022	0.0042 - 0.27	0.000308 - 0.27	0.13	0.023	4.10E-02	2.83E-02	NMED-DAF20
Bromodichloromethane	1 / 35	3%	0.00026 - 0.00183	0.0119	0.00026 - 0.0119	0.012	0.00064	1.20E-03	9.28E-04	NMED-DAF20
Carbon disulfide	14 / 35	40%	0.00039 - 0.00243	0.0014 - 0.0999	0.00039 - 0.0999	0.026	0.011	1.80E-02	7.52E+00	NMED-DAF20
Ethylbenzene	13 / 35	37%	0.00026 - 0.0016	0.002 - 2.7	0.00026 - 2.7	0.5	0.19	3.50E-01	1.05E+01	NMED-DAF20
Isopropylbenzene (Cumene)	9 / 35	26%	0.000339 - 0.00211	0.0019 - 1.65	0.000339 - 1.65	0.5	0.13	2.40E-01	7.29E+00	NMED-DAF20
m,p-Xylene	15 / 35	43%	0.000452 - 0.00282	0.0014 - 3	0.000452 - 3	0.51	0.22	3.90E-01	8.00E+01	NMED SSL
Methylene chloride (Dichloromethane)	23 / 35	66%	0.000452 - 0.00306	0.0013 - 0.0104	0.000452 - 0.0104	0.0027	0.0021	2.70E-03	1.69E-02	NMED-DAF20
o-Xylene	14 / 35	40%	0.000247 - 0.00176	0.0013 - 2.48	0.000247 - 2.48	0.35	0.14	2.70E-01	9.86E+01	NMED SSL
Toluene	14 / 35	40%	0.000226 - 0.00141	0.0012 - 1.43	0.000226 - 1.43	0.23	0.092	1.70E-01	6.80E+00	NMED-DAF20
Semi Volatile Organic Compounds (mg/kg)										
2-Methylnaphthalene	5 / 14	36%	1.12 - 3.66	1.77 - 45.8	1.12 - 45.8	14	5.9	1.20E+01	-	-
Acenaphthene	1 / 14	7%	0.52 - 3.66	0.782	0.52 - 3.66	0.78	1.3	1.60E+00	7.98E+01	NMED-DAF20
Anthracene	1 / 14	7%	0.5 - 3.66	1.86	0.50 - 3.66	1.9	1.2	1.60E+00	1.60E+03	NMED-DAF20
Benzo(a)anthracene	1 / 14	7%	0.5 - 3.1	1.02	0.50 - 3.1	1	1.1	1.40E+00	1.10E+00	NMED-DAF20
Carbazole	1 / 14	7%	0.88 - 5.2	2.77	0.88 - 5.2	2.8	1.5	1.90E+00	6.0E+00	Region 6-DAF20
Chrysene	3 / 14	21%	0.61 - 3.6	0.85 - 5.49	0.61 - 5.49	2.7	1.6	2.10E+00	1.10E+02	NMED-DAF20
Dibenzofuran	2 / 14	14%	0.53 - 3.66	2.07 - 5.84	0.53 - 5.84	4	1.7	2.30E+00	5.70E+00	NMED-DAF20
Fluoranthene	3 / 14	21%	0.76 - 4.46	2.15 - 4.87	0.76 - 4.87	3.5	1.8	2.40E+00	4.82E+03	NMED-DAF20
Fluorene	5 / 14	36%	0.47 - 3.66	2.75 - 5.2	0.47 - 5.2	4	2.2	3.00E+00	1.00E+02	NMED-DAF20
Naphthalene	1 / 14	7%	1.76 - 10.4	1.47	1.47 - 10.4	1.5	1.7	2.20E+00	3.93E-01	NMED-DAF20
Phenanthrene	8 / 14	57%	0.51 - 3.32	1.6 - 28	0.51 - 28	16	9.5	1.40E+01	7.62E+01	NMED-DAF20
Pyrene	9 / 14	64%	0.65 - 3.84	2.37 - 16.2	0.65 - 16.2	6	4.3	6.20E+00	5.68E+02	NMED-DAF20
Metals (mg/kg)										
Arsenic	23 / 35	66%	0.31 - 0.57	1.07 - 40.3	0.314 - 40.3	11	7	9.70E+00	1.77E+01	NMED SSL
Barium	35 / 35	100%	NA	109.0 - 587	109.0 - 587	220	220	2.50E+02	8.23E+02	NMED-DAF20
Cadmium	14 / 35	40%	0.14 - 0.28	0.39 - 1.62	0.135 - 1.62	0.79	0.38	4.90E-01	7.52E+00	NMED-DAF20
Chromium	35 / 35	100%	NA	2.3 - 1160	2.3 - 1160	140	140	2.10E+02	1.92E+01	NMED-DAF20
(as Chromium VI)								3.00E+01	1.92E+01	NMED-DAF20
Lead	35 / 35	100%	NA	1.94 - 130	1.94 - 130	33	33	4.20E+01	7.50E+02	NMED SSL
Selenium	4 / 35	11%	0.42 - 0.9	1.73 - 4.28	0.423 - 4.28	2.8	0.6	8.40E-01	5.17E+00	NMED-DAF20
Silver	12 / 35	34%	0.05 - 0.12	0.86 - 2.13	0.054 - 2.13	1.3	0.47	6.60E-01	8.47E+00	NMED-DAF20
Mercury	15 / 35	43%	0.0151 - 0.0203	0.0504 - 0.421	0.0151 - 0.421	0.22	0.1	1.40E-01	3.41E+02	NMED SSL

Shading indicates that the SQL exceeds the applicable Soil Screening Level.

Shading indicates that the value exceeds the applicable Soil Screening Level.

Average Detect — Arithmetic average of the detected samples only.

DAF-20 — NMED Soil screening Level for Soil-to-Groundwater (2004).

Mean — Arithmetic average of the total number of samples, using proxy concentrations (1/2 the SQL), for non-detects.

ND — Not detected.

NA — Not applicable.

NMED SSL — New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).

Region 6 — EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10^{-5} risk (2003-2004).

SQL — Practical sample quantitation limits for the non-detects.

UCL — 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution (1/2 SQL used for non-detects).

\- — No SSL is available.

Table 8B. Total Chromium Values as Chromium VI and Chromium III[1]
Evaporation Ponds, Navajo Refinery, Artesia, NM.

ID #	Depth		Total Chromium as Cr^{+6}[2] *(mg/kg)*	Chromium as $1Cr^{+6}$: $6Cr^{+3}$ Cr^{+6} *(mg/kg)*	Cr^{+3} *(mg/kg)*
		NMED SSL[3]:	1.92E+01	1.92E+01	1.00E+05
Evaporation Pond #1					
EP1-1	(0-2.5')		908.0	129.7	778.3
	(2.5-5')		22.2	3.2	19.0
EP1-2	(0-2.5')		53.7	7.7	46.0
EP1-3	(0-2.5')		305.0	43.6	261.4
	(2.5-5')		132.0	18.9	113.1
EP1-4	(0-2.5')		1160.0	165.7	994.3
EP1-5	(0-2.5')		426.0	60.9	365.1
EP1-6	(0-2.5')		136.0	19.4	116.6
	(2.5-5')		167.0	23.9	143.1
EP1-7	(0-2.5')		209.0	29.9	179.1
EP1-8	(0-2.5')		447.0	63.9	383.1
	(5-7.5')		24.9	3.6	21.3
	(12.5-15')		29.7	4.2	25.5
EP1-9	(0-2.5')		77.2	11.0	66.2
EP1-10	(0-2.5')		307.0	43.9	263.1
EP1-11	(0-2.5')		111.0	15.9	95.1
EP1-12	(0-2.5')		130.0	18.6	111.4
	(2.5-5')		139.0	19.9	119.1
Evaporation Pond #2					
EP2-1	(0-2.5')		153.0	21.9	131.1
	(2.5-5')		90.3	12.9	77.4
	Dup-11		52.6	7.5	45.1
EP2-2	(0-2.5')		540.0	77.1	462.9
EP2-3	(0-2.5')		776.0	110.9	665.1
	(2.5-5')		20.0	2.9	17.1
EP2-4	(0-2.5')		1230.0	175.7	1054.3
EP2-5	(0-2.5')		549.0	78.4	470.6
EP2-6	(0-2.5')		773.0	110.4	662.6
EP2-7	(0-2.5')		527.0	75.3	451.7
	(2.5-5')		470.0	67.1	402.9
EP2-8	(0-2.5')		187.0	26.7	160.3
EP2-9	(2.5-5')		425.0	60.7	364.3
EP2-10	(0-2.5')		68.1	9.7	58.4
EP2-12	(0-2.5')		227.0	32.4	194.6
EP2-13	(0-2.5')		560.0	80.0	480.0
EP2-14	(0-2.5')		779.0	111.3	667.7
	(7.5-10')		20.8	3.0	17.8
EP2-15	(0-2.5')		269.0	38.4	230.6
	(2.5-5')		38.9	5.6	33.3
EP2-21	(0-2.5')		22.8	3.3	19.5
	(2.5-5')		20.0	2.9	17.1
EP2-25	(0-2.5')		87.0	12.4	74.6

Table 8B. Total Chromium Values as Chromium VI and Chromium III[1]
Evaporation Ponds, Navajo Refinery, Artesia, NM.

ID #	Depth		Total Chromium as Cr^{+6}[2] *(mg/kg)*	Chromium as $1Cr^{+6}$: $6Cr^{+3}$	
				Cr^{+6} *(mg/kg)*	Cr^{+3} *(mg/kg)*
		NMED SSL [3]:	1.92E+01	1.92E+01	1.00E+05
Evaporation Pond #3					
EP3-5	(0-2.5')		29.5	4.2	25.3
	(2.5-5')		23.3	3.3	20.0
	Dup2-23		21.5	3.1	18.4
EP3-6	(0-2.5')		22.0	3.1	18.9
EP3-7	(2.5-5')		22.0	3.1	18.9
EP3-12	(0-2.5')		24.3	3.5	20.8
Evaporation Pond #5					
EP5-1	(0-2.5')		109.0	15.6	93.4
EP5-3	(0-2.5')		81.6	11.7	69.9
EP5-6	(0-2.5')		33.8	4.8	29.0
EP5-8	(0-2.5')		19.3	2.8	16.5
EP5-12	(2.5-5')		22.4	3.2	19.2
EP5-13	Dup-20		23.4	3.3	20.1
EP5-17	(0-2.5')		19.3	2.8	16.5
EP5-21	(0-2.5')		24.2	3.5	20.7
	Dup-22		22.7	3.2	19.5
Evaporation Pond #6					
EP6-4	Dup-27		27.1	3.9	23.2
EP6-5	(0-2.5')		22.6	3.2	19.4
Evaporation Pond Berm					
EPB-1	(0-2.5')		24.9	3.6	21.3
EPB-2	(0-2.5')		42.9	6.1	36.8
EPB-3	(0-2.5')		116.0	16.6	99.4

(1) Laboratory measured values are as total chromium, not speciated. Due to the probable source of the Chromium (crude oil, metallurgy, catalysts, and water treatment chemicals) and the time any $Chromium^{+6}$ has had to degrade to $Chromium^{+3}$, it is likely that most, if not all, the Chromium is present as $Chromium^{+3}$. The 1:6 ratio of Cr^{+6} to Cr^{+3} used on this table is based on EPA guidance and practice.

(2) Values are provided only for the samples where Total Chromium exceeds the SSL.

(3) Soil Screening Value (SSL) for Cr^{+6} is DAF 20 for soil-to- groundwater leaching.
SSL for Cr^{+3} is the Industrial/Occupational and Construction Worker value.

Shading indicates the value exceeds the Soil Screening Level

mg/kg milligrams per kilogram

Table 8C. **Occurrence Summary for Evaporation Pond 1 Borings Groundwater Samples, Navajo Refinery, Artesia, New Mexico.**

Concentrations are reported in milligrams per liter (mg/L).

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	Groundwater Standard (mg/L)	Standard Source
BTEX									
Benzene	1 / 3	33%	0.00004	0.03020 - 0.03020	0.00004 - 0.0302	0.03000	0.01000	5.0E-03	MCL
Ethylbenzene	2 / 3	67%	0.00005	0.00642 - 0.01340	0.00005 - 0.0134	0.00990	0.00660	7.0E-01	MCL
m,p-Xylene	2 / 3	67%	0.00007	0.00725 - 0.01240	0.00007 - 0.012	0.00980	0.00660	1.0E+01	MCL
o-Xylene	2 / 3	67%	0.00009	0.01400 - 0.01450	0.00009 - 0.0145	0.01400	0.00950	1.0E+01	MCL
Toluene	2 / 3	67%	0.00005	0.01060 - 0.01580	0.00005 - 0.0158	0.01300	0.00880	7.2E-01	EPA9TAP
Semi Volatile Organic Compounds									
Anthracene	1 / 3	33%	0.00002	0.00047	0.00002 - 0.000468	0.00047	0.00016	1.8E+00	EPA9TAP
Fluorene	2 / 3	67%	0.00004 - 0.00004	0.00095 - 0.00679	0.00004 - 0.00679	0.00390	0.00260	2.4E-01	EPA9TAP
Phenanthrene	2 / 3	67%	0.00002	0.00085 - 0.00573	0.00002 - 0.00573	0.00330	0.00220	1.8E-01	Surrogate(pyrene)
Pyrene	2 / 3	67%	0.00040 - 0.00040	0.00052 - 0.00571	0.00040 - 0.00571	0.00310	0.00210	1.8E-01	EPA9TAP

Shaded value indicates that the SQL exceeds the Groundwater Standard.

Shaded value indicates that the value exceeds the Groundwater Standard.

Average Detect — Arithmetic average of the detected samples only.

MCL — Federal/EPA Maximum Contaiminant Level (MCL).

EPA9TAP — USEPA Region 9 PRGs for tapwater.

Mean — Arithmetic average of the total number of samples, using proxy concentrations for non-detects.

NMED — New Mexico Water Quality Commission Standards, 2002.

NA — Not applicable.

ND — Not detected.

SQLs — Practical sample quantitation limits for the non-detects.

UCL — 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution.(1/2 SQL used for non-detects)

\- — No Groundwater Standard available.

Table 8D. Evaporation Pond 1, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP1-1									EP1-2										
			Date	6/23/2004			6/23/2004			6/23/2004			6/23/2004			6/23/2004			6/23/2004			6/23/2004		
			Depth	(0-2.5')			(2.5-5')			(12.5-15')			(0-2.5')			(7.5-10')			(17.5-20')			Dup-9		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		55200		477	4280		44.1	38.9	U	38.9	376		33.5	129		41.4	38.4	U	38.4	38.8	U	38.8
VOCs (ug/kg)																							
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		19.5	U	19.5	18	U	18	24.4		3.18	2.73	U	2.73	23.6		3.38	3.13	U	3.13	3.17	U	3.17
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		6.22	U	6.22	5.74	U	5.74	1.76	J	1.02	0.874	U	0.874	1.08	U	1.08	1	U	1	1.01	U	1.01
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		531		20.2	2320		18.6	105		3.3	2.84	U	2.84	213		3.5	24.3		3.25	21.5		3.29
Benzene	2.83E+01	NMED-DAF20		2.2	U	2.2	270		2.03	0.358	U	0.358	0.308	U	0.308	0.381	U	0.381	0.353	U	0.353	0.357	U	0.357
Bromodichloromethane	9.28E-01	NMED-DAF20		1.83	U	1.83	1.69	U	1.69	0.299	U	0.299	0.257	U	0.257	0.317	U	0.317	0.294	U	0.294	0.298	U	0.298
Carbon disulfide	7.52E+03	NMED-DAF20		44.1		2.78	16.9	J	2.57	0.454	U	0.454	0.391	U	0.391	0.482	U	0.482	0.448	U	0.448	1.43	J	0.452
Ethylbenzene	1.05E+04	NMED-DAF20		37.8		1.83	2030	E	1.69	0.299	U	0.299	0.257	U	0.257	0.317	U	0.317	0.294	U	0.294	0.298	U	0.298
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		17	J	2.42	1120		2.23	0.394	U	0.394	0.339	U	0.339	0.419	U	0.419	0.389	U	0.389	0.393	U	0.393
m,p-Xylene	8.00E+04	NMED SSL		53.1		3.22	3000		2.97	0.526	U	0.526	0.452	U	0.452	0.558	U	0.558	0.518	U	0.518	0.524	U	0.524
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		10.4	J	3.22	2.97	U	2.97	1.54	J	0.526	0.452	U	0.452	1.36	J	0.558	1.26	J	0.518	1.39	J	0.524
o-Xylene	9.86E+04	NMED SSL		1.76	U	1.76	1120		1.62	0.287	U	0.287	0.247	U	0.247	3.05	J	0.305	0.283	U	0.283	0.286	U	0.286
Toluene	6.80E+03	NMED-DAF20		30.5	J	1.61	1430		1.49	0.263	U	0.263	0.226	U	0.226	0.279	U	0.279	0.259	U	0.259	0.262	U	0.262
SVOCs (ug/kg)																							
Acenaphthene	7.98E+04	NMED-DAF20		3660	U	3660	782	J	655	NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		3660	U	3660	626	U	626	NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		3100	U	3100	1020	J	635	NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		3210	U	3210	1800	J	772	NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		3660	U	3660	2070	J	664	NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		3660	U	3660	2150	J	958	NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		3660	U	3660	4360	J	596	NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		3660	U	3660	2230	U	2230	NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		1600	J	3660	17400		650	NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		7690	J	3490	3200	J	823	NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		3660	U	3660	5610		1410	NT			NT			NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		3660	U	3660	2770	J	1110	NT			NT			NT			NT			NT		
Metals (mg/kg)																							
Arsenic	1.77E+01	NMED SSL		40.3		0.549	0.461	U	0.461	0.498	U	0.498	3.17		0.33	0.571	U	0.571	1.93		0.482	0.446	U	0.446
Barium	8.23E+02	NMED-DAF20		293		0.122	245		0.102	174		0.111	184		0.0734	162		0.127	280		0.107	154		0.0992
Cadmium	7.52E+00	NMED-DAF20		1.62		0.245	0.205	U	0.205	0.221	U	0.221	0.147	U	0.147	0.69		0.254	0.214	U	0.214	0.199	U	0.199
Chromium	1.92E+01	NMED-DAF20		908		0.146	22.2		0.123	8.4		0.133	53.7		0.0881	15.6		0.152	3.09		0.128	2.32		0.119
Lead	7.50E+02	NMED SSL		115		0.268	12.7		0.226	8.13		0.244	39.8		0.161	15.4		0.279	3.95		0.236	1.94		0.218
Selenium	5.17E+00	NMED-DAF20		4.28		0.769	0.645	U	0.645	0.697	U	0.697	0.462	U	0.462	0.799	U	0.799	0.675	U	0.675	2.12		0.625
Silver	8.47E+00	NMED-DAF20		1.62		0.0977	0.0819	U	0.0819	0.0885	U	0.0885	0.0587	U	0.0587	2.13		0.102	0.0856	U	0.0856	0.0794	U	0.0794
Mercury	3.41E+02	NMED SSL		0.319		0.0202	0.0162	U	0.0162	0.0151	U	0.0151	0.0504		0.014	0.0157	U	0.0157	0.0152	U	0.0152	0.0171	U	0.0171

Qualifier Key

E = The concentration reported for ethylbenzene for sample 20270656 was slightly above the calibration range. The laboratory reran the sample according to the high level procedure but the re-analysis was completed 7/8/04, with a sample holding time limit of 7/7/04. The result for ethylbenzene was therefore flagged with an E.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 8D. Evaporation Pond 1, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP1-3									EP1-4								
			Date	6/22/2004			6/22/2004			6/22/2004			6/23/2004			6/23/2004			6/23/2004		
			Depth	(0-2.5')			(2.5-5')			(12.5-15')			(0-2.5')			(7.5-10')			(22.5-25')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		49400		422	4850		44.2	147		39.1	18900		41.1	167		41.7	39.9	U	39.9
VOCs (ug/kg)																					
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.45	U	3.45	18	U	18	10.3	J	3.19	3.35	U	3.35	90.3		17	17.6		3.26
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1.1	U	1.1	5.76	U	5.76	15.5		1.02	1.07	U	1.07	5.44	U	5.44	9.27	J	1.04
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.58	U	3.58	692		18.7	138		3.31	135		3.48	611		17.7	28.9		3.38
Benzene	2.83E+01	NMED-DAF20		0.389	U	0.389	37.1		2.03	0.36	U	0.36	0.378	U	0.378	1.92	U	1.92	0.367	U	0.367
Bromodichloromethane	9.28E-01	NMED-DAF20		0.324	U	0.324	1.69	U	1.69	0.3	U	0.3	0.315	U	0.315	1.6	U	1.6	0.306	U	0.306
Carbon disulfide	7.52E+03	NMED-DAF20		0.492	U	0.492	45.7		2.57	0.456	U	0.456	0.479	U	0.479	8	J	2.43	0.465	U	0.465
Ethylbenzene	1.05E+04	NMED-DAF20		2.14	J	0.324	2700		15.4	0.3	U	0.3	3.69	J	0.315	1.6	U	1.6	0.306	U	0.306
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		1.94	J	0.427	1650		13.6	0.396	U	0.396	0.416	U	0.416	2.11	U	2.11	0.404	U	0.404
m,p-Xylene	8.00E+04	NMED SSL		2.86	J	0.57	1290		2.98	0.528	U	0.528	3.06	J	0.554	2.82	U	2.82	0.539	U	0.539
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.57	U	0.57	2.98	U	2.98	0.528	U	0.528	0.554	U	0.554	7.75	J	2.82	1.42	J	0.539
o-Xylene	9.86E+04	NMED SSL		2.15	J	0.311	2480		16.5	0.288	U	0.288	0.302	U	0.302	1.54	U	1.54	0.294	U	0.294
Toluene	6.80E+03	NMED-DAF20		0.285	U	0.285	401		1.49	0.264	U	0.264	0.277	U	0.277	1.41	U	1.41	0.269	U	0.269
SVOCs (ug/kg)																					
Acenaphthene	7.98E+04	NMED-DAF20		3320	U	3320	657	U	657	NT			3050	U	3050	NT			NT		
Anthracene	1.60E+06	NMED-DAF20		1860	J	3320	627	U	627	NT			2920	U	2920	NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		2820	U	2820	637	U	637	NT			2960	U	2960	NT			NT		
Chrysene	1.10E+05	NMED-DAF20		2910	U	2910	852	J	774	NT			3600	U	3600	NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		3320	U	3320	665	U	665	NT			3090	U	3090	NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		3320	U	3320	961	U	961	NT			4460	U	4460	NT			NT		
Fluorene	1.00E+05	NMED-DAF20		3320	U	3320	2760	J	598	NT			2780	U	2780	NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		3320	U	3320	2240	U	2240	NT			10400	U	10400	NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		3320	U	3320	19400		652	NT			16000	J	3030	NT			NT		
Pyrene	5.68E+05	NMED-DAF20		3160	U	3160	2370	J	825	NT			3840	U	3840	NT			NT		
2-Methylnaphthalene		-		3320	U	3320	1420	U	1420	NT			11000	J	6590	NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		3320	U	3320	1120	U	1120	NT			5200	U	5200	NT			NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		29.3		0.53	5.91		0.526	2.47		0.45	17.8		0.506	0.506	U	0.506	0.475	U	0.475
Barium	8.23E+02	NMED-DAF20		246		0.118	307		0.117	163		0.0999	279		0.112	131		0.112	363		0.106
Cadmium	7.52E+00	NMED-DAF20		1.05		0.236	0.634		0.233	0.561		0.2	0.837		0.225	0.224	U	0.224	0.211	U	0.211
Chromium	1.92E+01	NMED-DAF20		305		0.141	132		0.14	12.4		0.12	1160		0.135	12.8		0.134	2.69		0.126
Lead	7.50E+02	NMED SSL		98.4		0.259	45.1		0.257	11		0.219	104		0.247	11.9		0.247	4.32		0.233
Selenium	5.17E+00	NMED-DAF20		0.742	U	0.742	0.736	U	0.736	0.629	U	0.629	0.709	U	0.709	0.708	U	0.708	0.665	U	0.665
Silver	8.47E+00	NMED-DAF20		0.0942	U	0.0942	0.0935	U	0.0935	1.54		0.08	1.38		0.0899	1.61		0.0899	1.22		0.0845
Mercury	3.41E+02	NMED SSL		0.343		0.017	0.018	U	0.018	0.0163	U	0.0163	0.212		0.0174	0.199		0.0159	0.0152	U	0.0152

Qualifier Key

E = The concentration reported for ethylbenzene for sample 20270656 was slightly above the calibration range. The laboratory reran the sample according to the high level procedure but the re-analysis was completed 7/8/04, with a sample holding time limit of 7/7/04. The result for ethylbenzene was therefore flagged with an E.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 8D. Evaporation Pond 1, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP1-5									EP1-6					
			Date	6/22/2004			6/22/2004			6/22/2004			6/24/2004			6/24/2004		
			Depth	(0-2.5')			(2.5-5')			(10-12.5')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		6780		34.8	41.7	U	41.7	40.1	U	40.1	9740		42.5	17700		45.3
VOCs (ug/kg)																		
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		2.84	U	2.84	210		17	7.98	J	3.28	3.47	U	3.47	18.5	U	18.5
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		0.908	U	0.908	5.44	U	5.44	1.05	U	1.05	1.11	U	1.11	5.91	U	5.91
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		2.95	U	2.95	1650		17.7	76.8		3.4	3.6	U	3.6	1040		19.2
Benzene	2.83E+01	NMED-DAF20		0.321	U	0.321	1.92	U	1.92	0.369	U	0.369	0.391	U	0.391	87.9		2.09
Bromodichloromethane	9.28E-01	NMED-DAF20		0.267	U	0.267	11.9	J	1.6	0.308	U	0.308	0.326	U	0.326	1.74	U	1.74
Carbon disulfide	7.52E+03	NMED-DAF20		0.406	U	0.406	2.43	U	2.43	0.468	U	0.468	2.36	J	0.495	26	J	2.64
Ethylbenzene	1.05E+04	NMED-DAF20		0.267	U	0.267	61.7		1.6	0.308	U	0.308	33.6		0.326	522		1.74
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.353	U	0.353	2.11	U	2.11	0.406	U	0.406	30.9		0.43	188		2.29
m,p-Xylene	8.00E+04	NMED SSL		0.47	U	0.47	10.9	J	2.82	0.542	U	0.542	57		0.574	937		3.06
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		2.02	J	0.47	8.19	J	2.82	1.33	J	0.542	2.1	J	0.574	3.06	U	3.06
o-Xylene	9.86E+04	NMED SSL		0.256	U	0.256	30.1	J	1.54	1.26	J	0.296	22.4		0.313	353		1.67
Toluene	6.80E+03	NMED-DAF20		1.24	J	0.235	18.3	J	1.41	1.44	J	0.271	16.7		0.287	403		1.53
SVOCs (ug/kg)																		
Acenaphthene	7.98E+04	NMED-DAF20		518	U	518	NT			NT			3260	U	3260	3480	U	3480
Anthracene	1.60E+06	NMED-DAF20		495	U	495	NT			NT			3260	U	3260	3480	U	3480
Benzo(a)anthracene	1.10E+03	NMED-DAF20		502	U	502	NT			NT			2760	U	2760	2950	U	2950
Chrysene	1.10E+05	NMED-DAF20		610	U	610	NT			NT			2860	U	2860	3050	U	3050
Dibenzofuran	5.70E+03	NMED-DAF20		525	U	525	NT			NT			3260	U	3260	3480	U	3480
Fluoranthene	4.82E+06	NMED-DAF20		757	U	757	NT			NT			3260	U	3260	3480	J	3480
Fluorene	1.00E+05	NMED-DAF20		471	U	471	NT			NT			3260	U	3260	5200	J	3480
Naphthalene	3.93E+02	NMED-DAF20		1760	U	1760	NT			NT			3260	U	3260	3480	U	3480
Phenanthrene	7.62E+04	NMED-DAF20		514	U	514	NT			NT			3260	U	3260	28000		3480
Pyrene	5.68E+05	NMED-DAF20		651	U	651	NT			NT			5840	J	3100	6540	J	3310
2-Methylnaphthalene		-		1120	U	1120	NT			NT			3260	U	3260	7180	J	3480
Carbazole	6.0E+03	Region 6-DAF20		881	U	881	NT			NT			3260	U	3260	3480	U	3480
Metals (mg/kg)																		
Arsenic	1.77E+01	NMED SSL		19.8		0.394	1.77		0.488	5.22		0.478	4.61		0.353	5.05		0.626
Barium	8.23E+02	NMED-DAF20		352		0.0876	203		0.109	203		0.106	148		0.0785	208		0.139
Cadmium	7.52E+00	NMED-DAF20		1.09		0.175	0.218	U	0.218	0.212	U	0.212	0.156	U	0.156	0.278	U	0.278
Chromium	1.92E+01	NMED-DAF20		426		0.105	17.8		0.131	17.2		0.127	136		0.0943	167		0.167
Lead	7.50E+02	NMED SSL		75.8		0.192	15.8		0.238	15.6		0.234	14.8		0.173	18.7		0.306
Selenium	5.17E+00	NMED-DAF20		0.551	U	0.551	0.684	U	0.684	0.669	U	0.669	0.495	U	0.495	0.876	U	0.876
Silver	8.47E+00	NMED-DAF20		1.23		0.0701	0.0868	U	0.0868	0.085	U	0.085	0.0628	U	0.0628	0.111	U	0.111
Mercury	3.41E+02	NMED SSL		0.184		0.0147	0.0168	U	0.0168	0.0161	U	0.0161	0.133		0.0184	0.0185	U	0.0185

Qualifier Key

E = The concentration reported for ethylbenzene for sample 20270656 was slightly above the calibration range. The laboratory reran the sample according to the high level procedure but the re-analysis was completed 7/8/04, with a sample holding time limit of 7/7/04. The result for ethylbenzene was therefore flagged with an E.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 8D. Evaporation Pond 1, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP1-7									EP1-8								
			Date	6/23/2004			6/23/2004			6/23/2004			6/22/2004			6/22/2004			6/22/2004		
			Depth	(0-2.5')			(2.5-5')			DUP-10			(0-2.5')			(5-7.5')			(12.5-15')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		587		39.5	163		45.9	186		42.2	417		39.9	40.3	U	40.3	46.8	U	46.8
VOCs (ug/kg)																					
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.22	U	3.22	32.8		3.75	24.3		3.44	3.26	U	3.26	25		3.29	13	J	3.82
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1.03	U	1.03	1.2	U	1.2	1.1	U	1.1	1.04	U	1.04	1.05	U	1.05	1.22	U	1.22
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.35	U	3.35	229		3.89	132		3.57	3.38	U	3.38	347		3.41	99.6		3.96
Benzene	2.83E+01	NMED-DAF20		0.364	U	0.364	0.423	U	0.423	0.388	U	0.388	0.367	U	0.367	0.371	U	0.371	0.43	U	0.43
Bromodichloromethane	9.28E-01	NMED-DAF20		0.303	U	0.303	0.352	U	0.352	0.323	U	0.323	0.306	U	0.306	0.309	U	0.309	0.359	U	0.359
Carbon disulfide	7.52E+03	NMED-DAF20		0.461	U	0.461	1.94	J	0.535	1.55	J	0.492	0.465	U	0.465	0.47	U	0.47	0.545	U	0.545
Ethylbenzene	1.05E+04	NMED-DAF20		13.9		0.303	0.352	U	0.352	0.323	U	0.323	0.306	U	0.306	0.309	U	0.309	0.359	U	0.359
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		10.4		0.4	0.465	U	0.465	0.427	U	0.427	0.404	U	0.404	0.408	U	0.408	0.473	U	0.473
m,p-Xylene	8.00E+04	NMED SSL		29.9		0.533	0.62	U	0.62	0.569	U	0.569	0.539	U	0.539	0.544	U	0.544	1.52	J	0.631
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.533	U	0.533	1.49	J	0.62	2.76	J	0.569	0.539	U	0.539	1.42	J	0.544	1.76	J	0.631
o-Xylene	9.86E+04	NMED SSL		12.2		0.291	0.338	U	0.338	0.31	U	0.31	0.294	U	0.294	0.297	U	0.297	3.6	J	0.344
Toluene	6.80E+03	NMED-DAF20		5.26	J	0.267	0.31	U	0.31	0.285	U	0.285	0.269	U	0.269	0.272	U	0.272	0.316	U	0.316
SVOCs (ug/kg)																					
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT			NT			NT		
Carbazole	6.0E+03	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		9.22		0.314	1.07		0.428	0.388	U	0.388	16.3		0.53	16.2		0.515	17		0.646
Barium	8.23E+02	NMED-DAF20		183		0.0697	126		0.0952	134		0.0863	258		0.118	295		0.114	402		0.143
Cadmium	7.52E+00	NMED-DAF20		0.563		0.139	0.19	U	0.19	0.172	U	0.172	0.722		0.235	0.923		0.229	0.818		0.287
Chromium	1.92E+01	NMED-DAF20		209		0.0836	13.6		0.114	13		0.103	447		0.141	24.9		0.137	29.7		0.172
Lead	7.50E+02	NMED SSL		130		0.153	14.5		0.21	10.9		0.19	47.7		0.259	23.1		0.252	27.5		0.316
Selenium	5.17E+00	NMED-DAF20		1.73		0.439	0.6	U	0.6	0.543	U	0.543	0.742	U	0.742	0.721	U	0.721	0.904	U	0.904
Silver	8.47E+00	NMED-DAF20		0.935		0.0558	0.0762	U	0.0762	0.894		0.069	0.0941	U	0.0941	1.15		0.0916	0.115	U	0.115
Mercury	3.41E+02	NMED SSL		0.0758		0.0159	0.0182	U	0.0182	0.0203	U	0.0203	0.391		0.0169	0.0153	U	0.0153	0.0178	U	0.0178

Qualifier Key

E = The concentration reported for ethylbenzene for sample 20270656 was slightly above the calibration range. The laboratory reran the sample according to the high level procedure but the re-analysis was completed 7/8/04, with a sample holding time limit of 7/7/04. The result for ethylbenzene was therefore flagged with an E.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 8D. Evaporation Pond 1, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP1-11												EP1-12					
			Date	6/22/2004			6/22/2004			6/22/2004			6/22/2004			6/23/2004			6/23/2004		
			Depth	(0-2.5')			(15-17.5')			(17.5-20')			Dup-8			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		3020		41.2	40.4	U	40.4	39.7	U	39.7	39.5	U	39.5	4700		40.4	32800		43.9
VOCs (ug/kg)																					
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.36	U	3.36	8.22	J	3.3	9.44	J	3.24	5.21	J	3.22	16.5		3.3	40.6		3.58
4-Methyl-2-pentanone (MIBK)	1.16E+03	NMED-DAF20		1.07	U	1.07	1.05	U	1.05	1.03	U	1.03	1.03	U	1.03	1.05	U	1.05	1.14	U	1.14
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.48	U	3.48	66.4		3.42	70		3.36	40.9		3.34	3.42	U	3.42	147		3.71
Benzene	2.83E+01	NMED-DAF20		0.379	U	0.379	0.372	U	0.372	0.365	U	0.365	0.363	U	0.363	0.372	U	0.372	4.21	J	0.404
Bromodichloromethane	9.28E-01	NMED-DAF20		0.316	U	0.316	0.31	U	0.31	0.304	U	0.304	0.303	U	0.303	0.31	U	0.31	0.336	U	0.336
Carbon disulfide	7.52E+03	NMED-DAF20		0.48	U	0.48	0.471	U	0.471	0.462	U	0.462	0.46	U	0.46	0.471	U	0.471	1.72	J	0.511
Ethylbenzene	1.05E+04	NMED-DAF20		0.316	U	0.316	0.31	U	0.31	0.304	U	0.304	0.303	U	0.303	0.31	U	0.31	8.82		0.336
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.417	U	0.417	0.409	U	0.409	0.401	U	0.401	0.4	U	0.4	0.409	U	0.409	0.444	U	0.444
m,p-Xylene	8.00E+04	NMED SSL		0.556	U	0.556	0.545	U	0.545	0.535	U	0.535	0.533	U	0.533	1.38	J	0.545	24.1		0.592
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		1.91	J	0.556	1.6	J	0.545	1.73	J	0.535	1.62	J	0.533	2.49	J	0.545	2.37	J	0.592
o-Xylene	9.86E+04	NMED SSL		0.303	U	0.303	0.297	U	0.297	0.292	U	0.292	0.291	U	0.291	0.297	U	0.297	11		0.323
Toluene	6.80E+03	NMED-DAF20		1.63	J	0.278	0.273	U	0.273	0.268	U	0.268	0.266	U	0.266	0.273	U	0.273	11.2		0.296
SVOCs (ug/kg)																					
Acenaphthene	7.98E+04	NMED-DAF20		612	U	612	NT			NT			NT			3100	U	3100	3360	U	3360
Anthracene	1.60E+06	NMED-DAF20		585	U	585	NT			NT			NT			3100	U	3100	3360	U	3360
Benzo(a)anthracene	1.10E+03	NMED-DAF20		593	U	593	NT			NT			NT			2630	U	2630	2850	U	2850
Chrysene	1.10E+05	NMED-DAF20		721	U	721	NT			NT			NT			2720	U	2720	5490	J	2950
Dibenzofuran	5.70E+03	NMED-DAF20		620	U	620	NT			NT			NT			3100	U	3100	3360	U	3360
Fluoranthene	4.82E+06	NMED-DAF20		895	U	895	NT			NT			NT			3100	U	3100	4870	J	3360
Fluorene	1.00E+05	NMED-DAF20		557	U	557	NT			NT			NT			3100	U	3100	2750	J	3360
Naphthalene	3.93E+02	NMED-DAF20		2080	U	2080	NT			NT			NT			3100	U	3100	3360	U	3360
Phenanthrene	7.62E+04	NMED-DAF20		607	U	607	NT			NT			NT			3210	J	3100	21000		3360
Pyrene	5.68E+05	NMED-DAF20		769	U	769	NT			NT			NT			3430	J	2950	16200		3200
2-Methylnaphthalene		-		1320	U	1320	NT			NT			NT			1770	J	3100	3360	U	3360
Carbazole	6.0E+03	Region 6-DAF20		1040	U	1040	NT			NT			NT			3100	U	3100	3360	U	3360
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		7.32		0.557	0.45	U	0.45	0.415	U	0.415	0.407	U	0.407	7.71		0.45	9.64		0.415
Barium	8.23E+02	NMED-DAF20		244		0.124	206		0.1	109		0.0922	133		0.0903	193		0.1	206		0.0922
Cadmium	7.52E+00	NMED-DAF20		0.247	U	0.247	0.2	U	0.2	0.185	U	0.185	0.18	U	0.18	0.2	U	0.2	0.541		0.184
Chromium	1.92E+01	NMED-DAF20		111		0.149	4.41		0.12	3.91		0.111	4.29		0.108	130		0.12	139		0.111
Lead	7.50E+02	NMED SSL		36.3		0.273	4.79		0.219	4.61		0.203	2.93		0.199	54.9		0.219	41		0.203
Selenium	5.17E+00	NMED-DAF20		0.78	U	0.78	0.629	U	0.629	0.58	U	0.58	2.92		0.569	0.629	U	0.629	0.58	U	0.58
Silver	8.47E+00	NMED-DAF20		0.099	U	0.099	0.0799	U	0.0799	0.0737	U	0.0737	0.0723	U	0.0723	0.0799	U	0.0799	0.0738	U	0.0738
Mercury	3.41E+02	NMED SSL		0.25		0.0174	0.0169	U	0.0169	0.0159	U	0.0159	0.0167	U	0.0167	0.217		0.0182	0.369		0.0215

Qualifier Key

E = The concentration reported for ethylbenzene for sample 20270656 was slightly above the calibration range. The laboratory reran the sample according to the high level procedure but the re-analysis was completed 7/8/04, with a sample holding time limit of 7/7/04. The result for ethylbenzene was therefore flagged with an E.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 8D. Evaporation Pond 1, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP1-9						EP1-10								
			Date	6/23/2004			6/23/2004			6/23/2004			6/23/2004			6/23/2004		
			Depth	(0-2.5')			(5-7.5')			(0-2.5')			(2.5-5')			(22.5-25')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		2740		38.2	1920		40.3	19300		41.5	10300		39.3	42.8	U	42.8
VOCs (ug/kg)																		
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.11	U	3.11	16.4	U	16.4	16.9	U	16.9	16	U	16	3.49	U	3.49
4-Methyl-2-pentanone (MiBK)	1.16E+03	NMED-DAF20		0.995	U	0.995	5.25	U	5.25	5.41	U	5.41	5.12	U	5.12	1.12	U	1.12
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.23	U	3.23	222		17.1	2660		17.6	1930		16.6	24.5		3.62
Benzene	2.83E+01	NMED-DAF20		0.351	U	0.351	1.85	U	1.85	130		1.91	251		1.81	0.394	U	0.394
Bromodichloromethane	9.28E-01	NMED-DAF20		0.293	U	0.293	1.55	U	1.55	1.59	U	1.59	1.51	U	1.51	0.328	U	0.328
Carbon disulfide	7.52E+03	NMED-DAF20		0.445	U	0.445	8.1	J	2.35	99.9		2.42	99.8		2.29	5.87	J	0.499
Ethylbenzene	1.05E+04	NMED-DAF20		0.293	U	0.293	171		1.55	266		1.59	712		1.51	0.328	U	0.328
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.386	U	0.386	93.2		2.04	2.1	U	2.1	1350		1.99	0.433	U	0.433
m,p-Xylene	8.00E+04	NMED SSL		0.515	U	0.515	89.7		2.72	562		2.8	1590		2.65	0.577	U	0.577
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		2.97	J	0.515	2.72	U	2.72	2.8	U	2.8	2.65	U	2.65	1.59	J	0.577
o-Xylene	9.86E+04	NMED SSL		0.281	U	0.281	253		1.48	181		1.53	377		1.45	0.315	U	0.315
Toluene	6.80E+03	NMED-DAF20		0.258	U	0.258	78.4		1.36	274		1.4	552		1.33	0.289	U	0.289
SVOCs (ug/kg)																		
Acenaphthene	7.98E+04	NMED-DAF20		2930	U	2930	NT			3180	U	3180	3010	U	3010	NT		
Anthracene	1.60E+06	NMED-DAF20		2930	U	2930	NT			3180	U	3180	3010	U	3010	NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		2480	U	2480	NT			2700	U	2700	2550	U	2550	NT		
Chrysene	1.10E+05	NMED-DAF20		2570	U	2570	NT			2790	U	2790	2640	U	2640	NT		
Dibenzofuran	5.70E+03	NMED-DAF20		2930	U	2930	NT			3180	U	3180	5840	J	3010	NT		
Fluoranthene	4.82E+06	NMED-DAF20		2930	U	2930	NT			3180	U	3180	3010	U	3010	NT		
Fluorene	1.00E+05	NMED-DAF20		2930	U	2930	NT			3180	U	3180	4750	J	3010	NT		
Naphthalene	3.93E+02	NMED-DAF20		2930	U	2930	NT			3180	U	3180	1470	J	3010	NT		
Phenanthrene	7.62E+04	NMED-DAF20		2930	U	2930	NT			3180	U	3180	19600		3010	NT		
Pyrene	5.68E+05	NMED-DAF20		2790	U	2790	NT			3290	J	3030	5820	J	2870	NT		
2-Methylnaphthalene		-		2930	U	2930	NT			3180	U	3180	45800		3010	NT		
Carbazole	6.0E+03	Region 6-DAF20		2930	U	2930	NT			3180	U	3180	3010	U	3010	NT		
Metals (mg/kg)																		
Arsenic	1.77E+01	NMED SSL		4.17		0.342	2.64		0.303	14.7		0.345	0.399	U	0.399	0.314	U	0.314
Barium	8.23E+02	NMED-DAF20		152		0.076	191		0.0672	124		0.0767	184		0.0886	587		0.0698
Cadmium	7.52E+00	NMED-DAF20		0.152	U	0.152	0.135	U	0.135	0.63		0.153	0.177	U	0.177	0.385		0.139
Chromium	1.92E+01	NMED-DAF20		77.2		0.0912	10.9		0.0806	307		0.0921	12.6		0.106	6.02		0.0837
Lead	7.50E+02	NMED SSL		23.1		0.167	12.2		0.148	73.5		0.169	11.3		0.195	7.12		0.154
Selenium	5.17E+00	NMED-DAF20		0.479	U	0.479	0.423	U	0.423	0.484	U	0.484	0.558	U	0.558	0.44	U	0.44
Silver	8.47E+00	NMED-DAF20		0.0609	U	0.0609	0.0538	U	0.0538	0.863		0.0614	0.0708	U	0.0708	1.11		0.0559
Mercury	3.41E+02	NMED SSL		0.112		0.0169	0.0182	U	0.0182	0.421		0.0169	0.0515		0.0177	0.0189	U	0.0189

Qualifier Key

E = The concentration reported for ethylbenzene for sample 20270656 was slightly above the calibration range. The laboratory reran the sample according to the high level procedure but the re-analysis was completed 7/8/04, with a sample holding time limit of 7/7/04. The result for ethylbenzene was therefore flagged with an E.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

TABLE 8E
Evaporation Pond 1 Boring Groundwater Data Table, Navajo Refinery, Artesia, NM

	Groundwater Standard	Standard Source	ID #	EP1-1			EP1-9		
Analyte	(ug/L)		Date	6/24/2004			6/24/2004		
BTEX			ug/L	Result	Qualifier	SQL	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL		30.2		0.04	0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		13.4		0.05	6.42		0.05
m,p-Xylene	1.00E+04	EPA MCL		12.4		0.07	7.25		0.07
o-Xylene	1.00E+04	EPA MCL		14		0.09	14.5		0.09
Toluene	7.20E+02	EPA9TAP		15.8		0.05	10.6		0.05
SVOCs			ug/L						
Anthracene	1.80E+03	EPA9TAP		0.468		0.02	0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		0.02	U	0.02	0.02	U	0.02
Dibenz(a,h)anthracene	9.20E-03	EPA9TAP		0.05	U	0.05	0.05	U	0.05
Fluorene	2.40E+02	EPA9TAP		6.79		0.4	0.04	U	0.04
Phenanthrene	1.80E+02	Surrogate (pyrene)		5.73		0.2	0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		5.71		0.4	0.4	U	0.4
VOCs			ug/L						
2-Butanone (Methyl ethyl ketone)	1.90E+03	EPA9TAP		NT			NT		
Acetone (2-Propanone, Dimethyl ketone)	6.10E+02	EPA9TAP		NT			NT		
Benzene	5.00E+00	MCL		NT			NT		
Carbon disulfide	1.00E+03	EPA9TAP		NT			NT		
Ethylbenzene	7.00E+02	MCL		NT			NT		
m,p-Xylene	1.00E+04	MCL		NT			NT		
Methyl tert-butyl ether (MTBE)	1.30E+01	EPA9TAP		NT			NT		
o-Xylene	1.00E+04	MCL		NT			NT		
Toluene	7.20E+02	EPA9TAP		NT			NT		

Qualifier Key

Shaded value indicates that the compound was not detected and 1/2 the SQL exceeds the Groundwater Standard.

Shaded value indicates that the detected concentration exceeds the Groundwater Standard.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the san

NMED New Mexico Water Quality Commission Standards, 2002.

MCL Federal/EPA Maximum Contaiminant Level (MCL).

EPA9TAP USEPA Region 9 PRGs for tapwater.

TABLE 8E
Evaporation Pond 1 Boring Groundwater Data Table, Navajo Refinery, Artesia, NM

	Groundwater Standard	Standard Source	ID #	EP1-10		
Analyte	(ug/L)		Date	6/24/2004		
BTEX			ug/L	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL		0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		0.05	U	0.05
m,p-Xylene	1.00E+04	EPA MCL		0.07	U	0.07
o-Xylene	1.00E+04	EPA MCL		0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		0.05	U	0.05
SVOCs			ug/L			
Anthracene	1.80E+03	EPA9TAP		0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		0.02	U	0.02
Dibenz(a,h)anthracene	9.20E-03	EPA9TAP		0.05	U	0.05
Fluorene	2.40E+02	EPA9TAP		0.945		0.04
Phenanthrene	1.80E+02	Surrogate (pyrene)		0.846		0.02
Pyrene	1.80E+02	EPA9TAP		0.52		0.04
VOCs			ug/L			
2-Butanone (Methyl ethyl ketone)	1.90E+03	EPA9TAP		NT		
Acetone (2-Propanone, Dimethyl ketone)	6.10E+02	EPA9TAP		NT		
Benzene	5.00E+00	MCL		NT		
Carbon disulfide	1.00E+03	EPA9TAP		NT		
Ethylbenzene	7.00E+02	MCL		NT		
m,p-Xylene	1.00E+04	MCL		NT		
Methyl tert-butyl ether (MTBE)	1.30E+01	EPA9TAP		NT		
o-Xylene	1.00E+04	MCL		NT		
Toluene	7.20E+02	EPA9TAP		NT		

Qualifier Key

Shaded value indicates that the compound was not c
Shaded value indicates that the detected concentrati
U = Not detected: analysis for the analyte was performed , but the analyte
J = Estimated: The analyte was detected and identified. The associated nu**m**ple.
NMED New Mexico Water Quality Commission Standards
MCL Federal/EPA Maximum Contaiminant Le\
EPA9TAP USEPA Region 9 PRGs for tapwater.

TABLE 9

EVAPORATION POND 2

Table 9A. Occurrence Summary for Evaporation Pond 2 (1 through 15), Total Soil Data, Navajo Refinery, Artesia, New Mexico.

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Critical SSL mg/kg	SSL Source
TPH - Diesel Range Organics (C10-C28) (mg/kg)	38 / 41	93%	38.1 - 41.3	148 - 76000	38.1 - 76000	14000	14000	1.90E+04	2.00E+03	NMED SSL
Volatile Organic Compounds										
1,2-Dichloroethane (Ethylene dichloride)	4 / 41	10%	0.000353 - 0.082	0.006 - 0.0209	0.000353 - 0.082	0.012	0.0045	6.50E-03	1.98E-02	NMED-DAF20
2-Butanone (Methyl ethyl ketone)	9 / 41	22%	0.00297 - 0.393	0.0127 - 1.07	0.00297 - 1.07	0.31	0.084	1.40E-01	6.63E+00	NMED-DAF20
Acetone (2-Propanone, Dimethyl ketone)	19 / 41	46%	0.00308 - 2.53	0.0142 - 3.4	0.00308 - 3.4	0.57	0.34	5.10E-01	2.06E+00	NMED-DAF20
Benzene	11 / 41	27%	0.000334 - 0.061	0.0019 - 2.12	0.000334 - 2.12	0.59	0.16	2.70E-01	2.83E-02	NMED-DAF20
Carbon disulfide	12 / 41	29%	0.00042 - 0.127	0.0016 - 0.207	0.00042 - 0.207	0.051	0.02	3.10E-02	7.52E+00	NMED-DAF20
Chloroform	3 / 41	7%	0.000205 - 0.162	0.0062 - 0.0186	0.000205 - 0.162	0.013	0.0067	1.00E-02	4.90E-01	NMED-DAF20
Ethylbenzene	27 / 41	66%	0.00029 - 0.017	0.008 - 25.3	0.00029 - 25.3	4.4	2.9	4.50E+00	1.05E+01	NMED-DAF20
Isopropylbenzene (Cumene)	25 / 41	61%	0.000368 - 0.015	0.0081 - 9.69	0.000368 - 9.69	1.8	1.1	1.70E+00	7.29E+00	NMED-DAF20
m,p-Xylene	28 / 41	68%	0.000502 - 0.029	0.0012 - 32.9	0.000502 - 32.9	5	3.4	5.30E+00	8.00E+01	NMED SSL
Methylene chloride (Dichloromethane)	6 / 41	15%	0.000509 - 0.636	0.0016 - 0.0198	0.000509 - 0.636	0.0082	0.023	3.70E-02	1.69E-02	NMED-DAF20
o-Xylene	26 / 41	63%	0.000274 - 0.018	0.0097 - 21.4	0.000274 - 21.4	4.6	2.9	4.40E+00	9.86E+01	NMED SSL
Tetrachloroethene (Perchloroethylene)	3 / 41	7%	0.000239 - 0.071	0.0075 - 0.0271	0.000239 - 0.071	0.015	0.0039	5.70E-03	6.44E-03	NMED-DAF20
Toluene	17 / 41	41%	0.000245 - 0.016	0.0018 - 5.03	0.000245 - 5.03	1.3	0.56	8.80E-01	6.80E+00	NMED-DAF20
Semi Volatile Organic Compounds (mg/kg)										
2,4-Dinitrophenol	3 / 28	11%	6.97 - 9.27	9.3 - 10.1	6.97 - 10.1	9.8	4.7	5.20E+00	2.00E-01	Region 6-DAF20
2,4-Dinitrotoluene	1 / 28	4%	2.79 - 3.71	5.08	2.79 - 5.08	5.1	1.7	2.00E+00	4.54E-01	NMED-DAF20
2-Methylnaphthalene	13 / 28	46%	2.79 - 3.58	1.37 - 75.3	1.37 - 75.3	22	11	1.70E+01	-	-
2-Nitroaniline (o-Nitroaniline)	1 / 28	4%	6.97 - 9.27	2.12	2.12 - 9.27	2.1	4	4.10E+00	-	-
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	1 / 28	4%	6.97 - 9.27	1.57	1.57 - 9.27	1.6	4	4.10E+00	-	-
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	1 / 28	4%	2.79 - 3.71	1.57	1.57 - 3.71	1.6	1.6	1.70E+00	-	-
4-Nitrophenol (p-Nitrophenol)	2 / 28	7%	6.97 - 9.27	3.3 - 4.09	3.30 - 9.27	3.7	4	4.10E+00	5.47E+03	Region 6 SSL
Acenaphthene	2 / 28	7%	2.79 - 3.71	2.26 - 4.62	2.26 - 4.62	3.4	1.8	1.90E+00	7.98E+01	NMED-DAF20
Anthracene	1 / 28	4%	2.79 - 3.71	41.2	2.79 - 41.2	41	3	5.40E+00	1.60E+03	NMED-DAF20
Benzo(a)anthracene	2 / 28	7%	2.36 - 3.15	2.91 - 3.56	2.36 - 3.56	3.2	1.5	1.70E+00	1.10E+00	NMED-DAF20
Benzo(a)pyrene	4 / 28	14%	2.79 - 3.67	1.89 - 4.11	1.89 - 4.11	2.5	1.7	1.90E+00	2.34E+00	NMED SSL
Benzoic acid	3 / 28	11%	6.97 - 9.27	15 - 15.7	6.97 - 15.7	15	5.2	6.40E+00	4.00E+02	Region 6-DAF20
Chrysene	2 / 28	7%	2.44 - 3.25	3.41 - 5.49	2.44 - 5.49	4.5	1.6	1.90E+00	1.10E+02	NMED-DAF20
Dibenzofuran	1 / 28	4%	2.79 - 3.71	7.83	2.79 - 7.83	7.8	1.8	2.20E+00	5.70E+00	NMED-DAF20
Fluoranthene	2 / 28	7%	2.79 - 3.71	3.39 - 3.79	2.79 - 3.79	3.6	1.8	1.90E+00	4.82E+03	NMED-DAF20
Fluorene	6 / 28	21%	2.79 - 3.71	2.01 - 10.2	2.01 - 10.2	4.5	2.2	2.80E+00	1.00E+02	NMED-DAF20
Hexachlorocyclopentadiene	2 / 28	7%	2.79 - 3.71	13.8 - 14.3	2.79 - 14.3	14	2.5	3.60E+00	3.00E+02	NMED-DAF20
Hexachloroethane	1 / 28	4%	2.79 - 3.71	18.7	2.79 - 18.7	19	2.2	3.30E+00	2.74E-01	NMED-DAF20
Isophorone	1 / 28	4%	2.79 - 3.71	1.92	1.92 - 3.71	1.9	1.6	1.70E+00	3.38E-01	NMED-DAF20
Naphthalene	6 / 28	21%	2.79 - 3.71	2.39 - 18.2	2.39 - 18.2	7.8	2.9	4.20E+00	3.93E-01	NMED-DAF20
Nitrobenzene	1 / 28	4%	2.79 - 3.71	1.9	1.90 - 3.71	1.9	1.6	1.70E+00	1.80E-02	NMED-DAF20
N-Nitroso-di-n-propylamine	1 / 28	4%	2.79 - 3.71	2.6	2.60 - 3.71	2.6	1.7	1.70E+00	4.00E-04	Region 6-DAF20
N-Nitrosodiphenylamine (Diphenylamine)	1 / 28	4%	2.79 - 3.71	9.13	2.79 - 9.13	9.1	1.9	2.40E+00	5.89E-01	NMED-DAF20
Pentachlorophenol	3 / 28	11%	6.97 - 9.27	6.51 - 6.94	6.51 - 9.27	6.7	4.3	4.60E+00	2.11E-02	NMED-DAF20
Phenanthrene	13 / 28	46%	2.79 - 3.71	3.3 - 41.2	2.79 - 41.2	17	8.7	1.20E+01	7.62E+01	NMED-DAF20
Pyrene	6 / 28	21%	2.65 - 3.41	3.53 - 14	2.65 - 14	8.1	2.9	3.90E+00	5.68E+02	NMED-DAF20

Table 9A. Occurrence Summary for Evaporation Pond 2 (1 through 15), Total Soil Data, Navajo Refinery, Artesia, New Mexico.

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Critical SSL mg/kg	SSL Source
Metals (mg/kg)										
Arsenic	31 / 41	76%	0.332 - 0.634	0.86 - 38	0.332 - 38	12	9.4	1.20E+01	1.77E+01	NMED SSL
Barium	41 / 41	100%	NA	51.7 - 299	51.7 - 299	160	160	1.80E+02	8.23E+02	NMED-DAF20
Cadmium	22 / 41	54%	0.146 - 0.281	0.37 - 1.6	0.146 - 1.6	0.83	0.49	6.10E-01	7.52E+00	NMED-DAF20
Chromium	41 / 41	100%	NA	1.7 - 1230	1.7 - 1230	190	190	2.70E+02	1.92E+01	NMED-DAF20
(as Chromium VI)								3.86E+01	1.92E+01	NMED-DAF20
Lead	41 / 41	100%	NA	3.32 - 68.5	3.32 - 68.5	19	19	2.30E+01	7.50E+02	NMED SSL
Selenium	7 / 41	17%	0.454 - 0.91	1.27 - 7.28	0.454 - 7.28	3.7	0.9	1.30E+00	5.17E+00	NMED-DAF20
Silver	23 / 41	56%	0.058 - 0.116	0.89 - 2.21	0.058 - 2.21	1.4	0.82	1.00E+00	8.47E+00	NMED-DAF20
Mercury	16 / 41	39%	0.0145 - 0.022	0.0571 - 0.509	0.0145 - 0.509	0.19	0.079	1.10E-01	3.41E+02	NMED SSL

Shading indicates that the SQL exceeds the applicable Soil Screening Level.
Shading indicates that the value exceeds the applicable Soil Screening Level.

Average Detect — Arithmetic average of the detected samples only.
EPC — Exposure point concentration; lesser of the UCL and the maximum SQL or detected concentration, when there are ten or more data points; otherwise the maximum detected value is used.
ft bgs — Feet below ground surface.
DAF-20 — NMED Soil screening Level for Soil-to-Groundwater (2004).
Mean — Arithmetic average of the total number of samples, using proxy concentrations (1/2 the SQL), for non-detects.
NAP — Not applicable.
NS — No PCL available
ND — Not detected.
SAI-Ind MSC — Soil Medium-Specific Concentration for industrial use based on inhalation, ingestion, and dermal contact.
NA — Not applicable.
NMED SSL — New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6 — EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
SQL — Practical sample quantitation limits for the non-detects.
SVOCs — Semi-volatile organic compounds.
TPH — Total petroleum hydrocarbons
UCL — 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution (1/2 SQL used for non-detects).
- — No SSL available.

Table 9B

Occurrence Summary for Evaporation Pond 2 (16 through 25), Total Soil Data, Navajo Refinery, Artesia, New Mexico.

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Critical SSL mg/kg	SSL Source
TPH - Diesel Range Organics (C10-C28) (mg/kg)	10 / 22	45%	35.8 - 42.8	140 - 2800	35.8 - 2800	590	280	5.10E+02	2.00E+03	NMED SSL
Volatile Organic Compounds (mg/kg)										
Acetone (2-Propanone, Dimethyl ketone)	4 / 22	18%	0.00298 - 0.00368	0.0333 - 0.12	0.00298 - 0.12	0.075	0.015	2.70E-02	2.06E+00	NMED-DAF20
Metals (mg/kg)										
Arsenic	21 / 22	95%	0.597	1.72 - 36.3	0.597 - 36.3	8.3	8	1.10E+01	1.77E+01	NMED SSL
Barium	22 / 22	100%	NA	120.0 - 333	120.0 - 333	220	220	2.50E+02	8.23E+02	NMED-DAF20
Cadmium	4 / 22	18%	0.21 - 0.281	0.61 - 0.985	0.207 - 0.985	0.77	0.24	3.40E-01	7.52E+00	NMED-DAF20
Chromium	22 / 22	100%	NA	6.3 - 87	6.3 - 87	16	16	2.20E+01	1.92E+01	NMED-DAF20
(as Chromium VI)								3.14E+00	1.92E+01	NMED-DAF20
Lead	22 / 22	100%	NA	5.46 - 29.6	5.46 - 29.6	12	12	1.40E+01	7.50E+02	NMED SSL
Selenium	2 / 22	9%	0.65 - 0.874	4.86 - 5.03	0.653 - 5.03	4.9	0.8	1.30E+00	5.17E+00	NMED-DAF20
Silver	1 / 22	5%	0.08 - 0.113	1.47 - 1.47	0.083 - 1.47	1.5	0.11	2.30E-01	8.47E+00	NMED-DAF20

Shading indicates that the SQL exceeds the applicable Soil Screening Level.

Shading indicates that the UCL exceeds the applicable Soil Screening Level.

Average Detect — Arithmetic average of the detected samples only.

DAF-20 — NMED Soil screening Level for Soil-to-Groundwater (2004).

Mean — Arithmetic average of the total number of samples, using proxy concentrations (1/2 the SQL), for non-detects.

ND — Not detected.

NA — Not applicable.

NMED SSL — New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).

Region 6 — EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10^{-5} risk (2003-2004).

SQL — Practical sample quantitation limits for the non-detects.

UCL — 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution (1/2 SQL used for non-detects).

\- No SSL available.

Table 9C.

Occurrence Summary for Evaporation Pond 2 Borings Groundwater Samples, Navajo Refinery, Artesia, New Mexico.

Concentrations are reported in milligrams per liter (mg/L).

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	Groundwater Standard (mg/L)	Standard Source
BTEX									
Benzene	2 / 3	67%	0.00004	0.03790 - 0.04610	0.00004 - 0.0461	0.04200	0.02800	5.0E-03	MCL
m,p-Xylene	2 / 3	67%	0.00007	0.03480 - 0.22700	0.00007 - 0.227	0.13000	0.08700	1.0E+01	MCL
Toluene	1 / 3	33%	0.00005	0.03160 - 0.03160	0.00005 - 0.0316	0.03200	0.01100	7.2E-01	EPA9TAP
Volatile Organic Compounds									
2-Butanone (Methyl ethyl ketone)	3 / 3	100%	0.00000	0.00885 - 0.01570	0.00885 - 0.0157	0.01200	0.01200	1.9E+00	EPA9TAP
Acetone (2-Propanone, Dimethyl ketone)	3 / 3	100%	NA	0.02270 - 0.05500	0.0227 - 0.055	0.03600	0.03600	6.1E-01	EPA9TAP
Benzene	3 / 3	100%	0.00000	0.00305 - 0.07850	0.00305 - 0.0785	0.02900	0.02900	5.0E-03	MCL
Carbon disulfide	3 / 3	100%	0.00000	0.00102 - 0.00230	0.00102 - 0.0023	0.00160	0.00160	1.0E+00	EPA9TAP
Ethylbenzene	3 / 3	100%	0.00000	0.00535 - 0.03160	0.00535 - 0.0316	0.01600	0.01600	7.0E-01	MCL
m,p-Xylene	3 / 3	100%	0.00000	0.01190 - 0.01530	0.01190 - 0.0153	0.01300	0.01300	1.0E+01	MCL
Methyl tert-butyl ether (MTBE)	3 / 3	100%	0.00000	0.00639 - 0.01290	0.00639 - 0.0129	0.00860	0.00860	1.3E-02	EPA9TAP
o-Xylene	3 / 3	100%	0.00000	0.00397 - 0.02430	0.00397 - 0.0243	0.01200	0.01200	1.0E+01	MCL
Toluene	3 / 3	100%	NA	0.00319 - 0.02230	0.00319 - 0.0223	0.01000	0.01000	7.2E-01	EPA9TAP
Semi Volatile Organic Compounds									
Chrysene	1 / 6	17%	0.00002	0.00078	0.00002 - 0.000776	0.00078	0.00014	9.2E-03	EPA9TAP
Fluorene	1 / 6	17%	0.00004 - 0.00040	0.00383 - 0.00383	0.00004 - 0.00383	0.00380	0.00069	2.4E-01	EPA9TAP
Phenanthrene	2 / 6	33%	0.00002	0.00079 - 0.00282	0.00002 - 0.00282	0.00180	0.00061	1.8E-01	Surrogate(pyrene)

Shaded value indicates that the SQL exceeds the Groundwater Standard.

Shaded value indicates that the value exceeds the Groundwater Standard.

Average Detect — Arithmetic average of the detected samples only.

MCL — Federal/EPA Maximum Contaiminant Level (MCL).

EPA9TAP — USEPA Region 9 PRGs for tapwater.

Mean — Arithmetic average of the total number of samples, using proxy concentrations for non-detects.

NMED — New Mexico Water Quality Commission Standards, 2002.

NA — Not applicable.

ND — Not detected.

SQLs — Practical sample quantitation limits for the non-detects.

UCL — 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution.(1/2 SQL used for non-detects)

\- — No Groundwater Standard available.

TABLE 9D Evaporation Pond 2 (1-15), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	Source	ID #	EP2-1												EP2-2					
			Date	6/25/2004			6/25/2004			6/25/2004			6/25/2004			6/25/2004			6/25/2004		
			Depth	(0-2.5')			(2.5-5')			(7.5-10')			Dup-11			(0-2.5')			(5-7.5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		5190		37.5	17100		42.2	322		40.7	2510		40.4	18800		41.4	363		40.4
VOCs (ug/kg)																					
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.356	U	0.356	15.7	U	15.7	15.1	U	15.1	1.92	U	1.92	6	J	0.394	1.92	U	1.92
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.06	U	3.06	75	U	75	953		72.4	112		16.5	3.38	U	3.38	461		16.5
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		17.2		3.17	483	U	483	466	U	466	261		17.1	14.2		3.51	3400	E	17.1
Benzene	2.83E+01	NMED-DAF20		0.345	U	0.345	2120		11.5	11.1	U	11.1	1.86	U	1.86	0.381	U	0.381	1.86	U	1.86
Carbon disulfide	7.52E+03	NMED-DAF20		0.437	U	0.437	24.2	U	24.2	23.4	U	23.4	14.6	J	2.35	1.61	J	0.483	175		2.35
Chloroform	4.90E+02	NMED-DAF20		0.207	U	0.207	30.8	U	30.8	29.7	U	29.7	1.12	U	1.12	6.21	J	0.229	1.12	U	1.12
Ethylbenzene	1.05E+04	NMED-DAF20		0.287	U	0.287	18700		14.8	345		14.2	121		1.55	0.318	U	0.318	10.3	J	1.55
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.379	U	0.379	5030		13	106	J	12.5	44.1		2.04	0.419	U	0.419	28.6	J	2.04
m,p-Xylene	8.00E+04	NMED SSL		1.16	J	0.506	12400		25.5	349		24.6	119		2.73	1.93	J	0.559	8.05	J	2.73
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		2.17	J	0.506	121	U	121	117	U	117	2.73	U	2.73	9.31		0.559	19.8	J	2.73
o-Xylene	9.86E+04	NMED SSL		0.276	U	0.276	13200		15.8	268	J	15.2	107		1.49	0.305	U	0.305	17.1	J	1.49
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.241	U	0.241	13.5	U	13.5	13	U	13	1.3	U	1.3	0.267	U	0.267	1.3	U	1.3
Toluene	6.80E+03	NMED-DAF20		1.86	J	0.253	5030		14	67.5	J	13.5	1.36	U	1.36	1.84	J	0.28	1.36	U	1.36
SVOCs (ug/kg)																					
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Acenaphthene	7.98E+04	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Anthracene	1.60E+06	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		2440	U	2440	2750	U	2750	NT			2630	U	2630	2690	U	2690	NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Chrysene	1.10E+05	NMED-DAF20		2520	U	2520	2840	U	2840	NT			2720	U	2720	2790	U	2790	NT		
Dibenzofuran	5.70E+03	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Fluoranthene	4.82E+06	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Fluorene	1.00E+05	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Hexachloroethane	2.74E+02	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Isophorone	3.38E+02	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Naphthalene	3.93E+02	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Nitrobenzene	1.80E+01	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		7180	U	7180	8100	U	8100	NT			7740	U	7740	7940	U	7940	NT		
Phenanthrene	7.62E+04	NMED-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
Pyrene	5.68E+05	NMED-DAF20		2740	U	2740	3080	U	3080	NT			2950	U	2950	3030	U	3030	NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		7180	U	7180	8100	U	8100	NT			7740	U	7740	7940	U	7940	NT		
2-Methylnaphthalene		-		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
2-Methylphenol (o-Cresol)	1.60E+04	Region 6-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		7180	U	7180	8100	U	8100	NT			7740	U	7740	7940	U	7940	NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		7180	U	7180	8100	U	8100	NT			7740	U	7740	7940	U	7940	NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		7180	U	7180	8100	U	8100	NT			7740	U	7740	7940	U	7940	NT		
Benzoic acid	4.00E+05	Region 6-DAF20		7180	U	7180	8100	U	8100	NT			7740	U	7740	7940	U	7940	NT		
Benzyl alcohol	1.00E+08	Region 6 SSL		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
N-Nitroso-di-n-propylamine	4.00E-01	Region 6-DAF20		2870	U	2870	3240	U	3240	NT			3100	U	3100	3180	U	3180	NT		
		-																			
Metals (mg/kg)		-																			
Arsenic	1.77E+01	NMED SSL		11		0.47	12		0.478	2.93		0.331	2.49		0.325	23.5		0.366	0.372	U	0.372
Barium	8.23E+02	NMED-DAF20		157		0.104	195		0.106	73.1		0.0735	96.6		0.072	127		0.0814	72.2		0.0827
Cadmium	7.52E+00	NMED-DAF20		0.605		0.209	0.212	U	0.212	0.368		0.148	0.515		0.144	0.944		0.163	0.454		0.165
Chromium	1.92E+01	NMED-DAF20		153		0.125	90.3		0.127	7.42		0.0883	52.6		0.0865	540		0.0977	6.6		0.0991
Lead	7.50E+02	NMED SSL		22.7		0.23	17.6		0.233	6.81		0.161	11.7		0.159	60.5		0.179	6.62		0.182
Selenium	5.17E+00	NMED-DAF20		0.659	U	0.659	0.668	U	0.668	0.464	U	0.464	0.454	U	0.454	4.14		0.513	0.52	U	0.52
Silver	8.47E+00	NMED-DAF20		0.0836	U	0.0836	0.085	U	0.085	1.03		0.0589	1.27		0.0576	1.19		0.0652	1.75		0.066
Mercury	3.41E+02	NMED SSL		0.0755		0.0148	0.126		0.0183	0.0184	U	0.0184	0.139		0.0198	0.301		0.0194	0.0195	U	0.0195

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

TABLE 9D Evaporation Pond 2 (1-15), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	Source	ID #	EP2-3									EP2-4								
			Date	6/25/2004			6/25/2004			6/25/2004			6/25/2004			6/25/2004			6/25/2004		
			Depth	(0-2.5')			(2.5-5')			(5-7.5')			(0-2.5')			(2.5-5')			(7.5-10')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		10100		41.7	14700		43.9	451		39.4	63900		479	9430		39.8	577		39.7
VOCs (ug/kg)																					
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.396	U	0.396	2.09	U	2.09	1.87	U	1.87	17.8	U	17.8	14.8	U	14.8	1.89	U	1.89
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.4	U	3.4	17.9	U	17.9	80.8		16.1	85	U	85	70.7	U	70.7	16.2	U	16.2
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		39.9		3.53	18.6	U	18.6	243		16.7	548	U	548	455	U	455	16.8	U	16.8
Benzene	2.83E+01	NMED-DAF20		1.87	J	0.384	319		2.02	1.81	U	1.81	460		13.1	446		10.9	151		1.82
Carbon disulfide	7.52E+03	NMED-DAF20		12.6		0.486	207		2.56	40.4		2.3	27.5	U	27.5	22.8	U	22.8	7.73	J	2.31
Chloroform	4.90E+02	NMED-DAF20		0.23	U	0.23	1.21	U	1.21	1.09	U	1.09	34.9	U	34.9	29.1	U	29.1	1.09	U	1.09
Ethylbenzene	1.05E+04	NMED-DAF20		71.1		0.32	1400		15.3	7.98	J	1.51	15400		16.7	9370		13.9	363		1.52
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		57.3		0.422	1060		2.22	2	U	2	4300		14.7	2770		12.2	766		2.01
m,p-Xylene	8.00E+04	NMED SSL		45		0.563	2290		26.5	2.66	U	2.66	16600		28.9	6290		24.1	502		2.68
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.563	U	0.563	2.96	U	2.96	2.66	U	2.66	137	U	137	114	U	114	2.68	U	2.68
o-Xylene	9.86E+04	NMED SSL		19.4		0.307	1000		16.4	1.45	U	1.45	13700		17.9	8470		14.9	481		1.46
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.269	U	0.269	1.41	U	1.41	27.3	J	1.27	15.3	U	15.3	12.7	U	12.7	1.28	U	1.28
Toluene	6.80E+03	NMED-DAF20		0.281	U	0.281	367		1.48	1.33	U	1.33	4410		15.9	740		13.2	1.34	U	1.34
SVOCs (ug/kg)																					
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
Acenaphthene	7.98E+04	NMED-DAF20		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
Anthracene	1.60E+06	NMED-DAF20		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		2710	U	2710	2850	U	2850	NT			3110	U	3110	2590	U	2590	NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
Chrysene	1.10E+05	NMED-DAF20		2800	U	2800	2950	U	2950	NT			3220	U	3220	2680	U	2680	NT		
Dibenzofuran	5.70E+03	NMED-DAF20		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
Fluoranthene	4.82E+06	NMED-DAF20		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
Fluorene	1.00E+05	NMED-DAF20		3200	U	3200	3360	U	3360	NT			2010	J	3670	3050	U	3050	NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
Hexachloroethane	2.74E+02	NMED-DAF20		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
Isophorone	3.38E+02	NMED-DAF20		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
Naphthalene	3.93E+02	NMED-DAF20		2390	J	3200	3360	U	3360	NT			4330	J	3670	3050	U	3050	NT		
Nitrobenzene	1.80E+01	NMED-DAF20		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		7990	U	7990	8410	U	8410	NT			9180	U	9180	7630	U	7630	NT		
Phenanthrene	7.62E+04	NMED-DAF20		8520	J	3200	3360	U	3360	NT			12100	J	3670	13800		3050	NT		
Pyrene	5.68E+05	NMED-DAF20		6300	J	3040	3200	U	3200	NT			8140	J	3500	2910	U	2910	NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		7990	U	7990	8410	U	8410	NT			9180	U	9180	7630	U	7630	NT		
2-Methylnaphthalene		-		11000	J	3200	3360	U	3360	NT			20900		3670	3050	U	3050	NT		
2-Methylphenol (o-Cresol)	1.60E+04	Region 6-DAF20		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		7990	U	7990	8410	U	8410	NT			9180	U	9180	7630	U	7630	NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		7990	U	7990	8410	U	8410	NT			9180	U	9180	7630	U	7630	NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		7990	U	7990	8410	U	8410	NT			9180	U	9180	7630	U	7630	NT		
Benzoic acid	4.00E+05	Region 6-DAF20		7990	U	7990	8410	U	8410	NT			9180	U	9180	7630	U	7630	NT		
Benzyl alcohol	1.00E+08	Region 6 SSL		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
N-Nitroso-di-n-propylamine	4.00E-01	Region 6-DAF20		3200	U	3200	3360	U	3360	NT			3670	U	3670	3050	U	3050	NT		
		-																			
Metals (mg/kg)		-																			
Arsenic	1.77E+01	NMED SSL		13.1		0.373	7.77		0.378	4.56		0.34	36.1		0.486	0.861		0.343	1.92		0.391
Barium	8.23E+02	NMED-DAF20		120		0.083	219		0.0841	222		0.0756	154		0.108	79.9		0.0763	186		0.0869
Cadmium	7.52E+00	NMED-DAF20		0.787		0.166	0.168	U	0.168	0.151	U	0.151	1.6		0.216	0.39		0.153	0.174	U	0.174
Chromium	1.92E+01	NMED-DAF20		776		0.0996	20		0.101	12.5		0.0907	1230		0.13	7.78		0.0916	12.7		0.104
Lead	7.50E+02	NMED SSL		30.2		0.183	13.8		0.186	13.1		0.167	35.1		0.238	6.92		0.168	11.3		0.191
Selenium	5.17E+00	NMED-DAF20		0.523	U	0.523	0.53	U	0.53	0.476	U	0.476	7.28		0.68	0.481	U	0.481	0.547	U	0.547
Silver	8.47E+00	NMED-DAF20		1.17		0.0665	0.0673	U	0.0673	0.0605	U	0.0605	1.92		0.0863	1.29		0.0611	0.891		0.0695
Mercury	3.41E+02	NMED SSL		0.273		0.018	0.106		0.0194	0.0167	U	0.0167	0.509		0.0216	0.0172	U	0.0172	0.0191	U	0.0191

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

TABLE 9D Evaporation Pond 2 (1-15), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	Source	ID #	EP2-5									EP2-6								
			Date	6/25/2004			6/25/2004			6/25/2004			6/25/2004			6/25/2004			6/25/2004		
			Depth	(0-2.5')			(2.5-5')			(7.5-10')			(0-2.5')			(5-7.5')			(7.5-10')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		13200		41.6	20100		41.4	207		40.8	76000		484	7790		42.3	39.5	U	39.5
VOCs (ug/kg)																					
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.395	U	0.395	15.4	U	15.4	1.94	U	1.94	18	U	18	15.7	U	15.7	1.88	U	1.88
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.39	U	3.39	73.5	U	73.5	16.6	U	16.6	1070		85.9	75.2	U	75.2	16.1	U	16.1
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.52	U	3.52	473	U	473	594		17.3	553	U	553	484	U	484	508		16.7
Benzene	2.83E+01	NMED-DAF20		0.383	U	0.383	11.3	U	11.3	1.88	U	1.88	13.2	U	13.2	1090		11.6	1.82	U	1.82
Carbon disulfide	7.52E+03	NMED-DAF20		0.485	U	0.485	23.7	U	23.7	23.4	J	2.38	27.7	U	27.7	24.3	U	24.3	19.7	J	2.3
Chloroform	4.90E+02	NMED-DAF20		0.23	U	0.23	30.2	U	30.2	1.13	U	1.13	35.3	U	35.3	30.9	U	30.9	1.09	U	1.09
Ethylbenzene	1.05E+04	NMED-DAF20		0.319	U	0.319	1560		14.5	42.8		1.56	16.9	U	16.9	1940		14.8	1.51	U	1.51
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.421	U	0.421	428		12.7	11.8	J	2.07	14.8	U	14.8	6340		13	478		2
m,p-Xylene	8.00E+04	NMED SSL		0.561	U	0.561	1220		25	28.5	J	2.75	29.2	U	29.2	7170		25.6	2.66	U	2.66
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.561	U	0.561	119	U	119	2.75	U	2.75	139	U	139	122	U	122	2.66	U	2.66
o-Xylene	9.86E+04	NMED SSL		0.306	U	0.306	1330		15.5	35.7		1.5	18.1	U	18.1	12600		15.8	1.45	U	1.45
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.268	U	0.268	13.2	U	13.2	1.31	U	1.31	15.4	U	15.4	13.5	U	13.5	1.27	U	1.27
Toluene	6.80E+03	NMED-DAF20		0.281	U	0.281	617		13.7	1.38	U	1.38	16	U	16	838		14	1.33	U	1.33
SVOCs (ug/kg)																					
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
Acenaphthene	7.98E+04	NMED-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
Anthracene	1.60E+06	NMED-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		2700	U	2700	2690	U	2690	NT			3150	U	3150	2750	U	2750	NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		3190	U	3190	3170	U	3170	NT			4110	J	3710	3250	U	3250	NT		
Chrysene	1.10E+05	NMED-DAF20		2800	U	2800	2780	U	2780	NT			3250	U	3250	2850	U	2850	NT		
Dibenzofuran	5.70E+03	NMED-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
Fluoranthene	4.82E+06	NMED-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
Fluorene	1.00E+05	NMED-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
Hexachloroethane	2.74E+02	NMED-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
Isophorone	3.38E+02	NMED-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
Naphthalene	3.93E+02	NMED-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
Nitrobenzene	1.80E+01	NMED-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		7970	U	7970	7930	U	7930	NT			9270	U	9270	8120	U	8120	NT		
Phenanthrene	7.62E+04	NMED-DAF20		3190	U	3190	14100		3170	NT			3710	U	3710	13600		3250	NT		
Pyrene	5.68E+05	NMED-DAF20		3040	U	3040	3020	U	3020	NT			8070	J	3530	3090	U	3090	NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		7970	U	7970	7930	U	7930	NT			9270	U	9270	8120	U	8120	NT		
2-Methylnaphthalene		-		3190	U	3190	17300		3170	NT			3150	J	3710	14500		3250	NT		
2-Methylphenol (o-Cresol)	1.60E+04	Region 6-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		7970	U	7970	7930	U	7930	NT			9270	U	9270	8120	U	8120	NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		7970	U	7970	7930	U	7930	NT			9270	U	9270	8120	U	8120	NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		7970	U	7970	7930	U	7930	NT			9270	U	9270	8120	U	8120	NT		
Benzoic acid	4.00E+05	Region 6-DAF20		7970	U	7970	7930	U	7930	NT			9270	U	9270	8120	U	8120	NT		
Benzyl alcohol	1.00E+08	Region 6 SSL		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
N-Nitroso-di-n-propylamine	4.00E-01	Region 6-DAF20		3190	U	3190	3170	U	3170	NT			3710	U	3710	3250	U	3250	NT		
		-																			
Metals (mg/kg)		-																			
Arsenic	1.77E+01	NMED SSL		18		0.372	3.3		0.329	4		0.408	20.6		0.457	0.332	U	0.332	0.395	U	0.395
Barium	8.23E+02	NMED-DAF20		131		0.0828	120		0.073	129		0.0907	178		0.102	51.7		0.0738	98.6		0.0878
Cadmium	7.52E+00	NMED-DAF20		0.844		0.166	0.146	U	0.146	0.648		0.181	0.959		0.203	0.426		0.148	0.176	U	0.176
Chromium	1.92E+01	NMED-DAF20		549		0.0994	18.3		0.0876	9.68		0.109	773		0.122	8.54		0.0886	6.02		0.105
Lead	7.50E+02	NMED SSL		27.1		0.182	10.2		0.16	8.59		0.199	28.6		0.224	6.91		0.162	6		0.192
Selenium	5.17E+00	NMED-DAF20		3.97		0.522	0.459	U	0.459	1.27		0.571	0.639	U	0.639	0.465	U	0.465	0.552	U	0.552
Silver	8.47E+00	NMED-DAF20		1.14		0.0663	0.0584	U	0.0584	1.84		0.0726	1.22		0.0813	1.43		0.0591	0.985		0.0702
Mercury	3.41E+02	NMED SSL		0.121		0.0204	0.0183	U	0.0183	0.0173	U	0.0173	0.197		0.0233	0.0195	U	0.0195	0.0185	U	0.0185

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

TABLE 9D Evaporation Pond 2 (1-15), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	Source	ID #	EP2-7						EP2-8											
			Date	6/28/2004			6/28/2004			6/28/2004			6/28/2004			6/28/2004			6/28/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(7.5-10')			(15-17.5')			Dup2-12		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		6600		39.3	25200		43	654		37.7	2780		38.8	38.1	U	38.1	41.3	U	41.3
VOCs (ug/kg)																					
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		6.67		0.373	15.9	U	15.9	0.358	U	0.358	1.85	U	1.85	0.362	U	0.362	0.393	U	0.393
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.2	U	3.2	76.3	U	76.3	3.08	U	3.08	15.8	U	15.8	3.11	U	3.11	3.37	U	3.37
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.33	U	3.33	2020		491	3.19	U	3.19	16.4	U	16.4	28.6		3.22	20.9		3.5
Benzene	2.83E+01	NMED-DAF20		0.361	U	0.361	11.7	U	11.7	0.347	U	0.347	249		1.79	0.35	U	0.35	0.38	U	0.38
Carbon disulfide	7.52E+03	NMED-DAF20		0.458	U	0.458	24.6	U	24.6	0.439	U	0.439	2.26	U	2.26	0.444	U	0.444	0.482	U	0.482
Chloroform	4.90E+02	NMED-DAF20		0.217	U	0.217	31.4	U	31.4	0.208	U	0.208	1.07	U	1.07	0.21	U	0.21	0.228	U	0.228
Ethylbenzene	1.05E+04	NMED-DAF20		0.301	U	0.301	12800		15	0.289	U	0.289	951		13.6	0.292	U	0.292	0.317	U	0.317
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.398	U	0.398	4280		13.2	0.382	U	0.382	487		11.9	0.386	U	0.386	0.418	U	0.418
m,p-Xylene	8.00E+04	NMED SSL		0.53	U	0.53	22100		26	0.509	U	0.509	1480		2.62	0.514	U	0.514	0.558	U	0.558
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.53	U	0.53	123	U	123	0.509	U	0.509	2.62	U	2.62	0.514	U	0.514	0.558	U	0.558
o-Xylene	9.86E+04	NMED SSL		0.289	U	0.289	11800		16.1	0.277	U	0.277	749		1.43	0.28	U	0.28	0.304	U	0.304
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.253	U	0.253	13.7	U	13.7	0.243	U	0.243	1.25	U	1.25	0.245	U	0.245	0.266	U	0.266
Toluene	6.80E+03	NMED-DAF20		0.265	U	0.265	1140		14.2	0.254	U	0.254	100		1.31	0.257	U	0.257	0.279	U	0.279
SVOCs (ug/kg)																					
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Anthracene	1.60E+06	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		2550	U	2550	2790	U	2790	NT			2520	U	2520	NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Chrysene	1.10E+05	NMED-DAF20		2640	U	2640	2890	U	2890	NT			2610	U	2610	NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Fluorene	1.00E+05	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Isophorone	3.38E+02	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		7530	U	7530	8230	U	8230	NT			7440	U	7440	NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
Pyrene	5.68E+05	NMED-DAF20		2870	U	2870	3140	U	3140	NT			2830	U	2830	NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		7530	U	7530	8230	U	8230	NT			7440	U	7440	NT			NT		
2-Methylnaphthalene		-		3010	U	3010	16100		3290	NT			2980	U	2980	NT			NT		
2-Methylphenol (o-Cresol)	1.60E+04	Region 6-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		7530	U	7530	8230	U	8230	NT			7440	U	7440	NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		7530	U	7530	8230	U	8230	NT			7440	U	7440	NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		7530	U	7530	8230	U	8230	NT			7440	U	7440	NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		7530	U	7530	8230	U	8230	NT			7440	U	7440	NT			NT		
Benzyl alcohol	1.00E+08	Region 6 SSL		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
N-Nitroso-di-n-propylamine	4.00E-01	Region 6-DAF20		3010	U	3010	3290	U	3290	NT			2980	U	2980	NT			NT		
		-																			
Metals (mg/kg)		-																			
Arsenic	1.77E+01	NMED SSL		21		0.531	38		0.52	29.6		0.482	0.425	U	0.425	0.526	U	0.526	0.634	U	0.634
Barium	8.23E+02	NMED-DAF20		165		0.118	167		0.116	163		0.107	184		0.0945	178		0.117	214		0.141
Cadmium	7.52E+00	NMED-DAF20		0.882		0.236	1.35		0.231	1.34		0.214	0.189	U	0.189	0.234	U	0.234	0.281	U	0.281
Chromium	1.92E+01	NMED-DAF20		527		0.142	470		0.138	187		0.128	11		0.113	2.17		0.14	1.7		0.169
Lead	7.50E+02	NMED SSL		56.2		0.26	68.5		0.254	46.2		0.236	11.9		0.208	3.32		0.257	3.75		0.309
Selenium	5.17E+00	NMED-DAF20		0.745	U	0.745	2.13		0.729	0.674	U	0.674	0.595	U	0.595	0.736	U	0.736	0.887	U	0.887
Silver	8.47E+00	NMED-DAF20		0.0945	U	0.0945	1.23		0.0925	1.79		0.0857	1.05		0.0756	0.0935	U	0.0935	0.113	U	0.113
Mercury	3.41E+02	NMED SSL		0.195		0.0181	0.281		0.019	0.144		0.0163	0.019	U	0.019	0.0145	U	0.0145	0.0194	U	0.0194

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

TABLE 9D Evaporation Pond 2 (1-15), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	Source	ID #	EP2-9									EP2-10					
			Date	6/28/2004			6/28/2004			6/28/2004			6/25/2004			6/25/2004		
			Depth	(0-2.5')			(2.5-5')			(5-7.5')			(0-2.5')			(5-7.5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		3200		36.3	15200		40.6	148		40.4	177		37.2	385		40.8
VOCs (ug/kg)																		
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		14.9		0.346	19.3	U	19.3	0.384	U	0.384	0.353	U	0.353	1.94	U	1.94
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		2.97	U	2.97	166	U	166	19.2		3.3	3.03	U	3.03	16.6	U	16.6
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.08	U	3.08	1100		172	242		3.42	3.15	U	3.15	1190		17.3
Benzene	2.83E+01	NMED-DAF20		0.334	U	0.334	565		18.7	0.372	U	0.372	0.342	U	0.342	1050		11.1
Carbon disulfide	7.52E+03	NMED-DAF20		0.424	U	0.424	23.7	U	23.7	15.4		0.471	0.433	U	0.433	2.38	U	2.38
Chloroform	4.90E+02	NMED-DAF20		12.8		0.201	11.2	U	11.2	0.223	U	0.223	0.205	U	0.205	1.13	U	1.13
Ethylbenzene	1.05E+04	NMED-DAF20		9.9		0.279	25300		15.6	10.8		0.31	0.285	U	0.285	12400		14.3
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.368	U	0.368	9690		20.6	15.4		0.409	0.376	U	0.376	3890		12.5
m,p-Xylene	8.00E+04	NMED SSL		15.1		0.491	32900		27.4	8.29		0.545	0.502	U	0.502	9200		24.7
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		6.13		0.491	27.4	U	27.4	0.545	U	0.545	1.6	J	0.502	2.75	U	2.75
o-Xylene	9.86E+04	NMED SSL		9.65		0.268	21400		15	17.2		0.297	0.274	U	0.274	17500		15.3
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		7.47		0.234	13.1	U	13.1	0.26	U	0.26	0.239	U	0.239	1.31	U	1.31
Toluene	6.80E+03	NMED-DAF20		0.245	U	0.245	3500		13.7	0.273	U	0.273	0.251	U	0.251	1510		13.5
SVOCs (ug/kg)																		
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		2360	U	2360	2640	U	2640	NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		2790	U	2790	3120	U	3120	NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		2440	U	2440	2730	U	2730	NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
Isophorone	3.38E+02	NMED-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		2790	U	2790	18200		3120	NT			NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		6970	U	6970	7790	U	7790	NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		2790	U	2790	38400		3120	NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		2650	U	2650	2970	U	2970	NT			NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		6970	U	6970	7790	U	7790	NT			NT			NT		
2-Methylnaphthalene		-		2790	U	2790	75300		3120	NT			NT			NT		
2-Methylphenol (o-Cresol)	1.60E+04	Region 6-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		6970	U	6970	7790	U	7790	NT			NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		6970	U	6970	7790	U	7790	NT			NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		2790	U	2790	3120	U	3120	NT			NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		6970	U	6970	7790	U	7790	NT			NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		6970	U	6970	7790	U	7790	NT			NT			NT		
Benzyl alcohol	1.00E+08	Region 6 SSL		2790	U	2790	3120	U	3120	NT			NT			NT		
N-Nitroso-di-n-propylamine	4.00E-01	Region 6-DAF20		2790	U	2790	3120	U	3120	NT			NT			NT		
		-																
Metals (mg/kg)		-																
Arsenic	1.77E+01	NMED SSL		0.44	U	0.44	13.5		0.52	4.86		0.594	2.65		0.347	10		0.512
Barium	8.23E+02	NMED-DAF20		157		0.0978	152		0.115	118		0.131	172		0.0771	146		0.114
Cadmium	7.52E+00	NMED-DAF20		0.6		0.195	0.231	U	0.231	0.264	U	0.264	0.741		0.154	0.228	U	0.228
Chromium	1.92E+01	NMED-DAF20		18.5		0.117	425		0.138	7.48		0.159	68.1		0.0925	11.9		0.136
Lead	7.50E+02	NMED SSL		10.4		0.215	16.3		0.254	7.5		0.29	11.3		0.17	10.6		0.25
Selenium	5.17E+00	NMED-DAF20		0.616	U	0.616	0.727	U	0.727	0.83	U	0.83	0.486	U	0.486	0.717	U	0.717
Silver	8.47E+00	NMED-DAF20		1.65		0.0783	0.0924	U	0.0924	1.68		0.105	1.81		0.0617	0.091	U	0.091
Mercury	3.41E+02	NMED SSL		0.0175	U	0.0175	0.0571		0.02	0.0178	U	0.0178	0.0164	U	0.0164	0.02	U	0.02

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

TABLE 9D Evaporation Pond 2 (1-15), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	Source	ID #	EP2-11						EP2-12								
			Date	6/28/2004			6/28/2004			7/12/2004			7/12/2004			7/12/2004		
			Depth	(0-2.5')			(7.5-10')			(0-2.5')			(5-7.5')			Dup-14		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		74000		46.4	12700		43.4	3550		41.5	3690		41	5030		42.5
VOCs (ug/kg)																		
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		20.9		0.441	16.1	U	16.1	0.394	U	0.394	0.389	U	0.389	0.404	U	0.404
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.78	U	3.78	77	U	77	3.38	U	3.38	37.1		3.34	39.2		3.47
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.93	U	3.93	496	U	496	3.51	U	3.51	268		3.47	244		3.6
Benzene	2.83E+01	NMED-DAF20		0.427	U	0.427	11.8	U	11.8	0.382	U	0.382	0.377	U	0.377	7.21		0.391
Carbon disulfide	7.52E+03	NMED-DAF20		0.541	U	0.541	24.9	U	24.9	0.483	U	0.483	9.28		0.477	0.495	U	0.495
Chloroform	4.90E+02	NMED-DAF20		18.6		0.256	31.6	U	31.6	0.229	U	0.229	0.226	U	0.226	0.235	U	0.235
Ethylbenzene	1.05E+04	NMED-DAF20		25.7		0.356	11200		15.2	0.318	U	0.318	17		0.314	24.4		0.326
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		13.2		0.469	3540		13.3	0.42	U	0.42	0.415	U	0.415	8.07		0.43
m,p-Xylene	8.00E+04	NMED SSL		36.7		0.626	11000		26.2	0.56	U	0.56	18.2		0.553	25		0.574
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		9.93		0.626	124	U	124	0.56	U	0.56	0.553	U	0.553	0.574	U	0.574
o-Xylene	9.86E+04	NMED SSL		26.7		0.341	8670		16.2	0.305	U	0.305	17.8		0.302	23.6		0.313
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		10.9		0.299	13.8	U	13.8	0.267	U	0.267	0.264	U	0.264	0.274	U	0.274
Toluene	6.80E+03	NMED-DAF20		0.313	U	0.313	1270		14.4	0.28	U	0.28	0.276	U	0.276	0.287	U	0.287
SVOCs (ug/kg)																		
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
Acenaphthene	7.98E+04	NMED-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	2260	J	3260
Anthracene	1.60E+06	NMED-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
Benzo(a)anthracene	1.10E+03	NMED-DAF20		3020	U	3020	2820	U	2820	2700	U	2700	2660	U	2660	2760	U	2760
Benzo(a)pyrene	2.34E+03	NMED SSL		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
Chrysene	1.10E+05	NMED-DAF20		3120	U	3120	2910	U	2910	2790	U	2790	2750	U	2750	2860	U	2860
Dibenzofuran	5.70E+03	NMED-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
Fluoranthene	4.82E+06	NMED-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
Fluorene	1.00E+05	NMED-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	4570	J	3140	3140	J	3260
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
Hexachloroethane	2.74E+02	NMED-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
Isophorone	3.38E+02	NMED-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
Naphthalene	3.93E+02	NMED-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
Nitrobenzene	1.80E+01	NMED-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
Pentachlorophenol	2.11E+01	NMED-DAF20		8890	U	8890	8310	U	8310	7950	U	7950	7850	U	7850	8150	U	8150
Phenanthrene	7.62E+04	NMED-DAF20		3560	U	3560	17800		3320	3180	U	3180	14800		3140	6560	J	3260
Pyrene	5.68E+05	NMED-DAF20		3390	U	3390	3170	U	3170	3030	U	3030	2990	U	2990	3100	U	3100
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		8890	U	8890	8310	U	8310	7950	U	7950	7850	U	7850	8150	U	8150
2-Methylnaphthalene		-		3560	U	3560	23100		3320	3180	U	3180	2560	J	3140	1370	J	3260
2-Methylphenol (o-Cresol)	1.60E+04	Region 6-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		8890	U	8890	8310	U	8310	7950	U	7950	7850	U	7850	8150	U	8150
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		8890	U	8890	8310	U	8310	7950	U	7950	7850	U	7850	8150	U	8150
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		8890	U	8890	8310	U	8310	7950	U	7950	7850	U	7850	8150	U	8150
Benzoic acid	4.00E+05	Region 6-DAF20		8890	U	8890	8310	U	8310	7950	U	7950	7850	U	7850	8150	U	8150
Benzyl alcohol	1.00E+08	Region 6 SSL		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
N-Nitroso-di-n-propylamine	4.00E-01	Region 6-DAF20		3560	U	3560	3320	U	3320	3180	U	3180	3140	U	3140	3260	U	3260
		-																
Metals (mg/kg)		-																
Arsenic	1.77E+01	NMED SSL		1.65		0.627	3.33		0.586	20.7		0.511	0.479	U	0.479	0.524	U	0.524
Barium	8.23E+02	NMED-DAF20		299		0.139	270		0.13	177		0.114	86.1		0.107	127		0.116
Cadmium	7.52E+00	NMED-DAF20		0.875		0.279	0.261	U	0.261	0.85		0.228	0.214	U	0.214	0.233	U	0.233
Chromium	1.92E+01	NMED-DAF20		16.2		0.168	17.2		0.157	227		0.136	6.74		0.128	7.45		0.14
Lead	7.50E+02	NMED SSL		11.9		0.307	14.3		0.287	33		0.249	5.76		0.234	7.14		0.256
Selenium	5.17E+00	NMED-DAF20		0.879	U	0.879	0.822	U	0.822	4.44		0.691	0.671	U	0.671	0.734	U	0.734
Silver	8.47E+00	NMED-DAF20		2.21		0.112	0.104	U	0.104	0.0908	U	0.0908	1.44		0.0852	1.36		0.0931
Mercury	3.41E+02	NMED SSL		0.0201	U	0.0201	0.0199	U	0.0199	0.155		0.02	0.0185	U	0.0185	0.0209	U	0.0209

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

TABLE 9D Evaporation Pond 2 (1-15), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	Source	ID #	EP2-13						EP2-14						EP2-15								
			Date	7/12/2004			7/12/2004			7/12/2004			7/12/2004			7/12/2004			7/12/2004			7/12/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(7.5-10')			(0-2.5')			(2.5-5')			(7.5-10')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		14500		46.6	35900		44.8	26300		45.3	6920		44.3	14100		43.3	13000		44	150		41.4
VOCs (ug/kg)																								
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.443	U	0.443	2.13	U	2.13	0.431	U	0.431	82.2	U	82.2	0.412	U	0.412	2.09	U	2.09	0.393	U	0.393
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.81	U	3.81	18.3	U	18.3	3.7	U	3.7	393	U	393	3.53	U	3.53	17.9	U	17.9	12.7		3.38
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.95	U	3.95	449		19	3.84	U	3.84	2530	U	2530	32.5		3.67	18.6	U	18.6	93.7		3.5
Benzene	2.83E+01	NMED-DAF20		0.429	U	0.429	2.06	U	2.06	0.417	U	0.417	60.5	U	60.5	0.398	U	0.398	2.02	U	2.02	0.381	U	0.381
Carbon disulfide	7.52E+03	NMED-DAF20		0.544	U	0.544	81.3		2.61	0.529	U	0.529	127	U	127	0.505	U	0.505	2.56	U	2.56	0.482	U	0.482
Chloroform	4.90E+02	NMED-DAF20		0.258	U	0.258	1.24	U	1.24	0.25	U	0.25	162	U	162	0.239	U	0.239	1.21	U	1.21	0.228	U	0.228
Ethylbenzene	1.05E+04	NMED-DAF20		44.8		0.358	137		1.72	0.348	U	0.348	6100		77.4	0.332	U	0.332	483		1.69	0.317	U	0.317
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		14.6		0.472	48.9		2.27	0.459	U	0.459	2020		67.9	0.438	U	0.438	128		2.23	0.419	U	0.419
m,p-Xylene	8.00E+04	NMED SSL		99.6		0.629	294		3.02	0.612	U	0.612	14300		134	0.584	U	0.584	617		2.97	0.558	U	0.558
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.629	U	0.629	3.02	U	3.02	0.612	U	0.612	636	U	636	0.584	U	0.584	2.97	U	2.97	0.558	U	0.558
o-Xylene	9.86E+04	NMED SSL		63.7		0.343	198		1.65	0.334	U	0.334	7000		82.9	0.319	U	0.319	472		1.62	0.305	U	0.305
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.3	U	0.3	1.44	U	1.44	0.292	U	0.292	70.7	U	70.7	0.279	U	0.279	1.42	U	1.42	0.266	U	0.266
Toluene	6.80E+03	NMED-DAF20		15		0.315	1.51	U	1.51	0.306	U	0.306	3170		73.4	0.292	U	0.292	82.9		1.48	0.279	U	0.279
SVOCs (ug/kg)																								
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		3580	U	3580	5080	J	3430	3480	U	3480	3400	U	3400	3320	U	3320	3370	U	3370	NT		
Acenaphthene	7.98E+04	NMED-DAF20		3580	U	3580	4620	J	3430	3480	U	3480	3400	U	3400	3320	U	3320	3370	U	3370	NT		
Anthracene	1.60E+06	NMED-DAF20		3580	U	3580	41200		3430	3480	U	3480	3400	U	3400	3320	U	3320	3370	U	3370	NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		3030	U	3030	3560	J	2910	2950	U	2950	2880	U	2880	2820	U	2820	2910	J	2860	NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		3580	U	3580	2050	J	3430	3480	U	3480	3400	U	3400	2050	J	3320	1890	J	3370	NT		
Chrysene	1.10E+05	NMED-DAF20		3140	U	3140	3410	J	3010	3050	U	3050	2980	U	2980	2910	U	2910	5490	J	2960	NT		
Dibenzofuran	5.70E+03	NMED-DAF20		3580	U	3580	7830	J	3430	3480	U	3480	3400	U	3400	3320	U	3320	3370	U	3370	NT		
Fluoranthene	4.82E+06	NMED-DAF20		3580	U	3580	3790	J	3430	3480	U	3480	3400	U	3400	3320	U	3320	3390	J	3370	NT		
Fluorene	1.00E+05	NMED-DAF20		3580	U	3580	10200	J	3430	3480	U	3480	2680	J	3400	3320	U	3320	4440	J	3370	NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		3580	U	3580	14300		3430	3480	U	3480	3400	U	3400	13800		3320	3370	U	3370	NT		
Hexachloroethane	2.74E+02	NMED-DAF20		3580	U	3580	18700		3430	3480	U	3480	3400	U	3400	3320	U	3320	3370	U	3370	NT		
Isophorone	3.38E+02	NMED-DAF20		3580	U	3580	1920	J	3430	3480	U	3480	3400	U	3400	3320	U	3320	3370	U	3370	NT		
Naphthalene	3.93E+02	NMED-DAF20		3580	U	3580	13700		3430	3480	U	3480	4500	J	3400	3320	U	3320	3470	J	3370	NT		
Nitrobenzene	1.80E+01	NMED-DAF20		3580	U	3580	1900	J	3430	3480	U	3480	3400	U	3400	3320	U	3320	3370	U	3370	NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		3580	U	3580	9130	J	3430	3480	U	3480	3400	U	3400	3320	U	3320	3370	U	3370	NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		6940	J	8940	6650	J	8590	8690	U	8690	8490	U	8490	6510	J	8300	8430	U	8430	NT		
Phenanthrene	7.62E+04	NMED-DAF20		3580	U	3580	41200		3430	3300	J	3480	13300	J	3400	3320	U	3320	22400		3370	NT		
Pyrene	5.68E+05	NMED-DAF20		3410	U	3410	14000		3270	3530	J	3310	3240	U	3240	3160	U	3160	8540	J	3210	NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		9960	J	8940	10100	J	8590	8690	U	8690	8490	U	8490	9300	J	8300	8430	U	8430	NT		
2-Methylnaphthalene		-		3580	U	3580	70600		3430	3480	U	3480	11100	J	3400	3320	U	3320	20800		3370	NT		
2-Methylphenol (o-Cresol)	1.60E+04	Region 6-DAF20		3580	U	3580	3430	U	3430	3480	U	3480	3400	U	3400	3320	U	3320	3370	U	3370	NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		8940	U	8940	2120	J	8590	8690	U	8690	8490	U	8490	8300	U	8300	8430	U	8430	NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		8940	U	8940	1570	J	8590	8690	U	8690	8490	U	8490	8300	U	8300	8430	U	8430	NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		3580	U	3580	3430	U	3430	3480	U	3480	3400	U	3400	1570	J	3320	3370	U	3370	NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		8940	U	8940	3300	J	8590	8690	U	8690	8490	U	8490	4090	J	8300	8430	U	8430	NT		
Benzoic acid	4.00E+05	Region 6-DAF20		15700	J	8940	15200	J	8590	8690	U	8690	8490	U	8490	15000	J	8300	8430	U	8430	NT		
Benzyl alcohol	1.00E+08	Region 6 SSL		3580	U	3580	3430	U	3430	3480	U	3480	3400	U	3400	3320	U	3320	3370	U	3370	NT		
N-Nitroso-di-n-propylamine	4.00E-01	Region 6-DAF20		3580	U	3580	2600	J	3430	3480	U	3480	3400	U	3400	3320	U	3320	3370	U	3370	NT		
		-																						
Metals (mg/kg)		-																						
Arsenic	1.77E+01	NMED SSL		16.5		0.528	0.533	U	0.533	30.5		0.549	8.85		0.651	12		0.598	6.17		0.619	2.63		0.529
Barium	8.23E+02	NMED-DAF20		224		0.117	147		0.118	225		0.122	288		0.144	218		0.133	273		0.138	165		0.118
Cadmium	7.52E+00	NMED-DAF20		1.01		0.235	0.236	U	0.236	1.2		0.243	0.819		0.289	0.266	U	0.266	0.275	U	0.275	0.235	U	0.235
Chromium	1.92E+01	NMED-DAF20		560		0.141	17.2		0.141	779		0.146	20.8		0.174	269		0.159	38.9		0.165	4.06		0.141
Lead	7.50E+02	NMED SSL		44.9		0.258	9.64		0.261	25.6		0.268	12.1		0.318	20.1		0.292	14.5		0.302	3.35		0.259
Selenium	5.17E+00	NMED-DAF20		0.738	U	0.738	0.746	U	0.746	2.57		0.769	0.91	U	0.91	0.837	U	0.837	0.868	U	0.868	0.74	U	0.74
Silver	8.47E+00	NMED-DAF20		0.0938	U	0.0938	1.59		0.0948	0.0976	U	0.0976	0.116	U	0.116	0.106	U	0.106	0.11	U	0.11	0.094	U	0.094
Mercury	3.41E+02	NMED SSL		0.181		0.0245	0.0168	U	0.0168	0.134		0.0192	0.0223	U	0.0223	0.0212	U	0.0212	0.0216	U	0.0216	0.0183	U	0.0183

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

TABLE 9E Evaporation Pond 2 (16-15), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	Source	ID #	EP2-16						EP2-17						EP2-18					
			Date	7/12/2004			7/12/2004			7/12/2004			7/12/2004			7/12/2004			7/12/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		544		39.3	38.9	U	38.9	40.3	U	40.3	41.6	U	41.6	39.2	U	39.2	38.5	U	38.5
VOCs (ug/kg)																					
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.373	U	0.373	0.37	U	0.37	0.384	U	0.384	0.395	U	0.395	0.373	U	0.373	0.366	U	0.366
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.2	U	3.2	3.17	U	3.17	3.29	U	3.29	3.39	U	3.39	3.2	U	3.2	3.14	U	3.14
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.33	U	3.33	100		3.29	3.42	U	3.42	48.6		3.52	3.32	U	3.32	3.26	U	3.26
Benzene	2.83E+01	NMED-DAF20		0.361	U	0.361	0.358	U	0.358	0.371	U	0.371	0.383	U	0.383	0.361	U	0.361	0.355	U	0.355
Carbon disulfide	7.52E+03	NMED-DAF20		0.458	U	0.458	0.453	U	0.453	0.47	U	0.47	0.485	U	0.485	0.457	U	0.457	0.449	U	0.449
Chloroform	4.90E+02	NMED-DAF20		0.217	U	0.217	0.215	U	0.215	0.223	U	0.223	0.23	U	0.23	0.216	U	0.216	0.213	U	0.213
Ethylbenzene	1.05E+04	NMED-DAF20		0.301	U	0.301	0.298	U	0.298	0.309	U	0.309	0.319	U	0.319	0.3	U	0.3	0.296	U	0.296
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.398	U	0.398	0.394	U	0.394	0.408	U	0.408	0.421	U	0.421	0.397	U	0.397	0.39	U	0.39
m,p-Xylene	8.00E+04	NMED SSL		0.53	U	0.53	0.525	U	0.525	0.545	U	0.545	0.561	U	0.561	0.529	U	0.529	0.52	U	0.52
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.53	U	0.53	0.525	U	0.525	0.545	U	0.545	0.561	U	0.561	0.529	U	0.529	0.52	U	0.52
o-Xylene	9.86E+04	NMED SSL		0.289	U	0.289	0.286	U	0.286	0.297	U	0.297	0.306	U	0.306	0.288	U	0.288	0.284	U	0.284
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.253	U	0.253	0.251	U	0.251	0.26	U	0.26	0.268	U	0.268	0.252	U	0.252	0.248	U	0.248
Toluene	6.80E+03	NMED-DAF20		0.265	U	0.265	0.263	U	0.263	0.272	U	0.272	0.281	U	0.281	0.264	U	0.264	0.26	U	0.26
SVOCs (ug/kg)																					
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Isophorone	3.38E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene	-	-		NT			NT			NT			NT			NT			NT		
2-Methylphenol (o-Cresol)	1.60E+04	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		NT			NT			NT			NT			NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	-	-		NT			NT			NT			NT			NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	-	-		NT			NT			NT			NT			NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
Benzyl alcohol	1.00E+08	Region 6 SSL		NT			NT			NT			NT			NT			NT		
N-Nitroso-di-n-propylamine	4.00E-01	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
	-	-																			
Metals (mg/kg)	-	-																			
Arsenic	1.77E+01	NMED SSL		2.03		0.553	0.597	U	0.597	4.89		0.619	3		0.624	1.93		0.564	7.85		0.475
Barium	8.23E+02	NMED-DAF20		219		0.123	120		0.132	251		0.137	206		0.139	206		0.125	213		0.106
Cadmium	7.52E+00	NMED-DAF20		0.246	U	0.246	0.265	U	0.265	0.275	U	0.275	0.277	U	0.277	0.25	U	0.25	0.212	U	0.212
Chromium	1.92E+01	NMED-DAF20		11.5		0.147	8.23		0.159	14		0.165	15.6		0.166	7.89		0.15	8.32		0.126
Lead	7.50E+02	NMED SSL		7.91		0.27	7.08		0.291	12.6		0.302	8.11		0.305	6.93		0.275	6.57		0.232
Selenium	5.17E+00	NMED-DAF20		0.775	U	0.775	0.835	U	0.835	0.866	U	0.866	0.874	U	0.874	0.788	U	0.788	0.665	U	0.665
Silver	8.47E+00	NMED-DAF20		0.0983	U	0.0983	0.106	U	0.106	0.11	U	0.11	0.111	U	0.111	0.1	U	0.1	0.0844	U	0.0844
Mercury	3.41E+02	NMED SSL		0.0152	U	0.0152	0.0183	U	0.0183	0.0186	U	0.0186	0.0195	U	0.0195	0.0192	U	0.0192	0.017	U	0.017

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

TABLE 9E Evaporation Pond 2 (16-15), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	Source	ID #	EP2-19						EP2-20									EP2-21					
			Date	7/12/2004			7/12/2004			7/12/2004			7/12/2004			7/12/2004			7/12/2004			7/12/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(5-7.5')			Dup-15			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		2800		39.3	145		41.9	207		36.3	37.9	U	37.9	38.2	U	38.2	189		39.1	41.6	U	41.6
VOCs (ug/kg)																								
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.374	U	0.374	0.398	U	0.398	0.398	U	0.398	0.36	U	0.36	0.363	U	0.363	0.372	U	0.372	0.395	U	0.395
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.21	U	3.21	3.42	U	3.42	3.42	U	3.42	3.09	U	3.09	3.12	U	3.12	3.19	U	3.19	3.39	U	3.39
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.33	U	3.33	3.55	U	3.55	3.55	U	3.55	120		3.21	33.3		3.24	3.31	U	3.31	3.52	U	3.52
Benzene	2.83E+01	NMED-DAF20		0.362	U	0.362	0.386	U	0.386	0.386	U	0.386	0.349	U	0.349	0.352	U	0.352	0.36	U	0.36	0.383	U	0.383
Carbon disulfide	7.52E+03	NMED-DAF20		0.458	U	0.458	0.488	U	0.488	0.488	U	0.488	0.442	U	0.442	0.445	U	0.445	0.456	U	0.456	0.485	U	0.485
Chloroform	4.90E+02	NMED-DAF20		0.217	U	0.217	0.231	U	0.231	0.231	U	0.231	0.209	U	0.209	0.211	U	0.211	0.216	U	0.216	0.23	U	0.23
Ethylbenzene	1.05E+04	NMED-DAF20		0.302	U	0.302	0.321	U	0.321	0.321	U	0.321	0.291	U	0.291	0.293	U	0.293	0.3	U	0.3	0.319	U	0.319
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.398	U	0.398	0.424	U	0.424	0.424	U	0.424	0.384	U	0.384	0.387	U	0.387	0.396	U	0.396	0.421	U	0.421
m,p-Xylene	8.00E+04	NMED SSL		0.531	U	0.531	0.566	U	0.566	0.566	U	0.566	0.512	U	0.512	0.516	U	0.516	0.528	U	0.528	0.561	U	0.561
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.531	U	0.531	0.566	U	0.566	0.566	U	0.566	0.512	U	0.512	0.516	U	0.516	0.528	U	0.528	0.561	U	0.561
o-Xylene	9.86E+04	NMED SSL		0.29	U	0.29	0.308	U	0.308	0.308	U	0.308	0.279	U	0.279	0.281	U	0.281	0.288	U	0.288	0.306	U	0.306
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.253	U	0.253	0.27	U	0.27	0.27	U	0.27	0.244	U	0.244	0.246	U	0.246	0.252	U	0.252	0.268	U	0.268
Toluene	6.80E+03	NMED-DAF20		0.265	U	0.265	0.283	U	0.283	0.283	U	0.283	0.256	U	0.256	0.258	U	0.258	0.264	U	0.264	0.281	U	0.281
SVOCs (ug/kg)																								
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		2560	U	2560	NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		3020	U	3020	NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		2640	U	2640	NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
Isophorone	3.38E+02	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		7540	U	7540	NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		2870	U	2870	NT			NT			NT			NT			NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		7540	U	7540	NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		3020	U	3020	NT			NT			NT			NT			NT			NT		
2-Methylphenol (o-Cresol)	1.60E+04	Region 6-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		7540	U	7540	NT			NT			NT			NT			NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		7540	U	7540	NT			NT			NT			NT			NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		3020	U	3020	NT			NT			NT			NT			NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		7540	U	7540	NT			NT			NT			NT			NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		7540	U	7540	NT			NT			NT			NT			NT			NT		
Benzyl alcohol	1.00E+08	Region 6 SSL		3020	U	3020	NT			NT			NT			NT			NT			NT		
N-Nitroso-di-n-propylamine	4.00E-01	Region 6-DAF20		3020	U	3020	NT			NT			NT			NT			NT			NT		
		-																						
Metals (mg/kg)		-																						
Arsenic	1.77E+01	NMED SSL		10.1		0.554	8.96		0.467	36.3		0.501	3.36		0.523	3.76		0.528	22.1		0.54	7.56		0.574
Barium	8.23E+02	NMED-DAF20		219		0.123	218		0.104	314		0.111	158		0.116	333		0.117	309		0.12	128		0.128
Cadmium	7.52E+00	NMED-DAF20		0.246	U	0.246	0.207	U	0.207	0.985		0.223	0.233	U	0.233	0.234	U	0.234	0.615		0.24	0.255	U	0.255
Chromium	1.92E+01	NMED-DAF20		15.7		0.147	9.55		0.124	11.8		0.134	10.3		0.14	10.1		0.141	22.8		0.144	20		0.153
Lead	7.50E+02	NMED SSL		9.87		0.27	8.08		0.228	8.52		0.245	9.42		0.256	8.12		0.258	18.4		0.264	19.2		0.281
Selenium	5.17E+00	NMED-DAF20		0.776	U	0.776	0.653	U	0.653	0.702	U	0.702	0.733	U	0.733	0.739	U	0.739	0.756	U	0.756	0.804	U	0.804
Silver	8.47E+00	NMED-DAF20		0.0984	U	0.0984	0.0829	U	0.0829	0.0891	U	0.0891	1.47		0.093	0.0938	U	0.0938	0.096	U	0.096	0.102	U	0.102
Mercury	3.41E+02	NMED SSL		0.0181	U	0.0181	0.0202	U	0.0202	0.0134	U	0.0134	0.0158	U	0.0158	0.0162	U	0.0162	0.0173	U	0.0173	0.018	U	0.018

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

TABLE 9E Evaporation Pond 2 (16-15), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	Source	ID #	EP2-22						EP2-23						EP2-24					
			Date	7/12/2004			7/12/2004			7/12/2004			7/12/2004			7/12/2004			7/12/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		148		39.6	42.8	U	42.8	140		35.2	35.8	U	35.8	373		39.6	235		43.5
VOCs (ug/kg)																					
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.377	U	0.377	0.407	U	0.407	0.334	U	0.334	0.341	U	0.341	0.376	U	0.376	0.413	U	0.413
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.23	U	3.23	3.5	U	3.5	2.87	U	2.87	2.92	U	2.92	3.23	U	3.23	3.55	U	3.55
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.35	U	3.35	3.63	U	3.63	2.98	U	2.98	3.03	U	3.03	3.35	U	3.35	3.68	U	3.68
Benzene	2.83E+01	NMED-DAF20		0.365	U	0.365	0.394	U	0.394	0.324	U	0.324	0.33	U	0.33	0.364	U	0.364	0.4	U	0.4
Carbon disulfide	7.52E+03	NMED-DAF20		0.462	U	0.462	0.499	U	0.499	0.41	U	0.41	0.418	U	0.418	0.461	U	0.461	0.507	U	0.507
Chloroform	4.90E+02	NMED-DAF20		0.219	U	0.219	0.237	U	0.237	0.194	U	0.194	0.198	U	0.198	0.218	U	0.218	0.24	U	0.24
Ethylbenzene	1.05E+04	NMED-DAF20		0.304	U	0.304	0.329	U	0.329	0.27	U	0.27	0.275	U	0.275	0.303	U	0.303	0.333	U	0.333
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.401	U	0.401	0.434	U	0.434	0.356	U	0.356	0.363	U	0.363	0.4	U	0.4	0.44	U	0.44
m,p-Xylene	8.00E+04	NMED SSL		0.535	U	0.535	0.578	U	0.578	0.475	U	0.475	0.484	U	0.484	0.534	U	0.534	0.587	U	0.587
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.535	U	0.535	0.578	U	0.578	0.475	U	0.475	0.484	U	0.484	0.534	U	0.534	0.587	U	0.587
o-Xylene	9.86E+04	NMED SSL		0.292	U	0.292	0.315	U	0.315	0.259	U	0.259	0.264	U	0.264	0.291	U	0.291	0.32	U	0.32
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.255	U	0.255	0.276	U	0.276	0.227	U	0.227	0.231	U	0.231	0.255	U	0.255	0.28	U	0.28
Toluene	6.80E+03	NMED-DAF20		0.267	U	0.267	0.289	U	0.289	0.237	U	0.237	0.242	U	0.242	0.267	U	0.267	0.293	U	0.293
SVOCs (ug/kg)																					
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Isophorone	3.38E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT			NT			NT		
2-Methylphenol (o-Cresol)	1.60E+04	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		NT			NT			NT			NT			NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		NT			NT			NT			NT			NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		NT			NT			NT			NT			NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
Benzyl alcohol	1.00E+08	Region 6 SSL		NT			NT			NT			NT			NT			NT		
N-Nitroso-di-n-propylamine	4.00E-01	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
		-																			
Metals (mg/kg)		-																			
Arsenic	1.77E+01	NMED SSL		6.64		0.547	7.55		0.591	9.88		0.517	1.72		0.562	10.2		0.546	3.25		0.6
Barium	8.23E+02	NMED-DAF20		298		0.122	194		0.131	212		0.114	192		0.125	207		0.121	198		0.133
Cadmium	7.52E+00	NMED-DAF20		0.243	U	0.243	0.263	U	0.263	0.23	U	0.23	0.249	U	0.249	0.614		0.243	0.267	U	0.267
Chromium	1.92E+01	NMED-DAF20		15		0.146	8.28		0.158	16.4		0.138	6.3		0.149	19.2		0.146	17.8		0.16
Lead	7.50E+02	NMED SSL		15.2		0.267	9.39		0.289	9.13		0.252	5.46		0.275	25.1		0.267	17.1		0.293
Selenium	5.17E+00	NMED-DAF20		0.765	U	0.765	0.828	U	0.828	0.723	U	0.723	0.707	U	0.707	0.765	U	0.765	0.84	U	0.84
Silver	8.47E+00	NMED-DAF20		0.0972	U	0.0972	0.105	U	0.105	0.0918	U	0.0918	0.0999	U	0.0999	0.0971	U	0.0971	0.107	U	0.107
Mercury	3.41E+02	NMED SSL		0.0182	U	0.0182	0.0189	U	0.0189	0.018	U	0.018	0.018	U	0.018	0.0194	U	0.0194	0.0192	U	0.0192

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

TABLE 9E Evaporation Pond 2 (16-15), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	Source	ID #	EP2-25								
			Date	7/12/2004			7/12/2004			7/12/2004		
			Depth	(0-2.5')			(2.5-5')			Dup-16		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		1120		39.6	41.5	U	41.5	42.2	U	42.2
VOCs (ug/kg)												
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.376	U	0.376	0.394	U	0.394	0.401	U	0.401
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.23	U	3.23	3.38	U	3.38	3.44	U	3.44
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.35	U	3.35	3.51	U	3.51	3.57	U	3.57
Benzene	2.83E+01	NMED-DAF20		0.364	U	0.364	0.382	U	0.382	0.388	U	0.388
Carbon disulfide	7.52E+03	NMED-DAF20		0.461	U	0.461	0.483	U	0.483	0.492	U	0.492
Chloroform	4.90E+02	NMED-DAF20		0.218	U	0.218	0.229	U	0.229	0.233	U	0.233
Ethylbenzene	1.05E+04	NMED-DAF20		0.303	U	0.303	0.318	U	0.318	0.323	U	0.323
Isopropylbenzene (Cumene)	7.29E+03	NMED-DAF20		0.4	U	0.4	0.42	U	0.42	0.427	U	0.427
m,p-Xylene	8.00E+04	NMED SSL		0.534	U	0.534	0.56	U	0.56	0.569	U	0.569
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.534	U	0.534	0.56	U	0.56	0.569	U	0.569
o-Xylene	9.86E+04	NMED SSL		0.291	U	0.291	0.305	U	0.305	0.31	U	0.31
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.255	U	0.255	0.267	U	0.267	0.272	U	0.272
Toluene	6.80E+03	NMED-DAF20		0.267	U	0.267	0.28	U	0.28	0.285	U	0.285
SVOCs (ug/kg)												
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		NT			NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		NT			NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		NT			NT			NT		
Isophorone	3.38E+02	NMED-DAF20		NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		NT			NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		NT			NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT		
2-Methylphenol (o-Cresol)	1.60E+04	Region 6-DAF20		NT			NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		NT			NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		NT			NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		NT			NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		NT			NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		NT			NT			NT		
Benzyl alcohol	1.00E+08	Region 6 SSL		NT			NT			NT		
N-Nitroso-di-n-propylamine	4.00E-01	Region 6-DAF20		NT			NT			NT		
		-										
Metals (mg/kg)		-										
Arsenic	1.77E+01	NMED SSL		16		0.546	1.96		0.573	6.07		0.633
Barium	8.23E+02	NMED-DAF20		276		0.121	209		0.127	269		0.141
Cadmium	7.52E+00	NMED-DAF20		0.853		0.243	0.254	U	0.254	0.281	U	0.281
Chromium	1.92E+01	NMED-DAF20		87		0.146	7.58		0.153	18.1		0.168
Lead	7.50E+02	NMED SSL		29.6		0.267	7.43		0.28	14.8		0.309
Selenium	5.17E+00	NMED-DAF20		4.86		0.765	0.802	U	0.802	5.03		0.886
Silver	8.47E+00	NMED-DAF20		0.0971	U	0.0971	0.102	U	0.102	0.113	U	0.113
Mercury	3.41E+02	NMED SSL		0.0175	U	0.0175	0.0179	U	0.0179	0.015	U	0.015

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

TABLE 10

EVAPORATION POND 5

10A Borings 1-3 Soils Occurrence Summary

10B Borings 4-21 Soils Occurrence Summary

10C Boring Groundwater Occurrence Summary

10D Borings 1-3 Soils Sample Data

10E Borings 4-21 Soils Sample Data

10F Boring Groundwater Sample Data

Table 10A

Occurrence Summary for Evaporation Pond 5 (Borings 1 - 3) Total Soil Data, Navajo Refinery, Artesia, New Mexico.

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	Critical SSL mg/kg	SSL Source
TPH - Diesel Range Organics (C10-C28) (mg/kg)	5 / 6	83%	39.4 - 39.4	154 - 75500	39.4 - 75500	21000	18000	2.00E+03	NMED SSL
Volatile Organic Compounds (mg/kg)									
Acetone (2-Propanone, Dimethyl ketone)	1 / 6	17%	0.0033 - 0.00418	0.3440 - 0.344	0.0033 - 0.344	0.34	0.059	2.06E+00	NMED-DAF20
m,p-Xylene	2 / 6	33%	0.000524 - 0.000666	0.0198 - 0.136	0.000524 - 0.136	0.078	0.026	8.00E+01	NMED SSL
o-Xylene	2 / 6	33%	0.000286 - 0.000363	0.00913 - 0.0841	0.000286 - 0.0841	0.047	0.016	9.86E+01	NMED SSL
Tetrachloroethene (Perchloroethylene)	1 / 6	17%	0.00025 - 0.00142	0.00796	0.00025 - 0.00796	0.008	0.0015	6.44E-03	NMED-DAF20
Semi Volatile Organic Compounds (mg/kg)									
2,4-Dinitrophenol	1 / 4	25%	7.37 - 9.46	10.8	7.37 - 10.8	11	5.8	2.00E-01	Region 6-DAF20
2,4-Dinitrotoluene	1 / 4	25%	2.95 - 3.78	4.47	2.95 - 4.47	4.5	2.4	4.54E-01	NMED-DAF20
2-Chloronaphthalene	1 / 4	25%	2.95 - 3.78	1.71	1.71 - 3.78	1.7	1.7	2.52E+01	NMED-DAF20
2-Methylnaphthalene	1 / 4	25%	2.95 - 3.78	104	2.95 - 104	100	27	-	-
2-Nitroaniline (o-Nitroaniline)	1 / 4	25%	7.4 - 9.46	2.79	2.79 - 9.46	2.8	3.8	2.10E+01	Region 6 SSL
3,3'-Dichlorobenzidine	1 / 4	25%	5.90 - 7.56	1.9	1.90 - 7.56	1.9	2.9	3.76E-03	NMED-DAF20
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	1 / 4	25%	7.37 - 9.46	2.43	2.43 - 9.46	2.4	3.7	-	-
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	1 / 4	25%	2.95 - 3.78	2.48	2.48 - 3.78	2.5	1.9	-	-
4-Chloroaniline (p-Chloroaniline)	1 / 4	25%	2.95 - 3.78	2.78	2.78 - 3.78	2.8	1.9	6.00E-01	Region 6-DAF20
4-Methylphenol (p-Cresol)	1 / 4	25%	2.95 - 3.78	13.2	2.95 - 13.2	13	4.5	3.42E+03	Region 6 SSL
4-Nitrophenol (p-Nitrophenol)	1 / 4	25%	7.37 - 9.46	3.36	3.36 - 9.46	3.4	3.9	5.47E+03	Region 6 SSL
Acenaphthene	1 / 4	25%	2.95 - 3.78	12.5	2.95 - 12.5	13	4.4	7.98E+01	NMED-DAF20
Acenaphthylene	1 / 4	25%	2.95 - 3.78	3.44	2.95 - 3.78	3.4	2.1	-	-
Anthracene	1 / 4	25%	3.0 - 3.78	65.9	2.95 - 65.9	66	18	1.60E+03	NMED-DAF20
Benzo(a)anthracene	1 / 4	25%	2.5 - 3.21	12.4	2.50 - 12.4	12	4.1	1.10E+00	NMED-DAF20
Benzo(a)pyrene	1 / 4	25%	2.95 - 3.78	8.33	2.95 - 8.33	8.3	3.3	2.34E+00	NMED SSL
Benzo(b)fluoranthene	1 / 4	25%	2.95 - 3.78	6.3	2.95 - 6.3	6.3	2.8	3.40E+00	NMED-DAF20
Benzo(k)fluoranthene	1 / 4	25%	2.95 - 3.78	7.02	2.95 - 7.02	7	3	3.40E+01	NMED-DAF20
Benzoic acid	1 / 4	25%	7.37 - 9.46	21.7	7.37 - 21.7	22	8.5	4.00E+02	Region 6-DAF20
bis(2-Chloroethoxy)methane	1 / 4	25%	2.95 - 3.78	1.46	1.46 - 3.78	1.5	1.6	-	-
Carbazole	1 / 4	25%	2.95 - 3.78	2.99	2.95 - 3.78	3	2	6.00E+00	Region 6-DAF20
Chrysene	1 / 4	25%	2.58 - 3.32	23.4	2.58 - 23.4	23	6.9	1.10E+02	NMED-DAF20
Dibenzofuran	1 / 4	25%	2.95 - 3.78	19.8	2.95 - 19.8	20	6.2	5.70E+00	NMED-DAF20
Fluoranthene	1 / 4	25%	2.95 - 3.78	6.73	2.95 - 6.73	6.7	2.9	4.82E+03	NMED-DAF20
Fluorene	1 / 4	25%	2.95 - 3.78	22.2	2.95 - 22.2	22	6.8	1.00E+02	NMED-DAF20
Hexachlorocyclopentadiene	1 / 4	25%	2.95 - 3.78	14.1	2.95 - 14.1	14	4.8	3.00E+02	NMED-DAF20
Hexachloroethane	1 / 4	25%	2.95 - 3.78	6.02	2.95 - 6.02	6	2.7	2.74E-01	NMED-DAF20
Naphthalene	1 / 4	25%	2.95 - 3.78	9.8	2.95 - 9.8	9.8	3.7	3.93E-01	NMED-DAF20
Nitrobenzene	1 / 4	25%	2.95 - 3.78	1.67	1.67 - 3.78	1.7	1.7	1.80E-02	NMED-DAF20
N-Nitrosodiphenylamine (Diphenylamine)	1 / 4	25%	2.95 - 3.78	29.3	2.95 - 29.3	29	8.6	5.89E-01	NMED-DAF20
Pentachlorophenol	1 / 4	25%	7.37 - 9.46	6.75	6.75 - 9.46	6.8	4.8	2.11E-02	NMED-DAF20
Phenanthrene	1 / 4	25%	2.95 - 3.78	68	2.95 - 68	68	18	7.62E+01	NMED-DAF20
Pyrene	1 / 4	25%	2.81 - 3.6	26.4	2.81 - 26.4	26	7.8	5.68E+02	NMED-DAF20

Table 10A

Occurrence Summary for Evaporation Pond 5 (Borings 1 - 3) Total Soil Data, Navajo Refinery, Artesia, New Mexico.

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	Critical SSL mg/kg	SSL Source
Metals (mg/kg)									
Arsenic	4 / 6	67%	0.459 - 0.469	3.39 - 19.9	0.459 - 19.9	8.9	6	1.77E+01	NMED SSL
Barium	6 / 6	100%	1E-10	143 - 295	143.000 - 295	200	200	8.23E+02	NMED-DAF20
Cadmium	1 / 6	17%	0.203 - 0.26	1.15	0.203 - 1.15	1.2	0.28	7.52E+00	NMED-DAF20
Chromium	6 / 6	100%	1E-10	8.74 - 109	8.740 - 109	40	40	1.92E+01	NMED-DAF20
(as Chromium VI)					15.6	5.7	5.7	1.92E+01	NMED-DAF20
Lead	6 / 6	100%	1E-10	5.75 - 25.1	5.750 - 25.1	13	13	7.50E+02	NMED SSL
Selenium	5 / 6	83%	0.656 - 0.656	3.18 - 70.5	0.656 - 70.5	21	18	5.17E+00	NMED-DAF20
Silver	1 / 6	17%	0.0808 - 0.104	1.69	0.0808 - 1.69	1.7	0.32	8.47E+00	NMED-DAF20
Mercury	2 / 6	33%	0.0158 - 0.0203	0.122 - 0.285	0.0158 - 0.285	0.2	0.074	3.41E+02	NMED SSL

Shading indicates that the SQL exceeds the applicable Soil Screening Level.

Shading indicates that the value exceeds the applicable Soil Screening Level.

Average Detect — Arithmetic average of the detected samples only.

DAF-20 — NMED Soil screening Level for Soil-to-Groundwater (2004).

Mean — Arithmetic average of the total number of samples, using proxy concentrations (1/2 the SQL), for non-detects.

ND — Not detected.

NMED SSL — New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).

Region 6 — EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10^{-5} risk (2003-2004).

SQL — Practical sample quantitation limits for the non-detects.

TPH — Total petroleum hydrocarbons

UCL — 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution (1/2 SQL used for non-detects).

\- — No SSL available.

Table 10B

Occurrence Summary for Evaporation Pond 5 (Borings 4 - 21) Total Soil Data, Navajo Refinery, Artesia, New Mexico.

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Critical SSL mg/kg	SSL Source
TPH - Diesel Range Organics (C10-C28) (mg/kg)	11 / 42	26%	34.2 - 53.2	138 - 1700	34.2 - 1700	600	170	2.70E+02	2.00E+03	NMED SSL
Volatile Organic Compounds (mg/kg)										
1,2-Dichloroethane (Ethylene dichloride)	5 / 42	12%	0.000325 - 0.00177	0.00663 - 0.0673	0.000325 - 0.0673	0.027	0.0034	6.40E-03	1.98E-02	NMED-DAF20
Acetone (2-Propanone, Dimethyl ketone)	3 / 42	7%	0.0029 - 0.0158	0.0359 - 0.119	0.0029 - 0.119	0.072	0.0068	1.20E-02	2.06E+00	NMED-DAF20
Carbon tetrachloride	3 / 42	7%	0.000199 - 0.00109	0.0112 - 0.0397	0.000199 - 0.0397	0.022	0.0017	3.50E-03	5.74E-02	NMED-DAF20
Chloroethane	2 / 42	5%	0.000881 - 0.00481	0.00753 - 0.0178	0.000881 - 0.0178	0.013	0.0011	1.90E-03	2.23E-02	NMED-DAF20
Chloroform	4 / 42	10%	0.000189 - 0.00103	0.00928 - 0.0386	0.000189 - 0.0386	0.019	0.0019	3.70E-03	4.90E-01	NMED-DAF20
Semi Volatile Organic Compounds (mg/kg)										
Metals (mg/kg)										
Arsenic	30 / 42	71%	0.298 - 0.554	1.24 - 13	0.298 - 13	4.5	3.3	4.10E+00	1.77E+01	NMED SSL
Barium	41 / 42	98%	0.123	140 - 419	0.123 - 419	230	220	2.40E+02	8.23E+02	NMED-DAF20
Chromium	41 / 42	98%	0.148	5.15 - 33.8	0.148 - 33.8	14	14	1.50E+01	1.92E+01	NMED-DAF20
(as Chromium VI)								2.14E+00	1.92E+01	NMED-DAF20
Lead	41 / 42	98%	0.271	3.39 - 36.4	0.271 - 36.4	9.5	9.3	1.10E+01	7.50E+02	NMED SSL
Selenium	40 / 42	95%	0.657 - 0.731	1.69 - 16.7	0.657 - 16.7	5.7	5.5	6.40E+00	5.17E+00	NMED-DAF20
Mercury	1 / 42	2%	0.0133 - 0.0428	0.042 - 0.042	0.0133 - 0.0428	0.042	0.0096	1.10E-02	3.41E+02	NMED SSL

Shading indicates that the SQL exceeds the applicable Soil Screening Level.

Shading indicates that the value exceeds the applicable Soil Screening Level.

Average Detect — Arithmetic average of the detected samples only.

DAF-20 — NMED Soil screening Level for Soil-to-Groundwater (2004).

Mean — Arithmetic average of the total number of samples, using proxy concentrations (1/2 the SQL), for non-detects.

ND — Not detected.

NMED SSL — New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).

Region 6 — EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10^{-5} risk (2003-2004).

SQL — Practical sample quantitation limits for the non-detects.

TPH — Total petroleum hydrocarbons

UCL — 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution (1/2 SQL used for non-detects).

\- — No SSL available.

Table 10C.

Occurrence Summary for Evaporation Pond 5 Borings Groundwater Samples, Navajo Refinery, Artesia, New Mexico.

Concentrations are reported in milligrams per liter (mg/L).

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	Groundwater Standard (mg/L)	Standard Source
BTEX	0 5								
Volatile Organic Compounds									
Acetone (2-Propanone, Dimethyl ketone)	2 / 2	100%	NA	0.01440 - 0.02060	0.0144 - 0.021	0.01800	0.01800	6.1E-01	EPA9TAP
Benzene	1 / 2	50%	0.00086	0.00382 - 0.00382	0.00086 - 0.0038	0.00380	0.00210	5.0E-03	MCL
Carbon disulfide	1 / 2	50%	0.00071	0.00121 - 0.00121	0.00071 - 0.0012	0.00120	0.00078	1.0E+00	EPA9TAP
Ethylbenzene	1 / 2	50%	0.00073	0.00299 - 0.00299	0.00073 - 0.0030	0.00300	0.00170	7.0E-01	MCL
m,p-Xylene	1 / 2	50%	0.00092	0.00762 - 0.00762	0.00092 - 0.0076	0.00760	0.00400	1.0E+01	MCL
o-Xylene	1 / 2	50%	0.00068	0.00483 - 0.00483	0.00068 - 0.0048	0.00480	0.00260	1.0E+01	MCL
Toluene	2 / 2	100%	NA	0.00249 - 0.00531	0.00249 - 0.0053	0.00390	0.00390	7.2E-01	EPA9TAP
Semi Volatile Organic Compounds									
Fluorene	1 / 5	20%	0.00004 - 0.00004	0.00154 - 0.00154	0.00004 - 0.00154	0.00150	0.00032	2.4E-01	EPA9TAP
Phenanthrene	1 / 5	20%	0.00002	0.00132 - 0.00132	0.00002 - 0.00132	0.00130	0.00027	1.8E-01	Surrogate(pyrene)
Pyrene	1 / 5	20%	0.00004 - 0.00004	0.00092 - 0.00092	0.00004 - 0.00092	0.00092	0.00020	1.8E-01	EPA9TAP

	Shaded value indicates that the SQL exceeds the Groundwater Standard.
	Shaded value indicates that the value exceeds the Groundwater Standard.
Average Detect	Arithmetic average of the detected samples only.
MCL	Federal/EPA Maximum Containminant Level (MCL).
EPA9TAP	USEPA Region 9 PRGs for tapwater.
Mean	Arithmetic average of the total number of samples, using proxy concentrations for non-detects.
NMED	New Mexico Water Quality Commission Standards, 2002.
NA	Not applicable.
ND	Not detected.
SQLs	Practical sample quantitation limits for the non-detects.
UCL	95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution.(1/2 SQL used for non-detects)
-	No Groundwater Standard available.

Table 10D. Evaporation Pond 5 (Borings 1-3), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP5-1						EP5-2						EP5-3					
			Date	7/13/2004			7/13/2004			7/13/2004			7/13/2004			6/30/2004			6/30/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')			(0-2.5')			(5-7.5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		3200		38.4	24700		44.2	2470		41.3	154		38.9	75500		493	39.4	U	39.4
VOCs (ug/kg)																					
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.366	U	0.366	2.1	U	2.1	0.392	U	0.392	0.369	U	0.369	0.469	U	0.469	0.374	U	0.374
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.25	U	3.25	344		18.7	3.49	U	3.49	3.29	U	3.29	4.18	U	4.18	3.33	U	3.33
Carbon tetrachloride	5.74E+01	NMED-DAF20		0.224	U	0.224	1.29	U	1.29	0.241	U	0.241	0.226	U	0.226	0.287	U	0.287	0.229	U	0.229
Chloroethane	2.23E+01	NMED-DAF20		0.991	U	0.991	5.69	U	5.69	1.06	U	1.06	1	U	1	1.27	U	1.27	1.01	U	1.01
Chloroform	4.90E+02	NMED-DAF20		0.212	U	0.212	1.22	U	1.22	0.228	U	0.228	0.215	U	0.215	0.272	U	0.272	0.217	U	0.217
m,p-Xylene	8.00E+04	NMED SSL		19.8		0.519	136		2.98	0.557	U	0.557	0.524	U	0.524	0.666	U	0.666	0.531	U	0.531
o-Xylene	9.86E+04	NMED SSL		9.13		0.283	84.1		1.63	0.304	U	0.304	0.286	U	0.286	0.363	U	0.363	0.29	U	0.29
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		7.96		0.248	1.42	U	1.42	0.266	U	0.266	0.25	U	0.25	0.318	U	0.318	0.254	U	0.254
SVOCs (ug/kg)																					
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		2950	U	2950	4470	J	3390	3160	U	3160	NT			3780	U	3780	NT		
2-Chloronaphthalene	2.52E+04	NMED-DAF20		2950	U	2950	1710	J	3390	3160	U	3160	NT			3780	U	3780	NT		
3,3'-Dichlorobenzidine	3.76E+00	NMED-DAF20		5900	U	5900	1900	J	6780	6330	U	6330	NT			7560	U	7560	NT		
Acenaphthene	7.98E+04	NMED-DAF20		2950	U	2950	12500	J	3390	3160	U	3160	NT			3780	U	3780	NT		
Anthracene	1.60E+06	NMED-DAF20		2950	U	2950	65900		3390	3160	U	3160	NT			3780	U	3780	NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		2500	U	2500	12400	J	2870	2680	U	2680	NT			3210	U	3210	NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		2950	U	2950	8330	J	3390	3160	U	3160	NT			3780	U	3780	NT		
Benzo(b)fluoranthene	3.40E+03	NMED-DAF20		2950	U	2950	6300	J	3390	3160	U	3160	NT			3780	U	3780	NT		
Benzo(k)fluoranthene	3.40E+04	NMED-DAF20		2950	U	2950	7020	J	3390	3160	U	3160	NT			3780	U	3780	NT		
Chrysene	1.10E+05	NMED-DAF20		2580	U	2580	23400		2970	2770	U	2770	NT			3320	U	3320	NT		
Dibenz(a,h)anthracene	1.05E+03	NMED-DAF20		2950	U	2950	3390	U	3390	3160	U	3160	NT			3780	U	3780	NT		
Dibenzofuran	5.70E+03	NMED-DAF20		2950	U	2950	19800		3390	3160	U	3160	NT			3780	U	3780	NT		
Fluoranthene	4.82E+06	NMED-DAF20		2950	U	2950	6730	J	3390	3160	U	3160	NT			3780	U	3780	NT		
Fluorene	1.00E+05	NMED-DAF20		2950	U	2950	22200		3390	3160	U	3160	NT			3780	U	3780	NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		2950	U	2950	14100		3390	3160	U	3160	NT			3780	U	3780	NT		
Hexachloroethane	2.74E+02	NMED-DAF20		2950	U	2950	6020	J	3390	3160	U	3160	NT			3780	U	3780	NT		
Naphthalene	3.93E+02	NMED-DAF20		2950	U	2950	9800	J	3390	3160	U	3160	NT			3780	U	3780	NT		
Nitrobenzene	1.80E+01	NMED-DAF20		2950	U	2950	1670	J	3390	3160	U	3160	NT			3780	U	3780	NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		2950	U	2950	29300		3390	3160	U	3160	NT			3780	U	3780	NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		7370	U	7370	6750	J	8470	7910	U	7910	NT			9460	U	9460	NT		
Phenanthrene	7.62E+04	NMED-DAF20		2950	U	2950	68000		3390	3160	U	3160	NT			3780	U	3780	NT		
Pyrene	5.68E+05	NMED-DAF20		2810	U	2810	26400		3230	3010	U	3010	NT			3600	U	3600	NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		7370	U	7370	10800	J	8470	7910	U	7910	NT			9460	U	9460	NT		
2-Methylnaphthalene		-		2950	U	2950	104000		3390	3160	U	3160	NT			3780	U	3780	NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		7370	U	7370	2790	J	8470	7910	U	7910	NT			9460	U	9460	NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		7370	U	7370	2430	J	8470	7910	U	7910	NT			9460	U	9460	NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		2950	U	2950	2480	J	3390	3160	U	3160	NT			3780	U	3780	NT		
4-Chloroaniline (p-Chloroaniline)	6.00E+02	Region 6-DAF20		2950	U	2950	2780	J	3390	3160	U	3160	NT			3780	U	3780	NT		
4-Methylphenol (p-Cresol)	3.42E+06	Region 6 SSL		2950	U	2950	13200	J	3390	3160	U	3160	NT			3780	U	3780	NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		7370	U	7370	3360	J	8470	7910	U	7910	NT			9460	U	9460	NT		
Acenaphthylene		-		2950	U	2950	3440	J	3390	3160	U	3160	NT			3780	U	3780	NT		
Benzoic acid	4.00E+05	Region 6-DAF20		7370	U	7370	21700	J	8470	7910	U	7910	NT			9460	U	9460	NT		
bis(2-Chloroethoxy)methane		-		2950	U	2950	1460	J	3390	3160	U	3160	NT			3780	U	3780	NT		
Carbazole	6.00E+03	Region 6-DAF20		2950	U	2950	2990	J	3390	3160	U	3160	NT			3780	U	3780	NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		3.39		0.531	7.05		0.587	0.459	U	0.459	5.15		0.454	19.9		0.405	0.469	U	0.469
Barium	8.23E+02	NMED-DAF20		143		0.118	174		0.13	194		0.102	208		0.101	295		0.09	169		0.104
Cadmium	7.52E+00	NMED-DAF20		0.236	U	0.236	0.26	U	0.26	0.204	U	0.204	0.203	U	0.203	1.15		0.18	0.208	U	0.208
Chromium	1.92E+01	NMED-DAF20		109		0.142	16		0.156	16.5		0.123	9.68		0.122	81.6		0.108	8.74		0.124
Lead	7.50E+02	NMED SSL		25.1		0.259	6.62		0.287	7.63		0.224	5.75		0.222	24.2		0.198	6.74		0.229
Selenium	5.17E+00	NMED-DAF20		9.27		0.743	17.9		0.821	6.32		0.643	3.18		0.636	70.5		0.567	0.656	U	0.656
Silver	8.47E+00	NMED-DAF20		0.0943	U	0.0943	0.104	U	0.104	0.0816	U	0.0816	0.0808	U	0.0808	1.69		0.072	0.0833	U	0.0833
Mercury	3.41E+02	NMED SSL		0.122		0.0173	0.0175	U	0.0175	0.0203	U	0.0203	0.0164	U	0.0164	0.285		0.0213	0.0158	U	0.0158

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 10E. Evaporation Pond 5 (Borings 4-21), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP5-4									EP5-5								
			Date	7/13/2004			7/13/2004			7/13/2004			7/13/2004			7/13/2004			7/13/2004		
			Depth	(0-2.5')			(2.5-5')			Dup-17			(0-2.5')			(2.5-5')			Dup-18		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		1700		35.4	40.5	U	40.5	39.5	U	39.5	576		36.3	38.1	U	38.1	39.6	U	39.6
VOCs (ug/kg)																					
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		10.3		0.337	0.385	U	0.385	0.375	U	0.375	0.346	U	0.346	67.3		0.362	20.1		0.376
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3	U	3	3.43	U	3.43	3.34	U	3.34	3.08	U	3.08	3.22	U	3.22	3.35	U	3.35
Carbon tetrachloride	5.74E+01	NMED-DAF20		0.206	U	0.206	0.236	U	0.236	0.23	U	0.23	0.212	U	0.212	39.7		0.222	11.2		0.231
Chloroethane	2.23E+01	NMED-DAF20		0.912	U	0.912	1.04	U	1.04	1.02	U	1.02	0.936	U	0.936	17.8		0.981	1.02	U	1.02
Chloroform	4.90E+02	NMED-DAF20		9.28		0.195	0.224	U	0.224	0.218	U	0.218	0.201	U	0.201	38.6		0.21	11.8		0.218
m,p-Xylene	8.00E+04	NMED SSL		0.478	U	0.478	0.547	U	0.547	0.533	U	0.533	0.491	U	0.491	0.514	U	0.514	0.534	U	0.534
o-Xylene	9.86E+04	NMED SSL		0.261	U	0.261	0.298	U	0.298	0.291	U	0.291	0.268	U	0.268	0.28	U	0.28	0.291	U	0.291
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.228	U	0.228	0.261	U	0.261	0.254	U	0.254	0.234	U	0.234	0.245	U	0.245	0.255	U	0.255
SVOCs (ug/kg)																					
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
2-Chloronaphthalene	2.52E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
3,3'-Dichlorobenzidine	3.76E+00	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT			NT		
Benzo(b)fluoranthene	3.40E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(k)fluoranthene	3.40E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Dibenz(a,h)anthracene	1.05E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT			NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		NT			NT			NT			NT			NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		NT			NT			NT			NT			NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		NT			NT			NT			NT			NT			NT		
4-Chloroaniline (p-Chloroaniline)	6.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
4-Methylphenol (p-Cresol)	3.42E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT		
Acenaphthylene		-		NT			NT			NT			NT			NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
bis(2-Chloroethoxy)methane		-		NT			NT			NT			NT			NT			NT		
Carbazole	6.00E+03	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		0.436	U	0.436	7.88		0.57	6.16		0.534	2.16		0.534	3.92		0.526	1.74		0.488
Barium	8.23E+02	NMED-DAF20		419		0.097	220		0.127	224		0.119	209		0.118	152		0.117	184		0.108
Cadmium	7.52E+00	NMED-DAF20		0.194	U	0.194	0.253	U	0.253	0.237	U	0.237	0.237	U	0.237	0.234	U	0.234	0.217	U	0.217
Chromium	1.92E+01	NMED-DAF20		17.2		0.116	17.7		0.152	12.7		0.143	8.68		0.143	9.03		0.14	9.36		0.13
Lead	7.50E+02	NMED SSL		7.43		0.213	11.2		0.278	8.38		0.262	7.3		0.261	6.6		0.257	6.97		0.238
Selenium	5.17E+00	NMED-DAF20		5.84		0.611	4.06		0.799	3.91		0.748	2.94		0.747	3.39		0.736	2.73		0.683
Silver	8.47E+00	NMED-DAF20		0.0775	U	0.0775	0.101	U	0.101	0.0949	U	0.0949	0.0949	U	0.0949	0.0935	U	0.0935	0.0867	U	0.0867
Mercury	3.41E+02	NMED SSL		0.016	U	0.016	0.0199	U	0.0199	0.0194	U	0.0194	0.0152	U	0.0152	0.0175	U	0.0175	0.0182	U	0.0182

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil Screening Level.

Table 10E. Evaporation Pond 5 (Borings 4-21), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP5-6						EP5-7						EP5-8					
			Date	7/13/2004			7/13/2004			7/13/2004			7/13/2004			7/13/2004			7/13/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		931		40	42.1	U	42.1	188		37	40.2	U	40.2	1350		37.3	35.5	U	35.5
VOCs (ug/kg)																					
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.381	U	0.381	0.401	U	0.401	0.351	U	0.351	29.1		0.382	1.77	U	1.77	0.338	U	0.338
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.39	U	3.39	3.57	U	3.57	3.13	U	3.13	3.4	U	3.4	15.8	U	15.8	3.01	U	3.01
Carbon tetrachloride	5.74E+01	NMED-DAF20		0.233	U	0.233	0.245	U	0.245	0.215	U	0.215	16.3		0.234	1.09	U	1.09	0.207	U	0.207
Chloroethane	2.23E+01	NMED-DAF20		1.03	U	1.03	1.09	U	1.09	0.952	U	0.952	7.53		1.04	4.81	U	4.81	0.915	U	0.915
Chloroform	4.90E+02	NMED-DAF20		0.221	U	0.221	0.233	U	0.233	0.204	U	0.204	16.9		0.222	1.03	U	1.03	0.196	U	0.196
m,p-Xylene	8.00E+04	NMED SSL		0.541	U	0.541	0.568	U	0.568	0.499	U	0.499	0.543	U	0.543	2.52	U	2.52	0.479	U	0.479
o-Xylene	9.86E+04	NMED SSL		0.295	U	0.295	0.31	U	0.31	0.272	U	0.272	0.296	U	0.296	1.37	U	1.37	0.261	U	0.261
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.258	U	0.258	0.271	U	0.271	0.238	U	0.238	0.259	U	0.259	1.2	U	1.2	0.229	U	0.229
SVOCs (ug/kg)																					
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
2-Chloronaphthalene	2.52E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
3,3'-Dichlorobenzidine	3.76E+00	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT			NT		
Benzo(b)fluoranthene	3.40E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(k)fluoranthene	3.40E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Dibenz(a,h)anthracene	1.05E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT			NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		NT			NT			NT			NT			NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		NT			NT			NT			NT			NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		NT			NT			NT			NT			NT			NT		
4-Chloroaniline (p-Chloroaniline)	6.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
4-Methylphenol (p-Cresol)	3.42E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT		
Acenaphthylene		-		NT			NT			NT			NT			NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
bis(2-Chloroethoxy)methane		-		NT			NT			NT			NT			NT			NT		
Carbazole	6.00E+03	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		1.38		0.564	8.73		0.606	0.448	U	0.448	4.01		0.534	0.429	U	0.429	2.38		0.522
Barium	8.23E+02	NMED-DAF20		187		0.125	255		0.134	174		0.0994	254		0.118	229		0.0953	140		0.115
Cadmium	7.52E+00	NMED-DAF20		0.251	U	0.251	0.269	U	0.269	0.198	U	0.198	0.237	U	0.237	0.191	U	0.191	0.232	U	0.232
Chromium	1.92E+01	NMED-DAF20		33.8		0.15	12.9		0.161	14.7		0.119	11.3		0.142	19.3		0.114	5.15		0.139
Lead	7.50E+02	NMED SSL		17.1		0.275	9.3		0.296	36.4		0.219	7.79		0.261	9.51		0.209	4		0.255
Selenium	5.17E+00	NMED-DAF20		15.4		0.79	3.76		0.848	11.3		0.627	3.16		0.747	8.48		0.601	2.37		0.73
Silver	8.47E+00	NMED-DAF20		0.1	U	0.1	0.108	U	0.108	0.0796	U	0.0796	0.0948	U	0.0948	0.0763	U	0.0763	0.0927	U	0.0927
Mercury	3.41E+02	NMED SSL		0.0193	U	0.0193	0.0186	U	0.0186	0.0163	U	0.0163	0.0143	U	0.0143	0.0175	U	0.0175	0.0163	U	0.0163

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil

Table 10E. Evaporation Pond 5 (Borings 4-21), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP5-9									EP5-10						EP5-11					
			Date	7/14/2004			7/14/2004			7/14/2004			7/14/2004			7/14/2004			7/13/2004			7/13/2004		
			Depth	(0-2.5')			(2.5-5')			Dup-19			(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		40.9	U	40.9	39.5	U	39.5	40.1	U	40.1	39.4	U	39.4	46.2	U	46.2	258		37.3	42.3	U	42.3
VOCs (ug/kg)																								
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.388	U	0.388	6.63		0.375	0.381	U	0.381	0.375	U	0.375	0.439	U	0.439	0.354	U	0.354	0.403	U	0.403
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.46	U	3.46	3.34	U	3.34	3.39	U	3.39	3.34	U	3.34	3.91	U	3.91	3.15	U	3.15	3.58	U	3.58
Carbon tetrachloride	5.74E+01	NMED-DAF20		0.238	U	0.238	0.23	U	0.23	0.234	U	0.234	0.23	U	0.23	0.269	U	0.269	0.217	U	0.217	0.247	U	0.247
Chloroethane	2.23E+01	NMED-DAF20		1.05	U	1.05	1.02	U	1.02	1.03	U	1.03	1.02	U	1.02	1.19	U	1.19	0.96	U	0.96	1.09	U	1.09
Chloroform	4.90E+02	NMED-DAF20		0.226	U	0.226	0.218	U	0.218	0.221	U	0.221	0.218	U	0.218	0.255	U	0.255	0.206	U	0.206	0.234	U	0.234
m,p-Xylene	8.00E+04	NMED SSL		0.551	U	0.551	0.533	U	0.533	0.541	U	0.541	0.532	U	0.532	0.623	U	0.623	0.503	U	0.503	0.571	U	0.571
o-Xylene	9.86E+04	NMED SSL		0.301	U	0.301	0.291	U	0.291	0.295	U	0.295	0.29	U	0.29	0.34	U	0.34	0.274	U	0.274	0.312	U	0.312
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.263	U	0.263	0.254	U	0.254	0.258	U	0.258	0.254	U	0.254	0.297	U	0.297	0.24	U	0.24	0.273	U	0.273
SVOCs (ug/kg)																								
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
2-Chloronaphthalene	2.52E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
3,3'-Dichlorobenzidine	3.76E+00	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT			NT			NT		
Benzo(b)fluoranthene	3.40E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Benzo(k)fluoranthene	3.40E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Dibenz(a,h)anthracene	1.05E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT			NT			NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		NT			NT			NT			NT			NT			NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		NT			NT			NT			NT			NT			NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		NT			NT			NT			NT			NT			NT			NT		
4-Chloroaniline (p-Chloroaniline)	6.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
4-Methylphenol (p-Cresol)	3.42E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT			NT		
Acenaphthylene		-		NT			NT			NT			NT			NT			NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
bis(2-Chloroethoxy)methane		-		NT			NT			NT			NT			NT			NT			NT		
Carbazole	6.00E+03	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
Metals (mg/kg)																								
Arsenic	1.77E+01	NMED SSL		0.553	U	0.553	1.95		0.505	0.554	U	0.554	0.418	U	0.418	8.46		0.602	0.514	U	0.514	2.01		0.635
Barium	8.23E+02	NMED-DAF20		0.123	U	0.123	209		0.112	205		0.123	173		0.093	266		0.134	174		0.114	218		0.142
Cadmium	7.52E+00	NMED-DAF20		0.246	U	0.246	0.224	U	0.224	0.246	U	0.246	0.186	U	0.186	0.268	U	0.268	0.229	U	0.229	0.282	U	0.282
Chromium	1.92E+01	NMED-DAF20		0.148	U	0.148	8.46		0.134	9.92		0.148	9.32		0.112	17.8		0.16	11		0.137	14.9		0.169
Lead	7.50E+02	NMED SSL		0.271	U	0.271	5.7		0.247	5.74		0.271	6.08		0.204	12.7		0.295	5.41		0.251	11.5		0.31
Selenium	5.17E+00	NMED-DAF20		3.04		0.774	2.7		0.706	5.66		0.775	5.4		0.586	8.02		0.841	7.3		0.72	3.76		0.89
Silver	8.47E+00	NMED-DAF20		0.0982	U	0.0982	0.0897	U	0.0897	0.0984	U	0.0984	0.0744	U	0.0744	0.107	U	0.107	0.0914	U	0.0914	0.113	U	0.113
Mercury	3.41E+02	NMED SSL		0.018	U	0.018	0.0165	U	0.0165	0.0167	U	0.0167	0.0152	U	0.0152	0.0176	U	0.0176	0.0168	U	0.0168	0.0148	U	0.0148

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil

Table 10E. Evaporation Pond 5 (Borings 4-21), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP5-12						EP5-13									EP5-14					
			Date	7/14/2004			7/14/2004			7/14/2004			7/14/2004			7/14/2004			7/14/2004			7/14/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')			Dup-20			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		38.4	U	38.4	43.1	U	43.1	40.3	U	40.3	53.2	U	53.2	42.2	U	42.2	309		37.7	39.3	U	39.3
VOCs (ug/kg)																								
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.365	U	0.365	0.41	U	0.41	0.384	U	0.384	0.506	U	0.506	0.401	U	0.401	0.358	U	0.358	0.374	U	0.374
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.25	U	3.25	59.9		3.65	3.42	U	3.42	4.5	U	4.5	3.57	U	3.57	3.19	U	3.19	3.33	U	3.33
Carbon tetrachloride	5.74E+01	NMED-DAF20		0.224	U	0.224	0.251	U	0.251	0.235	U	0.235	0.31	U	0.31	0.246	U	0.246	0.22	U	0.22	0.229	U	0.229
Chloroethane	2.23E+01	NMED-DAF20		0.988	U	0.988	1.11	U	1.11	1.04	U	1.04	1.37	U	1.37	1.09	U	1.09	0.971	U	0.971	1.01	U	1.01
Chloroform	4.90E+02	NMED-DAF20		0.212	U	0.212	0.238	U	0.238	0.223	U	0.223	0.294	U	0.294	0.233	U	0.233	0.208	U	0.208	0.217	U	0.217
m,p-Xylene	8.00E+04	NMED SSL		0.518	U	0.518	0.582	U	0.582	0.545	U	0.545	0.718	U	0.718	0.569	U	0.569	0.509	U	0.509	0.531	U	0.531
o-Xylene	9.86E+04	NMED SSL		0.282	U	0.282	0.317	U	0.317	0.297	U	0.297	0.392	U	0.392	0.31	U	0.31	0.277	U	0.277	0.29	U	0.29
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.247	U	0.247	0.278	U	0.278	0.26	U	0.26	0.343	U	0.343	0.272	U	0.272	0.243	U	0.243	0.253	U	0.253
SVOCs (ug/kg)																								
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
2-Chloronaphthalene	2.52E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
3,3'-Dichlorobenzidine	3.76E+00	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT			NT			NT		
Benzo(b)fluoranthene	3.40E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Benzo(k)fluoranthene	3.40E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Dibenz(a,h)anthracene	1.05E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT			NT			NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		NT			NT			NT			NT			NT			NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		NT			NT			NT			NT			NT			NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		NT			NT			NT			NT			NT			NT			NT		
4-Chloroaniline (p-Chloroaniline)	6.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
4-Methylphenol (p-Cresol)	3.42E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT			NT		
Acenaphthylene		-		NT			NT			NT			NT			NT			NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
bis(2-Chloroethoxy)methane		-		NT			NT			NT			NT			NT			NT			NT		
Carbazole	6.00E+03	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
Metals (mg/kg)																								
Arsenic	1.77E+01	NMED SSL		0.298	U	0.298	5.39		0.392	7.16		0.526	7.66		0.408	9.67		0.448	0.371	U	0.371	2.18		0.452
Barium	8.23E+02	NMED-DAF20		212		0.0661	293		0.087	247		0.117	297		0.0907	288		0.0995	188		0.0825	243		0.1
Cadmium	7.52E+00	NMED-DAF20		0.132	U	0.132	0.175	U	0.175	0.234	U	0.234	0.181	U	0.181	0.199	U	0.199	0.165	U	0.165	0.201	U	0.201
Chromium	1.92E+01	NMED-DAF20		10		0.0793	22.4		0.104	18		0.14	18.6		0.109	23.4		0.119	12.4		0.0991	12.9		0.121
Lead	7.50E+02	NMED SSL		6.84		0.146	16.5		0.192	13.4		0.257	13.4		0.199	16.1		0.219	8.65		0.182	9.47		0.221
Selenium	5.17E+00	NMED-DAF20		3.68		0.416	6.08		0.548	3.36		0.735	7.51		0.571	7.04		0.627	8.51		0.52	5.74		0.633
Silver	8.47E+00	NMED-DAF20		0.0528	U	0.0528	0.0696	U	0.0696	0.0934	U	0.0934	0.0724	U	0.0724	0.0796	U	0.0796	0.066	U	0.066	0.0805	U	0.0805
Mercury	3.41E+02	NMED SSL		0.0169	U	0.0169	0.0187	U	0.0187	0.0186	U	0.0186	0.0245	U	0.0245	0.0153	U	0.0153	0.0154	U	0.0154	0.042		0.0134

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil

Table 10E. Evaporation Pond 5 (Borings 4-21), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP5-15									EP5-16						EP5-17					
			Date	7/14/2004			7/14/2004			7/14/2004			7/14/2004			7/14/2004			7/14/2004			7/14/2004		
			Depth	(0-2.5')			(2.5-5')			Dup-21			(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		38.5	U	38.5	39.4	U	39.4	37.9	U	37.9	39.2	U	39.2	36.9	U	36.9	355		44.4	36.8	U	36.8
VOCs (ug/kg)																								
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.366	U	0.366	0.374	U	0.374	0.36	U	0.36	0.373	U	0.373	0.351	U	0.351	0.422	U	0.422	0.349	U	0.349
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.26	U	3.26	3.33	U	3.33	3.21	U	3.21	3.32	U	3.32	3.13	U	3.13	3.76	U	3.76	3.11	U	3.11
Carbon tetrachloride	5.74E+01	NMED-DAF20		0.224	U	0.224	0.229	U	0.229	0.221	U	0.221	0.229	U	0.229	0.215	U	0.215	0.259	U	0.259	0.214	U	0.214
Chloroethane	2.23E+01	NMED-DAF20		0.992	U	0.992	1.01	U	1.01	0.977	U	0.977	1.01	U	1.01	0.951	U	0.951	1.14	U	1.14	0.947	U	0.947
Chloroform	4.90E+02	NMED-DAF20		0.213	U	0.213	0.217	U	0.217	0.209	U	0.209	0.217	U	0.217	0.204	U	0.204	0.245	U	0.245	0.203	U	0.203
m,p-Xylene	8.00E+04	NMED SSL		0.519	U	0.519	0.531	U	0.531	0.512	U	0.512	0.529	U	0.529	0.498	U	0.498	0.599	U	0.599	0.496	U	0.496
o-Xylene	9.86E+04	NMED SSL		0.283	U	0.283	0.29	U	0.29	0.279	U	0.279	0.289	U	0.289	0.272	U	0.272	0.327	U	0.327	0.271	U	0.271
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.248	U	0.248	0.254	U	0.254	0.244	U	0.244	0.253	U	0.253	0.238	U	0.238	0.286	U	0.286	0.237	U	0.237
SVOCs (ug/kg)																								
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
2-Chloronaphthalene	2.52E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
3,3'-Dichlorobenzidine	3.76E+00	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT			NT			NT		
Benzo(b)fluoranthene	3.40E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Benzo(k)fluoranthene	3.40E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Dibenz(a,h)anthracene	1.05E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT			NT			NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		NT			NT			NT			NT			NT			NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		NT			NT			NT			NT			NT			NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		NT			NT			NT			NT			NT			NT			NT		
4-Chloroaniline (p-Chloroaniline)	6.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
4-Methylphenol (p-Cresol)	3.42E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT			NT		
Acenaphthylene		-		NT			NT			NT			NT			NT			NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
bis(2-Chloroethoxy)methane		-		NT			NT			NT			NT			NT			NT			NT		
Carbazole	6.00E+03	Region 6-DAF20		NT			NT			NT			NT			NT			NT			NT		
Metals (mg/kg)																								
Arsenic	1.77E+01	NMED SSL		2.78		0.458	0.425	U	0.425	0.369	U	0.369	3.29		0.437	3.22		0.431	4.76		0.365	5.44		0.479
Barium	8.23E+02	NMED-DAF20		250		0.102	216		0.0943	191		0.0819	210		0.0971	227		0.096	215		0.0811	225		0.106
Cadmium	7.52E+00	NMED-DAF20		0.203	U	0.203	0.188	U	0.188	0.164	U	0.164	0.194	U	0.194	0.193	U	0.193	0.162	U	0.162	0.213	U	0.213
Chromium	1.92E+01	NMED-DAF20		16		0.122	9.28		0.113	6.75		0.0983	14.8		0.116	14.1		0.116	19.3		0.0973	13.8		0.127
Lead	7.50E+02	NMED SSL		8.15		0.224	5.38		0.208	4.38		0.18	10.6		0.213	9.19		0.211	10.8		0.178	7.27		0.234
Selenium	5.17E+00	NMED-DAF20		8.26		0.641	3.89		0.594	1.69		0.516	4.88		0.611	4.16		0.605	16.7		0.511	7.93		0.67
Silver	8.47E+00	NMED-DAF20		0.0815	U	0.0815	0.0755	U	0.0755	0.0655	U	0.0655	0.0776	U	0.0776	0.0768	U	0.0768	0.0649	U	0.0649	0.0851	U	0.0851
Mercury	3.41E+02	NMED SSL		0.0157	U	0.0157	0.0178	U	0.0178	0.014	U	0.014	0.0189	U	0.0189	0.0154	U	0.0154	0.0214	U	0.0214	0.0159	U	0.0159

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil

Table 10E. Evaporation Pond 5 (Borings 4-21), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP5-18						EP5-19						EP5-20					
			Date	7/14/2004			7/14/2004			7/14/2004			7/14/2004			7/14/2004			7/14/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		34.2	U	34.2	38.7	U	38.7	263		38.4	40.9	U	40.9	38.9	U	38.9	38.9	U	38.9
VOCs (ug/kg)																					
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.325	U	0.325	0.368	U	0.368	0.365	U	0.365	0.389	U	0.389	0.37	U	0.37	0.369	U	0.369
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		2.9	U	2.9	3.28	U	3.28	3.25	U	3.25	3.46	U	3.46	3.3	U	3.3	35.9		3.29
Carbon tetrachloride	5.74E+01	NMED-DAF20		0.199	U	0.199	0.226	U	0.226	0.224	U	0.224	0.238	U	0.238	0.227	U	0.227	0.226	U	0.226
Chloroethane	2.23E+01	NMED-DAF20		0.881	U	0.881	0.998	U	0.998	0.989	U	0.989	1.05	U	1.05	1	U	1	1	U	1
Chloroform	4.90E+02	NMED-DAF20		0.189	U	0.189	0.214	U	0.214	0.212	U	0.212	0.226	U	0.226	0.215	U	0.215	0.215	U	0.215
m,p-Xylene	8.00E+04	NMED SSL		0.462	U	0.462	0.523	U	0.523	0.518	U	0.518	0.552	U	0.552	0.526	U	0.526	0.524	U	0.524
o-Xylene	9.86E+04	NMED SSL		0.252	U	0.252	0.285	U	0.285	0.283	U	0.283	0.301	U	0.301	0.287	U	0.287	0.286	U	0.286
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.22	U	0.22	0.249	U	0.249	0.247	U	0.247	0.263	U	0.263	0.251	U	0.251	0.25	U	0.25
SVOCs (ug/kg)																					
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
2-Chloronaphthalene	2.52E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
3,3'-Dichlorobenzidine	3.76E+00	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT			NT			NT			NT		
Benzo(b)fluoranthene	3.40E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Benzo(k)fluoranthene	3.40E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Dibenz(a,h)anthracene	1.05E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT			NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT			NT			NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT			NT			NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		NT			NT			NT			NT			NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		NT			NT			NT			NT			NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		NT			NT			NT			NT			NT			NT		
4-Chloroaniline (p-Chloroaniline)	6.00E+02	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
4-Methylphenol (p-Cresol)	3.42E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		NT			NT			NT			NT			NT			NT		
Acenaphthylene		-		NT			NT			NT			NT			NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
bis(2-Chloroethoxy)methane		-		NT			NT			NT			NT			NT			NT		
Carbazole	6.00E+03	Region 6-DAF20		NT			NT			NT			NT			NT			NT		
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		1.24		0.438	2.42		0.469	1.34		0.552	2.71		0.523	4.51		0.363	0.4	U	0.4
Barium	8.23E+02	NMED-DAF20		270		0.0972	227		0.104	211		0.122	167		0.116	227		0.0808	238		0.0889
Cadmium	7.52E+00	NMED-DAF20		0.194	U	0.194	0.208	U	0.208	0.245	U	0.245	0.232	U	0.232	0.161	U	0.161	0.178	U	0.178
Chromium	1.92E+01	NMED-DAF20		5.23		0.116	6.35		0.125	15.6		0.147	7.82		0.139	11.5		0.0969	8.47		0.107
Lead	7.50E+02	NMED SSL		3.39		0.214	3.81		0.229	7.13		0.27	4.43		0.256	7.42		0.178	4.95		0.195
Selenium	5.17E+00	NMED-DAF20		2.27		0.612	0.657	U	0.657	6.12		0.773	0.731	U	0.731	3.87		0.509	3.65		0.56
Silver	8.47E+00	NMED-DAF20		0.0778	U	0.0778	0.0834	U	0.0834	0.0982	U	0.0982	0.093	U	0.093	0.0646	U	0.0646	0.0712	U	0.0712
Mercury	3.41E+02	NMED SSL		0.0137	U	0.0137	0.0428	U	0.0428	0.017	U	0.017	0.0133	U	0.0133	0.0159	U	0.0159	0.0164	U	0.0164

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil

Table 10E. Evaporation Pond 5 (Borings 4-21), Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP5-21								
			Date	7/14/2004			7/14/2004			7/14/2004		
			Depth	(0-2.5')			(2.5-5')			Dup-22		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		138		39.8	40.9	U	40.9	502		42
VOCs (ug/kg)												
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.378	U	0.378	0.389	U	0.389	0.399	U	0.399
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.37	U	3.37	119		3.46	3.55	U	3.55
Carbon tetrachloride	5.74E+01	NMED-DAF20		0.232	U	0.232	0.238	U	0.238	0.245	U	0.245
Chloroethane	2.23E+01	NMED-DAF20		1.02	U	1.02	1.05	U	1.05	1.08	U	1.08
Chloroform	4.90E+02	NMED-DAF20		0.22	U	0.22	0.226	U	0.226	0.232	U	0.232
m,p-Xylene	8.00E+04	NMED SSL		0.537	U	0.537	0.552	U	0.552	0.566	U	0.566
o-Xylene	9.86E+04	NMED SSL		0.293	U	0.293	0.301	U	0.301	0.309	U	0.309
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.256	U	0.256	0.263	U	0.263	0.27	U	0.27
SVOCs (ug/kg)												
2,4-Dinitrotoluene	4.54E+02	NMED-DAF20		NT			NT			NT		
2-Chloronaphthalene	2.52E+04	NMED-DAF20		NT			NT			NT		
3,3'-Dichlorobenzidine	3.76E+00	NMED-DAF20		NT			NT			NT		
Acenaphthene	7.98E+04	NMED-DAF20		NT			NT			NT		
Anthracene	1.60E+06	NMED-DAF20		NT			NT			NT		
Benzo(a)anthracene	1.10E+03	NMED-DAF20		NT			NT			NT		
Benzo(a)pyrene	2.34E+03	NMED SSL		NT			NT			NT		
Benzo(b)fluoranthene	3.40E+03	NMED-DAF20		NT			NT			NT		
Benzo(k)fluoranthene	3.40E+04	NMED-DAF20		NT			NT			NT		
Chrysene	1.10E+05	NMED-DAF20		NT			NT			NT		
Dibenz(a,h)anthracene	1.05E+03	NMED-DAF20		NT			NT			NT		
Dibenzofuran	5.70E+03	NMED-DAF20		NT			NT			NT		
Fluoranthene	4.82E+06	NMED-DAF20		NT			NT			NT		
Fluorene	1.00E+05	NMED-DAF20		NT			NT			NT		
Hexachlorocyclopentadiene	3.00E+05	NMED-DAF20		NT			NT			NT		
Hexachloroethane	2.74E+02	NMED-DAF20		NT			NT			NT		
Naphthalene	3.93E+02	NMED-DAF20		NT			NT			NT		
Nitrobenzene	1.80E+01	NMED-DAF20		NT			NT			NT		
N-Nitrosodiphenylamine (Diphenylamine)	5.89E+02	NMED-DAF20		NT			NT			NT		
Pentachlorophenol	2.11E+01	NMED-DAF20		NT			NT			NT		
Phenanthrene	7.62E+04	NMED-DAF20		NT			NT			NT		
Pyrene	5.68E+05	NMED-DAF20		NT			NT			NT		
2,4-Dinitrophenol	2.00E+02	Region 6-DAF20		NT			NT			NT		
2-Methylnaphthalene		-		NT			NT			NT		
2-Nitroaniline (o-Nitroaniline)	2.10E+04	Region 6 SSL		NT			NT			NT		
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)		-		NT			NT			NT		
4-Chloro-3-methylphenol (p-Chloro-m-cresol)		-		NT			NT			NT		
4-Chloroaniline (p-Chloroaniline)	6.00E+02	Region 6-DAF20		NT			NT			NT		
4-Methylphenol (p-Cresol)	3.42E+06	Region 6 SSL		NT			NT			NT		
4-Nitrophenol (p-Nitrophenol)	5.47E+06	Region 6 SSL		NT			NT			NT		
Acenaphthylene		-		NT			NT			NT		
Benzoic acid	4.00E+05	Region 6-DAF20		NT			NT			NT		
bis(2-Chloroethoxy)methane		-		NT			NT			NT		
Carbazole	6.00E+03	Region 6-DAF20		NT			NT			NT		
Metals (mg/kg)												
Arsenic	1.77E+01	NMED SSL		13		0.351	3.15		0.353	3.5		0.439
Barium	8.23E+02	NMED-DAF20		258		0.0782	268		0.0784	262		0.0976
Cadmium	7.52E+00	NMED-DAF20		0.156	U	0.156	0.157	U	0.157	0.196	U	0.196
Chromium	1.92E+01	NMED-DAF20		24.2		0.0938	15.8		0.0941	22.7		0.117
Lead	7.50E+02	NMED SSL		13.1		0.172	11.7		0.173	13.8		0.215
Selenium	5.17E+00	NMED-DAF20		10.4		0.493	4.08		0.494	5.9		0.614
Silver	8.47E+00	NMED-DAF20		0.0626	U	0.0626	0.0627	U	0.0627	0.078	U	0.078
Mercury	3.41E+02	NMED SSL		0.0183	U	0.0183	0.0181	U	0.0181	0.0175	U	0.0175

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.
	Shading indicates that half the Sample Quantitation Limit (SQL) concentration exceeds the applicable Soil

TABLE 10F
Evaporation Pond Boring 5 Groundwater Data Table, Navajo Refinery, Artesia, NM

	Groundwater Standard	Standard Source	ID #	EP5-1			EP5-5		
Analyte	(ug/L)		Date	7/14/2004			7/14/2004		
BTEX			ug/L	Result	Qualifier	SQL	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL		NT			NT		
Ethylbenzene	7.00E+02	EPA MCL		NT			NT		
m,p-Xylene	1.00E+04	EPA MCL		NT			NT		
o-Xylene	1.00E+04	EPA MCL		NT			NT		
Toluene	7.20E+02	EPA9TAP		NT			NT		
SVOCs			ug/L						
Anthracene	1.80E+03	EPA9TAP		0.02	U	0.02	0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		0.02	U	0.02	0.02	U	0.02
Dibenz(a,h)anthracene	9.20E-03	EPA9TAP		0.05	U	0.05	0.05	U	0.05
Fluorene	2.40E+02	EPA9TAP		1.54		0.04	0.04	U	0.04
Phenanthrene	1.80E+02	Surrogate (pyrene)		1.32		0.02	0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		0.924		0.04	0.04	U	0.04
VOCs			ug/L						
2-Butanone (Methyl ethyl ketone)	1.90E+03	EPA9TAP		6.83	U	6.83	6.83	U	6.83
Acetone (2-Propanone, Dimethyl ketone)	6.10E+02	EPA9TAP		14.4		1.7	20.6		1.7
Benzene	5.00E+00	MCL		3.82	J	0.86	0.86	U	0.86
Carbon disulfide	1.00E+03	EPA9TAP		0.71	U	0.71	1.21	J	0.71
Ethylbenzene	7.00E+02	MCL		2.99	J	0.73	0.73	U	0.73
m,p-Xylene	1.00E+04	MCL		7.62		0.92	0.92	U	0.92
Methyl tert-butyl ether (MTBE)	1.30E+01	EPA9TAP		0.97	U	0.97	0.97	U	0.97
o-Xylene	1.00E+04	MCL		4.83	J	0.68	0.68	U	0.68
Toluene	7.20E+02	EPA9TAP		5.31		0.47	2.49	J	0.47

Qualifier Key

Shaded value indicates that the compound was not detected and 1/2 the SQL exceeds the Groundwater Standard.

Shaded value indicates that the detected concentration exceeds the Groundwater Standard.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the san

NMED New Mexico Water Quality Commission Standards, 2002.

MCL Federal/EPA Maximum Contaiminant Level (MCL).

EPA9TAP USEPA Region 9 PRGs for tapwater.

TABLE 10F
Evaporation Pond Boring 5 Groundwater Data Table, Navajo Refinery, Artesia, NM

Analyte	Groundwater Standard (ug/L)	Standard Source	ID #	EP5-9			EP5-16		
			Date	7/14/2004			7/15/2004		
BTEX			ug/L	Result	Qualifier	SQL	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL		0.04	U	0.04	0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		0.05	U	0.05	0.05	U	0.05
m,p-Xylene	1.00E+04	EPA MCL		0.07	U	0.07	0.07	U	0.07
o-Xylene	1.00E+04	EPA MCL		0.09	U	0.09	0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		0.05	U	0.05	0.05	U	0.05
SVOCs			ug/L						
Anthracene	1.80E+03	EPA9TAP		0.02	U	0.02	0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		0.02	U	0.02	0.02	U	0.02
Dibenz(a,h)anthracene	9.20E-03	EPA9TAP		0.05	U	0.05	0.05	U	0.05
Fluorene	2.40E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04
Phenanthrene	1.80E+02	Surrogate (pyrene)		0.02	U	0.02	0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04
VOCs			ug/L						
2-Butanone (Methyl ethyl ketone)	1.90E+03	EPA9TAP		NT			NT		
Acetone (2-Propanone, Dimethyl ketone)	6.10E+02	EPA9TAP		NT			NT		
Benzene	5.00E+00	MCL		NT			NT		
Carbon disulfide	1.00E+03	EPA9TAP		NT			NT		
Ethylbenzene	7.00E+02	MCL		NT			NT		
m,p-Xylene	1.00E+04	MCL		NT			NT		
Methyl tert-butyl ether (MTBE)	1.30E+01	EPA9TAP		NT			NT		
o-Xylene	1.00E+04	MCL		NT			NT		
Toluene	7.20E+02	EPA9TAP		NT			NT		

Qualifier Key

Shaded value indicates that the compound was not c
Shaded value indicates that the detected concentrati
U = Not detected: analysis for the analyte was performed , but the analyte
J = Estimated: The analyte was detected and identified. The associated numple.
NMED New Mexico Water Quality Commission Standards
MCL Federal/EPA Maximum Contaiminant Le\
EPA9TAP USEPA Region 9 PRGs for tapwater.

TABLE 10F
Evaporation Pond Boring 5 Groundwater Data Table, Navajo Refinery, Artesia, NM

Analyte	Groundwater Standard (ug/L)	Standard Source	ID #	EP5-21		
			Date	7/15/2004		
BTEX			ug/L	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL		0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		0.05	U	0.05
m,p-Xylene	1.00E+04	EPA MCL		0.07	U	0.07
o-Xylene	1.00E+04	EPA MCL		0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		0.05	U	0.05
SVOCs			ug/L			
Anthracene	1.80E+03	EPA9TAP		0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		0.02	U	0.02
Dibenz(a,h)anthracene	9.20E-03	EPA9TAP		0.05	U	0.05
Fluorene	2.40E+02	EPA9TAP		0.04	U	0.04
Phenanthrene	1.80E+02	Surrogate (pyrene)		0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		0.04	U	0.04
VOCs			ug/L			
2-Butanone (Methyl ethyl ketone)	1.90E+03	EPA9TAP		NT		
Acetone (2-Propanone, Dimethyl ketone)	6.10E+02	EPA9TAP		NT		
Benzene	5.00E+00	MCL		NT		
Carbon disulfide	1.00E+03	EPA9TAP		NT		
Ethylbenzene	7.00E+02	MCL		NT		
m,p-Xylene	1.00E+04	MCL		NT		
Methyl tert-butyl ether (MTBE)	1.30E+01	EPA9TAP		NT		
o-Xylene	1.00E+04	MCL		NT		
Toluene	7.20E+02	EPA9TAP		NT		

Qualifier Key

Shaded value indicates that the compound was not c
Shaded value indicates that the detected concentrati
U = Not detected: analysis for the analyte was performed , but the analyte
J = Estimated: The analyte was detected and identified. The associated nun

NMED	New Mexico Water Quality Commission Standards.
MCL	Federal/EPA Maximum Contaiminant Lev
EPA9TAP	USEPA Region 9 PRGs for tapwater.

TABLE 11

EVAPORATION POND 3

11A Borings Soils Occurrence Summary

11B Borings Groundwater Occurrence Summary

11C Borings Soils Sample Data

11D Borings Groundwater Sample Data

Table 11A

Occurrence Summary for Evaporation Pond 3, Total Soil Data, Navajo Refinery, Artesia, New Mexico.

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Critical SSL mg/kg	SSL Source
Volatile Organic Compounds (mg/kg)										
1,2-Dichloroethane (Ethylene dichloride)	9 / 27	33%	0.00033 - 0.000417	0.00155 - 0.00352	0.00033 - 0.00352	0.0026	0.00098	1.40E-03	1.98E-02	NMED-DAF20
Acetone (2-Propanone, Dimethyl ketone)	2 / 27	7%	0.002920 - 0.00371	0.0476 - 0.0571	0.002920 - 0.0571	0.052	0.0054	9.90E-03	2.06E+00	NMED-DAF20
Chloroform	4 / 27	15%	0.00019 - 0.000242	0.0012 - 0.00177	0.00019 - 0.00177	0.0015	0.00031	4.80E-04	4.90E-01	NMED-DAF20
Methylene chloride (Dichloromethane)	12 / 27	44%	0.000471 - 0.000591	0.00131 - 0.00332	0.000471 - 0.00332	0.0022	0.0011	1.50E-03	1.69E-02	NMED-DAF20
Tetrachloroethene (Perchloroethylene)	2 / 27	7%	0.000222 - 0.000282	0.00138 - 0.00185	0.000222 - 0.00185	0.0016	0.00024	3.70E-04	6.44E-03	NMED-DAF20
Metals (mg/kg)										
Arsenic	24 / 27	89%	0.41 - 0.571	0.97 - 41.1	0.408 - 41.1	6.1	5.5	8.10E+00	1.77E+01	NMED SSL
Barium	26 / 27	96%	0.107	165 - 416	0.107 - 416	230	230	2.50E+02	8.23E+02	NMED-DAF20
Cadmium	2 / 27	7%	0.13 - 0.254	0.35 - 0.917	0.131 - 0.917	0.63	0.14	1.90E-01	7.52E+00	NMED-DAF20
Chromium	26 / 27	96%	0.128	4.85 - 29.5	0.128 - 29.5	15	14	1.60E+01	1.92E+01	NMED-DAF20
(as Chromium VI)								2.29E+00	1.92E+01	NMED-DAF20
Lead	26 / 27	96%	0.237	3.10 - 18.8	0.237 - 18.8	9.7	9.3	1.10E+01	7.50E+02	NMED SSL
Selenium	26 / 27	96%	0.676	0.96 - 11.4	0.676 - 11.4	3.7	3.6	4.40E+00	5.17E+00	NMED-DAF20

	Shading indicates that the UCL exceeds the applicable Soil Screening Level.
Average Detect	Arithmetic average of the detected samples only.
DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
Mean	Arithmetic average of the total number of samples, using proxy concentrations (1/2 the SQL), for non-detects.
ND	Not detected.
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10^{-5} risk (2003-2004).
SQL	Practical sample quantitation limits for the non-detects.
TPH	Total petroleum hydrocarbons.
UCL	95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution (1/2 SQL used for non-detects).
-	No SSL available.

Table 11B. Occurrence Summary for Evaporation Ponds 3&6 Borings Groundwater Samples, Navajo Refinery, Artesia, New Mexico.

Concentrations are reported in milligrams per liter (mg/L).

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	Groundwater Standard (mg/L)	Standard Source
BTEX									
Benzene	0 / 5	0%	0.00004	-	0.00004 - 0.0000			5.0E-03	MCL
Ethylbenzene	0 / 5	0%	0.00005	-	0.00005 - 0.0001			7.0E-01	MCL
m,p-Xylene	0 / 5	0%	0.00007	-	0.00007 - 0.000			1.0E+01	MCL
o-Xylene	0 / 5	0%	0.00009	-	0.00009 - 0.0001			1.0E+01	MCL
Toluene	0 / 5	0%	0.00005	-	0.00005 - 0.0001			7.2E-01	EPA9TAP
Semi Volatile Organic Compounds									
Anthracene	0 / 5	0%	0.00002		0.00002 - 0.000020			1.8E+00	EPA9TAP
Chrysene	0 / 5	0%	0.00002		0.00002 - 0.000020			9.2E-03	EPA9TAP
Fluorene	0 / 5	0%	0.00004 - 0.00004	-	0.00004 - 0.00004			2.4E-01	EPA9TAP
Phenanthrene	0 / 5	0%	0.00002	-	0.00002 - 0.00002			1.8E-01	Surrogate(pyrene)
Pyrene	0 / 5	0%	0.00004 - 0.00004	-	0.00004 - 0.00004			1.8E-01	EPA9TAP

Shaded value indicates that the SQL exceeds the Groundwater Standard.

Shaded value indicates that the value exceeds the Groundwater Standard.

Average Detect — Arithmetic average of the detected samples only.

MCL — Federal/EPA Maximum Containminant Level (MCL).

EPA9TAP — USEPA Region 9 PRGs for tapwater.

Mean — Arithmetic average of the total number of samples, using proxy concentrations for non-detects.

NMED — New Mexico Water Quality Commission Standards, 2002.

NA — Not applicable.

ND — Not detected.

SQLs — Practical sample quantitation limits for the non-detects.

UCL — 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution.(1/2 SQL used for non-detects)

\- — No Groundwater Standard available.

TABLE 11C Evaporation Pond 3, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP3-1						EP3-2					
			Date	7/15/2004			7/15/2004			7/15/2004			7/15/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
VOCs (ug/kg)															
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.351	U	0.351	0.364	U	0.364	0.346	U	0.346	0.33	U	0.33
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.13	U	3.13	3.24	U	3.24	3.08	U	3.08	2.94	U	2.94
Chloroform	4.90E+02	NMED-DAF20		0.204	U	0.204	0.212	U	0.212	0.201	U	0.201	0.191	U	0.191
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		2.81	J	0.499	2.4	J	0.517	2.19	J	0.491	2.05	J	0.468
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.238	U	0.238	0.247	U	0.247	0.234	U	0.234	0.223	U	0.223
Metals (mg/kg)															
Arsenic	1.77E+01	NMED SSL		4		0.52	3.73		0.529	0.483	U	0.483	1.27		0.51
Barium	8.23E+02	NMED-DAF20		228		0.116	199		0.118	0.107	U	0.107	174		0.113
Cadmium	7.52E+00	NMED-DAF20		0.231	U	0.231	0.235	U	0.235	0.214	U	0.214	0.227	U	0.227
Chromium	1.92E+01	NMED-DAF20		8.35		0.138	9.77		0.141	0.128	U	0.128	4.85		0.136
Lead	7.50E+02	NMED SSL		5.82		0.254	6.8		0.259	0.237	U	0.237	3.1		0.249
Selenium	5.17E+00	NMED-DAF20		3.19		0.729	3.22		0.74	0.676	U	0.676	3.24		0.713

Analyte	Critical SSL	SSL Source	ID #	EP3-3						EP3-4								
			Date	7/15/2004			7/15/2004			7/15/2004			7/15/2004			7/15/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			Dup-25			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
VOCs (ug/kg)																		
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		1.88	J	0.366	0.348	U	0.348	0.417	U	0.417	0.332	U	0.332	0.357	U	0.357
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.25	U	3.25	3.1	U	3.1	3.71	U	3.71	2.95	U	2.95	3.18	U	3.18
Chloroform	4.90E+02	NMED-DAF20		0.212	U	0.212	0.202	U	0.202	0.242	U	0.242	0.193	U	0.193	0.207	U	0.207
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		1.49	J	0.519	0.494	U	0.494	0.591	U	0.591	0.471	U	0.471	0.506	U	0.506
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.248	U	0.248	0.236	U	0.236	0.282	U	0.282	0.225	U	0.225	0.242	U	0.242
Metals (mg/kg)																		
Arsenic	1.77E+01	NMED SSL		5.75		0.482	1.19		0.428	0.571	U	0.571	1.94		0.401	2.29		0.432
Barium	8.23E+02	NMED-DAF20		211		0.107	191		0.0953	259		0.127	276		0.0891	177		0.0959
Cadmium	7.52E+00	NMED-DAF20		0.215	U	0.215	0.191	U	0.191	0.254	U	0.254	0.179	U	0.179	0.192	U	0.192
Chromium	1.92E+01	NMED-DAF20		17.4		0.129	6.48		0.115	11.2		0.152	15		0.107	10.4		0.115
Lead	7.50E+02	NMED SSL		10.9		0.236	4.78		0.209	7.92		0.28	12		0.196	7.21		0.211
Selenium	5.17E+00	NMED-DAF20		8.18		0.676	3.42		0.6	5.1		0.798	2.2		0.561	2.54		0.604

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.

TABLE 11C Evaporation Pond 3, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP3-5									EP3-6					
			Date	7/15/2004			7/15/2004			7/15/2004			7/15/2004			7/15/2004		
			Depth	(0-2.5')			(2.5-5')			Dup2-23			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
VOCs (ug/kg)																		
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		3.52	J	0.389	2.04	J	0.392	0.408	U	0.408	2.99	J	0.364	0.365	U	0.365
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.47	U	3.47	57.1		3.49	47.6		3.64	3.24	U	3.24	3.25	U	3.25
Chloroform	4.90E+02	NMED-DAF20		1.63	J	0.226	1.39	J	0.228	0.237	U	0.237	1.77	J	0.211	0.212	U	0.212
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.553	U	0.553	2.24	J	0.556	0.58	U	0.58	0.516	U	0.516	0.518	U	0.518
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		1.85	J	0.264	0.265	U	0.265	0.277	U	0.277	0.246	U	0.246	0.247	U	0.247
Metals (mg/kg)																		
Arsenic	1.77E+01	NMED SSL		4.12		0.514	13		0.346	7.3		0.385	8.92		0.297	8.49		0.402
Barium	8.23E+02	NMED-DAF20		294		0.114	262		0.0771	259		0.0855	272		0.066	225		0.0893
Cadmium	7.52E+00	NMED-DAF20		0.917		0.229	0.154	U	0.154	0.171	U	0.171	0.351		0.131	0.179	U	0.179
Chromium	1.92E+01	NMED-DAF20		29.5		0.137	23.3		0.0925	21.5		0.103	22		0.0791	17.9		0.107
Lead	7.50E+02	NMED SSL		16.6		0.251	18.7		0.169	16		0.188	15.9		0.146	12.3		0.197
Selenium	5.17E+00	NMED-DAF20		11.4		0.72	1.15		0.485	2.89		0.539	2.68		0.415	2.33		0.562

Analyte	Critical SSL	SSL Source	ID #	EP3-7									EP3-8					
			Date	7/15/2004			7/15/2004			7/15/2004			7/15/2004			7/15/2004		
			Depth	(0-2.5')			(2.5-5')			Dup-24			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
VOCs (ug/kg)																		
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		3.09	J	0.367	2.84	J	0.395	0.417	U	0.417	0.362	U	0.362	0.363	U	0.363
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.27	U	3.27	3.52	U	3.52	3.71	U	3.71	3.22	U	3.22	3.23	U	3.23
Chloroform	4.90E+02	NMED-DAF20		1.2	J	0.213	0.23	U	0.23	0.242	U	0.242	0.21	U	0.21	0.211	U	0.211
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.521	U	0.521	3.32	J	0.561	0.591	U	0.591	1.31	J	0.513	0.515	U	0.515
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		1.38	J	0.249	0.268	U	0.268	0.282	U	0.282	0.245	U	0.245	0.246	U	0.246
Metals (mg/kg)																		
Arsenic	1.77E+01	NMED SSL		9.15		0.417	41.1		0.522	11.3		0.368	1.47		0.355	1.5		0.351
Barium	8.23E+02	NMED-DAF20		261		0.0924	216		0.116	326		0.082	206		0.0789	177		0.0781
Cadmium	7.52E+00	NMED-DAF20		0.185	U	0.185	0.232	U	0.232	0.164	U	0.164	0.158	U	0.158	0.156	U	0.156
Chromium	1.92E+01	NMED-DAF20		11.9		0.111	22		0.139	16.6		0.0984	11.2		0.0946	6.87		0.0937
Lead	7.50E+02	NMED SSL		9.11		0.204	15.2		0.255	11.6		0.18	6.41		0.174	4.44		0.172
Selenium	5.17E+00	NMED-DAF20		2.34		0.582	3.56		0.731	0.961		0.516	3.94		0.497	1.74		0.492

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.

TABLE 11C Evaporation Pond 3, Soil Data Table, Navajo Refinery, Artesia NM.

Analyte	Critical SSL	SSL Source	ID #	EP3-9						EP3-10					
			Date	7/15/2004			7/15/2004			7/15/2004			7/15/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
VOCs (ug/kg)															
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.377	U	0.377	0.371	U	0.371	2.54	J	0.328	0.373	U	0.373
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.36	U	3.36	3.3	U	3.3	2.92	U	2.92	3.32	U	3.32
Chloroform	4.90E+02	NMED-DAF20		0.219	U	0.219	0.215	U	0.215	0.19	U	0.19	0.216	U	0.216
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		2.02	J	0.535	0.526	U	0.526	1.9	J	0.465	0.529	U	0.529
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.255	U	0.255	0.251	U	0.251	0.222	U	0.222	0.252	U	0.252
Metals (mg/kg)															
Arsenic	1.77E+01	NMED SSL		2.22		0.536	0.408	U	0.408	1.79		0.384	1.85		0.541
Barium	8.23E+02	NMED-DAF20		264		0.119	183		0.0907	190		0.0853	180		0.12
Cadmium	7.52E+00	NMED-DAF20		0.238	U	0.238	0.182	U	0.182	0.17	U	0.17	0.24	U	0.24
Chromium	1.92E+01	NMED-DAF20		14.9		0.144	8.05		0.109	18.6		0.102	8.49		0.144
Lead	7.50E+02	NMED SSL		7.59		0.263	4.84		0.2	5.99		0.187	4.39		0.264
Selenium	5.17E+00	NMED-DAF20		5.23		0.752	3		0.571	7.01		0.537	2.61		0.757

Analyte	Critical SSL	SSL Source	ID #	EP3-11						EP3-12					
			Date	7/15/2004			7/15/2004			7/15/2004			7/15/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
VOCs (ug/kg)															
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		1.55	J	0.364	2.56	J	0.383	0.377	U	0.377	0.402	U	0.402
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.24	U	3.24	3.41	U	3.41	3.35	U	3.35	3.58	U	3.58
Chloroform	4.90E+02	NMED-DAF20		0.211	U	0.211	0.222	U	0.222	0.219	U	0.219	0.233	U	0.233
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		0.516	U	0.516	2.1	J	0.543	0.535	U	0.535	2.6	J	0.57
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.246	U	0.246	0.259	U	0.259	0.255	U	0.255	0.272	U	0.272
Metals (mg/kg)															
Arsenic	1.77E+01	NMED SSL		1.2		0.383	0.974		0.323	8.65		0.526	3.27		0.294
Barium	8.23E+02	NMED-DAF20		215		0.0851	165		0.0717	416		0.117	249		0.0654
Cadmium	7.52E+00	NMED-DAF20		0.17	U	0.17	0.143	U	0.143	0.233	U	0.233	0.131	U	0.131
Chromium	1.92E+01	NMED-DAF20		15.5		0.102	8.36		0.0862	24.3		0.14	13		0.0785
Lead	7.50E+02	NMED SSL		10.9		0.187	5.89		0.158	18.8		0.258	8.92		0.144
Selenium	5.17E+00	NMED-DAF20		4.81		0.535	2.38		0.452	5.76		0.736	2.19		0.412

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.

TABLE 11D
Evaporation Pond 3 Boring Groundwater Data Table, Navajo Refinery, Artesia, NM

	Groundwater Standard	Standard Source	ID #	EP3-4			EP3-5		
Analyte	(ug/L)		Date	7/14/2004			7/14/2004		
BTEX			ug/L	Result	Qualifier	SQL	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL		0.04	U	0.04	0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		0.05	U	0.05	0.05	U	0.05
m,p-Xylene	1.00E+04	EPA MCL		0.07	U	0.07	0.07	U	0.07
o-Xylene	1.00E+04	EPA MCL		0.09	U	0.09	0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		0.05	U	0.05	0.05	U	0.05
SVOCs			ug/L						
Anthracene	1.80E+03	EPA9TAP		0.02	U	0.02	0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		0.02	U	0.02	0.02	U	0.02
Dibenz(a,h)anthracene	9.20E-03	EPA9TAP		0.05	U	0.05	0.05	U	0.05
Fluorene	2.40E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04
Phenanthrene	1.80E+02	Surrogate (pyrene)		0.02	U	0.02	0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04
VOCs			ug/L						
2-Butanone (Methyl ethyl ketone)	1.90E+03	EPA9TAP		NT			NT		
Acetone (2-Propanone, Dimethyl ketone)	6.10E+02	EPA9TAP		NT			NT		
Benzene	5.00E+00	MCL		NT			NT		
Carbon disulfide	1.00E+03	EPA9TAP		NT			NT		
Ethylbenzene	7.00E+02	MCL		NT			NT		
m,p-Xylene	1.00E+04	MCL		NT			NT		
Methyl tert-butyl ether (MTBE)	1.30E+01	EPA9TAP		NT			NT		
o-Xylene	1.00E+04	MCL		NT			NT		
Toluene	7.20E+02	EPA9TAP		NT			NT		

Qualifier Key

Shaded value indicates that the compound was not detected and 1/2 the SQL exceeds the Groundwater Standard.

Shaded value indicates that the detected concentration exceeds the Groundwater Standard.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the san

NMED New Mexico Water Quality Commission Standards, 2002.

MCL Federal/EPA Maximum Contaiminant Level (MCL).

EPA9TAP USEPA Region 9 PRGs for tapwater.

TABLE 11D
Evaporation Pond 3 Boring Groundwater Data Table, Navajo Refinery, Artesia, NM

	Groundwater Standard	Standard Source	ID #	EP3-9			Dup-6BW		
Analyte	(ug/L)		Date	7/14/2004			7/14/2004		
BTEX			ug/L	Result	Qualifier	SQL	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL		0.04	U	0.04	0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		0.05	U	0.05	0.05	U	0.05
m,p-Xylene	1.00E+04	EPA MCL		0.07	U	0.07	0.07	U	0.07
o-Xylene	1.00E+04	EPA MCL		0.09	U	0.09	0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		0.05	U	0.05	0.05	U	0.05
SVOCs			ug/L						
Anthracene	1.80E+03	EPA9TAP		0.02	U	0.02	0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		0.02	U	0.02	0.02	U	0.02
Dibenz(a,h)anthracene	9.20E-03	EPA9TAP		0.05	U	0.05	0.05	U	0.05
Fluorene	2.40E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04
Phenanthrene	1.80E+02	Surrogate (pyrene)		0.02	U	0.02	0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04
VOCs			ug/L						
2-Butanone (Methyl ethyl ketone)	1.90E+03	EPA9TAP		NT			NT		
Acetone (2-Propanone, Dimethyl ketone)	6.10E+02	EPA9TAP		NT			NT		
Benzene	5.00E+00	MCL		NT			NT		
Carbon disulfide	1.00E+03	EPA9TAP		NT			NT		
Ethylbenzene	7.00E+02	MCL		NT			NT		
m,p-Xylene	1.00E+04	MCL		NT			NT		
Methyl tert-butyl ether (MTBE)	1.30E+01	EPA9TAP		NT			NT		
o-Xylene	1.00E+04	MCL		NT			NT		
Toluene	7.20E+02	EPA9TAP		NT			NT		

Qualifier Key

Shaded value indicates that the compound was not c
Shaded value indicates that the detected concentrati
U = Not detected: analysis for the analyte was performed , but the analyte
J = Estimated: The analyte was detected and identified. The associated numple.

NMED	New Mexico Water Quality Commission Standards
MCL	Federal/EPA Maximum Contaiminant Le
EPA9TAP	USEPA Region 9 PRGs for tapwater.

TABLE 12

EVAPORATION POND 6

12A Borings Soils Occurrence Summary

12B Borings Groundwater Occurrence Summary

12C Borings Soils Sample Data

12D Borings Groundwater Sample Data

Table 12B Evaporation Pond 6. Soil Data Table, Navajo Refinery, Artesia, NM

Table 12A **Occurrence Summary for Evaporation Pond 6, Total Soil Data, Navajo Refinery, Artesia, New Mexico.**

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Critical SSL mg/kg	SSL Source
Volatile Organic Compounds (mg/kg)										
1,2-Dichloroethane (Ethylene dichloride)	9 / 12	75%	0.00032 - 0.000332	0.0013 - 0.00361	0.00032 - 0.00361	0.0022	0.0017	2.30E-03	1.98E-02	NMED-DAF20
Acetone (2-Propanone, Dimethyl ketone)	2 / 12	17%	0.00282 - 0.0037	0.0172 - 0.0196	0.00282 - 0.0196	0.018	0.0044	7.80E-03	2.06E+00	NMED-DAF20
Chloroform	2 / 12	17%	0.000184 - 0.000241	0.0013 - 0.00159	0.000184 - 0.00159	0.0015	0.00033	6.00E-04	4.90E-01	NMED-DAF20
Methylene chloride (Dichloromethane)	11 / 12	92%	0.000526 - 0.000526	0.0018 - 0.00381	0.000526 - 0.00381	0.0027	0.0025	3.00E-03	1.69E-02	NMED-DAF20
Metals (mg/kg)										
Arsenic	9 / 12	75%	0.407 - 0.472	1.03 - 12.4	0.407 - 12.4	3.2	2.5	4.20E+00	1.77E+01	NMED SSL
Barium	11 / 12	92%	0.0905	167 - 427	0.0905 - 427	230	210	2.60E+02	8.23E+02	NMED-DAF20
Chromium	11 / 12	92%	0.109	5.1 - 27.1	0.109 - 27.1	11	9.8	1.40E+01	1.92E+01	NMED-DAF20
(as Chromium VI)								2.00E+00	1.92E+01	NMED-DAF20
Lead	11 / 12	92%	0.2	3.64 - 19.6	0.2 - 19.6	7.4	6.7	9.60E+00	9.00E+02	NMED-DAF20
Selenium	11 / 12	92%	0.755	1.50 - 3.14	0.755 - 3.14	2.4	2.2	2.60E+00	5.17E+00	NMED-DAF20

	Shading indicates that the value exceeds the applicable Soil Screening Level.
Average Detect	Arithmetic average of the detected samples only.
DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
Mean	Arithmetic average of the total number of samples, using proxy concentrations (1/2 the SQL), for non-detects.
ND	Not detected.
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10^{-5} risk (2003-2004).
SQL	Practical sample quantitation limits for the non-detects.
TPH	Total petroleum hydrocarbons
UCL	95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution (1/2 SQL used for non-detects).

Table 12B Evaporation Pond 6. Soil Data Table, Navajo Refinery, Artesia, NM

Analyte	Critical SSL	SSL Source	ID #	EP6-1						EP6-2						EP6-4								
			Date	7/16/2004			7/16/2004			7/16/2004			7/16/2004			7/16/2004			7/16/2004			7/16/2004		
			Depth	(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')			(0-2.5')			(2.5-5')			Dup-27		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		33.8	U	33.8	34.9	U	34.9	33.3	U	33.3	38.8	U	38.8	37.2	U	37.2	39.9	U	39.9	43.7	U	43.7
VOCs (ug/kg)																								
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.322	U	0.322	0.332	U	0.332	1.44	J	0.317	3.61	J	0.369	2.01	J	0.353	2.41	J	0.379	3.1	J	0.416
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		2.86	U	2.86	2.96	U	2.96	2.82	U	2.82	3.29	U	3.29	3.15	U	3.15	19.6		3.38	3.7	U	3.7
Chloroform	4.90E+02	NMED-DAF20		0.187	U	0.187	0.193	U	0.193	0.184	U	0.184	1.33	J	0.214	0.205	U	0.205	0.22	U	0.22	0.241	U	0.241
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		1.77	J	0.456	2.14	J	0.471	2.18	J	0.449	3.3	J	0.524	2.47	J	0.502	2.93	J	0.539	3.69	J	0.59
Metals (mg/kg)																								
Arsenic	1.77E+01	NMED SSL		1.49		0.315	0.472	U	0.472	2.12		0.469	1.03		0.439	0.407	U	0.407	0.431	U	0.431	4.54		0.539
Barium	8.23E+02	NMED-DAF20		225		0.0701	206		0.105	176		0.104	169		0.0976	0.0905	U	0.0905	167		0.0956	427		0.12
Chromium	1.92E+01	NMED-DAF20		10.2		0.0841	7.69		0.126	5.09		0.125	6.3		0.117	0.109	U	0.109	7.98		0.115	27.1		0.143
Lead	7.50E+02	NMED SSL		6.46		0.155	5.52		0.231	3.64		0.229	3.95		0.214	0.2	U	0.2	5.53		0.211	19.6		0.263
Selenium	5.17E+00	NMED-DAF20		1.63		0.442	2.31		0.662	2.41		0.657	2.26		0.614	2.71		0.57	3.04		0.602	0.755	U	0.755

Analyte	Critical SSL	SSL Source	ID #	EP6-3									EP6-5				
			Date	7/16/2004			7/16/2004			7/16/2004			7/16/2004			7/16/2004	
			Depth	(0-2.5')			(2.5-5')			Dup-26			(0-2.5')			(2.5-5')	
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		33.6	U	33.6	37.8	U	37.8	36.4	U	36.4	38.9	U	38.9	43.9	U	43.9
VOCs (ug/kg)																		
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.32	U	0.32	1.87	J	0.36	2.01	J	0.346	1.31	J	0.37	2.46	J	0.417
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		2.85	U	2.85	3.2	U	3.2	3.08	U	3.08	3.3	U	3.3	17.2		3.71
Chloroform	4.90E+02	NMED-DAF20		0.186	U	0.186	0.209	U	0.209	0.201	U	0.201	0.215	U	0.215	1.59	J	0.242
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		2.17	J	0.454	2.61	J	0.51	2.88	J	0.492	0.526	U	0.526	3.81	J	0.592
Metals (mg/kg)																		
Arsenic	1.77E+01	NMED SSL		2.47		0.43	1.14		0.368	1.9		0.419	12.4		0.527	1.99		0.474
Barium	8.23E+02	NMED-DAF20		187		0.0956	178		0.0817	210		0.0931	304		0.117	246		0.105
Chromium	1.92E+01	NMED-DAF20		5.53		0.115	6.84		0.098	7.93		0.112	22.6		0.141	10.7		0.126
Lead	7.50E+02	NMED SSL		3.85		0.211	4.29		0.18	4.95		0.204	16.5		0.258	6.57		0.231
Selenium	5.17E+00	NMED-DAF20		1.5		0.602	2.03		0.515	3.1		0.587	2.09		0.738	3.14		0.662

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.

Table 12B Evaporation Pond 6. Soil Data Table, Navajo Refinery, Artesia, NM

	Groundwater Standard	Standard Source	ID #	EP6-3		
Analyte	(ug/L)		Date	7/16/2004		
BTEX			ug/L	Result	Qualifier	SQL
Benzene	5.00E+00	EPA MCL		0.04	U	0.04
Ethylbenzene	7.00E+02	EPA MCL		0.05	U	0.05
m,p-Xylene	1.00E+04	EPA MCL		0.07	U	0.07
o-Xylene	1.00E+04	EPA MCL		0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		0.05	U	0.05
SVOCs			ug/L			
Anthracene	1.80E+03	EPA9TAP		0.02	U	0.02
Chrysene	9.20E+00	EPA9TAP		0.02	U	0.02
Dibenz(a,h)anthracene	9.20E-03	EPA9TAP		0.05	U	0.05
Fluorene	2.40E+02	EPA9TAP		0.04	U	0.04
Phenanthrene	1.80E+02	Surrogate (pyrene)		0.02	U	0.02
Pyrene	1.80E+02	EPA9TAP		0.04	U	0.04
VOCs			ug/L			
2-Butanone (Methyl ethyl ketone)	1.90E+03	EPA9TAP		NT		
Acetone (2-Propanone, Dimethyl ketone)	6.10E+02	EPA9TAP		NT		
Benzene	5.00E+00	MCL		NT		
Carbon disulfide	1.00E+03	EPA9TAP		NT		
Ethylbenzene	7.00E+02	MCL		NT		
m,p-Xylene	1.00E+04	MCL		NT		
Methyl tert-butyl ether (MTBE)	1.30E+01	EPA9TAP		NT		
o-Xylene	1.00E+04	MCL		NT		
Toluene	7.20E+02	EPA9TAP		NT		

Qualifier Key

Shaded value indicates that the compound was not detected and 1/2 the SQL exceeds the Groundwater Standard.

Shaded value indicates that the detected concentration exceeds the Groundwater Standard.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NMED New Mexico Water Quality Commission Standards, 2002.

MCL Federal/EPA Maximum Contaiminant Level (MCL).

EPA9TAP USEPA Region 9 PRGs for tapwater.

TABLE 13

SOUTH OF EVAPORATION POND BERMS

13A Borings Soils Occurrence Summary

13B Borings Groundwater Occurrence Summary

13C Borings Soils Sample Data

13D Borings Groundwater Sample Data

Table 13A

Occurrence Summary for Evaporation Pond Berm, Total Soil Data, Navajo Refinery, Artesia, NM.

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Critical SSL mg/kg	SSL Source
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2 / 13	15%	33.9 - 41.9	131 - 419	33.9 - 419	280	59	1.10E+02	2.00E+03	NMED SSL
Volatile Organic Compounds (mg/kg)										
1,2-Dichloroethane (Ethylene dichloride)	9 / 13	69%	0.00032 - 0.000389	0.0017 - 0.0044	0.00032 - 0.0044	0.0031	0.0022	3.00E-03	1.98E-02	NMED-DAF20
2-Butanone (Methyl ethyl ketone)	1 / 13	8%	0.00276 - 0.00334	0.0069	0.00276 - 0.0069	0.0069	0.002	2.70E-03	6.63E+00	NMED-DAF20
Acetone (2-Propanone, Dimethyl ketone)	5 / 13	38%	0.00287 - 0.00347	0.0088 - 0.0506	0.00287 - 0.0506	0.027	0.011	2.00E-02	2.06E+00	NMED-DAF20
Benzene	1 / 13	8%	0.000312 - 0.000386	0.00123	0.000312 - 0.00123	0.0012	0.00026	4.00E-04	2.83E-02	NMED-DAF20
Chloroform	8 / 13	62%	0.000187 - 0.000226	0.0013 - 0.00201	0.000187 - 0.00201	0.0017	0.0011	1.50E-03	4.90E-01	NMED-DAF20
Methylene chloride (Dichloromethane)	11 / 13	85%	0.000485 - 0.00053	0.0016 - 0.00793	0.000485 - 0.00793	0.0034	0.0029	3.80E-03	1.69E-02	NMED-DAF20
Tetrachloroethene (Perchloroethylene)	3 / 13	23%	0.000218 - 0.00027	0.0012 - 0.00246	0.000218 - 0.00246	0.0019	0.00053	9.30E-04	6.44E-03	NMED-DAF20
Metals (mg/kg)										
Arsenic	6 / 13	46%	0.424 - 0.643	1.8 - 5.04	0.424 - 5.04	3	1.5	2.30E+00	1.77E+01	NMED SSL
Barium	13 / 13	100%	NA	87.4 - 252	87.4 - 252	170	170	1.90E+02	8.23E+02	NMED-DAF20
Cadmium	1 / 13	8%	0.196 - 0.285	0.568	0.196 - 0.568	0.57	0.15	2.10E-01	7.52E+00	NMED-DAF20
Chromium	13 / 13	100%	NA	5.46 - 116	5.46 - 116	21	21	3.60E+01	1.92E+01	NMED-DAF20
(as Chromium VI)								5.14E+00	1.92E+01	NMED-DAF20
Lead	13 / 13	100%	NA	5.97 - 43.7	5.97 - 43.7	13	13	1.90E+01	9.00E+02	NMED-DAF20
Silver	4 / 13	31%	0.078 - 0.108	1.15 - 1.73	0.078 - 1.73	1.5	0.48	8.20E-01	8.47E+00	NMED-DAF20
Mercury	3 / 13	23%	0.0133 - 0.0203	0.06 - 0.173	0.0133 - 0.173	0.11	0.031	5.60E-02	3.41E+02	NMED SSL

	Shading indicates that the value exceeds the applicable Soil Screening Level.
Average Detect	Arithmetic average of the detected samples only.
EPC	Exposure point concentration; lesser of the UCL and the maximum SQL or detected concentration. when there are ten or more data points; otherwise the maximum detected value is used.
ft bgs	Feet below ground surface.
DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
Mean	Arithmetic average of the total number of samples, using proxy concentrations (1/2 the SQL), for non-detects.
NAP	Not applicable.
NS	No PCL available
ND	Not detected.
SAI-Ind MSC	Soil Medium-Specific Concentration for industrial use based on inhalation, ingestion, and dermal contact.
NA	Not applicable.
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
SQL	Practical sample quantitation limits for the non-detects.
SVOCs	Semi-volatile organic compounds.
TPH	Total petroleum hydrocarbons
UCL	95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution (1/2 SQL used for non-detects).
VOCs	Volatile organic compounds.
-	No SSL available.

Table 13B

Occurrence Summary for Evaporation Pond Berm Groundwater Samples, Navajo Refinery, Artesia, New Mexico.

Concentrations are reported in milligrams per liter (mg/L).

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Groundwater Standard (mg/L)	Standard Source
Semi Volatile Organic Compounds										
Anthracene	3 / 7	43%	0.00002	0.0000297 - 0.000159	0.00002 - 0.000159	0.000079	0.000040	8.0E-05	1.8E+00	EPA9TAP
Fluorene	1 / 7	14%	0.00004	0.00296	0.00004 - 0.00296	0.003	0.00044	1.3E-03	2.4E-01	EPA9TAP
Pyrene	1 / 7	14%	0.00004	0.0000421	0.00004 - 0.0000421	0.000042	0.00002	2.9E-05	1.8E-01	EPA9TAP
BTEX										
Benzene	5 / 7	71%	0.00004	0.00657 - 0.098	0.00004 - 0.098	0.04	0.029	5.6E-02	5.0E-03	MCL
Ethylbenzene	4 / 7	57%	0.00005	0.00778 - 0.0281	0.00005 - 0.0281	0.014	0.0079	1.5E-02	7.0E-01	MCL
m,p-Xylene	7 / 7	100%	NA	0.000514 - 0.0832	0.000514 - 0.0832	0.035	0.035	6.2E-02	1.0E+01	MCL
o-Xylene	5 / 7	71%	0.00009	0.00724 - 0.0469	0.00009 - 0.0469	0.021	0.015	2.7E-02	1.0E+01	MCL
Toluene	6 / 7	86%	0.00005	0.00425 - 0.0723	0.00005 - 0.0723	0.033	0.028	4.6E-02	7.2E-01	EPA9TAP

	Shaded value indicates that the SQL exceeds the Groundwater Standard.
	Shaded value indicates that the value exceeds the Groundwater Standard.
Average Detect	Arithmetic average of the detected samples only.
MCL	Federal/EPA Maximum Contaminant Level (MCL).
EPA9TAP	USEPA Region 9 PRGs for tapwater.
Mean	Arithmetic average of the total number of samples, using proxy concentrations for non-detects.
NMED	New Mexico Water Quality Commission Standards, 2002.
NA	Not applicable.
ND	Not detected.
SQLs	Practical sample quantitation limits for the non-detects.
UCL	95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution.
-	No Groundwater Standard available.

Table 13C Evaporation Bond Berm Boring Soil Data, Navajo Refinery, Artesia, NM

Analyte	Critical SSL	SSL Source	ID #	EPB-1						EPB-2						EPB-3					
			Date	6/29/2004			6/29/2004			6/29/2004			6/29/2004			6/29/2004			6/29/2004		
			Depth	(0-2.5')			(5-7.5')			(0-2.5')			(5-7.5')			(0-2.5')			(5-7.5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		33.9	U	33.9	41	U	41	131		35.9	39.3	U	39.3	419		36.5	39.7	U	39.7
VOCs (ug/kg)																					
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		0.322	U	0.322	0.389	U	0.389	0.342	U	0.342	1.65	J	0.373	2.24	J	0.347	3.54	J	0.378
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		2.76	U	2.76	3.34	U	3.34	2.93	U	2.93	3.2	U	3.2	2.98	U	2.98	3.24	U	3.24
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		2.87	U	2.87	3.47	U	3.47	3.04	U	3.04	3.33	U	3.33	3.09	U	3.09	3.36	U	3.36
Benzene	2.83E+01	NMED-DAF20		0.312	U	0.312	0.377	U	0.377	0.331	U	0.331	0.361	U	0.361	0.336	U	0.336	0.365	U	0.365
Chloroform	4.90E+02	NMED-DAF20		0.187	U	0.187	0.226	U	0.226	0.198	U	0.198	0.217	U	0.217	1.29	J	0.201	1.63	J	0.219
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		1.63	J	0.457	2.74	J	0.553	0.485	U	0.485	0.53	U	0.53	1.61	J	0.492	3.28	J	0.536
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.218	U	0.218	0.264	U	0.264	0.232	U	0.232	0.253	U	0.253	2.46	J	0.235	0.256	U	0.256
Metals (mg/kg)																					
Arsenic	1.77E+01	NMED SSL		0.441	U	0.441	2.75		0.554	2.79		0.506	0.424	U	0.424	5.04		0.525	0.49	U	0.49
Barium	8.23E+02	NMED-DAF20		150		0.0979	154		0.123	193		0.112	202		0.0941	168		0.116	87.4		0.109
Cadmium	7.52E+00	NMED-DAF20		0.196	U	0.196	0.246	U	0.246	0.225	U	0.225	0.568		0.188	0.233	U	0.233	0.218	U	0.218
Chromium	1.92E+01	NMED-DAF20		24.9		0.117	12.3		0.148	42.9		0.135	7.09		0.113	116		0.14	5.46		0.13
Lead	7.50E+02	NMED SSL		9.41		0.216	12.1		0.271	29.1		0.247	8.05		0.207	43.7		0.256	5.97		0.239
Silver	8.47E+00	NMED-DAF20		0.0784	U	0.0784	0.0985	U	0.0985	0.09	U	0.09	1.73		0.0753	0.0933	U	0.0933	1.35		0.087
Mercury	3.41E+02	NMED SSL		0.0601		0.0136	0.0192	U	0.0192	0.0866		0.015	0.0189	U	0.0189	0.173		0.0176	0.0203	U	0.0203

Analyte	Critical SSL	SSL Source	ID #	EPB-4						EPB-5									EPB-6					
			Date	6/29/2004			6/29/2004			6/29/2004			6/29/2004			6/29/2004			6/29/2004			6/29/2004		
			Depth	(0-2.5')			(5-7.5')			(0-2.5')			(5-7.5')			Dup-13			(0-2.5')			(2.5-5')		
				Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
TPH - Diesel Range Organics (C10-C28) (mg/kg)	2.00E+03	NMED SSL		38.6	U	38.6	41.9	U	41.9	37.8	U	37.8	40.1	U	40.1	40.2	U	40.2	36.1	U	36.1	38.1	U	38.1
VOCs (ug/kg)																								
1,2-Dichloroethane (Ethylene dichloride)	1.98E+01	NMED-DAF20		3.25	J	0.367	3.8	J	0.398	3.01	J	0.359	4.4	J	0.382	0.382	U	0.382	3.28	J	0.344	2.79	J	0.362
2-Butanone (Methyl ethyl ketone)	6.63E+03	NMED-DAF20		3.15	U	3.15	6.9	J	3.42	3.08	U	3.08	3.28	U	3.28	3.28	U	3.28	2.95	U	2.95	3.11	U	3.11
Acetone (2-Propanone, Dimethyl ketone)	2.06E+03	NMED-DAF20		3.27	U	3.27	50.4		3.55	15.5		3.2	9.03	J	3.4	50.6		3.4	3.06	U	3.06	8.8	J	3.22
Benzene	2.83E+01	NMED-DAF20		1.23	J	0.355	0.386	U	0.386	0.348	U	0.348	0.369	U	0.369	0.37	U	0.37	0.333	U	0.333	0.35	U	0.35
Chloroform	4.90E+02	NMED-DAF20		1.83	J	0.213	1.71	J	0.231	1.59	J	0.209	1.81	J	0.222	0.222	U	0.222	2.01	J	0.2	1.38	J	0.21
Methylene chloride (Dichloromethane)	1.69E+01	NMED-DAF20		3.16	J	0.521	3.92	J	0.566	2.65	J	0.51	3.87	J	0.542	7.93		0.543	2.94	J	0.488	3.13	J	0.514
Tetrachloroethene (Perchloroethylene)	6.44E+00	NMED-DAF20		0.249	U	0.249	0.27	U	0.27	1.18	J	0.243	0.259	U	0.259	2.01	J	0.259	0.233	U	0.233	0.245	U	0.245
Metals (mg/kg)																								
Arsenic	1.77E+01	NMED SSL		0.605	U	0.605	0.643	U	0.643	3.54		0.532	2.18		0.554	0.44	U	0.44	1.8		0.489	0.548	U	0.548
Barium	8.23E+02	NMED-DAF20		179		0.135	93.7		0.143	186		0.118	252		0.123	204		0.0979	174		0.109	107		0.121
Cadmium	7.52E+00	NMED-DAF20		0.269	U	0.269	0.285	U	0.285	0.236	U	0.236	0.246	U	0.246	0.196	U	0.196	0.217	U	0.217	0.243	U	0.243
Chromium	1.92E+01	NMED-DAF20		10.5		0.161	7.88		0.171	10.6		0.141	13.1		0.148	8.06		0.117	10.1		0.131	8.7		0.146
Lead	7.50E+02	NMED SSL		10		0.296	7.75		0.314	11.6		0.26	12.3		0.271	7.26		0.216	9.69		0.239	8.12		0.268
Silver	8.47E+00	NMED-DAF20		0.108	U	0.108	1.62		0.114	0.0946	U	0.0946	0.0985	U	0.0985	1.15		0.0783	0.0869	U	0.0869	0.0974	U	0.0974
Mercury	3.41E+02	NMED SSL		0.0174	U	0.0174	0.0177	U	0.0177	0.0182	U	0.0182	0.0202	U	0.0202	0.0137	U	0.0137	0.0163	U	0.0163	0.0133	U	0.0133

Qualifier Key

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Footnotes

DAF-20	NMED Soil screening Level for Soil-to-Groundwater (2004).
NMED SSL	New Mexico Environmental Department Industrial/Occupational Soil Screening Level (2004).
Region 6	EPA Region 6 Human Health Medium-Specific Screening Level, Soil-to-Groundwater DAF 20 adjusted to 10-5 risk (2003-2004).
	Shading indicates that the detected concentration exceeds the applicable Soil Screening Level.

Table 13D Evaporation Pond Berm Groundwater Data Table, Navajo Refinery, Artesia NM

	Groundwater Standard	Standard Source	ID #	EPB-1			EPB-2			EPB-3		
Analyte	(ug/L)		Date	6/30/2004			6/30/2004			6/30/2004		
BTEX				Result	Qualif	SQL	Result	Qualif	SQL	Result	Qualif	SQL
Benzene	5.00E+00	MCL	*ug/L*	56.3		0.04	0.04	U	0.04	98		0.04
Ethylbenzene	7.00E+02	MCL		7.78		0.05	9.53		0.05	28.1		0.05
m,p-Xylene	1.00E+04	MCL		2.77	J	0.07	23.1		0.07	73.8		0.07
o-Xylene	1.00E+04	MCL		7.24		0.09	8.65		0.09	46.9		0.09
Toluene	7.20E+02	EPA9TAP		28.3		0.05	4.25	J	0.05	36.9		0.05
SVOCs												
Anthracene	1.80E+03	EPA9TAP	*ug/L*	0.02	U	0.02	0.02	U	0.02	0.049	J	0.02
Fluorene	2.40E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	2.96		0.04
Pyrene	1.80E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.0421	J	0.04

	Groundwater Standard	Standard Source	ID #	EPB-4			Dup-5BW			EPB-5			EPB-6		
Analyte	(ug/L)		Date	6/30/2004			6/30/2004			6/30/2004			6/30/2004		
BTEX				Result	Qualif	SQL	Result	Qualif	SQL	Result	Qualif	SQL	Result	Qualif	SQL
Benzene	5.00E+00	MCL	*ug/L*	11.3		0.04	29.5		0.04	6.57		0.04	0.04	U	0.04
Ethylbenzene	7.00E+02	MCL		9.93		0.05	0.05	U	0.05	0.05	U	0.05	0.05	U	0.05
m,p-Xylene	1.00E+04	MCL		83.2		0.07	62.4		0.07	0.514	J	0.07	1.92	J	0.07
o-Xylene	1.00E+04	MCL		25.6		0.09	16.4		0.09	0.09	U	0.09	0.09	U	0.09
Toluene	7.20E+02	EPA9TAP		38.3		0.05	72.3		0.05	18.4		0.05	0.05	U	0.05
SVOCs															
Anthracene	1.80E+03	EPA9TAP	*ug/L*	0.0297	J	0.02	0.159		0.02	0.02	U	0.02	0.02	U	0.02
Fluorene	2.40E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Pyrene	1.80E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04

Qualifier Key

Shaded value indicates that the compound was not detected and 1/2 the SQL exceeds the Groundwater Standard.

Shaded value indicates that the detected concentration exceeds the Groundwater Standard.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NMED New Mexico Water Quality Commission Standards, 2002.

MCL Federal/EPA Maximum Containminant Level (MCL).

EPA9TAP USEPA Region 9 PRGs for tapwater.

TABLE 14

EVAPORATION POND AREA GROUNDWATER

14A Upgradient Wells Occurrence Summary

14B Downgradient Wells Occurrence Summary

14C Upgradient Wells Sample Data

12D Downgradient Wells Sample Data

Table 14A. Occurrence Summary for Upgradient Monitoring Well Groundwater Samples, Evaporation Ponds, Navajo Refinery, Artesia, New Mexico.
Concentrations are reported in milligrams per liter (mg/L).

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Groundwater Standard (mg/L)	Standard Source
Semi Volatile Organic Compounds (8270)	0 / 7									
Semi Volatile Organic Compounds (8310)	0 / 7									
Volatile Organic Compounds (8260)										
Acetone (2-Propanone, Dimethyl ketone)	2 / 7	29%	0.00170	0.00665 - 0.0136	0.0017 - 0.0136	0.01	0.0041	0.0075	6.1E-01	EPA9TAP
Carbon disulfide	4 / 7	57%	0.00071	0.0117 - 0.016	0.00071 - 0.016	0.014	0.008	0.013	1.0E+00	EPA9TAP
Inorganics										
Fluoride	4 / 7	57%	0.5 - 1.00000	14.6	0.5 - 14.6	8.5	5.1	8.9	-	-
Chloride	7 / 7	100%	NA	11000	398 - 11000	4000	4000	6700	-	-
Nitrate/Nitrite	4 / 7	57%	0.03000	0.798	0.03 - 0.798	0.51	0.3	0.53	1.0E+00	MCL/EPA9TAP
Sulfate	7 / 7	100%	NA	3710	666 - 3710	2700	2700	3500	-	-
Total Dissolved Solids (TDS)	7 / 7	100%	NA	20 - 19200	20 - 19200	7600	7600	12000	1.0E+04	-
Metals										
Arsenic	3 / 7	43%	0.00444	0.0276 - 0.0558	0.00444 - 0.0558	0.04	0.02	0.035	1.0E-01	NMED
Lead	1 / 7	14%	0.00266	0.00442	0.00266 - 0.00442	0.0044	0.0029	0.0034	5.0E-02	NMED
Selenium	6 / 7	86%	0.00449	0.0132 - 0.0305	0.00449 - 0.0305	0.024	0.021	0.028	5.0E-02	NMED/MCL
Calcium	7 / 7	100%	NA	322 - 1040	322 - 1040	650	650	820	-	-
Iron	7 / 7	100%	0.00000	1.99 - 33	1.99 - 33	12	12	20	1.0E+00	NMED
Magnesium	7 / 7	100%	NA	174 - 464	174 - 464	240	240	320	-	-
Manganese	7 / 7	100%	0.00000	0.242 - 2.79	0.242 - 2.79	1.2	1.2	1.9	2.0E-01	NMED
Potassium	7 / 7	100%	NA	6.38 - 82.7	6.38 - 82.7	38	38	61	-	-
Sodium	7 / 7	100%	NA	545 - 6280	545 - 6280	2900	2900	4300	-	-

Shaded value indicates that the SQL exceeds the Groundwater Standard.
Shaded value indicates that the value exceeds the standard for Groundwater.

Average Detect: Arithmetic average of the detected samples only.
MCL: Federal/EPA Maximum Contaiminant Level (MCL).
EPA9TAP: USEPA Region 9 PRGs for tapwater.
Mean: Arithmetic average of the total number of samples, using proxy concentrations for non-detects.
NA: Not applicable.
ND: Not detected.
NMED: New Mexico Water Quality Commission Standards, 2002.
SQLs: Practical sample quantitation limits for the non-detects.
UCL: 95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution.
-: No Groundwater Standard available.

Table 14B

Occurrence Summary for Downgradient Monitoring Well Groundwater Samples, Evaporation Ponds, Navajo Refinery, Artesia, New Mexico.

Concentrations are reported in milligrams per liter (mg/L).

Constituent	Frequency Detects / Total	Percent Detects	Range of SQLs Min - Max	Range of Detects Min - Max	Total Range Min - Max	Average Detect	Mean	UCL	Groundwater Standard (mg/L)	Standard Source
Semi Volatile Organic Compounds (8270)										
bis(2-Ethylhexyl)phthalate	2 / 12	17%	0.00980	0.0111 - 0.019	0.0098 - 0.019	0.015	0.011	0.012	4.8E-03	EPA9TAP
Semi Volatile Organic Compounds (8310)										
Acenaphthylene	1 / 12	8%	0.00031 - 0.00052	0.00214	0.00031 - 0.00214	0.0021	0.00049	0.00077	-	-
Anthracene	1 / 12	8%	0.00002 - 0.00003	0.000801	0.00002 - 0.000801	0.0008	0.000087	0.0002	1.8E+00	EPA9TAP
Fluorene	2 / 12	17%	0.00004 - 0.00007	0.00139 - 0.00217	0.00004 - 0.00217	0.0018	0.00033	0.00069	2.4E-01	EPA9TAP
Volatile Organic Compounds (8260)										
Acetone (2-Propanone, Dimethyl ketone)	2 / 12	17%	0.00170	0.01620 - 0.0229	0.0017 - 0.0229	0.02	0.0047	0.0084	6.1E-01	EPA9TAP
Benzene	1 / 12	8%	0.00086	0.00221 - 0.00221	0.00086 - 0.00221	0.0022	0.00097	0.0012	5.0E-03	MCL
Carbon disulfide	10 / 12	83%	0.00071	0.0017 - 0.0168	0.00071 - 0.0168	0.01	0.0087	0.011	1.0E+00	EPA9TAP
Chloromethane (Methyl chloride)	1 / 12	8%	0.00099	0.00212	0.00099 - 0.00212	0.0021	0.0011	0.0013	1.5E-03	EPA9TAP
Ethylbenzene	2 / 12	17%	0.00073	0.00339 - 0.00728	0.00073 - 0.00728	0.0053	0.0015	0.0025	7.0E-01	MCL
Isopropylbenzene (Cumene)	2 / 12	17%	0.00071	0.00109 - 0.00135	0.000707 - 0.00135	0.0012	0.00079	0.0009	6.6E-01	EPA9TAP
m,p-Xylene	1 / 12	8%	0.00092	0.0156	0.00092 - 0.0156	0.016	0.0021	0.0043	1.0E+01	MCL
Methyl tert-butyl ether (MTBE)	5 / 12	42%	0.00097	0.00225 - 0.0101	0.00097 - 0.0101	0.0051	0.0027	0.0042	1.3E-02	EPA9TAP
Methylene chloride (Dichloromethane)	1 / 12	8%	0.00145	0.00178 - 0.00178	0.00145 - 0.00178	0.0018	0.0015	0.0015	4.3E-03	EPA9TAP
o-Xylene	2 / 12	17%	0.00068	0.0113 - 0.0134	0.00068 - 0.0134	0.012	0.0026	0.005	1.0E+01	MCL
Toluene	2 / 12	17%	0.00047	0.00201 - 0.00574	0.00047 - 0.00574	0.0039	0.001	0.0018	7.2E-01	EPA9TAP
Inorganics										
Fluoride	11 / 12	92%	1.0 - 1.00000	15	1 - 15	7.3	6.8	8.5	-	-
Chloride	12 / 12	100%	NA	16000	823 - 16000	3600	3600	5800	-	-
Total Cyanide	1 / 12	8%	0.00400	0.0109	0.004 - 0.0109	0.011	0.0046	0.0056	2.0E-01	NMED/MCL
Nitrate/Nitrite	6 / 12	50%	0.03000	0.596	0.03 - 0.596	0.28	0.15	0.25	1.0E+00	MCL/EPA9TAP
Sulfate	12 / 12	100%	NA	12900	2390 - 12900	6000	6000	7700	-	-
Total Dissolved Solids (TDS)	12 / 12	100%	NA	4,710 - 18300	4710 - 18300	8400	8400	11000	1.0E+04	-
Metals										
Arsenic	11 / 12	92%	0.00444	0.0121 - 0.176	0.00444 - 0.176	0.092	0.084	0.12	1.0E-01	NMED
Lead	2 / 12	17%	0.00266	0.00569 - 0.00654	0.00266 - 0.00654	0.0061	0.0032	0.0039	5.0E-02	NMED
Selenium	12 / 12	100%	0.00000	0.0152 - 0.0503	0.0152 - 0.0503	0.028	0.028	0.033	5.0E-02	NMED/MCL
Zinc	1 / 12	8%	0.01370	0.0396	0.0137 - 0.0396	0.04	0.016	0.02	1.0E+01	NMED
Calcium	12 / 12	100%	NA	390 - 762	390 - 762	590	590	640	-	-
Iron	12 / 12	100%	0.00000	0.215 - 22.4	0.215 - 22.4	8.3	8.3	12	1.0E+00	NMED
Magnesium	12 / 12	100%	NA	108 - 956	108 - 956	310	310	460	-	-
Manganese	12 / 12	100%	0.00000	0.252 - 3.82	0.252 - 3.82	2	2	2.6	2.0E-01	NMED
Potassium	12 / 12	100%	NA	2.42 - 89.5	2.42 - 89.5	18	18	30	-	-
Sodium	12 / 12	100%	NA	723 - 5650	723 - 5650	2300	2300	3100	-	-

	Shaded value indicates that the SQL exceeds the Groundwater Standard.
	Shaded value indicates that the value exceeds the standard for Groundwater.
Average Detect	Arithmetic average of the detected samples only.
MCL	Federal/EPA Maximum Contaminant Level (MCL).
EPA9TAP	USEPA Region 9 PRGs for tapwater.
Mean	Arithmetic average of the total number of samples, using proxy concentrations for non-detects.
NA	Not applicable.
ND	Not detected.
NMED	New Mexico Water Quality Commission Standards, 2002.
SQLs	Practical sample quantitation limits for the non-detects.
UCL	95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution.
-	No Groundwater Standard available.

Table 14C Evaporation Pond Upgradient Monitor Well Groundwater Data Table

Analyte	Groundwater Standard (mg/L)	Groundwater Standard (ug/L)	Standard Source	ID #	MW-2A			OCD-1			OCD-2a			OCD-3			OCD-4			MW-11A			OCD-5		
				Date	7/15/2004			6/14/2004			6/14/2004			6/14/2004			6/15/2004			6/15/2004			6/15/2004		
					Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
VOCs																									
4-Methyl-2-pentanone (MIBK)	1.60E-01	1.60E+02	EPA9TAP	ug/L	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	0.7	U	0.7	1.78	U	1.78
Acetone (2-Propanone, Dimethyl ketone)	6.10E-01	6.10E+02	EPA9TAP		6.65	J	1.7	1.7	U	1.7	13.6		1.7	1.7	U	1.7	1.7	U	1.7	0.9	U	0.9	1.7	U	1.7
Benzene	5.00E-03	5.00E+00	MCL		0.86	U	0.86	0.86	U	0.86	0.86	U	0.86	0.86	U	0.86	0.86	U	0.86	0.76	U	0.76	0.86	U	0.86
Carbon disulfide	1.00E+00	1.00E+03	EPA9TAP		0.71	U	0.71	16		0.71	0.71	U	0.71	0.71	U	0.71	12		0.71	0.84	U	0.84	11.7		0.71
Chloromethane (Methyl chloride)	1.50E-03	1.50E+00	EPA9TAP		0.99	U	0.99	0.99	U	0.99	0.99	U	0.99	0.99	U	0.99	0.99	U	0.99	0.77	U	0.77	0.99	U	0.99
Ethylbenzene	7.00E-01	7.00E+02	MCL		0.73	U	0.73	0.73	U	0.73	0.73	U	0.73	0.73	U	0.73	0.73	U	0.73	1.56	U	1.56	0.73	U	0.73
Isopropylbenzene (Cumene)	6.60E-01	6.60E+02	EPA9TAP		0.707	U	0.707	0.707	U	0.707	0.707	U	0.707	NT			0.707	U	0.707	0.78	U	0.78	0.707	U	0.707
m,p-Xylene	1.00E+01	1.00E+04	MCL		0.92	U	0.92	0.92	U	0.92	0.92	U	0.92	0.92	U	0.92	0.92	U	0.92	0.6	U	0.6	0.92	U	0.92
Methylene chloride (Dichloromethane)	4.30E-03	4.30E+00	EPA9TAP		1.45	U	1.45	1.45	U	1.45	1.45	U	1.45	1.45	U	1.45	1.45	U	1.45	0.84	U	0.84	1.45	U	1.45
o-Xylene	1.00E+01	1.00E+04	MCL		0.68	U	0.68	0.68	U	0.68	0.68	U	0.68	0.68	U	0.68	0.68	U	0.68	6.83	U	6.83	0.68	U	0.68
Toluene	7.20E-01	7.20E+02	EPA9TAP		0.47	U	0.47	0.47	U	0.47	0.47	U	0.47	0.47	U	0.47	0.47	U	0.47	1.78	U	1.78	0.47	U	0.47
Methyl tert-butyl ether (MTBE)	1.30E-02	1.30E+01	EPA9TAP		0.97	U	0.97	0.97	U	0.97	0.97	U	0.97	NT			0.97	U	0.97	1.7	U	1.7	0.97	U	0.97
SVOCs (8270)																									
bis(2-Ethylhexyl)phthalate	4.80E-03	4.80E+00	EPA9TAP	ug/L	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8	1.16	U	1.16	9.8	U	9.8
2,2'-oxybis(1-Chloropropane)	2.70E-04	2.70E-01	EPA9TAP		1.47	U	1.47	1.47	U	1.47	1.47	U	1.47	1.47	U	1.47	1.47	U	1.47	14.4		0.71	1.47	U	1.47
SVOCs (8310)																									
Anthracene	1.80E+00	1.80E+03	EPA9TAP	ug/L	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.027	U	0.027	3.69	U	3.69	0.0266	U	0.0266
Fluorene	2.40E-01	2.40E+02	EPA9TAP		0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.054	U	0.054	0.66	U	0.66	0.0532	U	0.0532
Acenaphthylene	-		-		0.31	U	0.31	0.31	U	0.31	0.31	U	0.31	0.31	U	0.31	0.419	U	0.419	0.99	U	0.99	0.412	U	0.412
Inorganics																									
Nitrate/Nitrite	1.00E+00	1.00E+03	MCL/EPA9TAP	mg/L	0.03	U	0.03	0.03	U	0.03	0.798		0.03	0.272		0.03	0.333		0.03	0.87	U	0.87	0.03	U	0.03
Total Cyanide	2.00E-01	2.00E+02	NMED/MCL		0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	2.52	U	2.52	0.004	U	0.004
Chloride	-		-		398		6.6	3090		33	1920		3.3	1130		3.3	5620		33	0.73	U	0.73	5160		33
Fluoride	-		-		7.22		0.05	14.6		1	6.8		0.5	5.2		0.5	0.5	U	0.5	0.707	U	0.707	0.5	U	0.5
Sulfate	-		-		666		5	3710		200	2580		200	2720		200	3210		200	0.92	U	0.92	3120		200
Total Dissolved Solids (TDS)	1.00E+04	1.00E+07	NMED		6950			20			7080			7730			1130			19200			10800		
Metals																									
Arsenic	1.00E-01	1.00E+02	NMED	ug/L	35.9		4.44	55.8		4.44	4.44	U	4.44	27.6		4.44	4.44	U	4.44	0.68	U	0.68	4.44	U	4.44
Chromium	5.00E-02	5.00E+01	NMED		4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	0.215	U	0.215	4.44	U	4.44
Lead	5.00E-02	5.00E+01	NMED		4.42		2.66	2.66	U	2.66	2.66	U	2.66	2.66	U	2.66	2.66	U	2.66	0.47	U	0.47	2.66	U	2.66
Nickel	2.00E-01	2.00E+02	NMED		5.25	U	5.25	5.25	U	5.25	5.25	U	5.25	5.25	U	5.25	5.25	U	5.25	0.82	U	0.82	5.25	U	5.25
Selenium	5.00E-02	5.00E+01	NMED/MCL		4.49	U	4.49	30.5		4.49	13.2		4.49	26.5		4.49	29.4		4.49	0.77	U	0.77	25.4		4.49
Vanadium	2.60E-01	2.60E+02	EPA9TAP		1.55	U	1.55	1.55	U	1.55	1.55	U	1.55	1.55	U	1.55	1.55	U	1.55	0.76	U	0.76	1.55	U	1.55
Zinc	1.00E+01	1.00E+04	NMED		13.7	U	13.7	13.7	U	13.7	13.7	U	13.7	13.7	U	13.7	13.7	U	13.7	0.7	U	0.7	13.7	U	13.7
Iron	1.00E+00	1.00E+03	NMED		1990		18.5	5590		18.5	4370		18.5	22400		18.5	9840		18.5	0.54	U	0.54	7860		18.5
Calcium	-		-		322000		29.2	673000		29.2	508000		29.2	581000		29.2	748000		29.2	NT			709000		29.2
Magnesium	-		-		174000		67.7	186000		67.7	205000		67.7	178000		67.7	262000		67.7	NT			227000		67.7
Manganese	2.00E-01	2.00E+02	NMED		1770		2.91	2790		2.91	1200		2.91	355		2.91	242		2.91	0.75	U	0.75	269		2.91
Potassium	-		-		6380		88.1	16200		88.1	8050		88.1	24400		88.1	82700		88.1	NT			76400		88.1
Sodium	-		-		545000		768	3450000		768	1480000		768	1080000		768	3540000		768	NT			3680000		768

Qualifier Key

Shaded value indicates that the compound was not detected and 1/2 the SQL exceeds the Groundwater Standard.

Shaded value indicates that the detected concentration exceeds the Groundwater Standard.

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the level of the SQL.

J = Estimated: The analyte was detected and identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NMED New Mexico Water Quality Commission Standards, 2002.

MCL Federal/EPA Maximum Contaminant Level (MCL).

EPA9TAP USEPA Region 9 PRGs for tapwater.

Table 14D Evaporation Pond Downgradient Monitor Well Groundwater Data Table

Analyte	Groundwater Standard (mg/L)	Groundwater Standard (ug/L)	Standard Source	ID #	OCD-6			OCD-7AR			OCD-8A			MW-3			MW-4A			MW-5A		
				Date	6/16/2004			6/16/2004			6/15/2004			6/16/2004			6/15/2004			6/15/2004		
					Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
VOCs																						
4-Methyl-2-pentanone (MIBK)	1.60E-01	1.60E+02	EPA9TAP	ug/L	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78
Acetone (2-Propanone, Dimethyl ke	6.10E-01	6.10E+02	EPA9TAP		1.7	U	1.7	16.2		1.7	1.7	U	1.7	1.7	U	1.7	1.7	U	1.7	1.7	U	1.7
Benzene	5.00E-03	5.00E+00	MCL		0.86	U	0.86	0.86	U	0.86	0.86	U	0.86	0.86	U	0.86	0.86	U	0.86	0.86	U	0.86
Carbon disulfide	1.00E+00	1.00E+03	EPA9TAP		9.52		0.71	8.58		0.71	14.2		0.71	8.69		0.71	13.3		0.71	16.8		0.71
Chloromethane (Methyl chloride)	1.50E-03	1.50E+00	EPA9TAP		0.99	U	0.99	0.99	U	0.99	2.12	J	0.99	0.99	U	0.99	0.99	U	0.99	0.99	U	0.99
Ethylbenzene	7.00E-01	7.00E+02	MCL		0.73	U	0.73	0.73	U	0.73	0.73	U	0.73	0.73	U	0.73	3.39	J	0.73	0.73	U	0.73
Isopropylbenzene (Cumene)	6.60E-01	6.60E+02	EPA9TAP		0.707	U	0.707	0.707	U	0.707	0.707	U	0.707	0.707	U	0.707	1.09	J	0.707	0.707	U	0.707
m,p-Xylene	1.00E+01	1.00E+04	MCL		0.92	U	0.92	0.92	U	0.92	0.92	U	0.92	0.92	U	0.92	15.6		0.92	0.92	U	0.92
Methylene chloride (Dichloromethar	4.30E-03	4.30E+00	EPA9TAP		1.45	U	1.45	1.45	U	1.45	1.45	U	1.45	1.45	U	1.45	1.45	U	1.45	1.45	U	1.45
o-Xylene	1.00E+01	1.00E+04	MCL		0.68	U	0.68	0.68	U	0.68	0.68	U	0.68	0.68	U	0.68	11.3		0.68	0.68	U	0.68
Toluene	7.20E-01	7.20E+02	EPA9TAP		0.47	U	0.47	0.47	U	0.47	0.47	U	0.47	0.47	U	0.47	2.01	J	0.47	0.47	U	0.47
Methyl tert-butyl ether (MTBE)	1.30E-02	1.30E+01	EPA9TAP		0.97	U	0.97	3.4	J	0.97	10.1		0.97	0.97	U	0.97	0.97	U	0.97	3.68	J	0.97
SVOCs (8270)																						
bis(2-Ethylhexyl)phthalate	4.80E-03	4.80E+00	EPA9TAP	ug/L	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8	19		9.8	11.1		9.8	9.8	U	9.8
2,2'-oxybis(1-Chloropropane)	2.70E-04	2.70E-01	EPA9TAP		1.47	U	1.47	1.47	U	1.47	1.47	U	1.47	1.47	U	1.47	1.47	U	1.47	1.47	U	1.47
SVOCs (8310)																						
Anthracene	1.80E+00	1.80E+03	EPA9TAP	ug/L	0.02	U	0.02	0.0308	U	0.0308	0.02	U	0.02	0.801		0.02	0.02	U	0.02	0.02	U	0.02
Fluorene	2.40E-01	2.40E+02	EPA9TAP		0.04	U	0.04	0.0616	U	0.0616	0.04	U	0.04	1.39		0.04	2.17		0.04	0.04	U	0.04
Acenaphthylene	-		-		0.31	U	0.31	0.477	U	0.477	0.31	U	0.31	0.31	U	0.31	0.31	U	0.31	0.31	U	0.31
Inorganics																						
Nitrate/Nitrite	1.00E+00	1.00E+03	MCL/EPA9TAP	mg/L	0.03	U	0.03	0.03	U	0.03	0.0839		0.03	0.03	U	0.03	0.203		0.03	0.03	U	0.03
Total Cyanide	2.00E-01	2.00E+02	NMED/MCL		0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	0.0109		0.004
Chloride	-		-		2770		33	1930		3.3	2260		33	1070		3.3	1090		3.3	4810		33
Fluoride	-		-		10.1		0.5	8.3		0.5	7.4		0.5	6.3		0.5	6.3		0.5	15		1
Sulfate	-		-		7160		125	10300		125	3850		200	5670		125	2390		1000	8610		1000
Total Dissolved Solids (TDS)	1.00E+04	1.00E+07	NMED		10400			8180			8470			5890			5090			17400		
Metals																						
Arsenic	1.00E-01	1.00E+02	NMED	ug/L	163		4.44	176		4.44	133		4.44	47.9		4.44	124		4.44	120		4.44
Chromium	5.00E-02	5.00E+01	NMED		4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44
Lead	5.00E-02	5.00E+01	NMED		2.66	U	2.66	2.66	U	2.66	2.66	U	2.66	2.66	U	2.66	2.66	U	2.66	2.66	U	2.66
Nickel	2.00E-01	2.00E+02	NMED		5.25	U	5.25	5.25	U	5.25	5.25	U	5.25	5.25	U	5.25	5.25	U	5.25	5.25	U	5.25
Selenium	5.00E-02	5.00E+01	NMED/MCL		21.4		4.49	24		4.49	40.8		4.49	28.7		4.49	20.3		4.49	26		4.49
Vanadium	2.60E-01	2.60E+02	EPA9TAP		1.55	U	1.55	1.55	U	1.55	1.55	U	1.55	1.55	U	1.55	1.55	U	1.55	1.55	U	1.55
Zinc	1.00E+01	1.00E+04	NMED		13.7	U	13.7	13.7	U	13.7	13.7	U	13.7	13.7	U	13.7	13.7	U	13.7	13.7	U	13.7
Calcium	-		-		640000		292	621000		292	586000		29.2	604000		292	557000		29.2	499000		29.2
Iron	1.00E+00	1.00E+03	NMED		22400		18.5	12200		18.5	7520		18.5	2020		18.5	3300		18.5	10600		18.5
Magnesium	-		-		227000		67.7	222000		67.7	253000		67.7	194000		67.7	144000		67.7	897000		67.7
Manganese	2.00E-01	2.00E+02	NMED		2140		2.91	3820		2.91	3170		2.91	2830		2.91	2430		2.91	1910		2.91
Potassium	-		-		28100		88.1	12500		88.1	16100		88.1	7960		88.1	6240		88.1	21500		88.1
Sodium	-		-		3400000		768	2400000		768	2470000		768	1150000		768	855000		768	5650000		768

Qualifier Key

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NMED New Mexico Water Quality Commission Standards, 2002.

MCL Federal/EPA Maximum Contaminant Level (MCL).

EPA9TAP USEPA Region 9 PRGs for tapwater.

Table 14D Evaporation Pond Downgradient M

Analyte	Groundwater Standard (mg/L)	Groundwater Standard (ug/L)	Standard Source	ID # / Date	MW-6A 6/16/2004			MW-7A 6/15/2004			MW-10 6/17/2004			MW-18A 6/16/2004			MW-19 6/17/2004			MW-22A 6/16/2004		
					Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL	Result	Qualifier	SQL
VOCs																						
4-Methyl-2-pentanone (MIBK)	1.60E-01	1.60E+02	EPA9TAP	ug/L	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78	1.78	U	1.78
Acetone (2-Propanone, Dimethyl ke	6.10E-01	6.10E+02	EPA9TAP		1.7	U	1.7	1.7	U	1.7	1.7	U	1.7	1.7	U	1.7	1.7	U	1.7	22.9		1.7
Benzene	5.00E-03	5.00E+00	MCL		2.21	J	0.86	0.86	U	0.86	0.86	U	0.86	0.86	U	0.86	0.86	U	0.86	0.86	U	0.86
Carbon disulfide	1.00E+00	1.00E+03	EPA9TAP		8.64		0.71	13.2		0.71	0.71	U	0.71	8.54		0.71	0.71	U	0.71	1.7	J	0.71
Chloromethane (Methyl chloride)	1.50E-03	1.50E+00	EPA9TAP		0.99	U	0.99	0.99	U	0.99	0.99	U	0.99	0.99	U	0.99	0.99	U	0.99	0.99	U	0.99
Ethylbenzene	7.00E-01	7.00E+02	MCL		7.28		0.73	0.73	U	0.73	0.73	U	0.73	0.73	U	0.73	0.73	U	0.73	0.73	U	0.73
Isopropylbenzene (Cumene)	6.60E-01	6.60E+02	EPA9TAP		1.35	J	0.707	0.707	U	0.707	0.707	U	0.707	0.707	U	0.707	0.707	U	0.707	0.707	U	0.707
m,p-Xylene	1.00E+01	1.00E+04	MCL		0.92	U	0.92	0.92	U	0.92	0.92	U	0.92	0.92	U	0.92	0.92	U	0.92	0.92	U	0.92
Methylene chloride (Dichloromethar	4.30E-03	4.30E+00	EPA9TAP		1.45	U	1.45	1.45	U	1.45	1.45	U	1.45	1.45	U	1.45	1.45	U	1.45	1.78	J	1.45
o-Xylene	1.00E+01	1.00E+04	MCL		13.4		0.68	0.68	U	0.68	0.68	U	0.68	0.68	U	0.68	0.68	U	0.68	0.68	U	0.68
Toluene	7.20E-01	7.20E+02	EPA9TAP		5.74		0.47	0.47	U	0.47	0.47	U	0.47	0.47	U	0.47	0.47	U	0.47	0.47	U	0.47
Methyl tert-butyl ether (MTBE)	1.30E-02	1.30E+01	EPA9TAP		0.97	U	0.97	6.12		0.97	0.97	U	0.97	0.97	U	0.97	0.97	U	0.97	2.25	J	0.97
SVOCs (8270)																						
bis(2-Ethylhexyl)phthalate	4.80E-03	4.80E+00	EPA9TAP	ug/L	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8	9.8	U	9.8
2,2'-oxybis(1-Chloropropane)	2.70E-04	2.70E-01	EPA9TAP		1.47	U	1.47	1.47	U	1.47	1.47	U	1.47	1.47	U	1.47	1.47	U	1.47	1.47	U	1.47
SVOCs (8310)																						
Anthracene	1.80E+00	1.80E+03	EPA9TAP	ug/L	0.02	U	0.02	0.0334	U	0.0334	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02	0.02	U	0.02
Fluorene	2.40E-01	2.40E+02	EPA9TAP		0.04	U	0.04	0.0668	U	0.0668	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04
Acenaphthylene	-		-		0.31	U	0.31	0.518	U	0.518	0.31	U	0.31	0.31	U	0.31	2.14		0.31	0.31	U	0.31
Inorganics																						
Nitrate/Nitrite	1.00E+00	1.00E+03	MCL/EPA9TAP	mg/L	0.0681		0.03	0.411		0.03	0.596		0.03	0.317		0.03	0.03	U	0.03	0.03	U	0.03
Total Cyanide	2.00E-01	2.00E+02	NMED/MCL		0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	0.004	U	0.004	0.004	U	0.004
Chloride	-		-		823		3.3	2260		33	1180		3.3	7480		33	1000		3.3	16000		33
Fluoride	-		-		5.5		0.5	5.7		0.5	4.8		0.5	1	U	1	5.7		0.5	5.5		0.5
Sulfate	-		-		5200		125	3440		200	3760		125	12900		125	4050		125	5020		125
Total Dissolved Solids (TDS)	1.00E+04	1.00E+07	NMED		4740			7980			4760			18300			4710			5410		
Metals																						
Arsenic	1.00E-01	1.00E+02	NMED	ug/L	12.1		4.44	81.5		4.44	19.7		4.44	4.44	U	4.44	12.2		4.44	118		4.44
Chromium	5.00E-02	5.00E+01	NMED		4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44	4.44	U	4.44
Lead	5.00E-02	5.00E+01	NMED		2.66	U	2.66	2.66	U	2.66	5.69		2.66	6.54		2.66	2.66	U	2.66	2.66	U	2.66
Nickel	2.00E-01	2.00E+02	NMED		5.25	U	5.25	5.25	U	5.25	5.25	U	5.25	5.25	U	5.25	5.25	U	5.25	5.25	U	5.25
Selenium	5.00E-02	5.00E+01	NMED/MCL		29.5		4.49	15.2		4.49	26.1		4.49	50.3		4.49	21.1		4.49	30.6		4.49
Vanadium	2.60E-01	2.60E+02	EPA9TAP		1.55	U	1.55	1.55	U	1.55	1.55	U	1.55	1.55	U	1.55	1.55	U	1.55	1.55	U	1.55
Zinc	1.00E+01	1.00E+04	NMED		13.7	U	13.7	13.7	U	13.7	13.7	U	13.7	39.6		13.7	13.7	U	13.7	13.7	U	13.7
Calcium	-		-		665000		292	390000		29.2	570000		292	762000		292	723000		292	470000		292
Iron	1.00E+00	1.00E+03	NMED		1400		18.5	11200		18.5	8490		18.5	215		18.5	9890		18.5	10900		18.5
Magnesium	-		-		108000		67.7	305000		67.7	129000		67.7	956000		67.7	174000		67.7	144000		67.7
Manganese	2.00E-01	2.00E+02	NMED		700		2.91	524		2.91	1300		2.91	2600		2.91	252		2.91	2720		2.91
Potassium	-		-		2420		88.1	10020		88.1	10800		88.1	89500		88.1	6670		88.1	5250		88.1
Sodium	-		-		765000		768	2120000		768	1290000		768	5130000		768	723000		768	1460000		768

Qualifier Key

Shaded value indicates that the compound was not detected and 1/2 the

Shaded value indicates that the detected concentration exceeds the Gro

U = Not detected: analysis for the analyte was performed , but the analyte was not detected above the

J = Estimated: The analyte was detected and identified. The associated numerical value is the approxima

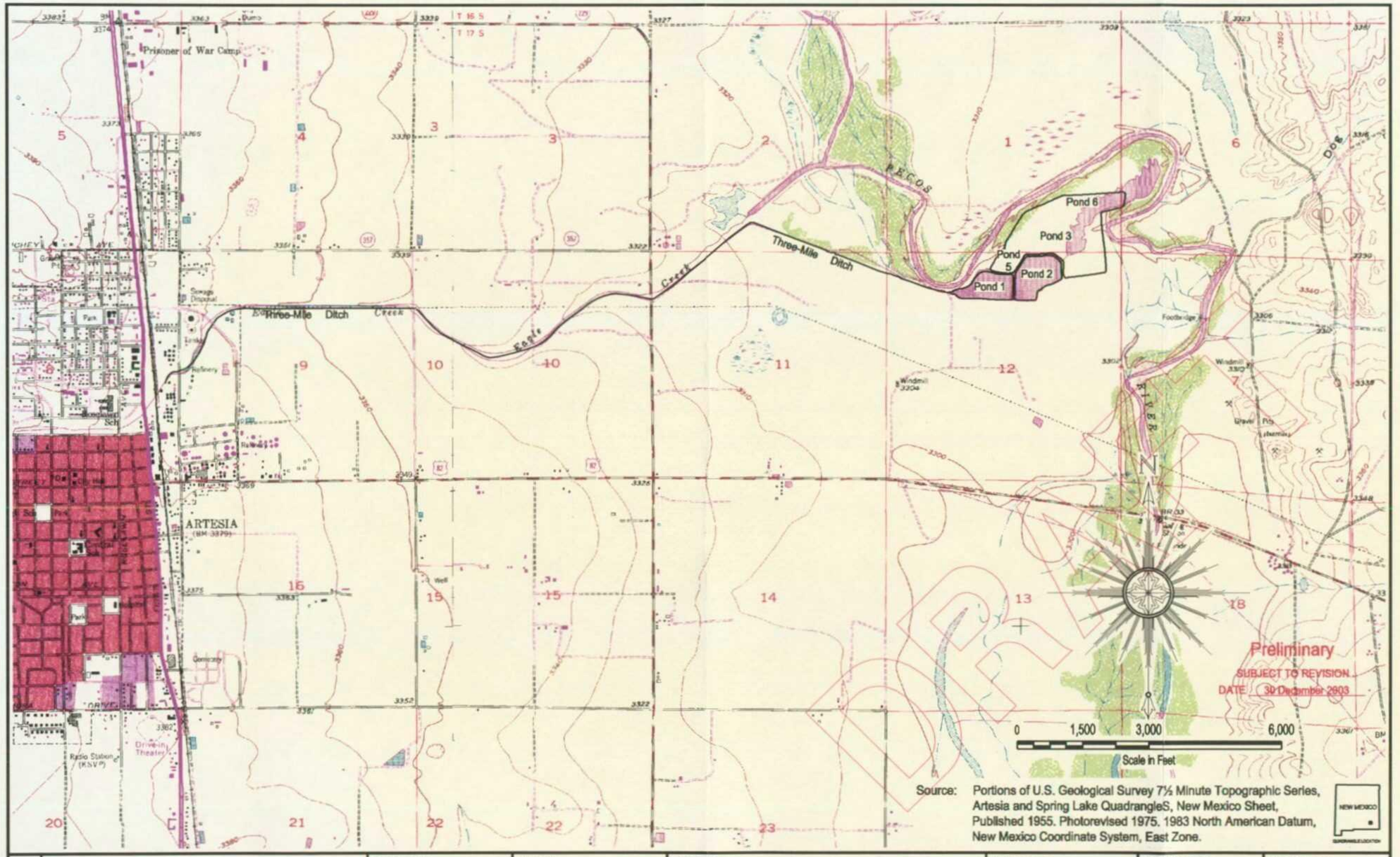
NMED New Mexico Water Quality Commission Standards, 2002.

MCL Federal/EPA Maximum Contaminant Level (MCL).

EPA9TAP USEPA Region 9 PRGs for tapwater.

FIGURES

FIGURES



Source: Portions of U.S. Geological Survey 7½ Minute Topographic Series, Artesia and Spring Lake QuadrangleS, New Mexico Sheet, Published 1955. Photorevised 1975. 1983 North American Datum, New Mexico Coordinate System, East Zone.

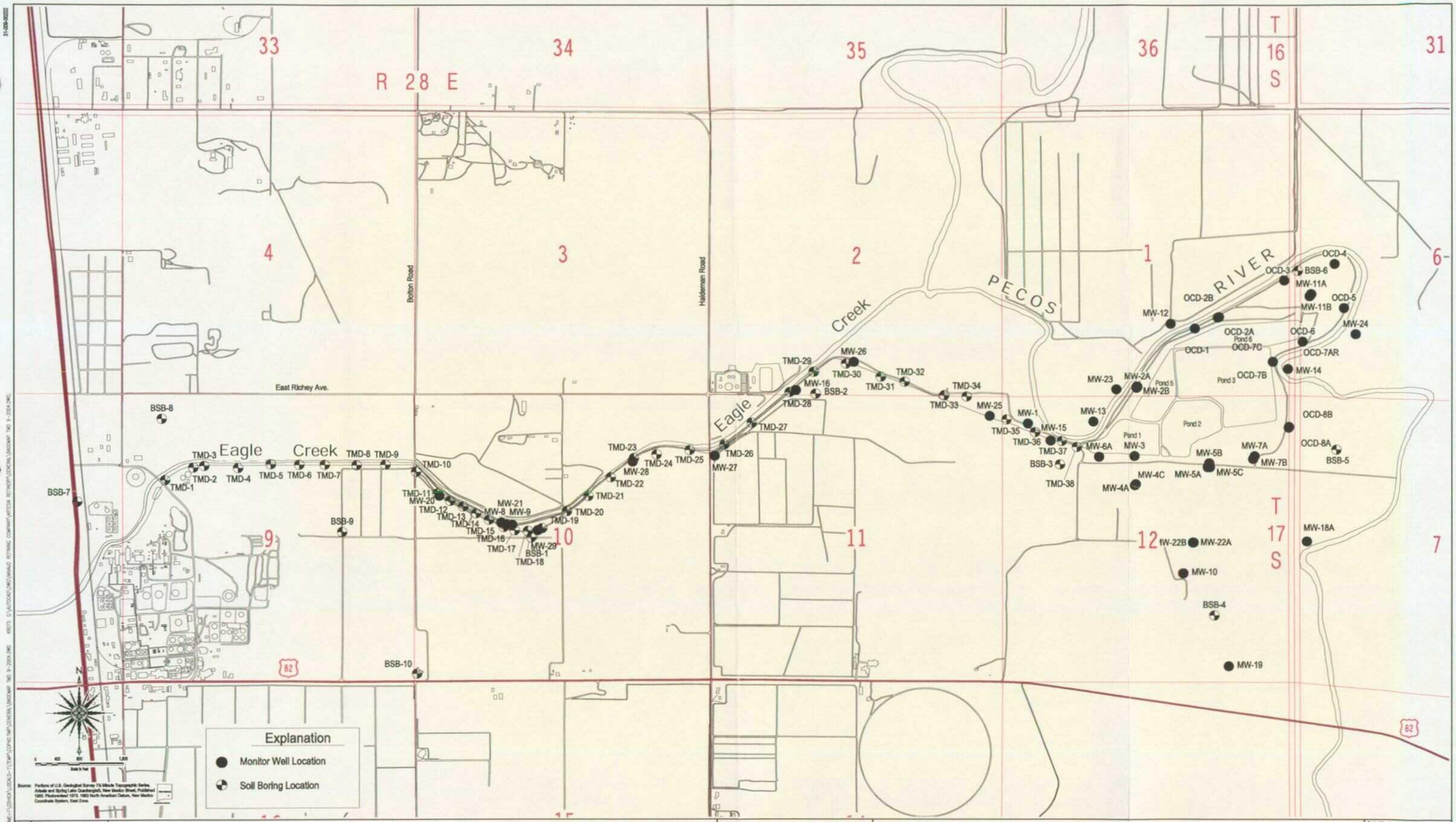
ARCADIS
1004 N. Big Spring Street, Suite 300
Midland, TX 79701-3383
Tel: 432 687 5400 Fax: 432 687 5401

Drawing Date	File Name	File Location	Task Manager	Project Director	Area Manager
23 December 2003	MT820101.dwg	\AutoCAD\DWG\Navajo Refining Company\Artesia Refinery\MT000820.001	S. Hall	S. Hall	A. Schmidt
				Technical Review: S. Tischer	Unique Number: 31-009-00076
				Project Number: MT000820.0001	Figure: 1

Navajo Refining Company
Artesia Refinery Investigation Workplan

Site Location Map

Eddy County, New Mexico



Area Manager	A. Schmidt
Project Manager	S. Hall
Task Manager	R. Lang
Technical Review	S. Tischer

ARCADIS

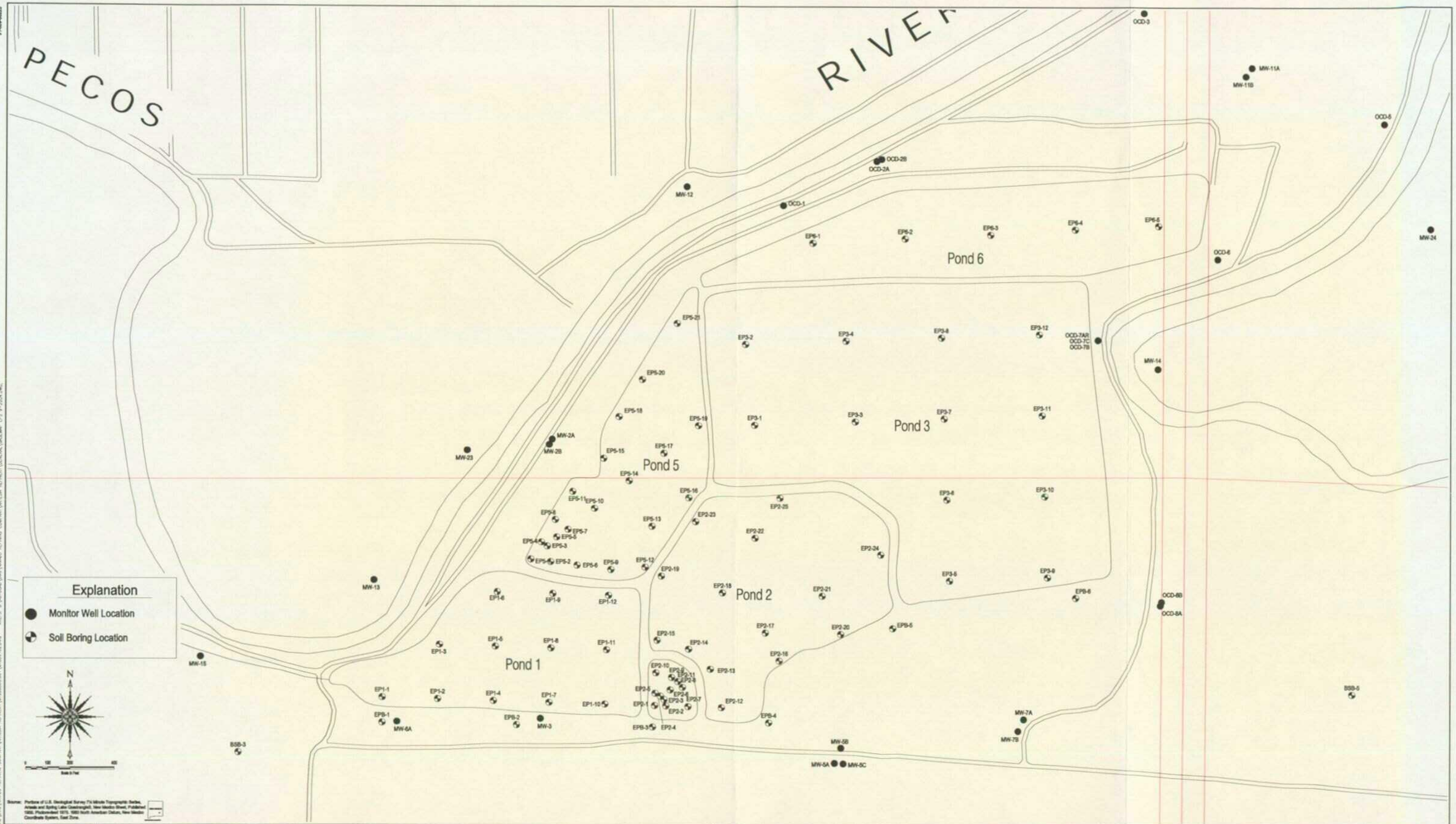
1004 North Big Spring Street
Suite 300
Midland, TX 79701-3363
Tel: 432-687-5400 Fax: 432-687-5401
www.arcadis-us.com

Navajo Refining Company
Artesia Refinery Investigation

Three-Mile Ditch Boring Locations

Artesia, Eddy County, New Mexico

Project Number	MT000839.0001
Date	27 September 2004
Figure	2



Area Manager	A. Schmidt
Project Manager	S. Hall
Task Manager	S. Hall
Technical Review	S. Tischer

ARCADIS

1004 North Big Spring Street
Suite 300
Midland, TX 79701-3383
Tel 432-687-5400 Fax 432-687-5401
www.arcadis-us.com

Navajo Refining Company
Artesia Refinery Investigation

Evaporation Pond Boring Locations

Artesia, Eddy County, New Mexico

Project Number	MT000839.0001
Date	27 September 2004
Figure	3