DEPARTMENT OF THE ARMY
U.S. ARMY GARRISON WHITE SANDS
100 Headquarters Avenue
WHITE SANDS MISSILE RANGE, NEW MEXICO 88002-5000

COPY

JUL 25 2019

Environmental Division

Mr. John Kieling
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Dear Mr. Kieling,

Enclosed for your review is the document titled: *Petition to Perform Class 3 Permit Modification to Change the Status of Solid Waste Management Units 86 & 87 from Corrective Action Required to Corrective action Complete with Controls White Sands Missile Range, New Mexico, July 2019.*

The solid Waste Management Units which are the subject of our request for petition to perform a Class 3 permit moidifcation are:

- SWMU 86 - Main Post Sanitary Landfill
- SWMU 87 - Main Post Construction Landfill

Also enclosed are proof of publications (3 total) for the public notice published on June 10, 2019 in the Las Cruces Sun News, June 11, 2019 in the Alamogordo Daily News and the White Sands Missile Ranger. The 60 day comment period began on June 10, 2019 and ends on August 10, 2019. A public meeting was held on July 2, 2019 at 6:00 pm at the Thomas Branigan Memorial Library in Las Cruces, NM.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, 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."

If you have any questions regarding this matter, please contact Mr. Benito Avalos of our Environmental Compliance Branch at (575) 678-2225.

I am forwarding a copy of this letter with enclosure (1 print copy w/ CD) to Ms. Kristen Van Horn, NMED-HWB; and without enclosure to Mr. Dave Cobrain, NMED-HWB; Ms. Laurie King, EPA Region 6; Mr. Robert Wassserman, ECC; and Mr. Robert Rowden, AEC.

Sincerely,

Deborah J. Hartel for

Brian D. Knight
Chief, Environmental Division

Enclosure

WHITE SANDS MISSILE RANGE ENVIRONMENTAL DOCUMENT

Petition to Perform Class 3 Permit Modification to Change the Status of Solid Waste Management Units 86 & 87 from Corrective Action Required to Corrective Action Complete with Controls

SWMU 86 (WSMR-81) Main Post Sanitary Landfill
SWMU 87 (WSMR-82) Main Post Construction Landfill

July 2019

White Sands Missile Range, New Mexico

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1. REPORT DATE ***(DD-MM-YYYY)***	**2. REPORT TYPE**	**3. DATES COVERED** ***(From - To)***
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4. TITLE AND SUBTITLE	**5a. CONTRACT NUMBER**
Petition to Perform Class 3 Permit Modification to Change the Status of Solid Waste Management Units 86 & 87 from Corrective Action Required to Corrective Action Complete with Controls SWMU 86 (WSMR-81) Main Post Sanitary Landfill SWMU 87 (WSMR-82) Main Post Construction Landfill White Sands Missile Range, New Mexico	W9124J-18-D-0004 **5b. GRANT NUMBER** **5c. PROGRAM ELEMENT NUMBER** CLIN 0009
6. AUTHOR(S) Environmental Chemical Corporation	**5d. PROJECT NUMBER** 5211.001 **5e. TASK NUMBER** 12 **5f. WORK UNIT NUMBER**
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) AND ADDRESS(ES) Environmental Chemical Corporation 9200 Church Street, Suite 305 Manassas, Virginia 20110	**8. PERFORMING ORGANIZATION REPORT NO.**
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Garrison, White Sands Directorate of Public Works, Environmental Division Building 163 Springfield Street White Sands Missile Range, New Mexico 88002 ATTN: IMWS-PWE (Benito Avalos)	**10. SPONSOR/MONITOR'S ACRONYM(S)** **11. SPONSOR/MONITOR'S REPORT NUMBER(S)**

12. DISTRIBUTION / AVAILABILITY STATEMENT

13. SUPPLEMENTARY NOTES

14. ABSTRACT

ECC is requesting from the New Mexico Environment Department (NMED) for the U.S. Army and White Sands Missile Range (WSMR) (Permittee) a Permit Modification to the WSMR RCRA Permit from Corrective Action Required to Corrective Action Complete with Controls for Solid Waste Management Units (SWMUs) 86 and 87. The results from previous investigations completed at the SWMUs indicate SWMUs 86 and 87 have not resulted in an additional environmental impact to the environmental media.

15. SUBJECT TERMS

WSMR, SWMU 86, SWMU 87, Landfill, Main Post Landfill, Construction, Corrective Action Complete, Petition, Permit, Class 3 Modification, NMED, Solid Waste.

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NO. OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
					Benito Avalos
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**	Same as Report (SAR)		**19b. TELEPHONE NUMBER** ***(include area code)***
Unclassified	Unclassified	Unclassified			(575) 678-5359

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	Degrees Fahrenheit
amsl	Above Mean Sea Level
AOC	Area of Concern
bgs	Below Ground Surface
C&D	Construction and Demolition
CAC	Corrective Action Complete
CFR	Code of Federal Regulations
COC	Chemical of Concern
DoD	U.S. Department of Defense
HELP	Hydrologic Evaluation of Landfill Performance
MCL	Maximum Contaminant Level
MEVATEC	MEVATEC Corporation
mg/L	Milligrams per Liter
MPL	Main Post Landfill
MSW	Municipal Solid Waste
MULTIMED	Multimedia Exposure Assessment
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMWQCC	New Mexico Water Quality Control Commission
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RSL	Regional Screening Level
STP	Sewage Treatment Plant
SWB	Solid Waste Bureau
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TDS	Total Dissolved Solids
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound
WSMR	White Sands Missile Range

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1.0 INTRODUCTION

The U.S. Army and White Sands Missile Range (WSMR) (Permittee) is requesting from the New Mexico Environment Department (NMED) a change in status for two Solid Waste Management Units (SWMUs) to Corrective Action Complete (CAC) With Controls in accordance with the New Mexico Hazardous Waste Act (Section 74-4-1 *et seq*., New Mexico Statutes Annotated 1978, as amended, 1992), Title 40, Code of Federal Regulations (CFR), Part 270.42, and 20.4.1 New Mexico Administrative Code (NMAC).

WSMR was issued Hazardous Waste Permit No. NM2750211235 by the U.S. Environmental Protection Agency (USEPA) on October 24, 1989, under the authority of the Resource Conservation and Recovery Act (RCRA), Part B. Before January 1, 1996, USEPA was the Administrative Authority for the permit; on January 1, 1996, NMED became the Administrative Authority. The two SWMUs included in this proposal are listed in the WSMR RCRA Permit (NMED 2009a) and are shown in Figure 1. The two SWMUs include the following:

- SWMU 86 (WSMR-81)
- SWMU 87 (WSMR-82).

The Permittee requests a Class 3 permit modification to the WSMR RCRA Permit to adjust the content of two corrective action tables contained in Permit Appendix 4 (NMED 2009a) that list the status of SWMUs and Areas of Concern (AOCs) at the facility as follows:

- Table 4-1 – SWMUs and AOCs Requiring Corrective Action
- Table 4-2 – SWMUs and AOCs – Corrective Action Complete With Controls.

If the Class 3 permit modification proposal is approved, the two SWMUs would transfer from Table 4-1 to Table 4-2 of the WSMR RCRA Permit (NMED 2009a). Previous characterization and/or remediation of the sites indicates that contaminant concentrations are below risk-based screening action levels designed to be protective of human health. This document complies with 40 CFR 270.42, which stipulates that a specific Class 3 permit modification request be made by WSMR and that supporting documentation be provided with the request. This proposal is submitted in partial fulfillment of requirements for permit modification promulgated in 40 CFR 270.42 and 20.4.1 NMAC. In addition to submitting the petition, in compliance with 40 CFR 270.42 (c) WSMR will:

- Provide public notice within 7 days of submitting the petition and provide evidence of publication
- Conduct a public meeting inviting stakeholder involvement in the CAC decisions no earlier than 15 days after the public notice is published and no later than 15 days before the close of the 60-day comment period
- Place a copy of the permit modification request and supporting documents in a publicly accessible location in the vicinity of WSMR
- Provide the public at least 60 days to comment on the permit modification request, which will begin the day the public notice is published.

As required by the WSMR RCRA Permit (NMED 2009a), analytical results for previous investigations have been compared with the current standards at the time (New Mexico Water Quality Control Commission [NMWQCC] standards [NMWQCC 2002], the USEPA Maximum Contaminant Levels [MCLs] [USEPA 2012] , or the USEPA Region 6 Tapwater Regional Screening Levels [RSLs]

[USEPA 2012]). USEPA Region 6 Tapwater RSLs have been used for constituents that do not have established NMWQCC standards or MCLs, in accordance with the RCRA Permit. The following sections describe the location, history, and land use conditions for each SWMU. A summary of relevant information from previous investigations and a basis for CAC determination for the two SWMUs are presented in Section 2.

1.1 FACILITY DESCRIPTION

WSMR is a U.S. Army Development Test Command Installation that was established in 1945. WSMR is the largest land area military installation in the United States, encompassing approximately 3,200 square miles of land in Doña Ana, Socorro, Lincoln, Otero, and Sierra counties in southcentral New Mexico. The installation is approximately 99 miles long (north to south) and 25 to 40 miles wide (east to west) (WTS 2006). WSMR was established on July 9, 1945, as White Sands Proving Ground (the name was changed in 1958) to be the Nation's testing range for the newly developed missile weapons. The sparse population, almost year-round clear weather, and excellent visibility affording relatively easy recovery of spent missiles contributed to establishing the base in this location.

WSMR is located in the Tularosa Basin of south-central New Mexico, (Figure 1), and portions of WSMR extend west into the Jornada del Muerto Basin. The headquarters (Main Post) area of WSMR is located at the southwestern corner of the installation, approximately 27 miles east northeast of Las Cruces, New Mexico, and 45 miles north of El Paso, Texas. The main entrance to WSMR is on U.S. Highway 70, east from Interstate 25 at Exit 6.

1.2 ENVIRONMENTAL SETTING

1.2.1 Geographic Setting

Topographic relief across WSMR is dominated by two prominent geomorphic features, the San Andres Mountains and the Tularosa Basin. The average elevation of the Tularosa Basin is 4,000 feet above mean sea level (amsl). The San Andres range trends north-south along the western side of the missile range and varies in elevation from 5,700 feet amsl at San Augustin Pass, where Highway 70 crosses the mountains, to more than 9,000 feet amsl at Salinas Peak, the highest point on WSMR.

1.2.2 Climate

The average annual precipitation measured at gauging stations in the Tularosa Basin, southeast of the WSMR Main Post, is 10.8 inches per year. About 50 percent of the annual precipitation falls in July through September in southern New Mexico. The average high temperature in the summer is about 92 degrees Fahrenheit (°F) with the lows reaching 65°F. During the winter months, the average high is about 57°F and the average low is about 36°F. Average annual humidity readings are only 37 percent. Wind is a climatic factor at WSMR from February through May, as westerly winds can reach about 40 miles per hour.

1.2.3 Geology and Soil Types

WSMR lies within the Mexican Highland Section of the Basin and Range Province. This province is characterized by a series of tilted fault blocks forming longitudinal, asymmetric ridges, or mountains, and broad intervening basins. The geology of WSMR consists predominantly of the Tularosa Basin and surrounding mountain ranges. The San Andres, San Augustin, and Oscura mountains border the Tularosa Basin on the west, and the Sacramento Mountains form the eastern border. A narrow region of north-south–trending, large displacement normal faulting separates the mountains from the basin, thus resulting in the change in relief across the missile range. The majority of WSMR property, including most test facilities, is located within the Tularosa Basin (WTS 2006). The Tularosa Basin contains thick sequences of Tertiary- and Quaternary-age alluvial and bolson fill deposits. These sediments, more than 5,000 feet in thickness in

some areas, consist mainly of silt, sand, gypsum, and clay weathered from the surrounding mountain ranges. The average elevation of the basin floor is 4,000 feet amsl, and surface features consist of flat sandy areas, sand dunes, basalt flows, and playas (dry lake beds). The nature of the bolson-fill deposits varies both laterally and vertically throughout the Tularosa Basin. Coarse-grained, poorly sorted sediments deposited near mountain fronts grade into finer-grained, well-sorted sediments toward the center of the basin (Kelly and Hearne 1976).

Sediments farther from the mountain fronts also contain a greater percentage of clay and gypsum. Vertically, the sediments are reported to become finer-grained and more consolidated until reaching a laterally continuous clay unit about 1,000 feet below ground surface (bgs) (Kelly and Hearne 1976). In general, the stratigraphy is represented by unconsolidated to partially consolidated, fine- to medium-grained sand with subordinate amounts of clay. Caliche is present as discrete layers and nodules throughout the stratigraphic section. Although no faults within the basin fill are mapped within the immediate area, Quaternary faulting is known to exist within the region. These faults are reported to occur within the unconsolidated bolson sediments, trend north to south, and are most common near the mountain fronts.

1.2.3.1 Site-Specific Geology

SWMUs 86 and 87 are located on the western side of the Tularosa Basin approximately 3 miles from the Organ Mountains. The Main Post Landfill (MPL) site is located on the distal portion of the alluvial fan extending eastward from the Organ Mountains. The stratigraphy beneath the site has been characterized from stratigraphic descriptions logged during the monitoring well installations in the vicinity of the MPL (MEVATEC 1996). No borings were installed within the MPL/SWMU areas, only around the perimeter. Based on the descriptions, in general, the subsurface is characterized by unconsolidated alluvial material consisting of layers of sand, silt, and clay in various proportions and intermixed with gravel. The stratigraphy is typical for basin fill/alluvial fan depositional cycles. The well installation and boring logs demonstrate that sand is the principal soil type of the top 30 to 75 feet (Shaw 2012). Clay layers exist at multiple locations in the subsurface and may be from 4 to 75 feet in thickness depending on the location.

1.2.4 Hydrogeology

Surface hydrogeology at WSMR is characterized by low precipitation, high evapotranspiration rates, and high soil infiltration. During the summer season, when thunderstorm activity is most common, playas within the basin may contain standing water. The arroyos that drain the surrounding mountain ranges usually contain water only following heavy precipitation events. The Tularosa Basin is a closed basin with no surface water drainage outside of WSMR (WTS 2006).

The WSMR Main Post obtains its potable water supply from an aquifer located in the upper bolson deposits. The majority of groundwater recharge to this aquifer occurs through the coarse, unconsolidated Tertiary/Quaternary alluvial fan deposits and arroyos along the eastern flank of the Organ, San Augustin, and San Andres mountains.

Recharge to the regional aquifer is from precipitation falling on the mountain ranges and alluvial fans, which border the bolson on the west (WTS 2006). This precipitation infiltrates the unconsolidated, relatively coarse deposits of the alluvial fans, and the resultant groundwater flows toward the center of the Tularosa Basin, generally to the east-southeast. To the east, groundwater becomes more mineralized, primarily with sulfate and chloride, most likely due to the slow lateral migration rate of groundwater from recharge to discharge areas in the presence of readily soluble minerals in the bolson sediments. However, groundwater flow direction within the western Tularosa Basin region is presumed to discharge to the south as underflow into the contiguous, northern Hueco Basin of western Texas. No surface expressions of groundwater discharge have been reported within the western Tularosa Basin (WTS 2006).

1.2.4.1 Site-Specific Hydrogeology

Unconsolidated soil layers lie directly beneath the MPL. The site is located on the distal portion of the alluvial fan extending eastward from the Organ Mountains. Sediments consist of varying layers of sand and clay to below the zone of interest, becoming somewhat finer-grained to the east (toward the center of the basin). The depth to the regional aquifer is 180 to 200 feet bgs and groundwater flow direction is to the east-southeast.

1.3 LAND USE

1.3.1 Current Land Use

WSMR is withdrawn public domain land controlled by the U.S. Department of Defense (DoD). For safety and security reasons, access to WSMR is restricted to authorized military and civilian personnel. Residential areas are limited to concentrated tracts at the Main Post and several up range command and control centers. The land on the missile range is predominantly used to stage tests of aerial weapons systems. Although much of the weapons testing occur in the airspace above WSMR, designated support, launch, and impact areas have been established. The SWMUs discussed in this CAC Petition (SWMU 86 and SWMU 87) are located within the facility boundary, which is an industrial setting where public access is restricted by fences and security personnel. SWMUs 86 and 87 are closed landfills with access restricted by perimeter fencing.

1.3.2 Future Land Use

DoD will continue its primary mission at WSMR for the foreseeable future. Public access to the approximately 3,200 square miles of land comprising the missile range will continue to be restricted. SWMU 86 and SWMU 87 will remain within the facility boundary, an industrial setting with public access restricted by fences and security personnel. SWMUs 86 and 87 are closed landfills with access restricted by perimeter fencing.

1.4 SCOPE

This document complies with 40 CFR 270.42, which stipulates that a specific Class 3 permit modification request be made by WSMR and that supporting documentation be provided with the request. This proposal is submitted in partial fulfillment of requirements for permit modification promulgated in 40 CFR 270.42 and 20.4.1 NMAC. In addition to submitting the petition, WSMR will provide public notice within 7 days of its submittal and conduct a public meeting inviting stakeholder involvement in the CAC decisions. As required by Appendix 3 of the WSMR RCRA Permit (NMED 2009a), analytical results have been compared with the NMWQCC standards. The USEPA MCLs and USEPA Region 6 Tapwater RSLs have been used for constituents that do not have established NMWQCC standards.

2.0 SWMU 86 (WSMR-81) – MAIN POST SANITARY LANDFILL AND SWMU 87 (WSMR-82) – MAIN POST CONSTRUCTION LANDFILL

2.1 SITE DESCRIPTION AND OPERATIONAL HISTORY

The MPL site, consisting of SWMUs 86 and 87, was registered with NMED in April 1982 and contained three disposal areas for residential refuse or municipal solid waste (MSW), dead animals, and construction and demolition (C&D) debris. The site is located approximately 3 miles east-southeast of the Main Post Headquarters. The immediate area around the MPL is undeveloped, with the exception of the Scrap Yard (metal recycling) just to the south. The Main Post Sewage Treatment Plant (STP) is located 0.7 miles to the west-southwest. Landfill cell locations and arrangements are presented in Figure 2. The MPL has been in operation since 1983 and covers an area of approximately 82.9 acres, although only 38.6 acres have actually been utilized. The MPL ceased receiving MSW (SWMU 86) in 1996 and no longer accepts C&D waste (SWMU 87). Based on these dates, the MPL qualifies as a Category 3 landfill, as defined in Title 20 NMAC 9.2.7.L(1)(c).

Groundwater monitoring began in 1996 with the installation of four monitoring wells and five quarters of sampling to establish background concentrations. Following development of the background data set, periodic groundwater monitoring has been conducted since 2000. Depth to groundwater in the area of the MPL is approximately 180 to 200 feet bgs. Monitoring for methane, previously conducted on a quarterly basis with no detections of methane, had been suspended, but was restarted in 2010. Based on prior documentation, the trench method of landfilling was used for most disposal areas within the MPL. Trenches were excavated, waste materials (MSW or C&D) were placed within the unlined cells, and the waste was covered with soil per the regulations (Title 20 NMAC 9.5.8 through 9.5.10). Measurement of affected areas relied on historical documents, consisting of the topographic survey prepared by Robert Pounds in 1991 and the geophysical survey performed by Blackhawk Geometrics, Inc. in 1999. Depths of disposal cells are reported to be 25 to 35 feet bgs (Radian 1995). The past disposal cell locations (MSW and C&D) are provided in Figure 2 along with the limits of the recently closed (soil cap) SWMUs.

MSW from WSMR offices and base housing was deposited from 1983 through 1996. Material accepted included household waste from 850 residences, office waste, and green waste. According to the prior closure plan (WTS 2008), MSW was placed into 12 disposal cells situated along the southern portion of the MPL with an estimated volume of 378,400 cubic yards. C&D debris has been placed into trenches north and east of the MSW area with an estimated volume for the closed cells of 269,500 cubic yards. Material accepted is typical of C&D waste and consists of concrete, brick, wood, stone, and soil.

The MPL (SWMU 86) and the Construction Landfill (SWMU 87) were closed in 2011 in accordance with NMED Solid Waste Bureau (SWB) requirements (NMED 2011). Current cover thickness per the cap design is at least 30 inches of native soil and 6 inches of erosion control layer capable of supporting vegetation.

2.2 PREVIOUS SITE INVESTIGATIONS

Previous investigations conducted at SWMUs 86 and 87 are summarized in this section. The historical documents referenced in this section, including MEVATEC (1995), MEVATEC (1996), and MEVATEC (1997), were provided to NMED Administrative Record with the RCRA Facility Investigation (RFI) Work Plan for SWMUs 86 and 87 on February 14, 2012 (WSMR 2012).

In 1993, WSMR drilled 15 soil borings around the perimeter of the MPL. Two of the borings were drilled to a maximum depth of 141.5 feet bgs. Information from the soil boring logs indicate that the geology in the vicinity of the MPL is characterized as interbedded sand and silty sand with caliche. Silty and sandy clays were noted from depths of 60 to 65 feet bgs along the southwestern border of the landfill. No

indication of soil moisture or groundwater saturation was noted in the boring logs. This information was presented with the RFI Work Plan for SWMUs 86 and 87 on February 14, 2012 (WSMR 2012) for NMED review with the acknowledgement that the source document from 1993 (Geological Report for Preliminary Site Assessment at Main Post Landfill by Tierra Engineering) was unavailable.

2.2.1 Demonstration for Groundwater Monitoring Suspension Request – 1995

In 1995, WSMR prepared a study titled, Demonstration for Groundwater Monitoring Suspension Request, Main Post Landfill, White Sands Missile Range (MEVATEC 1995), in response to new regulations imposed by USEPA and NMED for changes in solid waste management practices. The results of the study demonstrated that no potential exists for groundwater to be contaminated by constituents discharged from the MPL (MEVATEC 1995). Geological and hydrogeological information for the MPL were collected, evaluated, and input into two computer models. The HELP (Hydrologic Evaluation of Landfill Performance) and MULTIMED (Multimedia Exposure Assessment) computer models indicate that no potential exists for contamination of the groundwater beneath the MPL. These findings demonstrated that no migration of hazardous constituents can occur from the MPL to the uppermost aquifer during the post-closure care period of 30 years.

2.2.2 Groundwater Monitoring – 1996 to 1997

Four groundwater monitoring wells (MPL-01 through MPL-04) were installed by WSMR at the perimeter of the MPL during May and June 1996 (MEVATEC 1996). The four groundwater monitoring wells were installed and sampled per the Main Post Landfill Background Monitoring Plan (Radian 1995). One well (MPL-01) was installed upgradient of the MPL, and three wells (MPL-02, MPL-03, and MPL-04) were installed downgradient from the site. The purpose of these monitoring wells was to establish and monitor the physical and chemical parameters of groundwater in the vicinity of the MPL.

Groundwater monitoring at the MPL was completed within the first 12 months following monitoring well installation. The program involved the collection and analysis of five independent groundwater samples from each well. Four samples were collected within the first 6 months following installation, and the fifth was collected approximately 3 months later in February 1997. No volatile organic compounds (VOC), semivolatile organic compounds, polychlorinated biphenyls, or phenols were detected in samples from the four groundwater monitoring wells during any of the five groundwater sampling events.

All reported concentrations of metals in groundwater samples were below NMWQCC standards. One hazardous groundwater constituent, total cyanide, was detected in groundwater samples from the MPL in June 1996. All individual total cyanide concentrations reported during the sampling events for each well exceeded the NMWQCC standard (0.2 milligrams per liter [mg/L]) and USEPA MCL (0.2 mg/L) for total cyanide. The highest concentrations of total cyanide were consistently reported in samples from monitoring wells MPL-03 and MPL-04 (MEVATEC 1997). The higher concentrations of total cyanide appeared to be associated with the higher detected concentrations of total dissolved solids (TDS), sulfate, chloride, and nitrate in these two wells. Additional groundwater studies were recommended to delineate the plume, determine the source area, and evaluate contaminant migration pathways (MEVATEC 1997).

2.2.3 Groundwater Contamination Delineation Study – 1997

In 1997, WSMR conducted a delineation study to provide additional hydrologic information regarding the possible source area and extent of cyanide contamination first identified during the MPL groundwater monitoring event in June 1996. To supplement the existing groundwater data, six additional monitoring wells, MPL-05 through MPL-10, were installed both upgradient of and downgradient from the MPL. Groundwater samples were collected from the new wells, existing monitoring wells, and WSMR test wells. These wells are located upgradient of and downgradient from the MPL, and upgradient of and downgradient from the WSMR former STP effluent drainage ditches (SWMU 82). From 1958 to 1986, sewage effluent from the STP was discharged to the two surface drainage ditches that channeled effluent

to impoundment areas, which acted as evaporation and percolation beds. The MPL is situated near the former effluent impoundment areas (MEVATEC 1997). The results of the groundwater contamination delineation study indicated that the highest total cyanide, TDS, chloride, sulfate, and nitrate concentrations were detected in groundwater samples from beneath the southern boundary of the MPL, east-southeast of the former effluent impoundment areas, primarily in the vicinity of monitoring wells MPL-04 and MPL-07 (Figure 2).

The nature and distribution of the cyanide and other groundwater constituents suggest that the former effluent drainage and impoundment areas represented the source of the groundwater contamination rather than leachate from the MPL (MEVATEC 1997). The distribution of these constituents (upgradient of and downgradient from the source area) also confirms the presence of a former groundwater rise or mound, which originated in the vadose zone from the large volume of effluent discharged to the ponding area. While there may have been some downward percolation occurring from the drainage ditches, it appears most of the effluent percolated downward and outward from the impoundment areas and through the fine-grained sediments of the vadose zone before reaching the upper portion of the aquifer. The analytical data for samples from monitoring wells MPL-04 and MPL-07, located near the impoundment areas, support this conclusion (MEVATEC 1997). This eliminated the MPL as the source for cyanide contamination in the area.

2.2.4 Current Groundwater Monitoring

WSMR continued to submit annual groundwater monitoring reports to the NMED Hazardous Waste Bureau through 2007. Based on NMED correspondence to WSMR, dated December 8, 2006 (NMED 2006), "if VOCs are not detected, the Permittee may discontinue sampling for VOCs during subsequent groundwater sampling events." The requested VOC analyses were performed during the February/March and July/August 2007 events. No VOCs were detected in samples from any of the groundwater monitoring wells during either sampling event. Accordingly, WSMR discontinued VOC sampling and analysis as of the December 2007 and subsequent events. VOCs are no longer considered potential chemicals of concern (COCs) at the MPL.

Appendix A contains updated water quality data, which are presented in individual tables for each available well, for the various monitoring wells from approximately 2001 through 2012. The MPL site is monitored for the STP ditches (SWMU 82. The summary for 2006, 2007, and 2011 determined there has been little change in water quality in the general area and the only COC is cyanide, which is a remnant of the STP ditches, not a contribution from the SWMU 86 and SWMU 87 landfills. There have been no other metals or VOC contaminants, and there are no data from the previous investigations to indicate that dioxins/furans, perchlorate, or explosives are an issue.

2.2.5 Closure Status

In December 2008, WSMR submitted a Closure and Post-Closure Care Plan for the Municipal and Asbestos Areas of the Main Post Landfill to the NMED SWB (WTS 2008). The Municipal Main Post Landfill Closure and Post-Closure Care Plan included both SWMU 86 (the municipal landfill) and SWMU 87 (the construction landfill). The NMED SWB responded in November 2009 with its approval of the MPL Closure and Post-Closure Care Plan (NMED 2009b). The conditions of the approval included the following:

- Monitor for methane on an annual basis.
- Perform groundwater monitoring of the four monitoring wells (MPL-01, MPL-02, MPL-03, and MPL-04) on an annual basis unless otherwise required by the NMED SWB. Submit groundwater reports to the SWB within 90 days of the sampling date. Notify the NMED SWB of any groundwater exceedances as specified in the Solid Waste Rules.

- Routinely monitor and repair as necessary any erosion of the final cover, including subsidence and settlement areas on the top and side slopes.
- Maintain the integrity of fencing around the site.
- Submit annual monitoring reports to the NMED SWB within 45 days of the end of each calendar year unless an exceedance is noted, and then report it in accordance with the Solid Waste Rules.
- Within 60 days of closure completion, submit a closure report to include a summary of closure activities and certification by a registered New Mexico professional engineer that the closure has been completed and all conditions of the approved plan have been satisfied.

In October 2010, WSMR issued a contract for the closure of the landfill areas in accordance with the Closure and Post-Closure Care Plan (WTS 2008). The final work plan for the closure of the main post landfill and asbestos landfill, describing landfill cap construction and quality control, was issued in October 2010 (CH2M 2010). The landfill cover was completed in March 2011 followed by the Completion Report (CH2M Hill 2011) and NMED SWB approval (Appendix B) (NMED 2011). Methane surveys along the perimeter of the area were completed for the site. Results from surveys in 2007 and 2010 through 2012 are provided in Appendix C. All results indicate no methane generation. Current and previous data to date indicate no impact from SWMUs 86 and 87 to the surrounding area environmental elements (soil, groundwater, and air) other than the cyanide impact from the STP (SWMU 82).

2.2.6 RCRA Facility Investigation

The RFI consisted of sampling seven existing groundwater monitoring wells (MPL-01, MPL-02, MPL-03, MPL-04, MPL-06, MPL-19, and MPL-20) twice between June 2012 and January 2013 and performing a methane gas survey along the perimeter of the landfill areas per the June 19, 2012, NMED approval letter with modifications (NMED 2012). Methane gas sampling locations are shown in Figure 3. The RFI was conducted in accordance with the NMED-approved RFI Work Plan (Shaw 2012). The groundwater samples were analyzed for target analyte list (TAL) metals, VOCs, nitrate/nitrites, cyanide, alkalinity, sulfate, and water quality parameters. The RFI groundwater sampling results are provided in Appendix D. The potentiometric surface map is presented in Figure 4.

The RFI methane survey data indicate that methane is not present along the perimeter of the landfill at SWMUs 86 and 87. The data from November 30, 2012, compare favorably with the previous methane surveys conducted in 2011, 2010, and 2007 (Appendix C). Nitrate/nitrite, amenable cyanide, and total cyanide concentrations were indicated above NMWQCC standards in the groundwater samples, but none of the other constituents exceeded the NMWQCC standards (NMWQCC 2002). Nitrate/nitrite (as nitrogen) was detected in one sample and an unrelated field duplicate sample at concentrations of 14.4 and 11.4 mg/L, respectively, above the NMWQCC standard of 10 mg/L. The amenable cyanide and total cyanide concentrations in monitoring wells MPL-01, MPL-02, MPL-03, MPL-04, and MPL-20 are due to past practices at the STP Percolation Ditches (SWMU 82) and not from the past operation at SWMUs 86 and 87. The cyanide is being addressed under the SWMU 82 Closure and Post-Closure Care efforts (Shaw 2011). No other constituents were above NMWQCC limits.

2.3 CONCLUSIONS

The results of the RFI (Shaw 2014), in conjunction with data obtained during previous investigations, were used to determine whether COCs have been released within the site boundary and to evaluate the extent of impacts to each medium (e.g., soil and groundwater) adjacent to SWMUs 86 and 87. The results of the RFI field activities provide the following conclusions:

- The methane soil gas survey did not indicate the presence of methane in any of the 28 sampling points indicated in Figure 3. Methane is not being generated by the inactive landfills and is not impacting the surrounding area.
- The data from the 2012/2013 groundwater sampling program confirm the previously reported groundwater data for SMWUs 86 and 87. The 2012/2013 data indicate exceedances of NMWQCC standards (NMWQCC 2002) for cyanide and amenable cyanide, and two sample detections of nitrate/nitrites. The cyanide and amenable cyanide exceedances were recorded in both upgradient well MPL-01 and downgradient wells. The elevated cyanide and amenable cyanide concentrations are due to the previous discharges from the STP Percolation Ditches (SWMU 82) and are being monitored under that site. Nitrate/nitrite (as nitrogen) was detected in one sample and an unrelated field duplicate sample at concentrations of 14.4 and 11.4 mg/L, respectively, above the NMWQCC standard of 10 mg/L.
- The 2012/2013 groundwater data do not indicate the presence of sulfates, TAL metals, target compound list VOCs, or alkalinity. Other than the groundwater impact from SMWU 82, the closed inactive landfills, SWMUs 86 and 87, have not impacted the local groundwater.
- The groundwater data indicate that the inactive landfills, SWMUs 86 and 87, have not resulted in an additional environmental impact, separate from SWMU 82, to the environmental media.

2.4 RECOMMENDATION FOR CORRECTIVE ACTION COMPLETE WITH CONTROLS FOR SWMU 86 AND SWMU 87

Based on the results of the RFI, no further action at SWMU 86 and SWMU 87 was approved with modifications by NMED Hazardous Waste Bureau (Appendix E) (NMED 2014). The modifications will be addressed via continued monitoring and inspection activities for SWMUs 86 and 87:

- Groundwater monitoring of the four wells associated with SWMU 86 and SWMU 87 (MPL-01, MPL-02, MPL-03, and MPL-04) will continue under the SWMU 82 Post-Closure Care Monitoring Program.
- Groundwater monitoring of wells MPL-03 and MPL-06 for nitrate/nitrite will continue under the SWMU 82 Post-Closure Monitoring. The Annual Monitoring Report for SWMU 86 and SWMU 87 will be submitted to NMED separate from the SWMU 82 Post-Closure Monitoring Report. If exceedances of nitrate/nitrite continue, additional wells will be installed downgradient from MPL-06. If additional wells are installed downgradient from MPL-06, monitoring of the wells will continue through the closure/post-closure expiration date of June 15, 2041, per the NMED closure/post-closure approval notification (Appendix B), or until there are no exceedances of nitrate/nitrite.
- SWMUs 86 and 87 will continue to comply with the monitoring and inspection requirements of the NMED SWB approved Post-Closure Care Plan.

WSMR requests NMED approval of a Class 3 permit modification to transfer SWMU 86 and SWMU 87 from Table 4-1 (Corrective Action Required) to Table 4-2 (Corrective Action Complete With Controls) of the WSMR RCRA Permit (NMED 2009a).

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FIGURES

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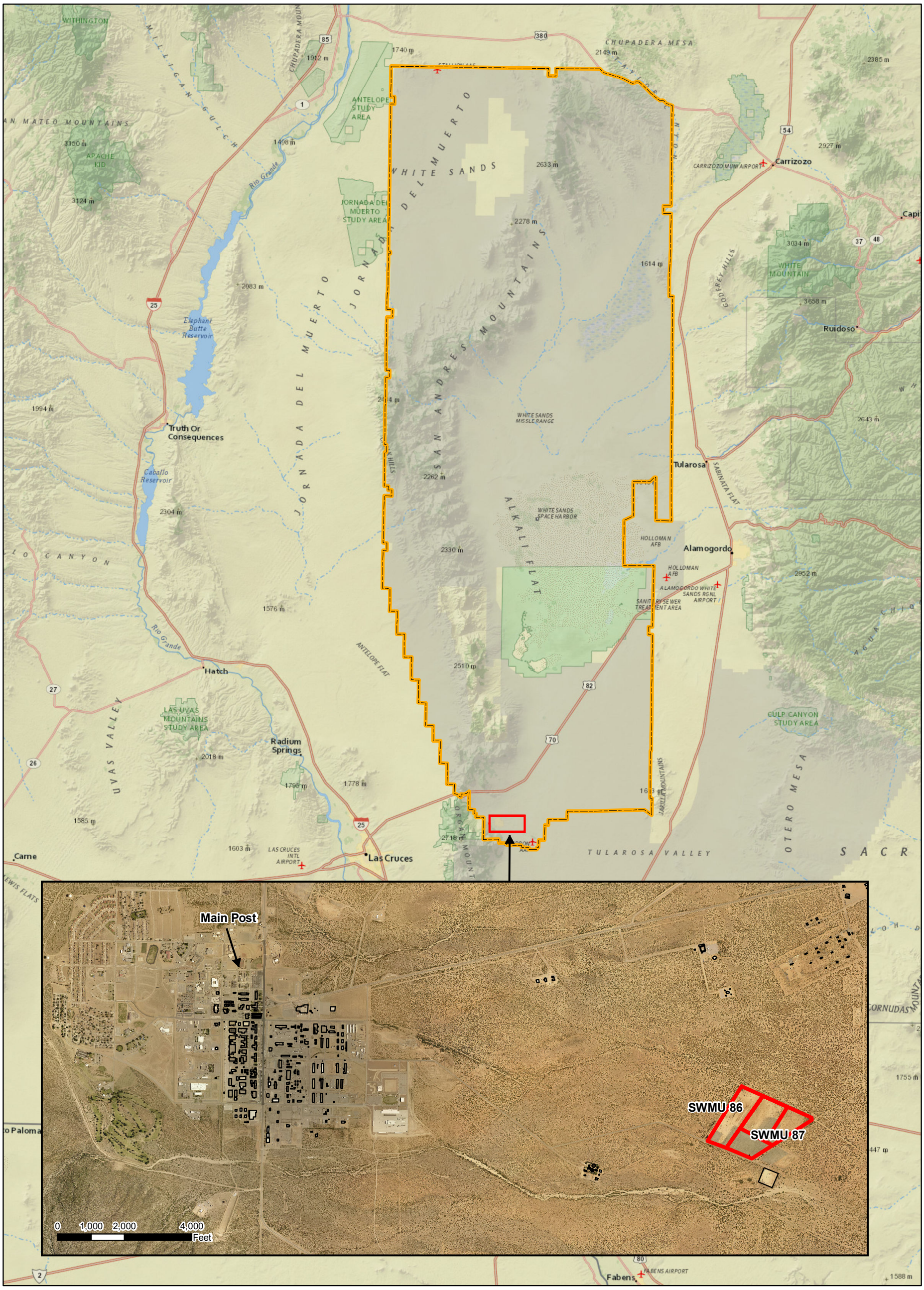

LEGEND:

- Site Boundary
- WSMR Installation Boundary
- Building

NOTES:

1. Background aerial imagery and building, road, and site boundary data layers were provided by WSMR.
2. Main basemap source: ESRI National Geographic World Map.

0 5 10 20 Miles

WHITE SANDS MISSILE RANGE
NEW MEXICO

SWMU 86 (WSMR 81) AND
SWMU 87 (WSMR 82)
SITE LOCATION

FIGURE: 1	DATE: 11/1/2018

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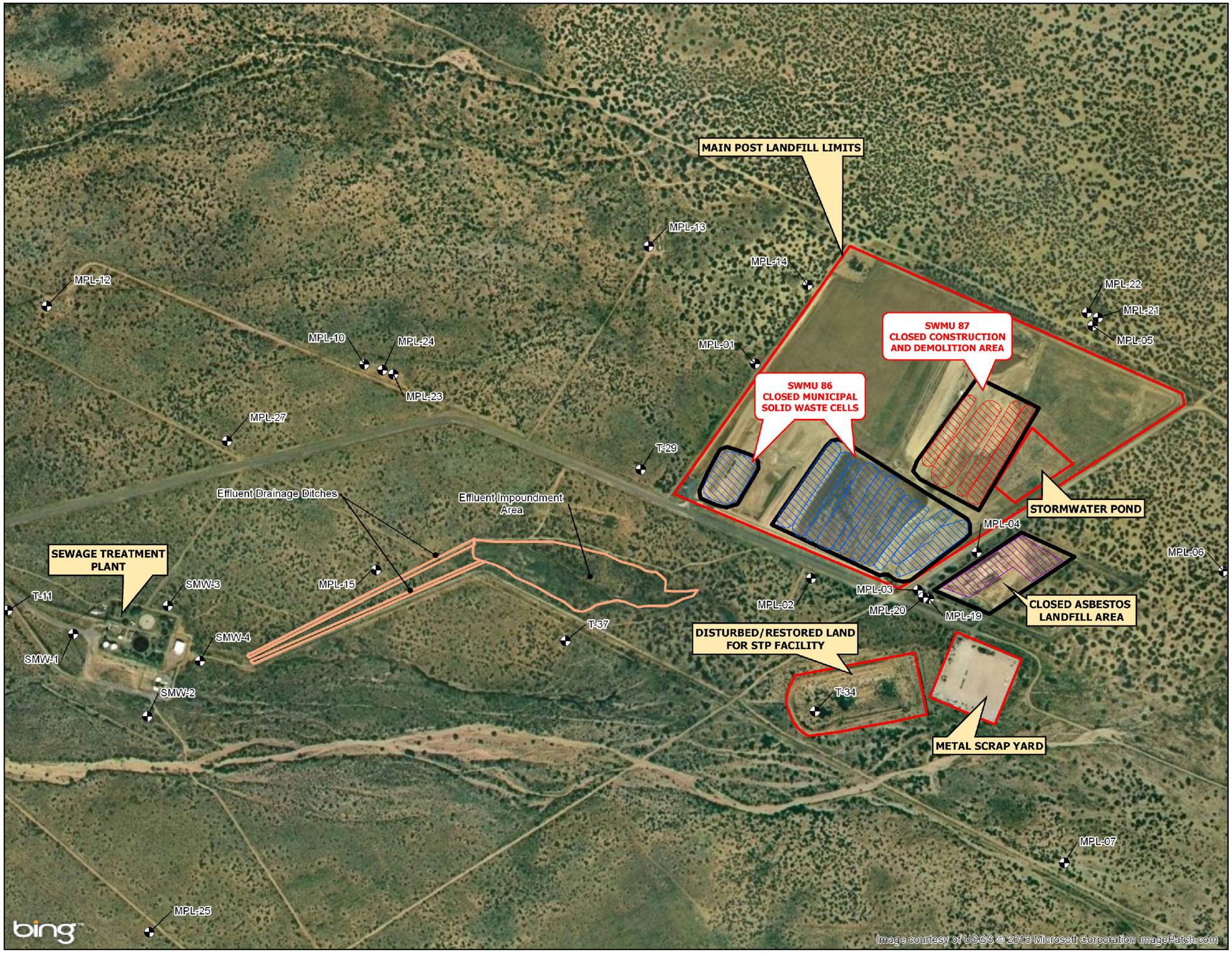

LEGEND:

- Groundwater Monitoring Well Location
- Approximate Areas of Landfill Closure (CH2M Hill, 2011)
- Approximate Location of Former Solid Waste Cells
- Approximate Location of Former Construction Debris Cells
- Approximate Location of Former Asbestos Cell
- Other Land Use Areas
- Effluent Drainage Ditches/ Impoundment Area (SWMU 82)

NOTES:

1. Adapted from Figure 2-2 of the RCRA Facility Investigation Report SWMUs 86 and 87, Main Post Sanitary and Construction Landfills (April 2014).

RCRA = Resource Conservation and Recovery Act
RFI = RCRA Facility Investigation
STP = Sewage Treatment Plant
SWMU = Solid Waste Management Unit
WSMR = White Sands Missile Range

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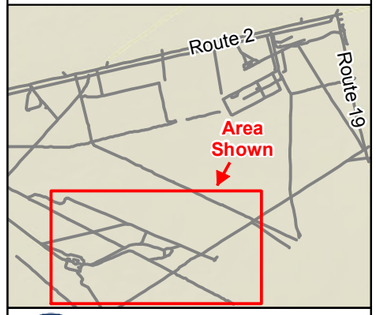

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WHITE SANDS MISSILE RANGE
NEW MEXICO

SITE LOCATION FOR
SWMU 86 (WSMR 81) AND
SWMU 87 (WSMR 82)
MAIN POST SANITARY LANDFILL
AND CONSTRUCTION LANDFILL

FIGURE: 2 | DATE: 11/1/2018

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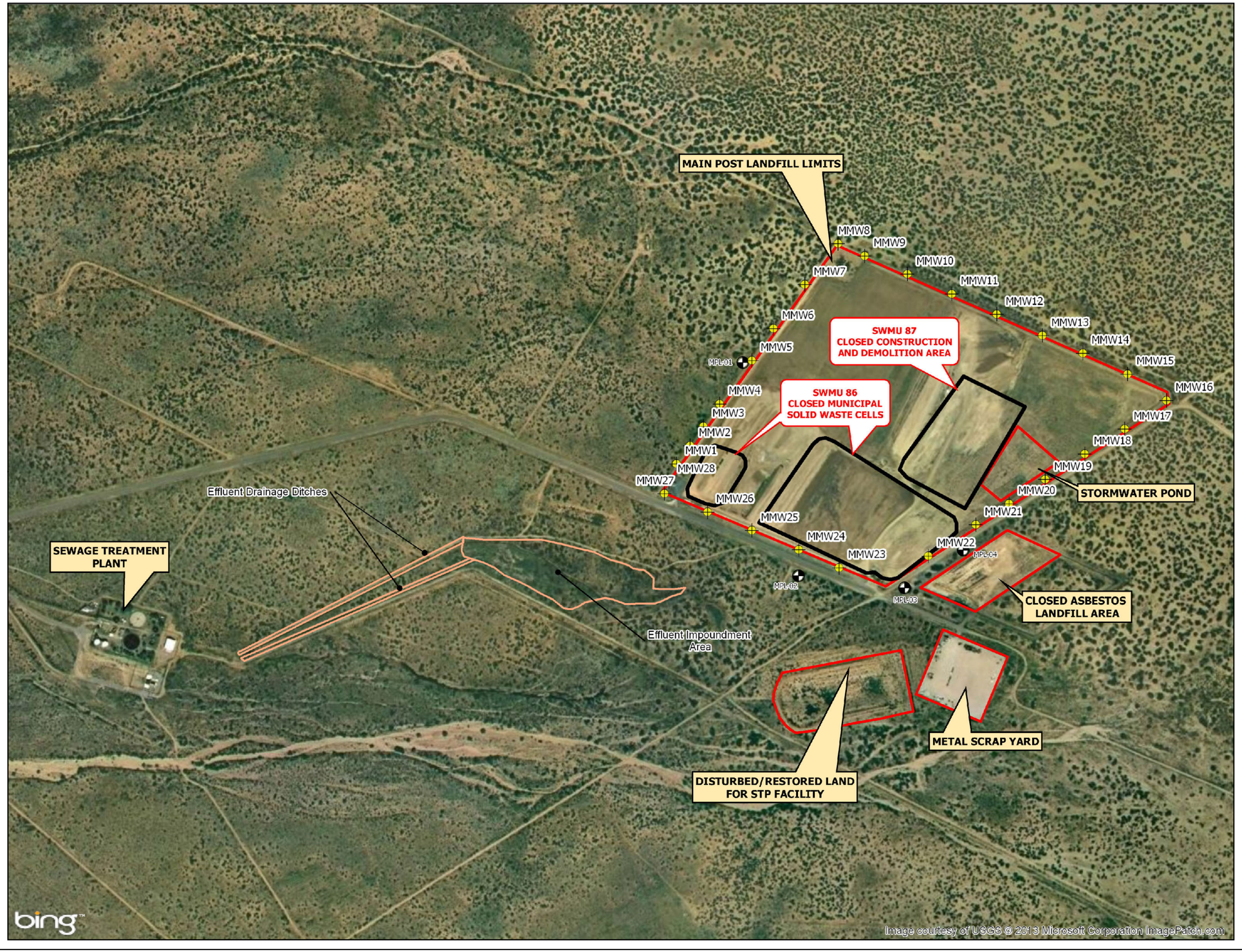

LEGEND:

- Groundwater Monitoring Well Location
- Methane Survey Location
- SWMU's 86 and 87
- Effluent Drainage Ditches/ Impoundment Area (SWMU 82)
- Other Land Use Areas

NOTES:

1. Adapted from Figure 6-1 of the RCRA Facility Investigation Report SWMUs 86 and 87, Main Post Sanitary and Construction Landfills (April 2014).

RCRA = Resource Conservation and Recovery Act
RFI = RCRA Facility Investigation
SWMU = Solid Waste Management Unit
WSMR = White Sands Missile Range

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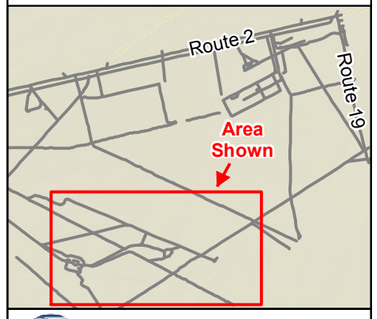

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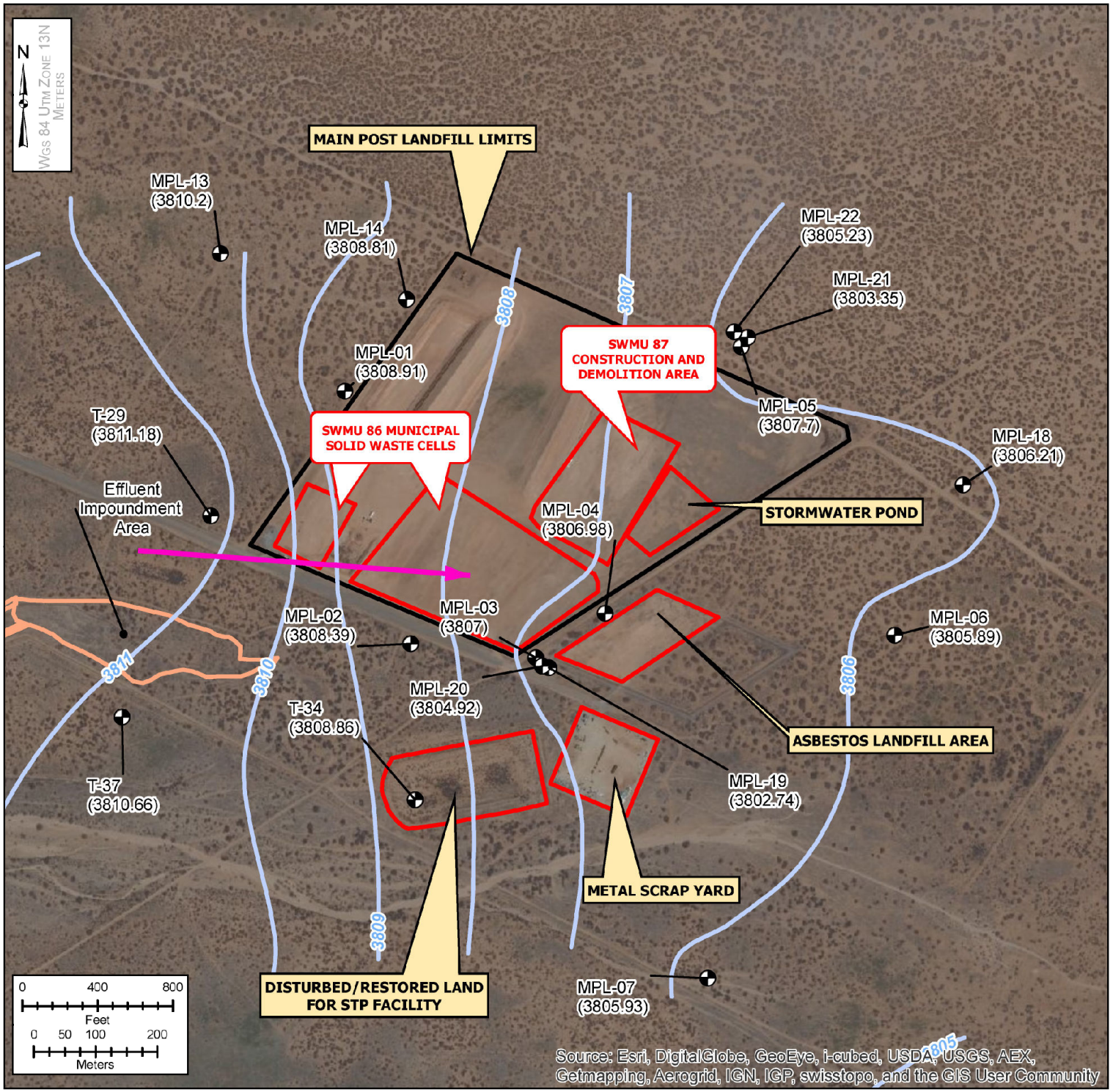
WHITE SANDS MISSILE RANGE
NEW MEXICO

METHANE GAS SAMPLING LOCATIONS
SWMU 86 (WSMR 81) AND
SWMU 87 (WSMR 82)
MAIN POST SANITARY LANDFILL
AND CONSTRUCTION LANDFILL

FIGURE: 3	DATE: 11/1/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-81-82\Figure_3_WSMR_81and82_Methane_Gas_Sampling_Locations_11x17.mxd



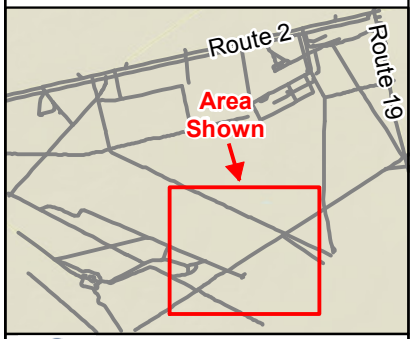
LEGEND:

- MPL-11 (3877.56) — Groundwater Monitoring Well Location (Groundwater Elevation in Feet AMSL, November 2012)
- Effluent Drainage Ditches/ Impoundment Area (SWMU 82)
- Landfills and Other Disturbed Areas
- Main Post Landfill Limits Before Cover
- Groundwater Elevation Contours (1-foot intervals)
- Groundwater Flow Direction

NOTES:

1. Adapted from Figure 6-2 of the RCRA Facility Investigation Report SWMUs 86 and 87, Main Post Sanitary and Construction Landfills (April 2014).
2. Wells MPL-19, MPL-21, MPL-23, and T-11 were not included in the potentiometric surface model.

AMSL = Above Mean Sea Level
RCRA = Resource Conservation and Recovery Act
RFI = RCRA Facility Investigation
SWMU = Solid Waste Management Unit
WSMR = White Sands Missile Range



WHITE SANDS MISSILE RANGE
NEW MEXICO

POTENTIOMETRIC SURFACE MAP
SWMU 86 (WSMR 81) AND
SWMU 87 (WSMR 82)
MAIN POST SANITARY LANDFILL
AND CONSTRUCTION LANDFILL

FIGURE: 4 | DATE: 11/1/2018

PROJECT: \WSMR\Projects\CAC_Petition_WSMR-81-82\Figure_4_WSMR_81and82_Potentiometric_Surface_Map.mxd

APPENDIX A

GROUNDWATER RESULTS (2001-2012)

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Groundwater analysis for well MPL-01 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method	Reference Method December 2012	Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Water Level	Elevation	ft amsl				3811.62	3811.46	3811.67	3811.18	3811.29	3810.89	*NR*	3810.39	3810.46	3810.29	3810.26	3810.03	3810.19	3809.75	3807.31	3807.15	3807.16	3807.08	3806.8	3808.91
Cyanide	Amenable Cyanide	mg/L	SW846-9010B	SM4500-CN-C, G	0.2 mg/L[a]	0.062	0.052	0.023	ND	0.0541	0.11	21.6 ?	0.0892	0.224	0.022	0.214	ND	0.193	0.248	0.0649	0.239	0.211	0.15	0.201	0.221
	Total Cyanide	mg/L		9014-9010C		0.199	0.208	0.12	0.161	0.173	0.242	46.6 ?	0.169	0.253	0.23	0.25	0.221	0.204	0.248	0.229	0.236	0.21	0.162	0.2	0.222
	Free Cyanide	mg/L		SM4500-CN-I		ND	0.03	ND	ND	0.03	0.02	0.018	ND	ND	0.039	0.029	Lab error	ND	ND	0.025			0.0298	0.0162	0.0327
Dissolved ions	Chloride	mg/L	EPA 300.0	EPA 300.0	250 mg/L[a]	34	26	32	32.2	31.7	31.4	0.118	29	32.1	31.4	32	31.1	34.3	32	34.1	35	19.7	33.5	34	39.5
	Fluoride	mg/L			1.6 mg/L[a]	ND	0.31	0.27	ND	ND	ND	ND	0.35	0.31	0.31	0.31	0.33	ND	0.33	0.222	0.225	0.293	0.354	0.251	0.246 J
	Sulfate	mg/L			250 mg/L[b]	46	46	48	47.2	47.1	45.5	116	43.5	43.4	42	43.2	42.9	46.6	42.4	58.9	46	51.9	39.9	44.2	45.1
	Nitrate/Nitrite (NO_3+NO_2)	mg/L			10 mg/L[a]	5.4	5.3	5.9	5.26	4.77	4.72	0.01	4.59	5.08	5	5.06	4.94	3.84	4.17	5.72	5.67	2.99	5.85	5.71	6.28
Nutrients	Ammonia (NH_3+NH_4)	mg/L	EPA 350.1		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0718	ND	0.058	ND	ND	0.0814 J
	TKN	mg/L	EPA 351.2		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.32									
Water Quality	pH	s.u.	EPA 150.1	9040C	6.5-8.5[b]	7.34	7.4	7.12	7.6	7.7	7.7	8.01	7.87	6.06	7.46	7.74	7.77	7.65	7.83	7.99	7.94	7.27	7.76	7.95	8.12
	Specific Conductance	µMHOS/cm	EPA 120.1	EPA 120.1	NA	568	400	420	452	413	420	571	412	432	433	419	416	408	416	408	ND	ND	414	409	411
	TDS	mg/L	EPA 160.1	EPA 160.1	500 mg/L[b]	310	280	290	286	388	287	0.111	306	304	282	292	256	286	272	274	318	332	482	276	280
	Total Suspended Solids	mg/L	EPA 160.2	EPA 160.2	NA															18	ND	6.5	ND	5.5	15
	Bicarbonate Alkalinity	mg/L	EPA 310.1	EPA 310.1	NA								83	80	88	80	76	80	80	81.9	83.1	87.7	ND	74.4	85.1
	Total Alkalinity	mg/L			NA								82	80	88	80	76	80	80	81.9	83.1	87.7	ND	74.4	85.1
Dissolved Metals	Aluminum	mg/L	SW846 6010A		0.05 to 0.2 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Antimony	mg/L			0.006 mg/L[c]												ND	ND	ND						
	Arsenic	mg/L			0.010 mg/L[c]	ND	ND	ND	ND	0.016	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Barium	mg/L			1.0 mg/L[a]	0.0896	0.099	ND	0.101	0.096	0.108	0.066	0.111	0.114	0.113	0.097	0.092	0.105	ND						
	Beryllium	mg/L			0.004 mg/L[c]												ND	ND	ND						
	Boron	mg/L			NA	0.012	0.0152	0.0163	ND	0.013	ND	0.018	ND	ND	0.051	ND									
	Cadmium	mg/L			0.005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Calcium	mg/L			NA	42.9	41.8	47	39.9	46.9	45.3	0.017		ND	43.1	46.8									
	Chromium	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	0.053	ND	ND	ND	0.005	ND						
	Cobalt	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Copper	mg/L			1.0 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Iron	mg/L			1.0 mg/L[a]	0.138	0.0835	0.0937	0.0937	0.125	0.098	0.18	0.085	0.092	0.083	0.088									
	Lead	mg/L			0.015 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Magnesium	mg/L			NA	7.68	6.56	9.86	7.27	7.49	7.46	0.056	0.01	7.89	7.33	7.46									
	Manganese	mg/L			0.05 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Molybdenum	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Nickel	mg/L			NA	ND	ND	ND	ND	ND	ND	48.3	ND	ND	ND	ND	ND	0.007	ND						
	Potassium	mg/L			NA	2.64	1.95	2.92	2	2	2.75	3.94	2.57	3.67	2.52	3.31									
	Selenium	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Silver	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Sodium	mg/L			NA	21.4	22.5	22.1	21.7	23.5	22.1	34.5	23.3	23.5	21.6	21.5									
	Thallium	mg/L			0.002 mg/L[c]												ND	ND	ND						
	Tin	mg/L			NA												ND	ND	ND						
	Uranium	µg/L			30 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.38	0.44	ND									
	Vanadium	mg/L			NA												ND	ND	ND						
	Zinc	mg/L			5 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.038	ND	ND	ND	ND						
	Aluminum	mg/L		6010B	16 mg/L[b]	ND	ND	ND					0.141	0.098	0.063	0.325			ND	ND	0.121	0.193	ND	0.503	1.09
	Antimony	mg/L			0.006 mg/L[c]										0.01					ND	ND	ND	ND	ND	ND
	Arsenic	mg/L		6020	0.010 mg/L[c]								ND	ND	ND	ND			ND	0.00234	0.00475	0.000555	0.00111	0.00187	0.00341
	Barium	mg/L			1.0 mg/L[a]	0.107							ND	0.106	0.099	0.102			0.101	0.103	0.109	0.0823	0.109	0.104	0.115
	Beryllium	mg/L		6010B	0.004 mg/L[c]										0.003				ND	ND	ND	ND	ND	ND	ND
	Boron	mg/L			NA	0.0184	0.0173	0.0196					0.014	0.031	0.019	0.014			ND		ND	ND	ND	ND	ND
	Cadmium	mg/L		6020	0.005 mg/L[c]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND

Groundwater analysis for well MPL-01 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method	Reference Method December 2012	Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Total Metals	Calcium	mg/L	SW846 6010A	6010B	NA	40.8	ND	49.2					40.9	46.1	44.7	43.2			ND	ND	41.8	34.6	43.3	45.5	41.9
	Chromium	mg/L			0.05 mg/L[a]	ND	ND	ND					ND	0.015	ND	ND			0.003	0.00605	0.00455	0.0192	0.00336	0.00357	0.00537
	Cobalt	mg/L		6020	NA	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Copper	mg/L			1.0 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	0.0013	ND	ND	0.00161 J
	Iron	mg/L		6010B	1.1 mg/L[a]	0.146	ND	0.142					0.322	0.152	0.156	0.13			ND	ND	0.199	0.335	0.175	0.442	0.81
	Lead	mg/L		6020	0.015 mg/L[c]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	0.00082 J
	Magnesium	mg/L		6010B	NA	7.4	ND	8.39					7.02	8.27	7.56	8.98			ND	ND	7.59	8.03	7.7	8.1	7.52
	Manganese	mg/L		6020	0.05 mg/L[b]	ND	ND	ND					ND	ND	ND	ND			ND	ND	0.00157	0.00519	ND	0.004	0.0114
	Mercury	mg/L	SW846 7470	7470A	NA	0.00034	ND	ND	ND	ND	ND	ND					ND	ND	ND	ND	ND	ND	ND	ND	ND
	Molybdenum	mg/L	SW846 6010A	6010B	NA	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND		ND
	Nickel	mg/L		6020	0.73 mg/L[e]	ND	ND	ND					ND	ND	ND	ND			ND	ND	0.00231	0.0847	ND	ND	0.0028 J
	Potassium	mg/L		6010B	NA	2.71	ND	2.78					2.38	3.34	2.32	3.05			ND	ND	2.25	1.91	2.42	2.46	2.38
	Selenium	mg/L		6020	0.05 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	0.00715	0.018	0.00161	0.00339	0.00742 J+	0.0132
	Silver	mg/L			0.05 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Sodium	mg/L		6010B	NA	22.8	ND	22.6					23.1	22.3	20.6	0.064			ND	ND	21.8	23.9	23.7	25.7	22.5
	Thallium	mg/L		6020	0.002 mg/L[c]															ND	ND	ND	ND	ND	ND
	Tin	mg/L		6010B	NA																ND	ND	ND	ND	ND
	Vanadium	mg/L			NA									0.006	0.007				0.005	ND	0.00645	ND	ND	ND	NA
	Uranium	µg/L		EPA 200.8	30 µg/L	ND	ND	ND					0.63	0.37	0.46	ND			ND			0.416		0.47	0.465
	Vanadium	mg/L		6010B	0.183mg/L[c]									0.006	0.007				0.005	ND	0.00645	ND	ND	0.0121	0.00542 J
	Zinc	mg/L			5 mg/L[b]	ND	ND	ND					ND	ND	0.012	ND			0.009	ND	ND	0.0433	ND	ND	ND
Radioactivity	Radium 226	pCi/L	EPA 903, 904	EPA 903.1 MODIFIED	5pCi/L (226+228)	ND	ND	ND	ND	ND	ND	ND										0.434		0.582	0.741
	Radium 228	pCi/L		EPA904.0/SW846 9320 MODIFIED		1.87	ND	ND	7.03	ND	ND	ND										0.72		0.995	ND
VOCs	1,2,-Dichloroethane	mg/L	SW846 8260B		0.005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	Acetone	µg/L			NA										ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Benzene	mg/L			0.005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND								ND	0.000137	ND	ND	ND	ND
	Bromofluorobenzene	mg/L			NA	ND	ND	ND	ND	ND	ND	ND								ND	0.0275	0.0258			
	Bromoform	µg/L			NA								3.31	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Chloromethane	mg/L			tox										ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Dibromofluoromethane	mg/L			NA	ND	ND	ND	ND	ND	ND	ND								ND	0.0237	0.0263	ND	ND	0.0236
	Toluene	mg/L			0.75 mg/L[a]	ND	ND	ND	ND	ND	ND	ND									0.0253	0.0265	ND	ND	ND
SVOCs	2-Fluorobiphenyl	mg/L	SW846 8270C		NA	ND	ND	ND	ND	ND	ND	ND								ND	2.06	1.66	ND	ND	2.07
	Benzo-a-pyrene	mg/L	SW846 8310	8270C	0.0002 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	Nitrobenzene-D5	mg/L	SW846 8270C		tox	ND	ND	ND	ND	ND	ND	ND								ND	2.18	1.76	ND	ND	2.31
	Phenols	mg/L	SW846 8081A/8082	420.1	0.005 mg/L[a]	ND	ND	ND	ND	ND	ND	ND									ND	0.00315 J	ND	ND	ND
Pesticides	Total Pesticides	µg/L	SW846 8081A/8082		NA	ND	ND	ND	ND	ND	ND	0.00354									31.2	24.3	ND		
	2,4-dichlorophenoxyacetic acid	mg/L			0.07 mg/L[c]	ND	ND	ND	ND	ND	ND	0.00354									ND	ND	ND		
Organics	Explosives	mg/L	SW846 8330		NA	ND	ND	ND	ND	ND	ND	ND								ND					
	EDB	mg/L	EPA 504.1		0.00005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	PCBs	mg/L	SW846 8081A/8082		0.0005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	Herbicides (dicamba)	µg/L	SW846 8151A		NA	ND	ND	ND	ND	ND	ND	ND													
	TOC	mg/L	EPA 415.3	415.1	NA	1.09	ND	ND	1.19	6.6	ND	ND	1.96	2.01	ND					0.933	1.21	0.764 J	1.23	0.532J	0.74 J
	TPH	mg/L	EPA 418.1		NA															ND	ND	ND	ND		
	DRO	mg/L			NA															ND	ND	ND	ND		
	GRO	mg/L			NA															ND	ND	ND	ND		
	p-Terphenyl-d14	µg/L		8270C	NA																2550	2400	2500		
	Bromide	mg/L			NA															ND					

Groundwater analysis for well MPL-01 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method	Reference Method December 2012	Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Other	Orthophosphate	mg/L	EPA 365.3	SM4500-P-E-20th	NA															0.172	0.168	0.167	ND	0.169	0.195
	Total Phosphorous	mg/L	EPA 365.4		NA															ND					

a	NMWQCC	GRO	Gasoline range organics	pCi/L	picocuries per liter
b	EPA Secondary Drinking Water Regulations	mg/L	milligrams per liter	SVOC	semi-volatile organic compound
c	EPA Primary Drinking Water Regulations	EDB	Ethylene dibromide	TDS	total dissolved solids
d	Preliminary data	NA	none available	TOC	total organic carbon
e	NMED SSLs June 2012	ND	non-detect	µg/L	microgram per liter
DRO	Diesel range organics	*NR*	Not reported. Only partial data is available for this sampling event, the full suite of wells analyzed and chemicals analyzed for is not available.	VOC	volatile organic compound
EPA	Environmental Protection Agency	PCB	polychlorinated biphenyl		Analyte not analyzed for during the given sampling event
ft amsl	feet above mean sea level	µMHOS/cm	micromhos per centimeter	3.54	Designates a value that is above the regulatory limit

Groundwater analysis for well MPL-02 for sampling events from June 1996 through December 2012

Group	Parameter	Units	Reference Method		Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Water Level	Elevation	ft				3810.71	3810.5	3810.72	3810.37	3809.7	3809.33	*NR*	3808.86	3808.8	3808.57	3808.6	3808.6	3816.75	3808.4	3805.72	3805.54	3805.7	3805.55	3805.15	3808.39
Cyanide	Amenable Cyanide	mg/L	SW846-9010B	SM4500-CN-C, G		0.345	1.089	0.081	0.166	0.11	0.214	0.107	0.197	0.081	0.383	0.194	ND	0.246	0.241	ND	0.211	0.382	0.228	0.335	0.335
	Total Cyanide	mg/L		9014-9010C	0.2 mg/L[a]	0.45	1.27	0.236	0.342	0.333	0.43	0.205	0.454	0.333	0.414	0.338	0.175	0.289	0.241	0.23	0.475	0.381	0.247	0.336	0.336
	Free Cyanide	mg/L		SM4500-CN-I		ND	ND	ND	0.03	0.02	0.03	0.011	ND	0.045	0.014	0.034	Lab error	ND	ND	0.0412			0.0356	0.0263	0.0452
Dissolved ions	Chloride	mg/L	EPA 300.0	EPA 300.0	250 mg/L[a]	44	36	50	48.6	45.7	47.2	13.5	47.4	49.1	68.9	50.9	48.2	52.6	53.3	53.1	32.4	51.2	51.7	54	65.6
	Fluoride	mg/L			1.6 mg/L[a]	ND	0.27	ND	ND	ND	ND	ND	0.23	0.22	ND	0.2	ND	ND	0.22	0.126	0.227	0.113	ND	ND	0.145 J
	Sulfate	mg/L			250 mg/L[b]	84	78	81	76.8	73	72	144	67.5	70.9	48.6	72.8	68.9	77.4	75.5	78.8	79.3	74.5	72.5	83	74.7
	Nitrate/Nitrite (NO_3+NO_2)	mg/L			10 mg/L[a]	6.1	6.3	6.8	5.8	5.23	5.39	2.11	5.78	5.7	5.88	5.94	5.9	6.1	3.18	6.63	5.36	6.2	6.77	6.74	7.24
Nutrients	Ammonia (NH_3+NH_4)	mg/L	EPA 350.1		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.62	0.0576	0.0571	0.0582	ND	ND	0.0686 J
	TKN	mg/L	EPA 351.2		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
Water Quality	pH	s.u.	EPA 150.1	9040C	6.5-8.5[b]	7.96	7.5	7.17	7.6	7.5	7.5	7.87	7.71	7.61	7.77	7.55	7.62	7.54	7.68	7.52	7.61	8.13	7.65	7.9	7.85
	Specific Conductance	µMHOS/cm	EPA 120.1	EPA 120.1	NA	410	540	570	616	566	539	418	560	573	577	571	570	556	563	556	ND	ND	563	538	530
	TDS	mg/L	EPA 160.1	EPA 160.1	500 mg/L[b]	390	380	390	390	378	358	0.119	380	380	366	394	368	388	350	366	276	402	330	328	370
	Total Suspended Solids	mg/L	EPA 160.2	EPA 160.2	NA															3	9	6.5	ND	ND	26
	Bicarbonate Alkalinity	mg/L	EPA 310.1	EPA 310.1	NA								107	90	88	88	88	86	88	80	91.7	98.2	103	83.1	86.4
	Total Alkalinity	mg/L			NA								84	90	88	88	88	86	88	80	91.7	98.2	103	83.1	86.4
Dissolved Metals	Aluminum	mg/L	SW846 6010A		0.05 to 0.2 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.054									
	Antimony	mg/L			0.006 mg/L[c]												ND	0.065	ND						
	Arsenic	mg/L			0.010 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Barium	mg/L			1.0 mg/L[a]	0.0527	0.0693		0.0663	0.06	ND	0.073	0.074	0.068	0.075	0.077	0.058	0.069	ND						
	Beryllium	mg/L			0.004 mg/L[c]												ND	ND	ND						
	Boron	mg/L			NA	0.0153	0.0173	0.0167	0.0062	0.021	ND	0.019	ND	ND	ND	ND									
	Cadmium	mg/L			0.005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	0.005	ND	ND	ND	ND	ND	ND						
	Calcium	mg/L			NA	57.7	60.7	66.4	57.8	57.5	57.9	37.2		ND	59.2	67.9									
	Chromium	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	0.016	ND	ND	ND	ND	ND						
	Cobalt	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Copper	mg/L			1.0 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Iron	mg/L			1.0 mg/L[a]	0.165	0.153	0.148	0.164	0.143	0.144	0.013	0.17	0.141	0.155	0.187									
	Lead	mg/L			0.015 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Magnesium	mg/L			NA	11	10.6	11.6	12.7	10.9	10.8	7.47	11.9	10.3	10.6	12									
	Manganese	mg/L			0.05 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Molybdenum	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Nickel	mg/L			NA	ND	ND	ND	ND	ND	ND	0.017	ND	ND	ND	ND	ND	0.005	ND						
	Potassium	mg/L			NA	3.5	2.83	3.42	3	3.46	3.19	2.39	3.25	4.28	2.68	4.56									
	Selenium	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	0.024	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Silver	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Sodium	mg/L			NA	31.6	32	28.6	33.4	35	30.7	3.45	28.1	28.5	26.6	27.6									
	Thallium	mg/L			0.002 mg/L[c]												ND	ND	ND						
	Tin	mg/L			NA												ND	ND	ND						
	Uranium	µg/L			30 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.51	0.41	ND									
	Vanadium	mg/L			NA												ND	ND	ND						
	Zinc	mg/L			5 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Aluminum	mg/L		6010B	0.05 to 0.2 mg/L[b]	ND	0.134	0.206					0.218	0.215	0.074	0.089			ND	ND	ND	0.921	ND	ND	1.35
	Antimony	mg/L			0.006 mg/L[c]										0.011					ND	ND	ND	ND	ND	ND
	Arsenic	mg/L		6020	0.010 mg/L[c]	ND	ND	ND					ND	ND	ND	ND			ND	0.00975	0.0141	0.00534	0.00354	0.00317	0.00983
	Barium	mg/L			1.0 mg/L[a]	ND	ND	ND					ND	0.076	0.063	0.072			0.071	0.069	0.0683	0.0655	0.0622	0.0582	0.0697
	Beryllium	mg/L			0.004 mg/L[c]										0.003				ND	ND	ND	ND	ND	ND	ND
	Boron	mg/L		6010B	NA	0.0185	0.0199	0.0204					0.011	0.041	0.019	ND			ND		ND	ND	ND	ND	ND

Groundwater analysis for well MPL-02 for sampling events from June 1996 through December 2012

Group	Parameter	Units	Reference Method		Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Total Metals	Cadmium	mg/L	SW846 6010A	6020	0.005 mg/L[c]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Calcium	mg/L		6010B	NA	61.6	ND	64.3					62.7	63.3	59.8	67.2			ND	ND	59	63.8	60.8	63.4	59.9
	Chromium	mg/L			0.05 mg/L[a]	ND	ND	ND					ND	0.015	ND	0.011			ND	0.00522	0.00312	0.00289	0.00221	0.00223	0.00379
	Cobalt	mg/L		6020	NA	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	0.000529 J
	Copper	mg/L			1.0 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	0.0017 J
	Iron	mg/L		6010B	1.1 mg/L[a]	0.184	0.11	0.304					0.417	0.341	0.253	0.537			ND	ND	ND	0.359	0.196	0.187	1.04
	Lead	mg/L		6020	0.015 mg/L[c]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	0.00088 J
	Magnesium	mg/L		6010B	NA	10.6	ND	12.2					11	12	11.2	11.6			ND	ND	10.8	10.6	11.1	11.4	11.1
	Manganese	mg/L		6020	0.05 mg/L[b]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	0.0179
	Mercury	mg/L	SW846 7470	7470A	NA	ND	ND	ND	ND	ND	ND	ND					ND	ND	ND	ND	ND	ND	ND	ND	ND
	Molybdenum	mg/L	SW846 6010A	6010B	NA	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Nickel	mg/L		6020	0.73 mg/L[e]	ND	ND	ND					ND	ND	ND	ND			ND	ND	0.00299	0.00298	0.00324	0.0022 J	0.00432
	Potassium	mg/L		6010B	NA	3.46	ND	3.54					3.01	3.26	2.38	3.16			ND	ND	2.55	2.39	2.66	2.57	2.79
	Selenium	mg/L		6020	0.05 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	0.034	0.0536	0.0195	0.0137	0.0147 J+	0.042
	Silver	mg/L			0.05 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Sodium	mg/L		6010B	NA	32.2	ND	31					27.8	28.9	24.9	0.064			ND	ND	27.5	26.8	29.8	30.8	29.5
	Thallium	mg/L		6020	0.002 mg/L[c]															ND	ND	ND	ND	0.000101 J	ND
	Tin	mg/L		6010B	NA																ND	ND	ND	ND	ND
	Uranium	µg/L		EPA 200.8	30 µg/L	ND	ND	ND					0.53	0.51	0.48	ND			ND			0.514		0.592	0.581
	Vanadium	mg/L		6010B	0.183 mg/L[c]									ND	0.006				0.005	ND	0.00781	ND	ND	0.00961 J	0.00519 J
	Zinc	mg/L			5 mg/L[b]	ND	ND	ND					ND	ND	0.012	0.025			0.005	ND	ND	ND	ND	ND	ND
Radioactivity	Radium 226	pCi/L	EPA 903, 904	EPA 903.1 MODIFIED	5pCi/L (226+228)	ND	ND	ND	ND	ND	ND	ND										-0.0287		-0.143	0.514
	Radium 228	pCi/L		EPA904.0/SW846 9320 MODIFIED		2.36	2.04	ND	5.05	ND	ND	ND										1.6		-0.118	ND
VOCs	1,2-Dichloroethane	mg/L	SW846 8260B	SW846 8260B	0.005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	Acetone	µg/L			NA										ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Bromofluorobenzene	mg/L			NA	ND	ND	ND	ND	ND	ND	ND								ND		0.0255			
	Bromoform	µg/L			NA								1.39	2.86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Chloromethane	mg/L			tox										ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Dibromofluoromethane	mg/L			NA	ND	ND	ND	ND	ND	ND	ND								ND		0.0263	ND	ND	0.0239
	Toluene	mg/L			0.75 mg/L[a]	ND	ND	ND	ND	ND	ND	ND									ND	0.0265	ND	ND	ND
SVOCs	2-Fluorobiphenyl	mg/L	SW846 8270C	SW846 8270C	NA	ND	ND	ND	ND	ND	ND	ND								ND		2.1	ND	ND	2.13
	Benzo-a-pyrene	mg/L	SW846 8310		0.0002 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	Nitrobenzene-D5	mg/L	SW846 8270C		tox	ND	ND	ND	ND	ND	ND	ND								ND		2.19	ND	ND	2.37
	Phenols	mg/L	SW846 8081A/8082	420.1	0.005 mg/L[a]	ND	0.153	ND	ND	ND	ND	ND									ND	ND	ND	ND	0.00358 J
Pesticides	Total Pesticides	µg/L	SW846 8081A/8082		NA	ND	ND	ND	ND	ND	ND	0.0043										23.8	ND		
	2,4-dichlorophenoxyacetic acid	mg/L			0.07 mg/L[c]	ND	ND	ND	ND	ND	ND	0.0043										ND	ND		
	Explosives	mg/L	SW846 8330		NA	ND	ND	ND	ND	ND	ND	ND								ND					
	EDB	mg/L	EPA 504.1	8260B	0.00005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND

Groundwater analysis for well MPL-02 for sampling events from June 1996 through December 2012

Group	Parameter	Units	Reference Method		Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Organics	PCBs	mg/L	SW846 8081A/8082		0.0005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	Herbicides (dicamba)	µg/L	SW846 8151A		NA	ND	ND	ND	ND	ND	ND	ND													
	TOC	mg/L	EPA 415.3	415.1	NA	ND	2.39	1.56	1.72	2.46	ND	ND	15.7	1	ND					1.14	1.24	0.884 J	2.79	0.612 J	0.789 J
	TPH	mg/L	EPA 418.1		NA															ND	ND	ND	ND		
	DRO	mg/L			NA															ND	ND	ND	ND		
	GRO	mg/L			NA															ND	ND	ND	ND		
	p-Terphenyl-d14	µg/L		8270C	NA																ND	2600			
Other	Bromide	mg/L			NA															ND					
	Orthophosphate	mg/L	EPA 365.3	SM4500-P-E-20th	NA															0.262	0.245	0.241	0.199	0.18	0.242
	Total Phosphorous	mg/L	EPA 365.4		NA															ND					

a	NMWQCC	NA	none available
b	EPA Secondary Drinking Water Regulations	ND	non-detect
c	EPA Primary Drinking Water Regulations	*NR*	Not reported. Only partial data is available for this sampling event, the full suite of wells analyzed and chemicals analyzed for is not available.
d	Preliminary data	PCB	polychlorinated biphenyl
e	NMED SSLs June 2012	pCi/L	picocuries per liter
DRO	Diesel range organics	SVOC	semi-volatile organic compound
EDB	Ethylene dibromide	TDS	total dissolved solids
EPA	Environmental Protection Agency	TOC	total organic carbon
ft amsl	feet above mean sea level	µg/L	microgram per liter
GRO	Gasoline range organics	µMHOS/cm	micromhos per centimeter
mg/L	milligrams per liter		

VOC	volatile organic compound
	Analyte not analyzed for during the given sampling event
3.54	Designates a value that is above the regulatory limit

Groundwater analysis for well MPL-03 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method		Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Water Level	Elevation	ft				3809.06	3808.97	3809.24	3808.92	3808.92	3808.46	*NR*	3808.23	3808.34	3808.32	3808.05	3807.85	3808	3807.49	3805.25	3805.07	3805.15	3805.12	3804.86	3807
Cyanide	Amenable Cyanide	mg/L	SW846-9010B	SM4500-Cl	0.2 mg/L[a]	0.213	0.996	0.211	0.222	0.206	0.214	0.232	0.18	0.232	0.22	0.28	0.301	0.33	0.394	0.197	0.4	0.271	0.22	0.34	0.352
	Total Cyanide	mg/L		9014-9010		0.435	1.11	0.347	0.365	0.288	0.394	389 ?	0.371	0.445	0.426	0.46	0.405	0.344	0.404	0.402	0.397	0.22	0.234	0.341	0.353
	Free Cyanide	mg/L		SM4500-Cl		ND	0.04	ND	ND	0.04	ND	0.04	0.026	ND	0.035	0.021	Lab error	ND	0.015	0.0467			0.0393	0.0307	0.0421
Dissolved ions	Chloride	mg/L	EPA 300.0	EPA 300.0	250 mg/L[a]	54	39	57	58	53.2	54.2	70.5	50.2	54	53.4	54	132	57.9	54.1	57.2	61.8	55.2	57.9	58.3	72.3
	Fluoride	mg/L			1.6 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	0.26	0.24	0.23	0.23	1.06		0.26	0.161		0.142		0.173 J	0.167 J
	Sulfate	mg/L			250 mg/L[b]	120	140	140	132	125	121	62.1	118	121	117	118	164	128	118	121	113	111	111	110	134
	Nitrate/Nitrite (NO_3+NO_2)	mg/L			10 mg/L[a]	8.2	8.1	9.1	7.48	7.14	6.91	7.87	6.74	7.4	7.19	7.48	8.28	6.64	5.38	7.65	8.33	6.26	7.82	7.48	9.86
Nutrients	Ammonia (NH_3+NH_4)	mg/L	EPA 350.1		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.169	ND	0.0864	ND	ND	0.141
	TKN	mg/L	EPA 351.2		NA	ND	ND	ND	ND	ND	ND	ND	ND	4.38	ND	ND									
Water Quality	pH	s.u.	EPA 150.1	9040C	6.5-8.5[b]	7.98	7.98	7.83	7.6	7.5	7.6	4.92	7.81	6	7.76	7.7	7.61	7.58	7.61	7.59	7.66	7.4	7.47	7.64	7.98
	Specific Conductance	µMHOS/cm	EPA 120.1	EPA 120.1	NA	751	720	740	796	734	733	8.01	682	739	730	720	711	696	699	676	ND	ND	679	648	631
	TDS	mg/L	EPA 160.1	EPA 160.1	500 mg/L[b]	520	490	560	476	488	453	220	469	436	488	482	449	473	440	516	388	462	408	438	412
	Total Suspended Solids	mg/L	EPA 160.2	EPA 160.2	NA															4	3.5	ND	13	ND	3
	Bicarbonate Alkalinity	mg/L	EPA 310.1	EPA 310.1	NA								108	108	109	110	105	105	105	105	91.2	107	122	103	103
	Total Alkalinity	mg/L			NA								124	108	109	110	105	105	105	105	91.2	107	122	103	103
Dissolved Metals	Aluminum	mg/L	SW846 6010A		0.05 to 0.2 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Antimony	mg/L			0.006 mg/L[c]												ND	0.074	ND						
	Arsenic	mg/L			0.010 mg/L[c]	ND	ND	ND	0.0352	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Barium	mg/L			1.0 mg/L[a]	0.0499	0.0679	ND	0.06	0.058	ND	0.076	0.056	0.056	0.055	0.05	0.046	0.048	ND						
	Beryllium	mg/L			0.004 mg/L[c]												ND	ND	ND						
	Boron	mg/L			NA	0.0323	0.0389	0.0378	0.0363	0.036	ND	0.139	ND	0.021	0.06	ND									
	Cadmium	mg/L			0.005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	0.005	ND	ND	ND	ND	ND	ND						
	Calcium	mg/L			NA	84.5	86.9	100	91.5	86.4	83	77.8		ND	93	82.8									
	Chromium	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.006	ND	ND						
	Cobalt	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Copper	mg/L			1.0 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Iron	mg/L			1.0 mg/L[a]	0.161	0.158	0.158	0.158	0.153	0.167	0.158	0.14	0.143	0.158	0.107									
	Lead	mg/L			0.015 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Magnesium	mg/L			NA	16.2	15.6	16.8	17.6	15.1	15.5	4.06	14.4	15.6	16.6	13.4									
	Manganese	mg/L			0.05 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Molybdenum	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Nickel	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.006	ND						
	Potassium	mg/L			NA	4.07	3.6	4.18	3.26	3.91	3.88	2.42	3.44	4.52	4.17	4.16									
	Selenium	mg/L			0.05 mg/L[a]	ND	0.0159	ND	0.0551	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Silver	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Sodium	mg/L			NA	35.1	36.6	34.6	36.1	36.5	34.2	2.25	32.2	34	33	30.6									
	Thallium	mg/L			0.002 mg/L[c]												ND	ND	ND						
	Tin	mg/L			NA												ND	ND	ND						
	Uranium	µg/L			30 µg/L	ND	ND	ND	ND	ND	ND	ND	1.3	1.2	1.4	ND									
	Vanadium	mg/L			NA												ND	ND	ND						
	Zinc	mg/L			5 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	0.013	0.012	ND	ND	ND	ND						
	Aluminum	mg/L		6010B	16 mg/L b	ND	ND	ND					0.158	ND	0.106	ND			ND	ND	ND	ND	0.507	0.272	0.102
	Antimony	mg/L			0.006 mg/L[c]										ND					ND	ND	ND	ND	ND	ND
	Arsenic	mg/L		6020	0.010 mg/L[c]	ND	ND	ND					ND	ND	ND	ND			ND	0.0127	0.0153	0.00826	0.00149	0.00489	0.00774
	Barium	mg/L			1.0 mg/L[a]	ND	ND	ND					ND	0.057	0.058	0.064			0.048	0.0465	0.11	0.0485	0.0517	0.0465	0.0484

Groundwater analysis for well MPL-03 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method		Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Total Metals	Beryllium	mg/L	SW846 6010A	6010B	0.004 mg/L[c]										ND				ND	ND	ND	ND	ND	ND	ND
	Boron	mg/L			NA	0.0391	0.0426	0.0393					0.026	0.022	0.053	0.071			ND		ND	ND	ND	ND	ND
	Cadmium	mg/L		6020	0.005 mg/L[c]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Calcium	mg/L		6010B	NA	91.6	ND	89.3					82.8	88.4	87	84.5			ND	ND	76.2	79	77.4	85.4	75.1
	Chromium	mg/L			0.05 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	0.00266	0.00514	0.00278	0.00235	0.00214	0.00253
	Cobalt	mg/L		6020	NA	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Copper	mg/L			1.0 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	0.00109	0.00151	ND	ND	ND	0.00115 J
	Iron	mg/L		6010B	1.1 mg/L[a]	0.161	0.0507	0.176					0.336	0.174	0.312	0.314			ND	ND	0.224	0.304	0.592	0.395	0.258
	Lead	mg/L		6020	0.015 mg/L[c]	ND	ND	ND					ND	ND	ND	ND			ND	0.000587	ND	ND	0.000829	ND	ND
	Magnesium	mg/L		6010B	NA	15.4	ND	16.8					14.6	15.7	15.8	13.7			ND	ND	12.4	13.7	14.3	15.5	13.7
	Manganese	mg/L		6020	0.05 mg/L[b]	ND	ND	ND					ND	ND	ND	ND			ND	ND	0.00345	0.00117	0.015	0.00888	0.00255
	Mercury	mg/L	SW846 7470	7470A	NA	ND	0.00026	ND	ND	ND	ND	ND					ND	ND	ND	ND	ND	ND	ND	ND	ND
	Molybdenum	mg/L	SW846 6010A	6010B	NA	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Nickel	mg/L		6020	0.73 mg/L[e]	ND	ND	ND					ND	ND	ND	ND			ND	0.00433	0.00347	0.00285	0.00381	0.00333 J	0.00399 J
	Potassium	mg/L		6010B	NA	4.26	ND	4.22					3.26	3.96	3.36	3.5			ND	ND	3.37	2.7	2.94	3.03	2.81
	Selenium	mg/L		6020	0.05 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	0.0453	0.0556	0.0305	0.00568	0.0236 J+	0.0336
	Silver	mg/L			0.05 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Sodium	mg/L		6010B	NA	35.7	ND	36.4					32.7	33.2	30.8	0.064			ND	ND	31	32.8	34.6	37.7	34.3
	Thallium	mg/L		6020	0.002 mg/L[c]															ND	ND	ND	ND	ND	ND
	Tin	mg/L		6010B	NA																ND	ND	ND	ND	ND
	Uranium	µg/L		EPA 200.8	30 µg/L	ND	ND	ND					1.5	1.2	1.5	ND			ND			1.13		1.37	1.27
	Vanadium	mg/L		6010B	0.183 mg/L[c]									ND	ND				ND	ND	0.0107	ND	ND	0.0155	ND
	Zinc	mg/L			5 mg/L[b]	ND	ND	ND					ND	0.02	0.007	ND			0.008	0.0334	0.0232	0.0133	0.0547	0.0256	0.0142 J
Radioactivity	Radium 226	pCi/L	EPA 903, 904	EPA 903.1 MODIFIED	5pCi/L (226+228)	ND	ND	ND	ND	ND	ND	ND										0.0937		0.731	ND
	Radium 228	pCi/L		EPA904.0/ SW846 9320 MODIFIED		1.92	2.98	ND	3.67	ND	ND	ND										0.455		0.102	ND
VOCs	1,2-Dichloroethane	mg/L	SW846 8260B	SW846 8260B	0.005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	Acetone	µg/L			NA										13.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Bromofluorobenzene	mg/L			NA															ND	0.024	0.0262			
	Bromoform	µg/L			NA								ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Chloroform	mg/L			0.1 mg/L[a]								ND	ND	ND	ND	ND	ND	ND	ND	0.000156	ND	0.000131	0.000151 J	ND
	Chloromethane	mg/L			tox										ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Dibromofluoromethane	mg/L			NA										ND	ND	ND	ND	ND	ND	0.0228	0.0265	ND	ND	0.0235
	Methylene chloride	mg/L			0.1 mg/L[a]										ND	ND	ND	ND	ND	ND	0.000292	ND	ND	ND	ND
	Toluene	mg/L			0.75 mg/L[a]	ND	ND	ND	ND	ND	ND	ND									0.0244	0.0244		ND	ND
SVOCs	2-Fluorobiphenyl	mg/L	SW846 8270C	NA		ND	ND	ND	ND	ND	ND	ND								ND	2.28	2.53	ND	ND	2.14
	Benzo-a-pyrene	mg/L	SW846 8310		0.0002 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	Nitrobenzene-D5	mg/L	SW846 8270C	NA		ND	ND	ND	ND	ND	ND	ND								ND	2.43	2.53	ND	ND	2.47
	Phenols	mg/L	SW846 8081A/8082	420.1	0.005 mg/L[a]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	0.00358 J
	Total Pesticides	µg/L	SW846		NA	ND	ND	ND	ND	ND	ND	0.0039									0.0299	0.0278	ND		

Groundwater analysis for well MPL-03 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method		Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Pesticides	2,4-dichlorophenoxyacetic acid	mg/L	SW846 8081A/8082		0.07 mg/L[c]	ND	ND	ND	ND	ND	ND	0.0039									ND	ND			
Organics	Explosives	mg/L	SW846 8330		NA	ND	ND	ND	ND	ND	ND	ND								ND					
	EDB	mg/L	EPA 504.1		0.00005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	PCBs	mg/L	SW846 8081A/8082		0.0005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	Herbicides (dicamba)	µg/L	SW846 8151A		NA	ND	ND	ND	ND	ND	ND	ND													
	TOC	mg/L	EPA 415.3	415.1	NA	ND	1.88	1.08	2.54	2.14	2.07	ND	3.13	ND	ND					2.06	0.825 J	0.888 J	3.36	0.684 J	0.902 J
	TPH	mg/L	EPA 418.1		NA															ND	ND	ND	ND		
	DRO	mg/L			NA															ND	ND	ND	ND		
	GRO	mg/L			NA															ND	ND	ND	ND		
	p-Terphenyl-d14	µg/L		8270C	NA																2750	2850			
Other	Bromide	mg/L			NA															ND					
	Orthophosphate	mg/L	EPA 365.3	SM4500-P-	NA															0.131	0.119	0.133	0.132	0.13	0.177
	Total Phosphorous	mg/L	EPA 365.4		NA															ND					

a	NMWQCC	mg/L	milligrams per liter	µMHOS/cm	micromhos per centimeter
b	EPA Tap Water Regulations	NA	none available	VOC	volatile organic compound
c	EPA Primary Drinking Water Regulations	ND	non-detect		Analyte not analyzed for during the given sampling event
d	Preliminary data	*NR*	Not reported. Only partial data is available for this sampling event, the full suite of wells analyzed and chemicals analyzed for is not available.	3.54	Designates a value that is above the regulatory limit
e	NMED SSLs June 2012	PCB	polychlorinated biphenyl		
DRO	Diesel range organics	pCi/L	picocuries per liter		
EDB	Ethylene dibromide	SVOC	semi-volatile organic compound		
EPA	Environmental Protection Agency	TDS	total dissolved solids		
ft amsl	feet above mean sea level	TOC	total organic carbon		
GRO	Gasoline range organics	µg/L	microgram per liter		

Groundwater analysis for well MPL-04 for sampling events from September 2001 through July 2012

Group	Parameter	Units	Reference Method		Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Water Level	Elevation	ft				3809.08	3808.88	3809.12	3808.77	3808.89	3808.46	*NR*	3808.22	3808.02	3808.12	3807.9	3807.81	3807.99	3807.47	3804.91	3804.75	3804.94	3804.80	3804.55	3806.98
Cyanide	Amenable Cyanide	mg/L	SW846-9010B	SM4500-CN	0.2 mg/L[a]	0.179	0.353	0.245	0.2	0.169	0.315	0.232	0.193	0.383	0.221	0.349	ND	0.0207	0.483	0.436	0.504	0.451	0.318	0.389	0.356
	Total Cyanide	mg/L		9014-9010C		0.423	0.513	0.443	0.376	0.299	0.517	0.225	0.344	0.513	0.429	0.466	0.341	0.0244	0.483	0.476	0.502	0.45	0.357	0.389	0.357
	Free Cyanide	mg/L		SM4500-CN		ND	0.03	ND	0.05	0.14	0.03	0.04	0.036	ND	0.037	0.045	Lab error	ND	ND	0.0373			0.0419	0.0339	0.0491
Dissolved ions	Chloride	mg/L	EPA 300.0	EPA 300.0	250 mg/L[a]	62	42	63	60	56.6	58.2	70.2	52.2	56.8	56.5	57.3	64.6	63.5	57.5	60.6	60.9	56.2	61.4	60.3	76.7
	Fluoride	mg/L			1.6 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	0.26	ND	0.22	0.21	ND	ND	0.23	0.137	ND	ND	ND	0.22	0.152 J
	Sulfate	mg/L			250 mg/L[b]	150	170	170	151	151	151	46.8 ?	133	144	144	147	183	173	144	153	160	142	144	143	182
	Nitrate/Nitrite (NO_3+NO_2)	mg/L			10 mg/L[a]	9.8	9.6	11	8.68	5.54	8.62	7.87	7.41	8.68	8.68	8.82	9.86	10.3	8.61	9.39	8.79	9.37	9.14	7.88	9.48
Nutrients	Ammonia (NH_3+NH_4)	mg/L	EPA 350.1		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.122	ND	ND	0.0811 J-
	TKN	mg/L	EPA 351.2		NA	ND	ND	ND	ND	ND	ND	ND	ND	23.8	ND	ND							ND	ND	
Water Quality	pH	s.u.	EPA 150.1	9040C	6.5-8.5[b]	8.06	7.64	7.68	6.9	7.5	7.4	8.01	7.8	7.29	7.94	7.51	7.58	7.71	7.53	7.14	7.49	7.39	7.27	8.18	7.56
	Specific Conductance	µMHOS/cm	EPA 120.1	EPA 120.1	NA	822	790	830	859	803	810	1.25 ?	718	826	827	821	818	809	815	808	ND	ND	806	756	737
	TDS	mg/L	EPA 160.1	EPA 160.1	500 mg/L[b]	540	540	600	566	584	522	492	480	554	592	538	510	559	530	560	572	560	20	514	524
	Total Suspended Solids	mg/L	EPA 160.2	EPA 160.2	NA															6.67	19	9	ND	ND	5
	Bicarbonate Alkalinity	mg/L	EPA 310.1	EPA 310.1	NA								122	126	124	128	124	124	124	145	126	134	148	134	132
	Total Alkalinity	mg/L			NA								118	126	124	128	124	124	124	145	126	134	148	134	132
Dissolved Metals	Aluminum	mg/L	SW846 6010A		16 mg/L[b]	ND	ND	ND	ND	0.054	ND	ND	ND	ND	ND	ND									
	Antimony	mg/L			0.006 mg/L[c]												ND	ND	ND						
	Arsenic	mg/L			0.010 mg/L[c]	ND	ND	ND	0.0275	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Barium	mg/L			1.0 mg/L[a]	0.0536	0.0688	ND	0.0694	0.064	ND	0.099	0.069	0.066	0.071	0.069	0.06	0.072	ND						
	Beryllium	mg/L			0.004 mg/L[c]												ND	ND	ND						
	Boron	mg/L			NA	0.0318	0.0345	0.0335	0.0345	0.027	ND	0.07	0.051	0.054	0.071	0.066									
	Cadmium	mg/L			0.005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	0.005	ND	ND	ND	ND	ND	ND						
	Calcium	mg/L			NA	95.3	100	104	95.4	96.9	ND	77.7			95.8	105									
	Chromium	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	0.029	ND	ND	ND	ND	ND						
	Cobalt	mg/L			NA	ND	ND	ND	ND	ND	ND	0.005	ND	ND	ND	ND	ND	ND	ND						
	Copper	mg/L			1.0 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Iron	mg/L			1.0 mg/L[a]	0.207	0.194	0.238	0.21	0.183	0.194	13.1	0.162	0.189	0.183	0.181									
	Lead	mg/L			0.015 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Magnesium	mg/L			NA	18.6	18.6	19.7	18.5	18.4	18.5	4.85	17.6	20	18.6	20									
	Manganese	mg/L			0.05 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Molybdenum	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Nickel	mg/L			NA	ND	ND	ND	ND	ND	ND	0.018	ND	ND	ND	ND	ND	ND	ND						
	Potassium	mg/L			NA	4.44	4.85	4.59	3.16	3.96	4.16	3.44	3.91	4.13	3.96	4.52									
	Selenium	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Silver	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Sodium	mg/L			NA	35.8	37.8	37	35.8	35.8	36.4	5.17	34.1	35.2	33.5	34.3									
	Thallium	mg/L			0.002 mg/L[c]												ND	ND	ND						
	Tin	mg/L			NA												ND	ND	ND						
	Uranium	µg/L			30 µg/L	ND	ND	ND	ND	ND	ND	ND	1.6	2	2.1	ND									
	Vanadium	mg/L			NA												ND	ND	ND						
	Zinc	mg/L			5 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Aluminum	mg/L		6010B	16 mg/L[b]	ND	ND	ND					ND	ND	0.072	ND			ND	ND	0.713	0.219	0.111	0.0696 J	0.196
	Antimony	mg/L			0.006 mg/L[c]										ND					ND	ND	ND	ND	ND	ND
	Arsenic	mg/L		6020	0.010 mg/L[c]	ND	ND	ND					ND	ND	ND	ND			ND	0.0143	0.0146	0.00766	0.0016	0.00307	0.00685
	Barium	mg/L			1.0 mg/L[a]	ND	ND	ND					ND	0.069	0.07	0.069			0.076	0.0667	0.0728	0.0631	0.636	0.0637	0.0699
	Beryllium	mg/L		6010B	0.004 mg/L[c]										ND				ND	ND	ND	ND	ND	ND	ND

Groundwater analysis for well MPL-04 for sampling events from September 2001 through July 2012

Group	Parameter	Units	Reference Method		Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Total Metals	Boron	mg/L	SW846 6010A	6010B	NA	0.0383	0.0388	0.0383					0.034	0.047	0.055	0.045			ND		0.0561	ND	ND	ND	ND
	Cadmium	mg/L		6020	0.005 mg/L[c]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Calcium	mg/L		6010B	NA	106	ND	105					110	112	112	101			ND		98.2	102	97.7	97.7	96.6
	Chromium	mg/L			0.05 mg/L[a]	ND	ND	ND					ND	0.021	ND	0.012			ND	0.00347	0.00431	0.003	0.00186	0.00271	0.00265
	Cobalt	mg/L		6020	NA	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Copper	mg/L			1.0 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	0.00126	0.00111	ND	ND	ND	0.00137 J
	Iron	mg/L		6010B	1.1 mg/L[a]	0.211	0.0773	0.56					0.334	0.209	0.217	0.187			ND	ND	0.744	0.494	0.278	0.244	0.351
	Lead	mg/L		6020	0.015 mg/L[c]	ND	ND	ND					ND	ND	ND	ND			ND	ND	0.000878	ND	ND	ND	ND
	Magnesium	mg/L		6010B	NA	19	ND	19.8					19.6	19.4	22.2	19			ND	ND	18.7	19.6	18.6	18.4	18.2
	Manganese	mg/L		6020	0.05 mg/L[b]	ND	ND	ND					ND	ND	ND	ND			ND	ND	0.0176	0.00735	0.00142	0.00145 J	0.00393
	Mercury	mg/L	SW846 7470	7470A	NA	ND	ND	ND	ND	ND	ND	ND					ND	0.029	ND	ND	ND	ND	ND	ND	0.000121 J
	Molybdenum	mg/L	SW846 6010A	6010B	NA	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Nickel	mg/L		6020	0.73 mg/L[e]	ND	ND	ND					ND	ND	ND	ND			ND	0.00889	0.0047	0.0036	0.00382	0.0034 J	0.00541
	Potassium	mg/L		6010B	NA	4.72	ND	4.07					3.93	4.27	4.15	3.49			ND	ND	3.22	3.24	3.33	3.12	3.23
	Selenium	mg/L		6020	0.05 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	0.0532	ND	0.03	0.00664	0.0151 J+	0.0298
	Silver	mg/L			0.05 mg/L[a]	ND	ND	ND					ND	ND	ND	ND			ND	ND	ND	ND	ND	ND	ND
	Sodium	mg/L		6010B	NA	37.9	ND	35.7					34.9	35.4	34.6	0.064			ND	ND	32.9	34.5	35.9	36.3	35.8
	Thallium	mg/L		6020	0.002 mg/L[c]															ND	ND	ND	ND	0.000102 J	ND
	Tin	mg/L		6010B	NA																ND	ND	ND	ND	ND
	Uranium	µg/L		EPA 200.8	30 µg/L	ND	ND	ND					1.9	2	2.1	ND			ND			2.39		3.12	2.67
	Vanadium	mg/L		6010B	0.183 mg/L[c]									ND	ND				ND	ND	0.00571	ND	ND	0.0104	ND
	Zinc	mg/L			5 mg/L[b]	ND	ND	ND					ND	ND	ND	ND			0.005	ND	0.0161	ND	ND	ND	ND
Radio activity	Radium 226	pCi/L	EPA 903, 904	EPA 903.1 MODIFIED	5pCi/L (226+228)	ND	ND	ND	ND	ND	ND	ND										0.89		0.447	ND
	Radium 228	pCi/L		EPA904.0/ SW846 9320 MODIFIED		5.25	ND	ND	2.64	ND	ND	ND										0.499		1.51	ND
VOCs	1,2-Dichloroethane	mg/L	SW846 8260B	SW846 8260B	0.005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	Acetone	µg/L			NA										26.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Bromofluorobenzene	mg/L			NA										ND	ND	ND	ND	ND	ND	0.023	0.0267			
	Bromoform	µg/L			NA								ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Chloroform	mg/L			0.1 mg/L[a]								ND	ND	ND	ND	ND	ND	ND	ND	0.00018	0.000164	0.000138	ND	0.000177
	Chloromethane	mg/L			tox										1.3	ND	ND	ND	ND	ND	0.000568	ND	ND	ND	ND
	Dibromofluoromethane	mg/L			NA										ND	ND	ND	ND	ND	ND	0.0241	0.0262	ND	ND	0.0263
	Trichlorofluoromethane	mg/L			tox										ND	ND	ND	ND	ND	ND	0.000503	0.000776	0.000531	ND	0.000591
	Toluene	mg/L			0.75 mg/L[a]	ND	ND	ND	ND	ND	ND	ND									0.0231	0.0248	ND	ND	ND
SVOCs	2-Fluorobiphenyl	mg/L	SW846 8270C	SW846 8270C	NA	ND	ND	ND	ND	ND	ND	ND								ND	1.82	1.96	ND	ND	2.27
	Benzo-a-pyrene	mg/L	SW846 8310		0.0002 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	Nitrobenzene-D5	mg/L	SW846 8270C		tox	ND	ND	ND	ND	ND	ND	ND									1.77	2.07	ND	ND	2.58
	Phenols	mg/L	SW846 8081A/8082	420.1	0.005 mg/L[a]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	0.00531 J

Groundwater analysis for well MPL-04 for sampling events from September 2001 through July 2012

Group	Parameter	Units	Reference Method		Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Pesticides	Total Pesticides	µg/L	SW846 8081A/8082		NA	ND	ND	ND	ND	ND	ND	0.0041									29.1	22.9	ND		
	2,4-dichlorophenoxyacetic acid	mg/L			0.07 mg/L[c]	ND	ND	ND	ND	ND	ND	0.0041									ND	ND	ND		
Organics	Explosives	mg/L	SW846 8330		NA	ND	ND	ND	ND	ND	ND	ND								ND					
	EDB	mg/L	EPA 504.1		0.00005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	PCBs	mg/L	SW846 8081A/8082		0.0005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND									ND	ND	ND	ND	ND
	Herbicides (dicamba)	µg/L	SW846 8151A		NA	ND	ND	ND	ND	ND	ND	ND													
	TOC	mg/L	EPA 415.3	415.1	NA	ND	1.75	1.84	1.76	1.79	ND	ND	22.4	ND	ND					3.31	1.9	1.01	3.39	0.762	0.898 J
	TPH	mg/L	EPA 418.1		NA															ND	ND	ND	ND		
	DRO	mg/L			NA															ND	ND	ND	ND		
	GRO	mg/L			NA															ND	ND	ND	ND		
	p-Terphenyl-d14	µg/L		8270C	NA																2630	2530			
Other	Bromide	mg/L			NA															ND					
	Orthophosphate	mg/L	EPA 365.3	SM4500-P-I	NA															0.587	0.549	0.489	0.449	0.423	0.4
	Total Phosphorous	mg/L	EPA 365.4		NA															ND					

a	NMWQCC	mg/L	milligrams per liter
b	EPA Tap Water Regulations	NA	none available
c	EPA Primary Drinking Water Regulations	ND	non-detect
d	Preliminary data	*NR*	Not reported. Only partial data is available for this sampling event, the full suite of wells analyzed and chemicals analyzed for is not available.
e	NMED SSLs June 2012	PCB	polychlorinated biphenyl
DRO	Diesel range organics	pCi/L	picocuries per liter
EDB	Ethylene dibromide	SVOC	semi-volatile organic compound
EPA	Environmental Protection Agency	TDS	total dissolved solids
ft amsl	feet above mean sea level	TOC	total organic carbon
GRO	Gasoline range organics	µg/L	microgram per liter

µMHOS/cm	micromhos per centimeter
VOC	volatile organic compound
	Analyte not analyzed for during the given sampling event
3.54	Designates a value that is above the regulatory limit

Groundwater analysis for well MPL-06 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method	Reference Method Decmeber 2012	Regulatory Limit	September, October 2001	December 2001, January 2002	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 2008	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Water Level	Elevation	ft				3808.46	3808.23	3808.47	3808.02	3808.09	3808.17	*NR*	3807.63	3809.44	3807.33	3807.21	3807.24	3807.3	3807.11	3803.99	3803.85	3803.93		3803.72	3805.89
Cyanide	Amenable Cyanide	mg/L	SW846-9010B	SM4500-CN-C, G 9014-9010C SM4500-CN-I	0.2 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	0.0732	ND	ND	ND	ND	ND	ND	ND	0.034	ND		0.00913 J	ND
	Total Cyanide	mg/L				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		0.0073	ND
	Free Cyanide	mg/L				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	Lab error	ND	ND	ND				ND	ND
Dissolved ions	Chloride	mg/L	EPA 300.0	EPA 300.0	250 mg/L[a]	17	19	15	17.6	15	15.1	47.8	15.1	15.3	14.8	15	23	13.1	15.4	18.2	19	17.6		27.4	20
	Fluoride	mg/L			1.6 mg/L[a]	1.08	0.43	0.44	ND	ND	ND	ND	0.44	0.38	ND	0.38	1.2	ND	0.4	0.291	0.311	0.292		0.272	0.319
	Sulfate	mg/L			250 mg/L[b]	39	42	38	40.9	37	36.9	42.9	41.8	36.2	38.6	37.2	49.4	45.2	36.3	39.3	39.6	38.2		40.2	39.2
	Nitrate/Nitrite (NO_3+NO_2)	mg/L			10 mg/L[a]	1.8	2	1.9	ND	1.91	1.79	6.06	1.85	1.89	1.97	1.99	3.34	2.23	1.67	2.37	7.87	2.08		2.53	14.4
Nutrients	Ammonia (NH_3+NH_4)	mg/L	EPA 350.1		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.08	ND	ND		ND	ND
	TKN	mg/L	EPA 351.2		NA	ND	ND	ND	ND	ND	ND	ND	4.2	5.88	4.2	4.48									
Water Quality	pH	s.u.	EPA 150.1	9040C	6.5-8.5[b]	7.26	7.5	7.36	7.8	7.7	7.7	7.91	7.9	7.15	7.52	7.79	7.83	7.83	7.81	7.86	7.9	7.28		7.07	7.67
	Specific Conductance	µMHOS/cm	EPA 120.1	EPA 120.1	NA	330	340	350	338	337	336	333	361	328	332	326	327	322	320	336	ND	ND		351	326
	TDS	mg/L	EPA 160.1	EPA 160.1	500 mg/L[b]	240	250	220	248	236	240	282	244	230	254	202	226	234	222	234	216	212		196	206
	Total Suspended Solids	mg/L	EPA 160.2	EPA 160.2	NA																12.5	ND		ND	ND
	Bicarbonate Alkalinity	mg/L	EPA 310.1	310.2	NA								90	82	82	86	90	84	84	86.2	101	92.2		82.1	86
	Total Alkalinity	mg/L			NA								90	82	82	86	90	84	84	86.2	101	92.2		82.1	86
Dissolved Metals	Aluminum	mg/L	SW846 6010A		16 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Antimony	mg/L			0.006 mg/L[c]												ND	ND	ND						
	Arsenic	mg/L			0.010 mg/L[c]	ND	ND	ND	0.0273	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Barium	mg/L			1.0 mg/L[a]	ND	0.109	ND	0.103	0.116	0.114	0.093	0.129	0.121	0.118	0.101	0.124	0.117	ND						
	Beryllium	mg/L			0.004 mg/L[c]												ND	ND	ND						
	Boron	mg/L			NA	ND	0.0238	0.0265	0.0249	0.027	ND	0.029	ND	0.23	ND	0.092									
	Cadmium	mg/L			0.005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0016	ND	ND	ND						
	Calcium	mg/L			NA	38	38.7	36.4	36.4	37.5	37.4	58.6		ND	34.8	33									
	Chromium	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	54.6 ?	ND	0.056	ND	ND	0.005	ND	ND						
	Cobalt	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Copper	mg/L			1.0 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Iron	mg/L			1.0 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	0.026	ND	ND	ND									
	Lead	mg/L			0.015 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Magnesium	mg/L			NA	6.88	6.51	6.27	7.82	5.98	6.34	6.09	5.89	6.31	6.2	5.62									
	Manganese	mg/L			0.05 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Molybdenum	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Nickel	mg/L			NA	ND	ND	ND	ND	ND	ND	0.013	ND	ND	ND	ND	ND	ND	ND						
	Potassium	mg/L			NA	2.25	1.8	2.35	1.91	2.36	2.21	2.61	2.52	2.57	2.18	3.01									
	Selenium	mg/L			0.05 mg/L[a]	ND	0.0113	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Silver	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Sodium	mg/L			NA	19.2	21.9	18.8	21.4	21.3	17.9	24.4	20.3	24.9	17.6	17.4									
	Thallium	mg/L			0.002 mg/L[c]												ND	ND	ND						
	Tin	mg/L			NA												ND	ND	ND						
	Uranium	µg/L			30 µg/L	ND	ND	ND	ND	ND	ND	ND	1	0.74	0.79	ND									
	Vanadium	mg/L			NA												0.005	0.008							
	Zinc	mg/L			5 mg/L[b]	ND	ND	0.0358	0.103	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Aluminum	mg/L		6020	16 mg/L[b]														ND	ND	ND	ND		ND	ND
	Antimony	mg/L			0.006 mg/L[c]															ND	ND	ND		ND	ND
	Arsenic	mg/L			0.010 mg/L[c]														ND	0.00154	0.00153	0.00152		0.00189	0.00183
	Barium	mg/L			1.0 mg/L[a]														0.099	0.108	0.112	0.111		0.114	0.123

Groundwater analysis for well MPL-06 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method	Reference Method Decmeber 2012	Regulatory Limit	September, October 2001	December 2001, January 2002	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 2008	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Total Metals	Beryllium	mg/L	SW846 6010A	6010B	0.004 mg/L[c]														ND	ND	ND	ND		ND	ND
	Boron	mg/L			NA														ND		ND	ND		ND	ND
	Cadmium	mg/L		6020	0.005 mg/L[c]														ND	ND	ND	ND		ND	ND
	Calcium	mg/L		6010B	NA														ND	ND	37.2	33.9		31.9	32.8
	Chromium	mg/L			0.05 mg/L[a]														ND	0.00437	0.0046	0.00397		0.00387	0.00398
	Cobalt	mg/L		6020	NA														ND	ND	0.000566	ND		ND	ND
	Copper	mg/L			1.0 mg/L[a]														ND	ND	0.00208	ND		ND	ND
	Iron	mg/L			1.1 mg/L[a]														ND	ND	ND	ND		ND	ND
	Lead	mg/L		6020	0.015 mg/L[c]														ND	ND	0.000617	ND		ND	ND
	Magnesium	mg/L		6010B	NA														ND	ND	48.5	6.05		6.29	6.38
	Manganese	mg/L		6020	0.05 mg/L[b]														ND	ND	0.0128	0.0131		0.0027	0.0046
	Mercury	mg/L	SW846 7470	7470C	NA	0.00024	ND	ND	ND	ND	ND	ND					ND	0.012	ND	ND	ND	ND		ND	ND
	Molybdenum	mg/L	SW846 6010A		NA														ND	ND	ND	ND		ND	ND
	Nickel	mg/L		6020	0.73 mg/L[c]														ND	ND	0.0081	ND		0.00421	ND
	Potassium	mg/L		6010B	NA														ND	ND	1.89	1.68		1.66	1.92
	Selenium	mg/L		6020	0.05 mg/L[a]														ND	0.00178	0.00896	0.00147		0.00313	0.00234
	Silver	mg/L			0.05 mg/L[a]														ND	ND	ND	0.000699		ND	ND
	Sodium	mg/L		6010B	NA														ND	ND	21.3	17.6		19.8	19.4
	Thallium	mg/L		6020	0.002 mg/L[c]															0.0002	ND	ND		ND	ND
	Tin	mg/L		6010B	NA																ND	ND		ND	ND
	Uranium	µg/L			30 µg/L														ND						
	Vanadium	mg/L			0.183 mg/L[c]									ND	ND				0.006	0.00558	0.00821	0.00535		0.00907 J	0.0096 J
	Zinc	mg/L		6010B	5 mg/L[b]														ND	ND	0.00676	0.0102		ND	ND
Radioactivity	Radium 226	pCi/L	EPA 903, 904		5pCi/L (226+228)	1.72	ND	ND	ND	ND	ND	ND													
	Radium 228	pCi/L				2.12	1.43	1.9	1.6	ND	ND	ND													
VOCs	1,2-Dichloroethane	mg/L	SW846 8260B	SW846 8260B	0.005 mg/L[c]																			ND	ND
	Acetone	µg/L			NA										ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
	Bromoform	µg/L			NA								ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
	Chloromethane	mg/L			tox										ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
	Toluene	mg/L			0.75 mg/L[a]																ND	ND		ND	ND
SVOCs	Benzo-a-pyrene	mg/L	SW846 8310		0.0002 mg/L[c]	ND	ND	ND	ND	ND	ND	ND													
	Phenols	mg/L	SW846 8081A/8082		0.005 mg/L[a]	ND	0.125	ND	ND	ND	ND	ND													
Pesticides	Total Pesticides	µg/L	SW846 8081A/8082		NA	ND	ND	ND	ND	ND	ND	0.0043										ND		ND	
	2,4-dichlorophenoxyacetic acid	mg/L			0.07 mg/L[c]	ND	ND	ND	ND	ND	ND	0.0043										ND		ND	
Organics	Explosives	mg/L	SW846 8330		NA	ND	ND	ND	ND	ND	ND	ND								ND	ND	ND			
	EDB	mg/L	EPA 504.1	8260B	0.00005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND												ND	ND
	PCBs	mg/L	SW846 8081A/8082		0.0005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND										ND		ND	ND
	TOC	mg/L	EPA 415.3	415.1	NA	ND	ND	3.23	1.99	ND	ND	ND	ND	ND	ND					1.41	1.42	ND		1.1 U	0.993 J
	TPH	mg/L	EPA 418.1		NA															ND	ND	ND		ND	
	DRO	mg/L			NA															ND	ND	ND		ND	
	GRO	mg/L			NA															ND	ND	ND		ND	
	p-Terphenyl-d14	µg/L			NA																ND	ND			
Other	Bromide	mg/L			NA															ND	ND	ND			
	Orthophosphate	mg/L	EPA 365.3	SM4500-P-E-20th	NA															ND	ND	ND		ND	ND

Groundwater analysis for well MPL-06 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method	Reference Method Decmeber 2012	Regulatory Limit	September, October 2001	December 2001, January 2002	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 2008	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
	Total Phosphorous	mg/L	EPA 365.4		NA															ND	ND	ND			

a	NMWQCC	EPA	Environmental Protection Agency	PCB	polychlorinated biphenyl	µMHOS/cm	micromhos per centimeter
b	EPA Tap Water Regulations	ft amsl	feet above mean sea level	pCi/L	picocuries per liter	VOC	volatile organic compound
c	EPA Primary Drinking Water Regulations	GRO	Gasoline range organics	SVOC	semi-volatile organic compound		Analyte not analyzed for during the given sampling event
d	Preliminary data	mg/L	milligrams per liter	TDS	total dissolved solids	3.54	Designates a value that is above the regulatory limit
e	NMED SSLs June 2012	NA	none available	TOC	total organic carbon	*NR*	Not reported. Only partial data is available for this sampling event,
DRO	Diesel range organics	ND	non-detect	µg/L	microgram per liter		the full suite of wells sampled and chemicals analyzed for is not available.
EDB	Ethylene dibromide						

Groundwater analysis for well MPL-19 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method	Reference Method December 2012	Regulatory Limit	September, October 2001	December 2001, January 2002	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 2008	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Water Level	Elevation	ft				3807.47	3805.04	3805.2	3805.07	3804.74	3804.74	*NR*	3804.9	3805.56	3804.31	3804.73	3803.32	3804.17	3804.51	3801.26	3801.29	3801.22		3800.66	3802.74
Cyanide	Amenable Cyanide	mg/L	SW846-9010B	SM4500-CN	0.2 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	0.0119	ND	ND	ND	ND	ND	ND	ND	ND	ND		0.00557	ND
	Total Cyanide	mg/L		9014-9010C		ND	ND	ND	ND	ND	ND	ND	0.0119	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
	Free Cyanide	mg/L		SM4500-CN		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0029	ND	ND	ND	ND				ND	ND
Dissolved ions	Chloride	mg/L	EPA 300.0	EPA 300.0	250 mg/L[a]	15	15	13	12.4	12.4	13	26.3	13.2	13	13.4	13	13.6	15.8	13.4	14.4	14.8	13.7		15.6	14.9
	Fluoride	mg/L			1.6 mg/L[a]	ND	ND	0.38	ND	ND	ND	ND	0.41	0.38	0.44	0.4	0.44	0.41	0.41	0.341	0.303	0.303		0.388	0.273
	Sulfate	mg/L			250 mg/L[b]	49	51	48	46	46.4	46.6	48.8	47.3	46.4	48.1	46.6	46.3	9.39	46.6	49.9	51.3	47.5		52.7	51.1
	Nitrate/Nitrite (NO_3+NO_2)	mg/L			10 mg/L[a]	2.3	3.3	2.3	2.68	2.09	2.02	1.88	2.09	2.07	2.47	2.13	2.13	3.24	1.55	2.52	2.3	0.59		2.19	2.7
Nutrients	Ammonia (NH_3+NH_4)	mg/L	EPA 350.1		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0824		0.0859 J	0.118
	TKN	mg/L	EPA 351.2		NA	ND	ND	ND	8.12	ND	ND	ND	ND	ND	ND	ND									
Water Quality	pH	s.u.	EPA 150.1	9040C	6.5-8.5[b]	7.93	7.53	6.31	7.9	7.7	7.7	7.51	7.85	7.93	7.82	7.92	7.83	7.78	7.84	7.77	7.74	7.69		8	7.86
	Specific Conductance	µMHOS/cm	EPA 120.1	EPA 120.1	NA	320	320	330	369	305	324	362	330	335	333	330	332	325	330	336	ND	ND		334	329
	TDS	mg/L	EPA 160.1	EPA 160.1	500 mg/L[b]	290	220	280	212	226	230	5.8	240	238	88	232	238	222	218	270	198	218		230	208
	Total Suspended Solids	mg/L	EPA 160.2	EPA 160.2	NA															ND	ND	ND		4 J	ND
	Bicarbonate Alkalinity	mg/L	EPA 310.1	310.2	NA								80	80	80	86	80	80	78	95.8	93.9	93.7		88.6	89.4
	Total Alkalinity	mg/L			NA								80	80	80	86	80	80	78	95.8	93.9	93.7		88.6	89.4
Dissolved Metals	Aluminum	mg/L	SW846 6010A		16 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Antimony	mg/L			0.006 mg/L[c]												ND	ND	ND						
	Arsenic	mg/L			0.010 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Barium	mg/L			1.0 mg/L[a]	0.0623	0.0659	ND	0.0801	0.079	ND	ND	0.071	0.076	0.074	0.086	0.083	0.079	ND						
	Beryllium	mg/L			0.004 mg/L[c]												ND	ND	ND						
	Boron	mg/L			NA	0.0226	0.0219	0.0217	0.0218	0.023	ND	ND	ND	ND	ND	ND									
	Cadmium	mg/L			0.005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Calcium	mg/L			NA	30.6	36.9	37.2	34.1	34	36.8	31.8			37	34.5									
	Chromium	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Cobalt	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Copper	mg/L			1.0 mg/L[a]	ND	ND	ND	ND	ND	0.019	ND	ND	ND	ND	ND	0.005	ND	ND						
	Iron	mg/L			1.0 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Lead	mg/L			0.015 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Magnesium	mg/L			NA	5.03	5.66	5.83	4.96	5.13	5.45	7.41	5.27	5.78	6.08	5.89									
	Manganese	mg/L			0.05 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Molybdenum	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Nickel	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Potassium	mg/L			NA	2.39	2.29	2.46	1.7	2.09	2.38	2.09	2.61	2.38	2.39	3.15									
	Selenium	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						

Groundwater analysis for well MPL-19 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method	Reference Method December 2012	Regulatory Limit	September, October 2001	December 2001, January 2002	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 2008	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
	Silver	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Sodium	mg/L			NA	19.3	18.5	19.1	22.4	21.1	20.7	43.6	18.1	19	19.5	16.7									
	Thallium	mg/L			0.002 mg/L[c]												ND	ND	ND						
	Tin	mg/L			NA												ND	ND	ND						
	Uranium	µg/L			30 µg/L	ND	ND	ND	ND	ND	ND	ND	0.65	0.68	0.72										
	Vanadium	mg/L			NA												0.007	ND	ND						
	Zinc	mg/L			5 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Aluminum	mg/L			16 mg/L[b]														ND	ND	ND	ND		ND	ND
	Antimony	mg/L		6020	0.006 mg/L[c]										ND					ND	ND	ND		0.001 U	ND
	Arsenic	mg/L		6020	0.010 mg/L[c]														ND	0.00211	0.00181	0.00162		0.00187	0.00176
	Barium	mg/L		6020	1.0 mg/L[a]														0.081	0.0812	0.0787	0.0743		0.0757	0.085
	Beryllium	mg/L		6010B	0.004 mg/L[c]										ND				ND	ND	ND	ND		ND	ND
	Boron	mg/L			NA														ND		ND	ND		ND	ND
	Cadmium	mg/L	SW846 6010A	6020	0.005 mg/L[c]														ND	ND	ND	ND		ND	ND
	Calcium	mg/L		6010B	NA														ND	ND	37.6	34.1		34.8	37
	Chromium	mg/L		6020	0.05 mg/L[a]														0.004	0.00361	0.00446	0.00362		0.0036	0.00316
	Cobalt	mg/L		6020	NA														ND	ND	ND	ND		ND	ND
	Copper	mg/L		6020	1.0 mg/L[a]														ND	0.00141	ND	ND		ND	0.00122 J
	Iron	mg/L			1.1 mg/L[a]														ND	ND	ND	ND		ND	ND
Total Metals	Lead	mg/L		6020	0.015 mg/L[c]														ND	ND	ND	ND		ND	ND
	Magnesium	mg/L		6010B	NA														ND	ND	5.92	5.61		6.14	5.72
	Manganese	mg/L		6020	0.05 mg/L[b]														ND	ND	0.00619	ND		0.00158 J	0.00132 J
	Mercury	mg/L	SW846 7470	7470C	NA	ND	ND	ND	ND	ND	ND	ND					ND	0.023	ND	ND	ND	ND		ND	ND
	Molybdenum	mg/L			NA														ND	ND	ND	ND		ND	ND
	Nickel	mg/L		6020	0.73 mg/L[e]														ND	0.00234	0.00256	ND		ND	ND
	Potassium	mg/L		6010B	NA														ND	ND	2.07	1.96		2.09	2.03
	Selenium	mg/L		6020	0.05 mg/L[a]														ND	0.00344	0.00157	0.00186		0.00249	0.00155
	Silver	mg/L		6020	0.05 mg/L[a]														ND	ND	ND	ND		ND	ND
	Sodium	mg/L	SW846 6010A	6010B	NA														ND	ND	22.2	19.4		20.5	21.2
	Thallium	mg/L		6020	0.002 mg/L[c]															ND	ND	ND		ND	0.000125 J
	Tin	mg/L		6010B	NA																ND	ND		ND	ND
	Uranium	µg/L			30 µg/L														ND						
	Vanadium	mg/L		6010B	0.183 mg/L[c]									ND	ND				0.008	ND	0.00927	0.00526		0.00665 J	0.00698 J
	Zinc	mg/L		6010B	5 mg/L[b]														0.005	0.0176	0.0199	0.0149		ND	ND
Radioactivity	Radium 226	pCi/L	EPA 903, 904		5pCi/L (226+228)	2.8	ND	1.55	ND	ND	ND	ND													
	Radium 228	pCi/L				ND	14.2	ND	4.77	ND	ND	ND													
	1,2-Dichloroethane	mg/L			0.005 mg/L[c]																			ND	ND
VOCs	Acetone	µg/L	SW846 8260B	SW846 8260B	NA										ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
	Bromoform	µg/L			NA								ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
	Chloromethane	mg/L			tox										ND	ND	ND	ND	ND	ND	ND	ND		ND	ND

Groundwater analysis for well MPL-19 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method	Reference Method December 2012	Regulatory Limit	September, October 2001	December 2001, January 2002	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 2008	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
	Toluene	mg/L			0.75 mg/L[a]	ND	ND	ND	ND	ND	ND	ND												ND	ND
SVOCs	Benzo-a-pyrene	µg/L	SW846 8310		0.0002 mg/L[c]	ND	ND	ND	ND	ND	ND	ND													
	Phenols	mg/L	SW846 8081A/8082		0.005 mg/L[a]	ND	ND	ND	ND	ND	ND	ND													
Pesticides	Total Pesticides	µg/L	SW846 8081A/8082		NA	ND	ND	ND	ND	ND	ND	ND										ND			
	2,4-dichlorophenoxyacetic acid	mg/L			0.07 mg/L[c]	ND	ND	ND	ND	ND	ND	ND										ND			
Organics	Explosives	mg/L	SW846 8330		NA	ND	ND	ND	ND	ND	ND	ND								ND	ND	ND			
	PCBs	mg/L	SW846 8081A/8082		0.0005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND										ND		ND	ND
	Herbicides (dicamba)	ug/L	SW846 8151A		NA	ND	22	ND	ND	ND	ND	ND													
	TOC	mg/L	EPA 415.3	415.1	NA	1.35	ND	1.34	3.06	ND	ND	ND	ND	ND	ND					1.1	0.96	2.27		0.742 J	ND
	EDB	mg/L	EPA 504.1	8260B	0.00005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND												ND	ND
	TPH	mg/L	EPA 418.1		NA															ND	ND	ND			
	DRO	mg/L			NA															ND	ND	ND			
	GRO	mg/L			NA															ND	ND	ND			
	p-Terphenyl-d14	µg/L			NA																ND	ND			
Other	Bromide	mg/L			NA															ND					
	Orthophosphate	mg/L	EPA 365.3	SM4500-	NA															ND	ND	ND	ND	ND	ND
	Total Phosphorous	mg/L	EPA 365.4		NA															ND					

a	NMWQCC	EPA	Environmental Protection Agency	PCB	polychlorinated biphenyl	µMHOS/cm	micromhos per centimeter
b	EPA Tap Water Regulations	ft amsl	feet above mean sea level	pCi/L	picocuries per liter	VOC	volatile organic compound
c	EPA Primary Drinking Water Regulations	GRO	Gasoline range organics	SVOC	semi-volatile organic compound		Analyte not analyzed for during the given sampling event
d	Preliminary data	mg/L	milligrams per liter	TDS	total dissolved solids	3.54	Designates a value that is above the regulatory limit
e	NMED SSLs June 2012	NA	none available	TOC	total organic carbon	*NR*	Not reported. Only partial data is available for this sampling event,
DRO	Diesel range organics	ND	non-detect	µg/L	microgram per liter		the full suite of wells analyzed and chemicals analyzed for is not available.
EDB	Ethylene dibromide						

Groundwater analysis for well MPL-20 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method	Reference Method December 2012	Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Water Level	Elevation	ft				3805.31	3807.21	3807.45	3807.16	3806.95	3806.95	*NR*	3807	3806.65	3806.64	3806.74	3806.59	3806.44	3806.46	3803.52	3803.52	3803.46		3803.38	3804.92
Cyanide	Amenable Cyanide	mg/L	SW846-9010B	SM4500-CN-C, G	0.2 mg/L[a]	0.062	0.246	0.253	0.183	0.0914	0.206	0.108	0.44	0.121	ND	0.422	0.217	0.056	0.338	0.0573	0.115	0.352		0.304	0.0739
	Total Cyanide	mg/L		9014-9010C		0.444	0.462	0.337	0.359	0.376	0.447	382	0.558	0.257	ND	0.494	0.22	0.142	0.338	0.428	0.0918	0.215		0.304	0.343
	Free Cyanide	mg/L		SM4500-CN-I		0.02	0.04	ND	0.02	0.05	0.05	0.02	0.035	0.035	ND	0.047	ND	0.078	ND	0.0525				0.0365	0.0368
Dissolved ions	Chloride	mg/L	EPA 300.0	EPA 300.0	250 mg/L[a]	68	9	76	70	68.4	68.5	15.2	68.6	74	ND	68.4	67.3	68	68.2	75.2	74.7	69.7		80	74.4
	Fluoride	mg/L			1.6 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	0.3	ND	ND	0.29	0.3	0.3	0.3	0.202	ND	0.172		0.186 J	ND
	Sulfate	mg/L			250 mg/L[b]	110	31	100	119	117	113	150	112	114	ND	110	107	106	106	113	105	101		102	95.5
	Nitrate/Nitrite (NO_3+NO_2)	mg/L		353.2	10 mg/L[a]	8.8	2.6	7.2	7.45	7.52	7.38	3.81	7.1	8.48	ND	7.54	7.61	8.97	6.73	8.3	7.28	7.39		7.41	9.12
Nutrients	Ammonia (NH_3+NH_4)	mg/L	EPA 350.1		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0687		0.161	0.082 J+
	TKN	mg/L	EPA 351.2		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.1									
Water Quality	pH	s.u.	EPA 150.1	9040C	6.5-8.5[b]	7.95	7.49	7.35	7.8	7.7	7.6	7.74	7.88	7.68	ND	7.84	7.76	7.7	7.66	7.5	7.53	7.62		7.77	7.68
	Specific Conductance	µMHOS/cm	EPA 120.1	EPA 120.1	NA	700	680	700	796	729	685	482	692	682	ND	676	676	673	674	677	ND	ND		642	624
	TDS	mg/L	EPA 160.1	EPA 160.1	500 mg/L[b]	550	480	500	456	468	438	6.7	483	506	ND	454	357	446	422	446	452	428		460	432
	Total Suspended Solids	mg/L	EPA 160.2	EPA 160.2	NA															ND	ND	ND		ND	ND
	Bicarbonate Alkalinity	mg/L	EPA 310.1	EPA 310.1	NA								76	75	ND	74	75	72	73	69.4	78.7	90.9		84.6	89.5
	Total Alkalinity	mg/L			NA								76	75	ND	74	75	72	73	69.4	78.7	90.9		84.6	89.5
Dissolved Metals	Aluminum	mg/L	SW846 6010A		16 mg/L[b]	ND	ND	ND	0.105	ND	ND	ND	ND	ND	ND	ND									
	Antimony	mg/L			0.006 mg/L[c]												ND	ND	ND						
	Arsenic	mg/L			0.010 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Barium	mg/L			1.0 mg/L[a]	0.0693	0.0717	ND	0.0872	0.083	ND	ND	0.08	0.07	ND	0.078	0.078	0.073	ND						
	Beryllium	mg/L			0.004 mg/L[c]												ND	ND	ND						
	Boron	mg/L			NA	0.0141	0.0138	0.0141	0.0182	0.016	ND	ND	ND	ND	ND	ND									
	Cadmium	mg/L			0.005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Calcium	mg/L			NA	76.9	84.4	82.1	81.7	73.3	76.3	33.2		ND	ND	81.2									
	Chromium	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Cobalt	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Copper	mg/L			1.0 mg/L[a]	ND	ND	ND	ND	ND	0.019	ND	ND	ND	ND	ND	0.009	ND	ND						
	Iron	mg/L			1.0 mg/L[a]	0.175	0.204	0.169	0.194	0.181	0.174	0.157	0.167	0.157	ND	0.153									
	Lead	mg/L			0.015 mg/L[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Magnesium	mg/L			NA	12.6	13.5	14.6	14	13.1	13.1	15.3	13.8	14.4	ND	13.5									
	Manganese	mg/L			0.05 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Molybdenum	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND									
	Nickel	mg/L			NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Potassium	mg/L			NA	3.62	3.14	3.55	2.26	2.93	3.47	1.93	3.51	2.4	ND	4.14									
	Selenium	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Silver	mg/L			0.05 mg/L[a]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Sodium	mg/L			NA	33.3	32.1	34.1	36.1	36.6	35.4	23.8	34.2	32	ND	30.7									
	Thallium	mg/L			0.002 mg/L[c]												ND	ND	ND						
	Tin	mg/L			NA												ND	ND	ND						
	Uranium	µg/L			30 µg/L	ND	ND	ND	ND	ND	ND	ND	0.64	0.65	ND	ND									
	Vanadium	mg/L			NA												0.005	ND	ND						
	Zinc	mg/L			5 mg/L[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.012	ND	ND	ND						
	Aluminum	mg/L			16 mg/L[b]				ND										ND	ND	ND	ND		ND	ND
	Antimony	mg/L		6020	0.006 mg/L[c]										ND					ND	ND	ND		0.001 U	ND
	Arsenic	mg/L		6020	0.010 mg/L[c]														ND	0.00653	0.00845	0.00495		0.00313	0.0039
	Barium	mg/L		6020	1.0 mg/L[a]														0.071	0.0759	0.0686	0.0662		0.0653	0.0728
	Beryllium	mg/L		6010B	0.004 mg/L[c]										ND				ND	ND	ND	ND		ND	ND
	Boron	mg/L			NA														ND		ND	ND		ND	ND

Groundwater analysis for well MPL-20 for sampling events from September 2001 through December 2012

Group	Parameter	Units	Reference Method	Reference Method December 2012	Regulatory Limit	September, October 2001	December 2001, January 02	May, June 2002	February, March 2003	June 2003	December 2003	June 2004	February, March 2005	June, July 2005	November, December 2005	June 2006	February, March 2007	June, July 2007	December 2007, January 08	August 2010	January, February 2011	July, August 2011	January 2012[d]	July 2012	December 2012
Total Metals	Cadmium	mg/L	SW846 6010A	6020	0.005 mg/L[c]														ND	ND	ND	ND		ND	ND
	Calcium	mg/L		6010B	NA														ND	ND	74.9	71.5		65.1	73
	Chromium	mg/L		6020	0.05 mg/L[a]														ND	0.00286	0.00333	0.00202		0.00231	0.00171 J
	Cobalt	mg/L		6020	NA														ND	ND	ND	ND			ND
	Copper	mg/L		6020	1.0 mg/L[a]														ND	0.00121	ND	ND		0.00174 J	0.00145 J
	Iron	mg/L			1.1 mg/L[a]														ND	ND	ND	ND		ND	0.00361 J
	Lead	mg/L		6020	0.015 mg/L[c]														ND	ND	ND	ND		ND	ND
	Magnesium	mg/L		6010B	NA														ND	ND	12.4	11.9		12.9	12.3
	Manganese	mg/L		6020	0.05 mg/L[b]														ND	ND	ND	ND		0.00307	ND
	Mercury	mg/L	SW846 7470	7470C	NA	ND	ND	ND	ND	ND	ND	ND					ND	0.02	ND	ND	ND	ND		ND	ND
	Molybdenum	mg/L	SW846 6010A		NA														ND	ND	ND	ND		ND	ND
	Nickel	mg/L		6020	0.73 mg/L [e]														ND	0.0036	0.00406	0.00247		0.00374 J	0.00361 J
	Potassium	mg/L		6010B	NA														ND	ND	2.72	2.47		2.61	2.68
	Selenium	mg/L		6020	0.05 mg/L[a]														ND	0.0245	0.031	0.0181		0.0156	0.0128
	Silver	mg/L		6020	0.05 mg/L[a]														ND	ND	ND	ND		ND	ND
	Sodium	mg/L		6010B	NA														ND	ND	34.7	30.6		32.8	33.4
	Thallium	mg/L		6020	0.002 mg/L[c]															ND	ND	ND		ND	0.000209
	Tin	mg/L		6010B	NA																ND	ND		ND	ND
	Uranium	µg/L			30 µg/L														ND						
	Vanadium	mg/L			0.183 mg/L[e]									ND	ND				ND	ND	ND	ND		0.00655 J	ND
	Zinc	mg/L		6010B	5 mg/L[b]														0.007	0.0156	0.0216	0.0254		ND	0.0158 J
Radio activity	Radium 226	pCi/L	EPA 903, 904		5pCi/L (226+228)	3.66	1.16	ND	ND	ND	ND	ND													
	Radium 228	pCi/L				3.12	6.14	0.94	5.12	ND	ND	ND													
VOCs	Acetone	µg/L	SW846 8260B	SW846 8260B	NA										ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
	1,2,-Dichloroethane	mg/L			0.005 mg/L[c]																			ND	ND
	Bromoform	µg/L			NA								ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
	Chloromethane	mg/L			tox										ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
	Toluene	mg/L			0.75 mg/L[a]	ND	ND	ND	ND	ND	ND	ND												ND	ND
SVOCs	Benzo-a-pyrene	µg/L	SW846 8310		0.0002 mg/L[c]	ND	ND	ND	ND	ND	ND	ND													
	Phenols	mg/L	SW846 8081A/8082		0.005 mg/L[a]	ND	ND	0.211	ND	ND	ND	ND													
Pesticides	Total Pesticides	µg/L	SW846 8081A/8082		NA	ND	ND	ND	ND	ND	ND	ND		ND								ND			
	2,4-dichlorophenoxyacetic acid	mg/L			0.07 mg/L[c]	ND	ND	ND	ND	ND	ND	ND										ND			
Organics	Explosives	mg/L	SW846 8330		NA	ND	ND	ND	0.5486	ND	ND	ND								ND					
	PCBs	mg/L	SW846 8081A/8082		0.0005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND										ND		ND	ND
	Herbicides (dicamba)	ug/L	SW846 8151A		NA	ND	13	ND	ND	ND	ND	ND													
	TOC	mg/L	EPA 415.3	415.1	NA	3.07	ND	2.13	3.6	ND	ND	ND	ND	ND	ND					1.56	0.701	1.94		1.04	0.611 J
	EDB	mg/L	EPA 504.1	8260B	0.00005 mg/L[c]	ND	ND	ND	ND	ND	ND	ND												ND	ND
	TPH	mg/L	EPA 418.1		NA															ND	ND	ND			
	DRO	mg/L			NA															ND	ND	ND			
	GRO	mg/L			NA															ND	ND	ND			
	p-Terphenyl-d14	µg/L			NA																ND	ND			
Other	Bromide	mg/L			NA															ND					
	Orthophosphate	mg/L	EPA 365.3	SM4500-P-E-20th	NA															ND	ND	ND	ND	ND	ND

APPENDIX B

CLOSURE/POST-CLOSURE PLAN APPROVAL

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The New Mexico Environment Department
hereby issues this

Closure/Post-Closure Care Approval Notification
White Sands Missile Range Main Post & Asbestos LF

Type of Facility: Municipal Solid and Asbestos Waste Landfill (Was a registered unlined landfill)

Facility ID No: CPC-030720

Facility Name & Location:
White Sands Missile Range Main Post LF
S of Hwy 70, ~ 20 miles E of Las Cruces
Township 22S, R5E,Sections 21, 22 & 27
Dona Ana County, New Mexico

Operator's Name & Address:
U.S. Army White Sands Missile Range
100 Headquarters Ave.
White Sands Missile Range, NM 88002

Closure/Post-Closure Approval Date: ***June 15, 2011***
Closure/Post-Closure Expiration Date: ***June 15, 2041***

Given this 20th *day of* June, *2011.*

Auralie Ashley-Marx
Bureau Chief-Solid Waste Bureau

*** See attached closure conditions**

NEW MEXICO
ENVIRONMENT DEPARTMENT

Solid Waste Bureau

BILL RICHARDSON
Governor
DIANE DENISH
Lieutenant Governor

Harold Runnels Building – Room 2050
1190 St Francis Dr.
PO Box 5469, Santa Fe, NM 87502-5469
Phone (505) 827-0197 Fax (505) 827-2902
www.nmenv.state.nm.us

RON CURRY
Secretary
JON GOLDSTEIN
Deputy Secretary

November 9, 2009

Thomas Ladd
Director, Public Works
100 headquarters Avenue
White Sands Missile Range, NM 88002-5000

RE: Closure Notification for the WSMR main Post & Asbestos Landfills

Dear Mr. Ladd:

The Solid Waste Bureau is sending you documentation for the closure of the White Sands Missile Range Main Post and Asbestos Landfill.

The Bureau has enclosed the Secretary's approval of the Closure and Post-Closure Care Plan (CPC) for the WSMR Landfill with Conditions.

A final Closure Certificate will be issued once the engineers report has been received and verified as noted in Condition 6 of the closure approval. **Please submit this report within 30 days of receipt of this letter unless otherwise approved by the Bureau**. This report will have the start and 30-year expiration post-closure dates on it.

Please contact me if you have any questions.

Sincerely,

Terry Nelson
Permit Section Manager

Attachments: Secretary's approval with Conditions

cc: John Offersen, Permit Section, SWB
Chuck Akeley, Enforcement Manager, SWB
EA-IV
James Bearzi, Chief, Hazardous Waste Bureau
Bob Peters, WSMR
Kelly Fort, Zia Engineering

NEW MEXICO
ENVIRONMENT DEPARTMENT

Office of the Secretary

BILL RICHARDSON
Governor
DIANE DENISH
Lieutenant

Harold Runnels Building
1190 Saint Francis Drive (87505)
PO Box 5469, Santa Fe, NM 87502-5469
Phone (505) 827-2855 Fax (505) 827-2836
www.nmenv.state.nm.us

RON CURRY
Secretary
JON GOLDSTEIN
Deputy Secretary

WHITE SANDS MISSILE RANGE MAIN POST & ASBESTOS LANDFILLS CLOSURE AND POST-CLOSURE CARE PLAN APPROVAL & CONDITIONS

Owner:	U.S. Army White Sands Missile Range
Operator:	U.S. Army White Sands Missile Range
Facility:	White Sands Missile Range Main Post & Asbestos Landfills
Location:	T 22S, R 5E, Sections 21, 22 & 27– Dona Ana County, NM

Pursuant to Section 20.9.6 of the New Mexico Solid Waste Management Rules (20.6.2-10 NMAC), and after providing Public Notice in accordance with Section 20.9.6.8.G; the New Mexico Environment Department hereby approves the Closure and Post-Closure Care (CPC) Plan of the aforementioned facility subject to the following conditions:

1. Monitor on an annual basis for methane.
2. Monitor for ground water on an annual basis unless otherwise required by the Department. Submit ground water reports to the Bureau within 90 days of the sampling date. Notify the Department of any ground water exceedances per the Rules.
3. Routinely monitor and repair as necessary any erosion of the final cover including subsidence and settlement areas on the top and sideslopes.
4. Maintain integrity of fencing around the site.
5. Submit annual monitoring summary reports to the Bureau within 45 days of the end of each calendar year unless an exceedance is noted and then report as per the Solid Waste Rules.
6. Within 60 days of closure completion submit a closure report to the Department to include summary of closure activities and certification by a registered New Mexico professional engineer that the closure has been completed and all conditions of the approved plan satisfied.

Ron Curry
Secretary - NMED

Approval Date 11/9/05

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APPENDIX C

METHANE MONITORING RESULTS

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QUARTERLY
LANDFILL METHANE MONITORING
FIRST QUARTER 2007
WHITE SANDS MISSILE RANGE

Submitted to:

Joe Talamantes

U.S. Army
White Sands Missile Range
National Range Support Directorate
Engineering Division
White Sands Missile Range, New Mexico 88002

Submitted by:

SafeNet Environmental Services, LLC
6500 Boeing Suite T-1
El Paso, Texas 79925

CH_4 Gas survey completed and prepared by:

Concurrence:

03/21/07
Oscar E. Ayala

03/21/07
Brandon A. Ayala

QUARTERLY LANDFILL GAS MONITORING
FIRST QUARTER 2007
THE MAIN POST CONSTRUCTION AND DEMOLITION LANDFILL
WHITE SANDS MISSILE RANGE

Executive Summary

The following report pertains to the ongoing quarterly landfill gas monitoring for the landfill located at the Main Post Construction and Demolition Landfill, White Sands Missile Range, New Mexico. At the request of White Sands Missile Range, SafeNet Services, LLC (SafeNet) conducted the gas monitoring on March 21, 2007, for the 1st quarter of 2007.

Findings:

Methane Gas- Results indicate that no methane gas was detected at any of the sampling points.

This facility has a fence line of 2420.58 meters or 7941.54 feet enclosed by chain-linked and barbed wire fence. The reported site lithology is a sandy soil with some silt to thirty feet. This quarterly monitoring was conducted in accordance with, and to comply in part with the New Mexico Environmental Department, Solid Waste Bureau, 20 NMAC 9.1 permitting for solid waste facilities.

The requirements are to ensure the concentration of explosive gases generated by this facility or practice comply with 20 NMAC 9.1, Subpart IV 403 C, and shall not exceed:

1.) Twenty-five percent (25%) of the lower explosive limit for the gases in facility structures (excluding gas control or recovery system components); and
2.) The lower explosive limit for gases at the property boundary.

On March 21, 2007, SafeNet personnel conducted monitoring operations for the possible migration of methane (CH_4) as directed by the Regulatory Compliance Office, White Sands Missile Range (WSMR) and in compliance with New Mexico Environmental Department, Solid Waste Bureau. Landfill gas monitoring points were selected within the landfill area at the property boundary at approximately 300-foot intervals. Each sampling point was taken at a total depth of three (3) feet below ground surface (bgs.) utilizing soil gas sampling technology. Monitoring points are presented in the Methane Sampling Location Map located in the Appendix. This monitoring event also encompassed all buildings within the permitted facility. All gas-monitoring points were conducted by constructing monitoring probes using the soil gas vapor impact probe system, and a Landtec GEM2000 portable gas detection meter. The GEM2000 meter was properly calibrated as to the manufactures specifications and utilized within the instrument's manufactures criteria for monitoring landfill gas. Identical methodology was utilized throughout the gas-monitoring event.

A total of twenty-seven (27) gas-monitoring points were conducted, within the landfill permitted area. Results from our on-site field analyses are presented as Landfill Gas Monitoring Results, downloaded from the Landtec GEM2000.

Introduction and Scope

The Main Post Construction and Demolition Landfill (landfill facility) is located at White Sands Missile Range, New Mexico. The facility has a fence line of 2420.58 meters or 7941.54 feet enclosed by chain-linked and barbed wire fence with two buildings. One building is currently utilized as a guardhouse and the other is a vacant guardhouse within the property boundary and is represented in this report as "Methane Sampling Location Map" located in the Appendix. The stratigraphy beneath the site is a sandy soil with some silt to thirty feet, as reported by WSMR. Examination of the retained soil retrieved from around the soil vapor probes during the sampling process verified this to a depth of three feet.

To comply in part with the New Mexico Environmental Department, Solid Waste Bureau, 20 NMAC 9.1 permitting for solid waste facilities, quarterly landfill gas monitoring must be conducted for explosive gases. The requirements are to ensure the concentration of explosive gases generated by this facility or practice comply with 20 NMAC 9.1, Subpart IV 403 C, and shall not exceed:

1.) Twenty-five percent (25%) of the lower explosive limit for the gases in facility structures (excluding gas control or recovery system components); and
2.) The lower explosive limit for gases at the property boundary.

The sampling probe used in this monitoring event is a patented, re-usable; AMS Retract-A-Tip designed as a survey tool for collection of discrete soil gas samples. It is constructed of hardened stainless steel and is designed to open when the drive extensions are retracted by 2 inches. The sampling probe was driven into the soil using a heavy duty Bosch 11245 rotary hammer drill with a 5/8-inch diameter x 3-foot long extension drive rod. Once installed, the drive extension was retracted 2 inches. In this open position, a gas sample was collected utilizing a Landtec GEM2000 meter. Teflon tubing was used in conjunction with the GEM2000 for soil gas transference media.

To comply with the Main Post Landfill Operating Plan application permit, the quarterly landfill methane gas monitoring will be conducted in the following manner.

1.) Request and receive utility clearance from White Sands Missile Range.

2.) Non-discrete monitoring points will be installed along the facility perimeter at 300-foot intervals (27 collection points were identified).

3.) Monitoring points will include the inside of all facility structures; a Photo Ionization Detector (intrinsically safe) will be utilized before entering closed structures.

4.) Bar-hole or soil gas vapor probes will be installed for monitoring points to a depth of three feet.

5.) A Landtec GEM2000 Gas Analyzer or other combustible gas indicator (GEM2000) that utilizes the catalytic oxidation method or thermal conductivity will be used to detect and record combustible gas levels. Notify Regulatory Compliance Office, WSMR immediately if methane concentrations are detected at or near the limiting concentrations.

6.) Report all procedures used and the results in a quality that can be submitted to the State of New Mexico, Environment Department.

Sampling Plan

On March 21, 2007 SafeNet conducted monitoring operations for the possible migration of methane (CH_4) as directed by the WSMR Regulatory Compliance Office, in compliance with New Mexico Environmental Department, Solid Waste Bureau. A permit was obtained from WSMR as to the location of any buried utility lines (gas, water, electrical) at, near, or crossing the property boundary. The only utility identified was a phone line located in front of the guardhouse area. This area was avoided during the sampling event. Landfill gas monitoring points were then selected within the landfill area at the property boundary at approximately 300-foot intervals utilizing a Trumeter measuring wheel. A soil gas vapor probe was installed at each monitoring point utilizing the following procedures:

(1) Typical Soil Gas Vapor Probe Installation (27 each at 300' intervals):

- A pilot hole was first installed utilizing a heavy-duty hammer drill and soil probe, a 5/8-inch diameter rod with a stainless steel tip, which was driven approximately 2 ½ feet into the soil. Soils showed to be sandy with little silt.

- The soil probe was withdrawn to allow for the placement of the sampling tip (AMS Retract-A-Tip).

- Place the sampling tip onto the 5/8-inch hollow rod and a probe adapter that allowed for a ¼" ID Teflon sample tube to be attached. The heavy-duty hammer drill was used to drive the sample to a total depth of 3 feet below ground surface.

- The Landtec- GEM2000 was then attached to the Teflon tubing and a sample was collected. (See: GEM2000 *Infrared Gas Analyzer*).

- The probe was withdrawn from the hole and the screen checked for plugging or damage, when necessary probe screens were replaced as to insure appropriate consecutive readings and functionality of the probe.

- Each location was identified by a round marker attached with tin-plated wire onto the chain-linked or barbwire fence that surrounded the property, thus allowing for future sampling reference points.

Note: Operators measured and recorded the depth of each probe to insure standardization with each probe placement.

(2) On-site structures

There are two on-site structures, one is a small concrete building used as a landfill office and the other is a vacant guardhouse. The monitoring measurement was taken 6 feet from the north wall of the vacant structure. Landscaping gravel has been placed around the landfill office; therefore the sample by the office was moved to approximately 30 feet north of the building. All results were data logged and downloaded to computer (See: *Results and Findings*).

(3) GEM2000 **Infrared Gas Analyzer**

The Landtec GEM2000 is a compact field instrument that can and was configured to analyze the methane (CH_4), carbon dioxide (CO_2) and oxygen (O_2) levels in landfill gas (LFG). It is an approved instrument in monitoring migration gases, active and passive gas extraction systems and measuring LFG at flares or other approved control systems. This instrument uses computer technology that displays on-screen menus to provide a simplified user interface for accurate data analysis and recording. All information collected was dated and time stamped and readings were stored in memory. The data was later downloaded via a serial connection to a computer, then inserted into our table template and submitted into our report as Landfill Gas Monitoring Results.

This unit works with a vacuum sample pump that draws a quantity of gas through the sample hose, in-line water trap and the user replaceable particulate filter, into a sample chamber. An infrared beam is projected, via sapphire windows, through the gas sample. On the other side of the chamber, methane and carbon dioxide detectors sense the beam. A microprocessor calculates the amount of infrared light absorbed at different wavelengths and determines the various gas concentrations.

When a sufficient amount of gas has entered the sample chamber, gas concentration levels were shown on the display as it stabilizes (approximately 60 seconds). The SafeNet technician, with a few keystrokes, stores the measurement data in memory utilizing a unique I.D. code, as well as the date and time.

(4) Combustible Gas Instrument Field Calibration

The Landtec GEM2000 Gas Analyzer utilizes an internal pump to pull air into the calibration map that is accessed by its microprocessor for baseline reference data. This reference data, as stated by the manufacture, was programmed into the GEM2000 during the factory calibration using various gas mixtures in an environmental chamber. The GEM2000 can be cleared of user calibration settings and restored to "factory settings" as needed. The factory calibration has been designed to give the best possible results over a wide range of conditions. However, SafeNet technicians performed "field calibrations" to improve the instrument's accuracy for this monitoring event. Each field calibration on-site was performed at stabilized working temperature. Whenever temperature changes occurred during the operation, the GEM2000 was re-calibrated (example: the cool of the morning to the hottest part of the day). Field calibration was performed using the manufacturer's recommended gas mixture for low concentrations which are 15/15 (15% methane, 15% carbon dioxide), 4 % oxygen and balance nitrogen, 15/15% and 4.0% oxygen/nitrogen. (See Landtec GEM2000 Operation Manual for procedures)

(5) Probe Purging:

The probe condition was checked for structural integrity and suitability for monitoring before each use. After the probe had been driven to the desired sampling depth (3 feet), it was purged (evacuated) to remove ambient air. Typically purging can be accomplished using either a hand pump, peristaltic pump, or pump attached to the top of the probe via PVC or polyethylene tubing. The GEM2000 used in this event (see GEM2000 *Infrared Gas Analyzer*) was designed with an internal pump that did actively draw the vapor sample into the instrument for continual analysis.

The GEM2000 was used alone, due to the shallow depth of each probe in this monitoring event, for the purging of each probe point via the internal pump. Purge time was based on the volume of the probe sampling system, and purging done long enough to remove 1 to 5 casing volumes of air from the system. Purge volumes and times were recorded within the GEM2000, which are presented as Landfill Gas Monitoring Results, and also on field forms. A particulate-moisture trap was placed between the probe and the GEM2000 to prevent damage to the instrument. This trap was checked before each use or sampling point due to the soil make up (sand and silt) with the possible vacuum pickup of particulate from the probe. The GEM2000 was directly connected to the vapor probe with ¼" Teflon tubing.

Results and Findings

SAMPLE NUMBER SES-	CH_4%	Co_2 %	O_2%	ATMOSPHERIC PRESSURE "HG"	Temp. DegF	DEPTH FEET
1	0	0	20.5	25.92	73	3ft
2	0	0	20.7	25.92	73	3ft
3	0	0	20.7	25.92	73	3ft
4	0	0	20.9	25.91	73	3ft
5	0	0	20.8	25.91	73	3ft
6	0	0	20.8	25.91	73	3ft
7	0	0	20.9	25.92	73	3ft
8	0	0	21.0	25.92	73	3ft
9	0	0	21.2	25.91	73	3ft
10	0	0	20.8	25.93	73	3ft
11	0	0	20.7	25.92	73	3ft
12	0	0	20.7	25.92	73	3ft
13	0	0	21.3	25.92	73	3ft
14	0	0	21.0	25.93	73	3ft
15	0.1	0	21.1	25.93	73	3ft
16	0.1	0	21.1	25.94	73	3ft
17	0	0	21.1	25.94	73	3ft
18	0.1	0	21.0	25.94	73	3ft
19	0.1	0	20.9	25.95	73	3ft
20	0.1	0	21.1	25.95	73	3ft
21	0	0	21.2	25.95	73	3ft
22	0	0	21.0	25.96	73	3ft
23	0	0	21.0	25.96	73	3ft
24	0	0	21.0	25.96	73	3ft
25	0	0	21.1	25.97	73	3ft
26	0	0	21.2	25.97	73	3ft
27	0	0	20.8	25.97	73	3ft

Discussion

This quarterly monitoring was conducted in accordance with the New Mexico Environmental Department, Solid Waste Bureau, 20 NMAC 9.1 permitting for solid waste facilities. This field investigation as shown in the results, verified non-detectable levels of methane at the facility's property boundary and within all facility's structures.

Sincerely,

Oscar E. Ayala
SafeNet Services, LLC
cc: file

WSMR Enviro Administrative Record
2880000369581

200-1L
N145-EMR
2011

DEPARTMENT OF THE ARMY
U.S. ARMY GARRISON WHITE SANDS
100 Headquarters Avenue
WHITE SANDS MISSILE RANGE, NEW MEXICO 88002-5000

JAN 13 2011

REPLY TO
ATTENTION OF
Directorate of Public Works

Mr. Terry Nelson
New Mexico Environment Department
Solid Waste Bureau
Harold Runnels Building Room S2050
1190 St. Francis Drive
P.O. Box 5469
Santa Fe, NM 87502-5469

Dear Mr. Nelson:

As required by Solid Waste Management Regulation NMAC 20.9.5.9.C Solid Waste Facility and Commercial Haulers Operating Requirements, the Fourth Quarter CY2010 methane monitoring form for White Sands Missile Range Main Post Landfill is enclosed. These results indicate an absence of methane in all samples. Also enclosed is a map of the landfill that shows the locations of the monitoring wells at which the samples were taken.

Please note that this event is the last quarterly sampling event for the Main Post Landfill due to implementation of the Closure and Post-Closure Care Plan for the Main Post Municipal Landfill. White Sands Missile Range is proceeding with the schedule and conditions in the approved plan and will monitor methane annually.

Please contact Mr. Javier Mendoza (575) 678-2225 if you have any questions.

Sincerely,

Thomas A. Ladd

Thomas A. Ladd
Director, Public Works

Enclosure

WHITE SANDS MISSILE RANGE METHANE MONITORING FORM

Landfill Name: Main Post Landfill Sampler Name: Javier Mendoza

Date: 17 December 2010 Barometric Pressure: 26.01 & Rising Temperature: 72° F

Weather conditions: Sunny

Wind Direction: Southwest Wind Speed: 1 knot gust three

Date & amount of last precipitation (within last 48 hours): 0

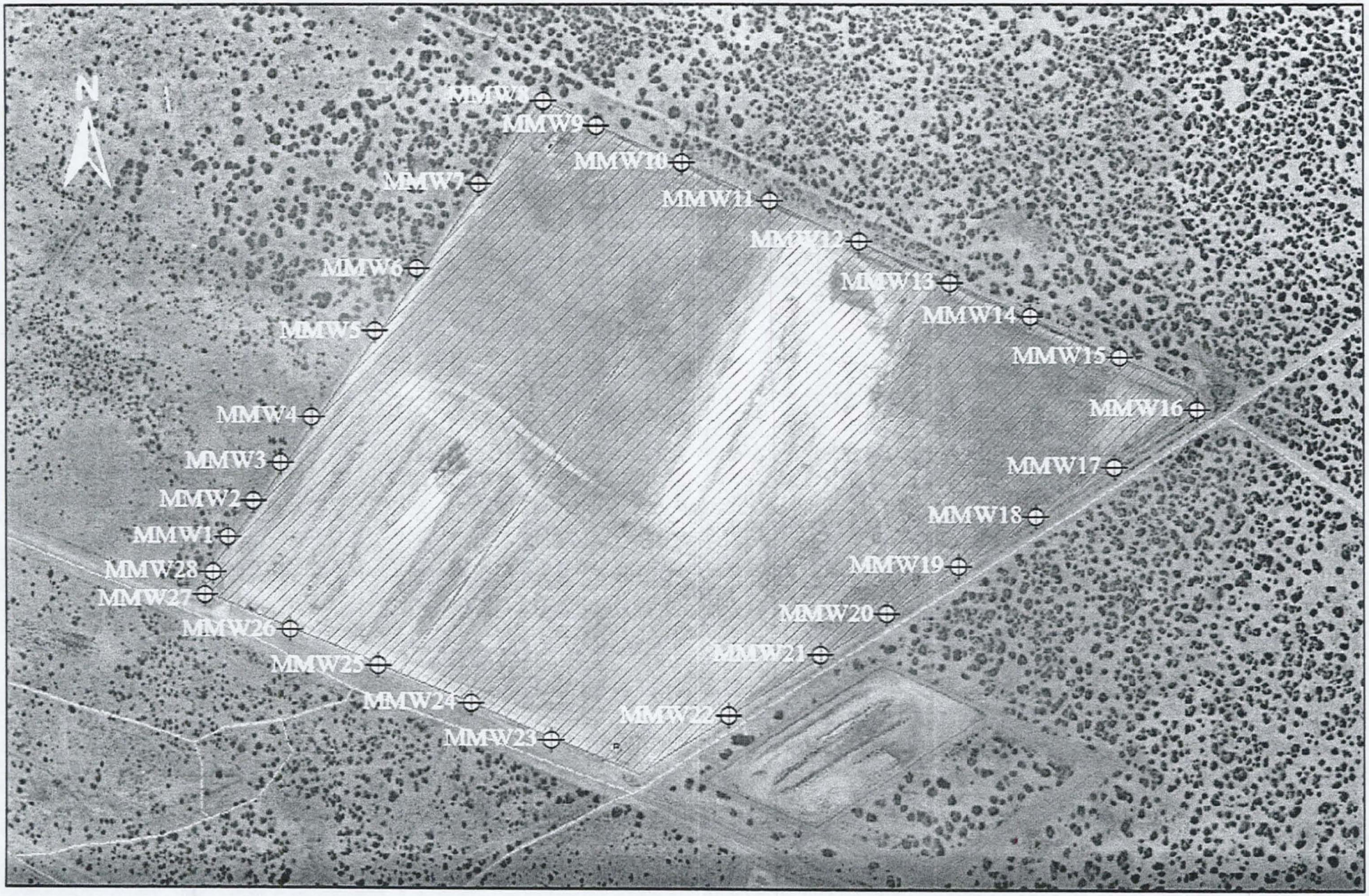
Instrument: Gem 2000 Date instrument last calibrated: June

Methane sampling type: Probe Probe/Well Depth: 3 ft

Location (use GPS location if needed)	Sampling Time	CH4 in air %	O2 %	CO2 %	N2 or Balance gas %
MMW1	0922	0	20.9	0	79.6
MMW2	0928	0	20.8	0	79.1
MMW3	0930	0	20.9	0	79.5
MMW4	0936	0	20.8	0	79.2
MMW5	0942	0	21.0	0	79.5
MMW6	0946	0	20.9	0	79.1
MMW7	0950	0	20.8	0	79.5
MMW8	0954	0	20.9	0	79.5
MMW9	0956	0	20.8	0	79.2
MMW10	1001	0	20.8	0	79.4
MMW11	1005	0	20.8	0	79.5
MMW12	1009	0	20.8	0	79.5
MMW13	1012	0	20.7	0	79.4
MMW14	1015	0	20.7	0	79.4
MMW15	1019	0	20.7	0	79.4
MMW16	1022	0	20.6	0	79.5
MMW17	1027	0	20.6	0	79.5
MMW18	1031	0	20.8	0	79.2

Location (use GPS location if needed)	Sampling Time	CH4 in air %	O2 %	CO2 %	N2 or Balance gas %
MMW19	1035	0	20.7	0	79.6
MMW20	1038	0	20.4	0	79.6
MMW21	1042	0	20.6	0	79.6
MMW22	1046	0	20.6	0	79.5
MMW23	1052	0	20.6	0	79.6
MMW24	1055	0	20.8	0	79.6
MMW25	1158	0	20.5	0	79.5
MMW26	1101	0	20.8	0	79.7
MMW27	1105	0	20.4	0	79.8
MMW28	1109	0	20.8	0	79.7

***Attach a map of the facility with labeled methane sampling point locations including buildings.**



MAIN POST LANDFILL

Monitoring Wells (3' Depth)

Main Post Landfill

0 50 100 200 Meters

DEPARTMENT OF THE ARMY
U.S. ARMY GARRISON WHITE SANDS
100 Headquarters Avenue
WHITE SANDS MISSILE RANGE, NEW MEXICO 88002-5000

REPLY TO
ATTENTION OF

Directorate of Public Works

JAN 2 0 2012

Mr. George Schuman
Manager, Permit Section
New Mexico Environment Department
Harold Runnels Building Room S2050
1190 St. Francis Drive
Santa Fe, New Mexico 87502-5469

Dear Mr. Schuman

As required by the White Sands Missile Range Main Post and Asbestos Landfill Closure and Post-Closure Care Plan approved by the New Mexico Environment Department on November 9, 2009, the annual 2011 methane monitoring report is enclosed.

The data is provided as a Post-Closure Plan requirement for the Main Post and Asbestos Landfills. The results indicate an absence of methane in all samples. Also enclosed is a map showing the locations of the monitoring wells.

Please contact Mr. Javier Mendoza of our Environmental Division, Environmental Compliance Branch at (575) 678-2225 if you have any questions regarding this matter.

Sincerely,

Thomas A. Ladd

Thomas A. Ladd
Director, Public Works

Enclosures

WHITE SANDS MISSILE RANGE MONITORING FORM

Landfill Name: Main Post Landfill Sampler Name: Javier Mendoza

Date: 12/14/11 Barometric Pressure: 25.72in Temperature: 49 F

Weather conditions: (*partly cloudy, wind*)

Wind Direction: NE Wind Speed: 17.8 – 29.8 mph

Date & amount of last precipitation (within last 48 hours): 0.19 in.

Instrument: Landtec GEM 2000 Date instrument last calibrated: 12/14/11

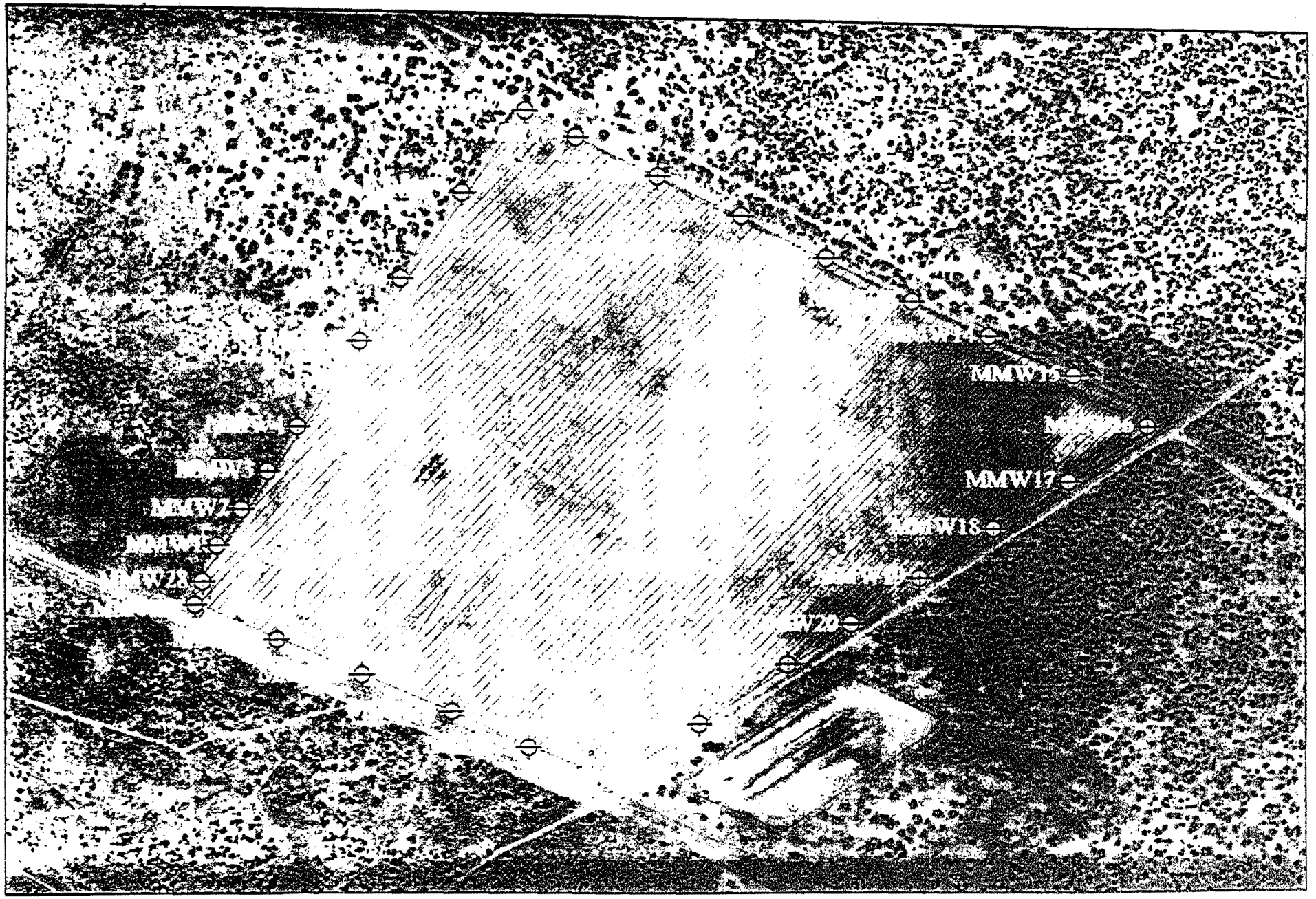
Methane sampling type: Probe Probe/Well Depth: 3ft

Location (use GPS location if needed)	**Time sample began (PM)**	**CH4 in air %**	**O2 %**	**CO2 %**	**N2 or Balance gas %**
MMW1	01:15	0.0 %	19.8 %	0.0 %	79.8 %
MMW2	01:21	0.0 %	19.9 %	0.0 %	79.7 %
MMW3	01:26	0.0 %	19.4 %	0.0 %	79.8 %
MMW4	01:32	0.0 %	20.1 %	0.0 %	79.5 %
MMW5	01:38	0.0 %	19.8 %	0.0 %	79.6 %
MMW6	01:44	0.0 %	19.8 %	0.0 %	79.6 %
MMW7	01:49	0.0 %	19.9 %	0.0 %	79.6 %
MMW8	01:55	0.0 %	19.9 %	0.0 %	79.6 %
MMW9	02:01	0.0 %	20.2 %	0.0 %	79.5 %

MMW10	02:06	0.0 %	19.9 %	0.0 %	79.8 %
MMW11	02:11	0.0 %	19.8 %	0.0 %	79.8 %
MMW12	02:16	0.0 %	19.9 %	0.0 %	79.7 %
MMW13	02:21	0.0 %	19.9 %	0.0 %	79.7 %
MMW14	02:26	0.0 %	19.8 %	0.0 %	79.6 %
MMW15	02:32	0.0 %	20.01 %	0.0 %	79.5 %
MMW16	02:37	0.0 %	20.01 %	0.0 %	79.8 %
MMW17	02:43	0.0 %	19.7 %	0.0 %	79.7 %
MMW18	02:48	0.0 %	19.8 %	0.0 %	79.7 %
MMW19	02:53	0.0 %	19.9 %	0.0 %	79.8 %
MMW20	02:58	0.0 %	19.8 %	0.0 %	79.7 %
MMW21	03:00	0.0 %	20.2 %	0.0 %	79.6 %
MMW22	03:05	0.0 %	19.8 %	0.0 %	79.6 %
MMW23	03:11	0.0 %	19.6 %	0.0 %	79.5 %
MMW24	03:17	0.0 %	19.7 %	0.0 %	79.7 %
MMW25	03:24	0.0 %	19.8 %	0.0 %	79.7 %
MMW26	03:35	0.0 %	19.8 %	0.0 %	79.7 %

MMW26	03:42	0.0 %	19.9 %	0.0 %	79.8 %
MMW27	03:50	0.0 %	19.8 %	0.0 %	79.6 %

* Attach a map of the facility with labeled methane sampling point locations including buildings.



MAIN POST LANDFILL

Monitoring Wells (3' Depth)

Main Post Landfill

0 50 100 200 Meters

DEPARTMENT OF THE ARMY
U.S. ARMY GARRISON WHITE SANDS
100 Headquarters Avenue
WHITE SANDS MISSILE RANGE, NEW MEXICO 88002-5000

December 19, 2012

REPLY TO
ATTENTION OF

Environmental Division

Mr. George Schuman
Manager, Permit Section
New Mexico Environment Department
Harold Runnels Building, Room S2050
1190 St. Francis Drive
Santa Fe, New Mexico 87502-5469

Dear Mr. Schuman:

As required by *White Sands Missile Range Main Post and Asbestos Landfill Closure and Post-Closure Care Plan*, approved by New Mexico Environment Department on November 09, 2009, the annual 2012 Post-Closure Monitoring Inspection Report (enclosure 1) and the annual methane monitoring data (enclosure 2) for the Main Post and Asbestos Landfills are attached.

Please contact Mr. Javier Mendoza of our Environmental Division, Environmental Compliance Branch at (575) 678-2225 if you have any questions regarding this matter.

Sincerely,

Deborah J. Hartel for

Jose A. Gallegos
Chief, Environmental Division

Enclosures

2012 Post-Closure Monitoring Summary Inspection Report

A. Site Information	B. Contact Information
Facility Name: White Sands Missile Range, Closed Main Post Municipal & Asbestos Landfills	POC for Report Name: Mr. Javier Mendoza Environmental Engineer EC
Address: Department of the Army US Army Garrison White Sands Attn: Director of Public Works (Bldg 1510) Acting Director, Gerold P Veara White Sands Missile Range, NM 88002	Address: Department of the Army US Army Garrison White Sands IMWS- PWE-EC (Bldg 163) Attn: Mr. Javier Mendoza White Sands Missile Range, NM 88002
Phone # (575) 678-8966	Phone #: (575) 678-2225
Closure Approved Date: June 15, 2011	Cap Approved Date: June 20, 2011

C. Off-Cap Features

If damage is present, indicate if damage is Minor or Major then use Comment Section F to provide additional information as necessary.
[Minor damage = no immediate repair needed, but should be repaired or watched during the year]
[Major damage = requires immediate repair and submittal of a work scope to conduct repair]

		Yes	No	NA	Minor	Major
(1)	Is there adequate access control [e.g., fencing or natural boundaries]?	X				
(2)	Are perimeter warning signs present?	X				
(3)	Is the access road(s) in good condition?	X				
(4)	Is the retention pond in good condition?	X				
(5)	Is the drainage system in good working order?	X				
(6)	Are all channels intact and free of obstructions?	X				
(7)	Are all cap drainages in good condition?	X				
(8)	Were there any landfill odors detected at the property line?		X			
		Yes	No	NA	Minor	Major
(9)	Is the Gas Management System: Is Passive					
(10)	Are all gas monitoring points in good working order?	X				
(11)	Are of the groundwater monitoring wells in good condition?	X				
(12)	Is there evidence of damaged/weakened vegetation?		X			
(13)	Has any off-cap portion of the site, during this or past monitoring periods, been used for activities other than post-closure? Explain in Comment Section.		X			
(14)	Other observations:		X			

2012 Post-Closure Monitoring Summary Inspection Report

D. Cap Features

If damage is present, indicate damage as Minor or Major then use Section F to provide additional information if necessary.
[Minor damage = no immediate repair needed, but should be repaired or watched during the year]
[Major damage = requires immediate repair and submittal of a work scope to conduct repair]

		Yes	No	NA	Minor	Major
(1)	Is the vegetative layer in good condition? Observation:	X				
(2)	Are all landfill side slopes in good condition?	X				
(3)	Is there evidence of erosion?	X				
(4)	Has cap settlement been uniform?	X				
(5)	Are there depressions in the cap's surface?		X			
(6)	Is there evidence of damage due to burrowing animals?		X			
(7)	Is there evidence of damage due to unauthorized access?		X			
(8)	Is there any blockage of the drainage swales?		X			
(9)	Do All drainage swales have positive drainage?	X				
(13)	Is the landfill cap used for other than post-closure monitoring and maintenance? Explain in Comment Section.		X			
(14)	Is the access road across the landfill cap in good condition?	X				
(15)	The overall condition of the cap?	Good	Fair	Poor		
(16)	Observation: First year since construction.	X				

E. Reporting Requirements

		Yes	No	NA
(1)	Was a report submitted to the NMED for the prior monitoring period?	X		
(2)	Was there any reported damage [minor or major] to the capping system in the previous to this report?		X	
		Yes	No	NA
(3)	If damage to the cap is being reported for the current monitoring period, is the damage similar to the previous monitoring period.			X
(4)	Is an instrument survey of the cap required? [If required, attach a settlement data summary table.]		X	
(5)	Is WSMR required to monitor methane generation from the landfill?	X		
(6)	For this monitoring period have methane levels exceeded 25% of the LEL inside any on or off-site structures?		X	
(7)	For this monitoring period have methane levels exceeded 50% of the LEL at the property line?		X	
(8)	For this monitoring period have methane levels exceeded 10% of the LEL in the ambient air at the property line?		X	
(9)	Are there any trends in the methane data thus far collected? [If yes, please provide an explanation in Comment Section F.]		X	
(10)	Is the Facility in compliance with its Groundwater Management?	X		
(11)	For this monitoring period, are there any violations?		X	
(12)	Has the closed landfill been used in the past for activities other than post-closure monitoring and maintenance? [Explain using Sec. F.]		X	

2012 Post-Closure Monitoring Summary Inspection Report

Attach summary table of all settlement data collected to date, if applicable.
Attach summary table of all methane data collected to date, if applicable
Attach summary table [**only**] of all water quality data collected to date.
F. Comments and Recommendations
The Main Post Municipal & Asbestos Landfills (closed landfills) are located at White Sands Missile Range, New Mexico. The closed landfills are enclosed by chain-linked and barbed wire fence with one building. This building is currently utilized as a guardhouse within the property boundary. Away from the closed area but within the general location of this fenced boundary is a C&D Landfill operation. The closed landfills are in the same general area and are routinely monitored. The final cover, fencing and cap are in new condition. The final cover of the landfill does not show any evidence of settlement. The landfills are only opened when there are landfill inspectors. All signs clearly identify the closed landfills and no one is allowed to enter these areas. . This inspection and methane monitoring occurred on 30 November 2012.
Authorized Signature/Date

WHTE SANDS MISSILE RANGE MONITORING FORM

Landfill Name: Main Post Landfill Sampler Name: Javier Mendoza

Date: 11/30/12 Barometric Pressure: 27.05in Temperature: 70 F

Weather conditions: (*Sunny*)

Wind Direction: W Wind Speed: 5 - 10 mph

Date & amount of last precipitation (within last 48 hours): 0.00 in.

Instrument: Landtec GEM 2000 Date instrument last calibrated: 11/30/12

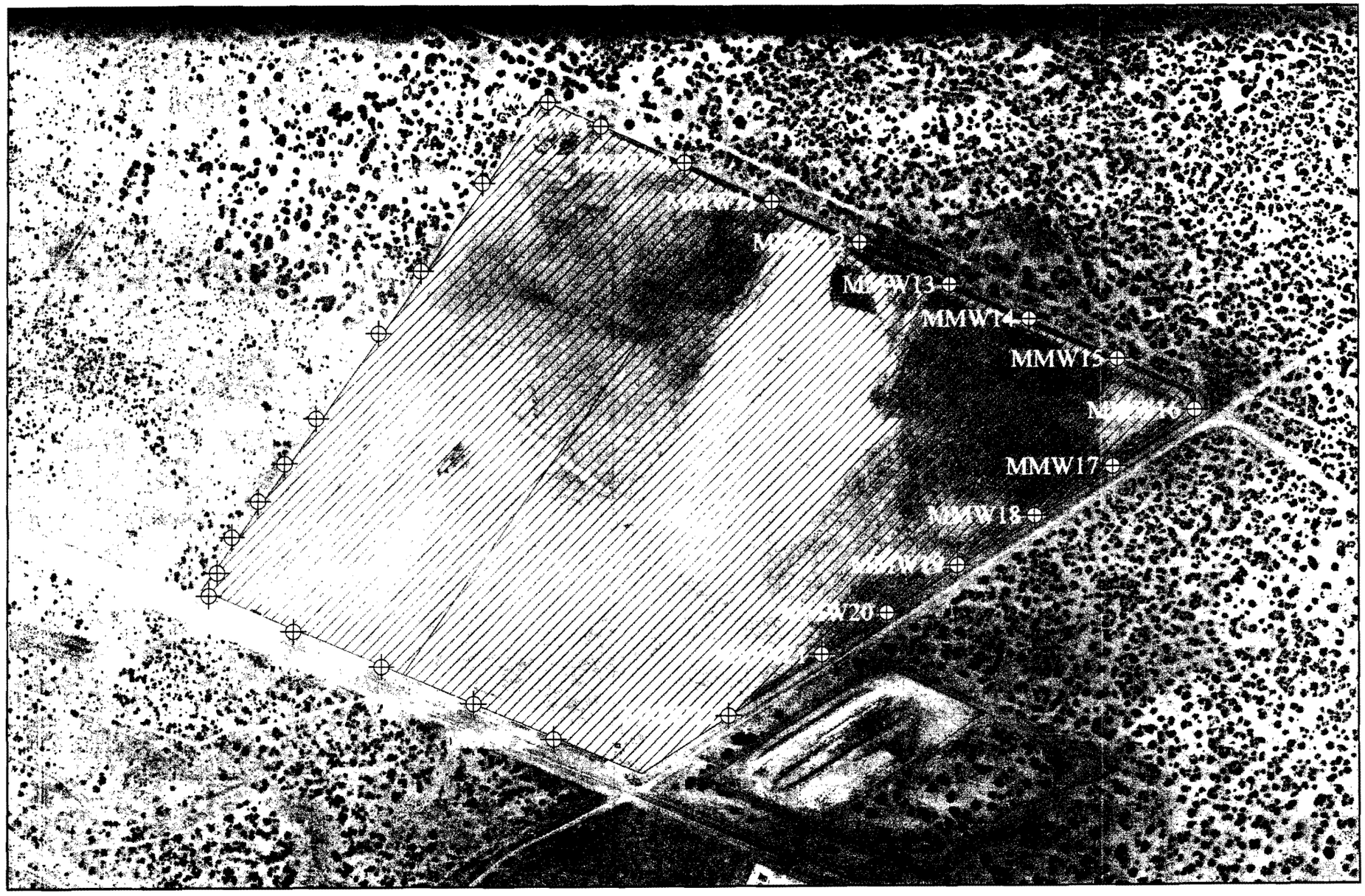
Methane sampling type: Probe Probe/Well Depth: 3ft

Location (use GPS location if needed)	**Time sample began (PM)**	**CH4 in air %**	**O2 %**	**CO2 %**	**N2 or Balance gas %**
MMW1	07:32	0.0 %	19.7%	0.0 %	79.5 %
MMW2	07:35	0.0 %	19.9 %	0.0 %	79.2 %
MMW3	07:40	0.0 %	19.4 %	0.0 %	79.4 %
MMW4	07:48	0.0 %	20.1 %	0.0 %	79.4 %
MMW5	07:52	0.0 %	19.8 %	0.0 %	79.5 %
MMW6	08:05	0.0 %	19.8 %	0.0 %	79.6 %
MMW7	08:11	0.0 %	19.9 %	0.0 %	79.4 %
MMW8	08:17	0.0 %	19.9 %	0.0 %	79.2 %
MMW9	08:25	0.0 %	20.2 %	0.0 %	79.5 %

MMW10	08:35	0.0 %	19.9 %	0.0 %	79.5 %
MMW11	08:42	0.0 %	19.8 %	0.0 %	79.8 %
MMW12	08:48	0.0 %	19.9 %	0.0 %	79.6 %
MMW13	08:52	0.0 %	19.9 %	0.0 %	79.7 %
MMW14	09:05	0.0 %	19.8 %	0.0 %	79.6 %
MMW15	09:11	0.0 %	20.01 %	0.0 %	79.5 %
MMW16	09:17	0.0 %	20.01 %	0.0 %	79.5 %
MMW17	09:25	0.0 %	19.7 %	0.0 %	79.6 %
MMW18	09:40	0.0 %	19.8 %	0.0 %	79.7 %
MMW19	09:55	0.0 %	19.9 %	0.0 %	79.6 %
MMW20	10:06	0.0 %	19.8 %	0.0 %	79.7 %
MMW21	10:11	0.0 %	20.2 %	0.0 %	79.7 %
MMW22	10:16	0.0 %	19.8 %	0.0 %	79.6 %
MMW23	10:25	0.0 %	19.6 %	0.0 %	79.5 %
MMW24	10:30	0.0 %	19.7 %	0.0 %	79.7 %
MMW25	10:35	0.0 %	19.8 %	0.0 %	79.7 %
MMW26	10:46	0.0 %	19.8 %	0.0 %	79.7 %

MMW27	10:55	0.0 %	19.9 %	0.0 %	79.6 %
MMW28	11:05	0.0 %	19.8 %	0.0 %	79.6 %

* Attach a map of the facility with labeled methane sampling point locations including buildings.



MAIN POST LANDFILL

APPENDIX D

RFI RESULTS (2012-2013)

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Appendix D
Groundwater Analytical Results -- All Data
SWMUs 86 and 87 Main Post Sanitary Landfill and Construction Landfill
RCRA Facility Investigation Report
White Sands Missile Range, New Mexico

WSMR Main Post Landfill (SWMUs 86 and 87)																											
Station	Reporting Units	NMWQCC Standard for Groundwater	EPA Maximum Contaminant Level	EPA Region VI Tapwater (groundwater) RSL	MPL01				MPL01				MPL02				MPL02				MPL03				MPL03			
Field Sample ID					MPL01-1212-1				MPL1-0712-1				MPL02-1212-1				MPL2-0712-1				MPL03-1212-1				MPL03-1212-2			
Date					12/7/2012				7/23/2012				12/6/2012				7/24/2012				12/6/2012				12/6/2012			
Sample Type					Original Sample				Original Sample				Original Sample				Original Sample				Original Sample				Field Duplicate			
					Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL
8260B Volatile Organic Compounds																												
1,1,1,2-Tetrachloroethane	µg/l			0.5	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,1,1-Trichloroethane	µg/l			7500	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,1,2,2-Tetrachloroethane	µg/l	10		0.066	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2
1,1,2-Trichloroethane	µg/l	10	5	0.24	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,1-Dichloroethane	µg/l	25		2.4	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
1,1-Dichloroethene	mg/l	0.005	0.007	0.26	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005
1,2,3-Trichloropropane	µg/l			0.00065	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
1,2,4-Trichlorobenzene	µg/l		70	0.99																								
1,2,4-Trimethylbenzene	µg/l			15																								
1,2-Dibromo-3-chloropropane	µg/l		0.2	0.00032	2	U	2	1	2	U	2	1	2	U	2	1	2	U	2	1	2	U	2	1	2	U	2	1
1,2-Dibromoethane	µg/l	0.1	0.05	0.0065	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,2-Dichlorobenzene	µg/l		600	280	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
1,2-Dichloroethane	µg/l	10	5	0.15	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,2-Dichloropropane	µg/l		5	0.38	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2
1,3,5-Trimethylbenzene	µg/l			87																								
1,3-Dichlorobenzene	µg/l																											
1,4-Dichlorobenzene	µg/l		75	0.42	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
2-Butanone	mg/l			4.9	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025
2-Chlorotoluene	µg/l																											
2-Hexanone	µg/l			34	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5
4-Chlorotoluene	µg/l			190																								
4-Methyl-2-pentanone	µg/l			1000	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5
Acetone	mg/l			12	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025
Acrylonitrile	µg/l			0.045	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5
Benzene	mg/l	0.01	0.005	0.00039	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125
Bromobenzene	µg/l			54																								
Bromochloromethane	µg/l			83	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2
Bromodichloromethane	µg/l			0.12	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Bromoform	µg/l			7.9	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Bromomethane	µg/l			7	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Carbon disulfide	µg/l			720	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Carbon tetrachloride	µg/l	10	5	0.39	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Chlorobenzene	µg/l		100	72	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
Chloroethane	µg/l			21000	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Chloroform	mg/l	0.1		0.00019	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125
Chloromethane	µg/l			190	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
cis-1,2-Dichloroethene	µg/l		70	28	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
cis-1,3-Dichloropropene	µg/l				1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Dibromochloromethane	µg/l			0.15	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Dibromomethane	µg/l			7.9	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Dichlorodifluoromethane	µg/l			190																								
Ethylbenzene	mg/l	0.75	0.7	0.0013	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025
Hexachlorobutadiene	µg/l			0.26																								
Isopropylbenzene	µg/l																											
Methyl tert butyl ether	µg/l			12																								

Appendix D
Groundwater Analytical Results -- All Data
SWMUs 86 and 87 Main Post Sanitary Landfill and Construction Landfill
RCRA Facility Investigation Report
White Sands Missile Range, New Mexico

WSMR Main Post Landfill (SWMUs 86 and 87)																											
Station	Reporting Units	NMWQCC Standard for Groundwater	EPA Maximum Contaminant Level	EPA Region VI Tapwater (groundwater) RSL	MPL01				MPL01				MPL02				MPL02				MPL03				MPL03			
Field Sample ID					MPL01-1212-1				MPL1-0712-1				MPL02-1212-1				MPL2-0712-1				MPL03-1212-1				MPL03-1212-2			
Date					12/7/2012				7/23/2012				12/6/2012				7/24/2012				12/6/2012				12/6/2012			
Sample Type					Original Sample				Original Sample				Original Sample				Original Sample				Original Sample				Field Duplicate			
					Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL
8260B Volatile Organic Compounds (Continued)																											
Methylene chloride	µg/l	100	5	9.9	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Methyliodide	µg/l				1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Naphthalene	µg/l			0.14																							
n-Butylbenzene	µg/l			780																							
n-Propylbenzene	µg/l			530																							
sec-Butylbenzene	µg/l																										
Styrene	µg/l		100	1100	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
tert-Butylbenzene	µg/l																										
Tetrachloroethene	mg/l	0.02	0.005	0.0097	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025
Toluene	mg/l	0.75	1	0.86	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025
trans-1,2-Dichloroethene	µg/l		100	86	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
trans-1,3-Dichloropropene	µg/l				1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
trans-1,4-Dichloro-2-butene	µg/l			0.0012	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5
Trichloroethene	µg/l	100	5	0.44	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Trichlorofluoromethane	µg/l			1100	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Vinylacetate	µg/l			410	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5
Vinylchloride	µg/l	1	2	0.015	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Xylene (Total)	µg/l	620	10000	190	2	U	2	0.5	2	U	2	0.5	2	U	2	0.5	2	U	2	0.5	2	U	2	0.5	2	U	2	0.5
9014-9010C																											
Total Cyanide	mg/l	0.2	0.2		0.222		0.01	0.005	0.201		0.01	0.005	0.336		0.01	0.005	0.336		0.01	0.005	0.353		0.01	0.005	0.354		0.01	0.005
SM4500-CN-C,G																											
Amenable Cyanide	mg/l	0.2	0.2		0.221		0.01	0.005	0.2		0.01	0.005	0.335		0.01	0.005	0.335		0.01	0.005	0.352		0.01	0.005	0.353		0.01	0.005
SM4500-CN-I																											
Weak/Dissociable Cyanide	mg/l				0.0327		0.01	0.005	0.0162		0.01	0.005	0.0452		0.01	0.005	0.0263		0.01	0.005	0.0421		0.01	0.005	0.0486		0.01	0.005
9040C																											
Corrosivity pH	Std Unit	6 - 9 [a]			8.12				7.95				7.85				7.9				7.98				7.35			

Analyte concentration exceeds the standard for:

	NMWQCC Standard for Groundwater (NMWQCC, 2002)
	EPA Maximum Contaminant Level (EPA, 2012)
	EPA Region VI Tapwater (groundwater) RSL (EPA, 2012)

[a] NMWQCC standard for iron is for domestic drinking water

µmhos/cm = micromhos per centimeter
µg/l = microgams per liter
EPA = U.S. Environmental Protection Agency
ID = identification
MDL = method detection limit
mg/l = milligrams per liter
MPL = Main Post Landfill
NMWQCC = New Mexico Water Quality Control Commission
RL = reporting limit
RSL = regional screening level
Std Unit = standard units
Valid Qual = validation qualifier

Appendix D
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RCRA Facility Investigation Report
White Sands Missile Range, New Mexico

WSMR Main Post Landfill (SWMUs 86 and 87)																											
Station	Reporting Units	NMWQCC Standard for Groundwater	EPA Maximum Contaminant Level	EPA Region VI Tapwater (groundwater) RSL	MPL03				MPL03				MPL04				MPL04				MPL06				MPL06			
Field Sample ID					MPL3-0712-1				MPL3-0712-2				MPL04-1212-1				MPL4-0712-1				MPL06-0712-1				MPL06-1212-1			
Date					7/24/2012				7/24/2012				12/7/2012				7/23/2012				7/12/2012				12/10/2012			
Sample Type					Original Sample				Field Duplicate				Original Sample				Original Sample				Original Sample				Original Sample			
					Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL
120.1																												
Conductivity	µmhos/cm				648		1	0.5	662		1	0.5	737		1	0.5	756		1	0.5	351		1	0.5	326		1	0.5
160.1																												
Total Dissolved Solids	mg/l	1000 [a]			438		20	10	396		20	10	524		20	10	514		20	10	196		20	10	206		20	10
160.2																												
Total Suspended Solids	mg/l				5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	20	U	20	10	5	U	5	2.5
300.0 Anions																												
Chloride	mg/l	250 [a]			58.3		1	0.5	57.6		1	0.5	63.1		1	0.5	60.3		1	0.5	27.4		0.4	0.2	20		0.2	0.1
Fluoride	mg/l	1.6	4	0.62	0.173		0.2	0.1	0.158		0.2	0.1	0.152	J	0.2	0.1	0.22		0.2	0.1	0.272		0.2	0.1	0.319		0.2	0.1
Sulfate	mg/l	600 [a]			110		5	2.5	109		5	2.5	149		5	2.5	143		5	2.5	40.2		1	0.5	39.2		1	0.5
310.2 Alkalinity																												
Alkalinity, Bicarbonate (as CaCO3)	mg/l				103		20	10	102		20	10	132		20	10	134		20	10	82.1		20	10	86		20	10
Alkalinity, Carbonate (as CaCO3)	mg/l				20	U	20	10	20	U	20	10	20	U	20	10	20	U	20	10	20	U	20	10	20	U	20	10
Alkalinity, Total (as CaCO3)	mg/l				103		20	10	102		20	10	132		20	10	134		20	10	82.1		20	10	86		20	10
353.2																												
Nitrate-Nitrite (as N)	mg/l	10			7.48		0.2	0.1	7.49		0.2	0.1	9.48		0.25	0.125	7.88		0.2	0.1	2.53		0.2	0.1	14.4		0.4	0.2
6010B TAL Metals																												
Aluminum	mg/l	5		16	0.272		0.1	0.05	0.257		0.1	0.05	0.196		0.1	0.05	0.0696		0.1	0.05					0.1	U	0.1	0.05
Beryllium	mg/l		0.004	0.016	0.002	U	0.002	0.001	0.002	U	0.002	0.001	0.002	U	0.002	0.001	0.002	U	0.002	0.001	0.002	U	0.002	0.001	0.002	U	0.002	0.001
Boron	mg/l			3.1	0.1	U	0.1	0.05	0.1	U	0.1	0.05	0.1	U	0.1	0.05	1	U	1	0.5					0.1	U	0.1	0.05
Calcium	mg/l				85.4		0.2	0.1	80		0.2	0.1	96.6		0.2	0.1	97.7		0.2	0.1	31.9		0.2	0.1	32.8		2	1
Iron, Total	mg/l	1 [a]		11	0.395		0.1	0.05	0.373		0.1	0.05	0.351		0.1	0.05	0.244		0.1	0.05					0.1	U	0.1	0.05
Magnesium	mg/l				15.5		0.5	0.25	14.3		0.5	0.25	18.2	J-	0.5	0.25	18.4		0.5	0.25	6.29		0.5	0.25	6.38		0.5	0.25
Molybdenum	mg/l			0.078	0.01	U	0.01	0.005	0.01	U	0.01	0.005	0.01	U	0.01	0.005	0.01	U	0.01	0.005					0.1	U	0.1	0.05
Potassium	mg/l				3.03		1	0.5	2.79		1	0.5	3.23		1	0.5	3.12		1	0.5	1.66		1	0.5	1.92		1	0.5
Sodium	mg/l				37.7		0.5	0.25	35.5		0.5	0.25	35.8		0.5	0.25	36.3		0.5	0.25	19.8		0.5	0.25	19.4		0.5	0.25
Tin	mg/l			9.3	0.5	U	0.5	0.25	0.5	U	0.5	0.25	0.5	U	0.5	0.25	0.5	U	0.5	0.25	0.5	U	0.5	0.25	0.5	U	0.5	0.25
Vanadium	mg/l			0.078	0.0115		0.01	0.005	0.011		0.01	0.005	0.01	U	0.01	0.005	0.0104		0.01	0.005	0.00907		0.01	0.005	0.0096	J	0.01	0.005
Zinc	mg/l	10 [a]		4.7	0.0256		0.02	0.01	0.0289		0.02	0.01	0.02	U	0.02	0.01	0.02	U	0.02	0.01	0.02	U	0.02	0.01	0.02	U	0.02	0.01
6020 TAL Metals																												
Antimony	mg/l		0.006	0.006	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005
Arsenic	mg/l	0.1	0.01	0.000045	0.00489		0.001	0.0005	0.00394		0.001	0.0005	0.00685		0.001	0.0005	0.00307		0.001	0.0005	0.00189		0.001	0.0005	0.00183		0.001	0.0005
Barium	mg/l	1	2	2.9	0.0465		0.003	0.0015	0.0453		0.003	0.0015	0.0699		0.003	0.0015	0.0637		0.003	0.0015	0.114		0.003	0.0015	0.123		0.003	0.0015
Cadmium	mg/l	0.01	0.005	0.0069	0.0006	U	0.0006	0.0003	0.0006	U	0.0006	0.0003	0.0006	U	0.0006	0.0003	0.0006	U	0.0006	0.0003	0.0006	U	0.0006	0.0003	0.0006	U	0.0006	0.0003
Chromium	mg/l	0.05	0.1	0.1	0.00214		0.002	0.001	0.00215		0.002	0.001	0.00265		0.002	0.001	0.00271		0.002	0.001	0.00387		0.002	0.001	0.00398		0.002	0.001
Cobalt	mg/l			0.0047	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005
Copper	mg/l	1 [a]	1.3	0.62	0.002	U	0.002	0.001	0.002	U	0.002	0.001	0.00137	J	0.002	0.001	0.002	U	0.002	0.001	0.002	U	0.002	0.001	0.002	U	0.002	0.001
Lead (Pb)	mg/l	0.05	0.015	0.015	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005
Manganese	mg/l	0.2 [a]		0.32	0.00888		0.002	0.001	0.00809		0.002	0.001	0.00393		0.002	0.001	0.00145		0.002	0.001	0.0027		0.002	0.001	0.0046		0.002	0.001
Nickel	mg/l			0.3	0.00333		0.004	0.002	0.00303		0.004	0.002	0.00541		0.004	0.002	0.0034		0.004	0.002	0.00421		0.004	0.002	0.004	U	0.004	0.002
Selenium	mg/l	0.05	0.05	0.078	0.0236		0.001	0.0005	0.0186		0.001	0.0005	0.0298		0.001	0.0005	0.0151		0.001	0.0005	0.00313		0.001	0.0005	0.00234		0.001	0.0005
Silver	mg/l	0.05		0.071	0.001	UN	0.001	0.0005	0.001	UN	0.001	0.0005	0.001	U	0.001	0.0005	0.001	UN	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005
Thallium	mg/l		0.002	0.00016	0.0002	U	0.0002	0.0001	0.00012		0.0002	0.0001	0.0002	U	0.0002	0.0001	0.0001		0.0002	0.0001	0.0002	U	0.0002	0.0001	0.0002	U	0.0002	0.0001
7470A Mercury																												
Mercury	mg/l	0.002	0.002	0.00063	0.0002	U	0.0002	0.0001	0.0002	U	0.0002	0.0001	0.000121	J	0.0002	0.0001	0.0002	U	0.0002	0.0001	0.0002	U	0.0002	0.0001	0.0002	U	0.0002	0.0001

Appendix D
Groundwater Analytical Results -- All Data
SWMUs 86 and 87 Main Post Sanitary Landfill and Construction Landfill
RCRA Facility Investigation Report
White Sands Missile Range, New Mexico

WSMR Main Post Landfill (SWMUs 86 and 87)																												
Station	Reporting Units	NMWQCC Standard for Groundwater	EPA Maximum Contaminant Level	EPA Region VI Tapwater (groundwater) RSL	MPL03				MPL03				MPL04				MPL04				MPL06				MPL06			
Field Sample ID					MPL3-0712-1				MPL3-0712-2				MPL04-1212-1				MPL4-0712-1				MPL06-0712-1				MPL06-1212-1			
Date					7/24/2012				7/24/2012				12/7/2012				7/23/2012				7/12/2012				12/10/2012			
Sample Type					Original Sample				Field Duplicate				Original Sample				Original Sample				Original Sample				Original Sample			
					Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL
8260B Volatile Organic Compounds																												
1,1,1,2-Tetrachloroethane	µg/l			0.5	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25								
1,1,1-Trichloroethane	µg/l			7500	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,1,2,2-Tetrachloroethane	µg/l	10		0.066	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2
1,1,2-Trichloroethane	µg/l	10	5	0.24	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,1-Dichloroethane	µg/l	25		2.4	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
1,1-Dichloroethene	mg/l	0.005	0.007	0.26	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005
1,2,3-Trichloropropane	µg/l			0.00065	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
1,2,4-Trichlorobenzene	µg/l		70	0.99																	1	U	1	0.2	1	U	1	0.2
1,2,4-Trimethylbenzene	µg/l			15																	1	U	1	0.25	1	U	1	0.25
1,2-Dibromo-3-chloropropane	µg/l		0.2	0.00032	2	U	2	1	2	U	2	1	2	U	2	1	2	U	2	1	2	U	2	1	2	U	2	1
1,2-Dibromoethane	µg/l	0.1	0.05	0.0065	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,2-Dichlorobenzene	µg/l		600	280	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
1,2-Dichloroethane	µg/l	10	5	0.15	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,2-Dichloropropane	µg/l		5	0.38	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2
1,3,5-Trimethylbenzene	µg/l			87																	1	U	1	0.25	1	U	1	0.25
1,3-Dichlorobenzene	µg/l																				1	U	1	0.25	1	U	1	0.25
1,4-Dichlorobenzene	µg/l		75	0.42	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
2-Butanone	mg/l			4.9	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.005	U	0.005	0.0025	0.005	UN	0.005	0.0025
2-Chlorotoluene	µg/l																				1	U	1	0.125	1	U	1	0.125
2-Hexanone	µg/l			34	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	5	U	5	2.5	5	UN	5	2.5
4-Chlorotoluene	µg/l			190																	1	U	1	0.25	1	U	1	0.25
4-Methyl-2-pentanone	µg/l			1000	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	5	U	5	2.5	5	UN	5	2.5
Acetone	mg/l			12	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.01	U	0.01	0.0025	0.005	U	0.005	0.0025	0.005	U	0.005	0.0025
Acrylonitrile	µg/l			0.045	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5	10	U	10	2.5								
Benzene	mg/l	0.01	0.005	0.00039	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125
Bromobenzene	µg/l			54																	1	U	1	0.125	1	U	1	0.125
Bromochloromethane	µg/l			83	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2								
Bromodichloromethane	µg/l			0.12	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Bromoform	µg/l			7.9	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Bromomethane	µg/l			7	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Carbon disulfide	µg/l			720	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Carbon tetrachloride	µg/l	10	5	0.39	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Chlorobenzene	µg/l		100	72	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
Chloroethane	µg/l			21000	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Chloroform	mg/l	0.1		0.00019	0.000151		0.001	0.000125	0.001	U	0.001	0.000125	0.000177	J	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125
Chloromethane	µg/l			190	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
cis-1,2-Dichloroethene	µg/l		70	28	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
cis-1,3-Dichloropropene	µg/l				1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Dibromochloromethane	µg/l			0.15	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Dibromomethane	µg/l			7.9	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25								
Dichlorodifluoromethane	µg/l			190																	1	U	1	0.25	1	U	1	0.25
Ethylbenzene	mg/l	0.75	0.7	0.0013	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025
Hexachlorobutadiene	µg/l			0.26																	1	U	1	0.25	1	U	1	0.25
Isopropylbenzene	µg/l																				1	U	1	0.25	1	U	1	0.25
Methyl tert butyl ether	µg/l			12																	1	U	1	0.5	1	U	1	0.5

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WSMR Main Post Landfill (SWMUs 86 and 87)																												
Station	Reporting Units	NMWQCC Standard for Groundwater	EPA Maximum Contaminant Level	EPA Region VI Tapwater (groundwater) RSL	MPL03				MPL03				MPL04				MPL04				MPL06				MPL06			
Field Sample ID					MPL3-0712-1				MPL3-0712-2				MPL04-1212-1				MPL4-0712-1				MPL06-0712-1				MPL06-1212-1			
Date					7/24/2012				7/24/2012				12/7/2012				7/23/2012				7/12/2012				12/10/2012			
Sample Type					Original Sample				Field Duplicate				Original Sample				Original Sample				Original Sample				Original Sample			
					Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL
8260B Volatile Organic Compounds (Continued)																												
Methylene chloride	µg/l	100	5	9.9	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Methyliodide	µg/l				1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5								
Naphthalene	µg/l			0.14																	1	U	1	0.2	1	U	1	0.2
n-Butylbenzene	µg/l			780																	1	U	1	0.25	1	U	1	0.25
n-Propylbenzene	µg/l			530																	1	U	1	0.125	1	U	1	0.125
sec-Butylbenzene	µg/l																				1	U	1	0.25	1	U	1	0.25
Styrene	µg/l		100	1100	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
tert-Butylbenzene	µg/l																				1	U	1	0.25	1	U	1	0.25
Tetrachloroethene	mg/l	0.02	0.005	0.0097	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025
Toluene	mg/l	0.75	1	0.86	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025
trans-1,2-Dichloroethene	µg/l		100	86	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
trans-1,3-Dichloropropene	µg/l				1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
trans-1,4-Dichloro-2-butene	µg/l			0.0012	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5								
Trichloroethene	µg/l	100	5	0.44	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Trichlorofluoromethane	µg/l			1100	1	U	1	0.25	1	U	1	0.25	0.591	J	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Vinylacetate	µg/l			410	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5
Vinylchloride	µg/l	1	2	0.015	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Xylene (Total)	µg/l	620	10000	190	2	U	2	0.5	2	U	2	0.5	2	U	2	0.5	2	U	2	0.5	1	U	1	0.5	1	U	1	0.5
9014-9010C																												
Total Cyanide	mg/l	0.2	0.2		0.341		0.01	0.005	0.376		0.02	0.01	0.357		0.01	0.005	0.389		0.02	0.01	0.00913	J	0.01	0.005	0.01	U	0.01	0.005
SM4500-CN-C,G																												
Amenable Cyanide	mg/l	0.2	0.2		0.34		0.01	0.005	0.374		0.01	0.005	0.356		0.01	0.005	0.389		0.01	0.005	0.0073	J	0.01	0.005	0.01	U	0.01	0.005
SM4500-CN-I																												
Weak/Dissociable Cyanide	mg/l				0.0307		0.01	0.005	0.0298		0.01	0.005	0.0491		0.01	0.005	0.0339		0.01	0.005	0.01	U	0.01	0.005	0.01	U	0.01	0.005
9040C																												
Corrosivity pH	Std Unit	6 - 9 [a]			7.64				7.71				7.56				8.18				7.07				7.67			

Analyte concentration exceeds the standard for:

	NMWQCC Standard for Groundwater (NMWQCC, 2002)
	EPA Maximum Contaminant Level (EPA, 2012)
	EPA Region VI Tapwater (groundwater) RSL (EPA, 2012)

[a] NMWQCC standard for iron is for domestic drinking water

µmhos/cm	= micromhos per centimeter	MPL	
µg/l	= microcgrams per liter	NMWQCC	
EPA	= U.S. Environmental Protection Agency	RL	
ID	= identification	RSL	
MDL	= method detection limit	Std Unit	
mg/l	= milligrams per liter	Valid Qual	

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WSMR Main Post Landfill (SWMUs 86 and 87)																			
Station	Reporting Units	NMWQCC Standard for Groundwater	EPA Maximum Contaminant Level	EPA Region VI Tapwater (groundwater) RSL	MPL19				MPL19				MPL20				MPL20			
Field Sample ID					MPL19-0113-1				MPL19-0712-1				MPL20-0113-1				MPL20-0712-1			
Date					1/7/2013				7/20/2012				1/7/2013				7/20/2012			
Sample Type					Original Sample				Original Sample				Original Sample				Original Sample			
					Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL
120.1																				
Conductivity	µmhos/cm				329		1	0.5	334		1	0.5	624		1	0.5	642		1	0.5
160.1																				
Total Dissolved Solids	mg/l	1000 [a]			208		20	10	230		20	10	432		20	10	460		20	10
160.2																				
Total Suspended Solids	mg/l				5	U	5	2.5	4		5	2.5	5	U	5	2.5	5	U	5	2.5
300.0 Anions																				
Chloride	mg/l	250 [a]			14.9		0.2	0.1	15.6		0.2	0.1	74.4		1	0.5	80		1	0.5
Fluoride	mg/l	1.6	4	0.62	0.273		0.2	0.1	0.388		0.2	0.1	1	U	1	0.5	0.186		0.2	0.1
Sulfate	mg/l	600 [a]			51.1		1	0.5	52.7		1	0.5	95.5		5	2.5	102		5	2.5
310.2 Alkalinity																				
Alkalinity, Bicarbonate (as CaCO3)	mg/l				89.4		20	10	88.6		20	10	89.5		20	10	84.6		20	10
Alkalinity, Carbonate (as CaCO3)	mg/l				20	U	20	10	20	U	20	10	20	U	20	10	20	U	20	10
Alkalinity, Total (as CaCO3)	mg/l				89.4		20	10	88.6		20	10	89.5		20	10	84.6		20	10
353.2																				
Nitrate-Nitrite (as N)	mg/l	10			2.7		0.2	0.1	2.19		0.2	0.1	9.12		0.4	0.2	7.41		0.2	0.1
6010B TAL Metals																				
Aluminum	mg/l	5		16	0.1	U	0.1	0.05					0.1	U	0.1	0.05				
Beryllium	mg/l		0.004	0.016	0.002	U	0.002	0.001	0.002	U	0.002	0.001	0.002	U	0.002	0.001	0.002	U	0.002	0.001
Boron	mg/l			3.1	0.1	U	0.1	0.05					0.1	U	0.1	0.05				
Calcium	mg/l				37		2	1	34.8		2	1	73		2	1	65.1		2	1
Iron, Total	mg/l	1 [a]		11	0.1	U	0.1	0.05					0.212		0.1	0.05				
Magnesium	mg/l				5.72		0.5	0.25	6.14		0.5	0.25	12.3		0.5	0.25	12.9		0.5	0.25
Molybdenum	mg/l			0.078	0.1	U	0.1	0.05					0.1	U	0.1	0.05				
Potassium	mg/l				2.03		1	0.5	2.09		1	0.5	2.68		1	0.5	2.61		1	0.5
Sodium	mg/l				21.2		0.5	0.25	20.5		0.5	0.25	33.4		0.5	0.25	32.8		0.5	0.25
Tin	mg/l			9.3	0.5	U	0.5	0.25	0.5	U	0.5	0.25	0.5	U	0.5	0.25	0.5	U	0.5	0.25
Vanadium	mg/l			0.078	0.00698	J	0.01	0.005	0.00665		0.01	0.005	0.01	U	0.01	0.005	0.00655		0.01	0.005
Zinc	mg/l	10 [a]		4.7	0.02	U	0.02	0.01	0.02	U	0.02	0.01	0.0158	J	0.02	0.01	0.02	U	0.02	0.01
6020 TAL Metals																				
Antimony	mg/l		0.006	0.006	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005
Arsenic	mg/l	0.1	0.01	0.000045	0.00176		0.001	0.0005	0.00187		0.001	0.0005	0.0039		0.001	0.0005	0.00313		0.001	0.0005
Barium	mg/l	1	2	2.9	0.085		0.003	0.0015	0.0757		0.003	0.0015	0.0728		0.003	0.0015	0.0653		0.003	0.0015
Cadmium	mg/l	0.01	0.005	0.0069	0.0006	U	0.0006	0.0003	0.0006	U	0.0006	0.0003	0.0006	U	0.0006	0.0003	0.0006	U	0.0006	0.0003
Chromium	mg/l	0.05	0.1	0.1	0.00316		0.002	0.001	0.0036		0.002	0.001	0.00171	J	0.002	0.001	0.00231		0.002	0.001
Cobalt	mg/l			0.0047	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005
Copper	mg/l	1 [a]	1.3	0.62	0.00122	J	0.002	0.001	0.002	U	0.002	0.001	0.00145	J	0.002	0.001	0.00174		0.002	0.001
Lead (Pb)	mg/l	0.05	0.015	0.015	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005
Manganese	mg/l	0.2 [a]		0.32	0.00132	J	0.002	0.001	0.00158		0.002	0.001	0.002	U	0.002	0.001	0.00307		0.002	0.001
Nickel	mg/l			0.3	0.004	U	0.004	0.002	0.004	U	0.004	0.002	0.00361	J	0.004	0.002	0.00374		0.004	0.002
Selenium	mg/l	0.05	0.05	0.078	0.00155		0.001	0.0005	0.00249		0.001	0.0005	0.0128		0.001	0.0005	0.0156		0.001	0.0005
Silver	mg/l	0.05		0.071	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005
Thallium	mg/l		0.002	0.00016	0.000125	J	0.0002	0.0001	0.0002	U	0.0002	0.0001	0.00021		0.0002	0.0001	0.0002	U	0.0002	0.0001
7470A Mercury																				
Mercury	mg/l	0.002	0.002	0.00063	0.0002	U	0.0002	0.0001	0.0002	U	0.0002	0.0001	0.0002	U	0.0002	0.0001	0.0002	U	0.0002	0.0001

Appendix D
Groundwater Analytical Results -- All Data
SWMUs 86 and 87 Main Post Sanitary Landfill and Construction Landfill
RCRA Facility Investigation Report
White Sands Missile Range, New Mexico

WSMR Main Post Landfill (SWMUs 86 and 87)																			
Station	Reporting Units	NMWQCC Standard for Groundwater	EPA Maximum Contaminant Level	EPA Region VI Tapwater (groundwater) RSL	MPL19				MPL19				MPL20				MPL20			
Field Sample ID					MPL19-0113-1				MPL19-0712-1				MPL20-0113-1				MPL20-0712-1			
Date					1/7/2013				7/20/2012				1/7/2013				7/20/2012			
Sample Type					Original Sample				Original Sample				Original Sample				Original Sample			
					Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL
8260B Volatile Organic Compounds																				
1,1,1,2-Tetrachloroethane	µg/l			0.5																
1,1,1-Trichloroethane	µg/l			7500	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,1,2,2-Tetrachloroethane	µg/l	10		0.066	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2
1,1,2-Trichloroethane	µg/l	10	5	0.24	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,1-Dichloroethane	µg/l	25		2.4	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
1,1-Dichloroethene	mg/l	0.005	0.007	0.26	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005	0.001	U	0.001	0.0005
1,2,3-Trichloropropane	µg/l			0.00065	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
1,2,4-Trichlorobenzene	µg/l		70	0.99	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2
1,2,4-Trimethylbenzene	µg/l			15	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,2-Dibromo-3-chloropropane	µg/l		0.2	0.00032	2	U	2	1	2	U	2	1	2	U	2	1	2	U	2	1
1,2-Dibromoethane	µg/l	0.1	0.05	0.0065	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,2-Dichlorobenzene	µg/l		600	280	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
1,2-Dichloroethane	µg/l	10	5	0.15	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,2-Dichloropropane	µg/l		5	0.38	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2
1,3,5-Trimethylbenzene	µg/l			87	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,3-Dichlorobenzene	µg/l				1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
1,4-Dichlorobenzene	µg/l		75	0.42	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
2-Butanone	mg/l			4.9	0.005	U	0.005	0.0025	0.005	U	0.005	0.0025	0.005	U	0.005	0.0025	0.005	U	0.005	0.0025
2-Chlorotoluene	µg/l				1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
2-Hexanone	µg/l			34	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5
4-Chlorotoluene	µg/l			190	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
4-Methyl-2-pentanone	µg/l			1000	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5
Acetone	mg/l			12	0.005	U	0.005	0.0025	0.005	U	0.005	0.0025	0.005	U	0.005	0.0025	0.005	U	0.005	0.0025
Acrylonitrile	µg/l			0.045																
Benzene	mg/l	0.01	0.005	0.00039	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125
Bromobenzene	µg/l			54	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
Bromochloromethane	µg/l			83																
Bromodichloromethane	µg/l			0.12	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Bromoform	µg/l			7.9	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Bromomethane	µg/l			7	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Carbon disulfide	µg/l			720	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Carbon tetrachloride	µg/l	10	5	0.39	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Chlorobenzene	µg/l		100	72	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
Chloroethane	µg/l			21000	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
Chloroform	mg/l	0.1		0.00019	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125	0.001	U	0.001	0.000125
Chloromethane	µg/l			190	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
cis-1,2-Dichloroethene	µg/l		70	28	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
cis-1,3-Dichloropropene	µg/l				1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Dibromochloromethane	µg/l			0.15	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Dibromomethane	µg/l			7.9																
Dichlorodifluoromethane	µg/l			190	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Ethylbenzene	mg/l	0.75	0.7	0.0013	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025
Hexachlorobutadiene	µg/l			0.26	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Isopropylbenzene	µg/l				1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Methyl tert butyl ether	µg/l			12	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5

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WSMR Main Post Landfill (SWMUs 86 and 87)																			
Station	Reporting Units	NMWQCC Standard for Groundwater	EPA Maximum Contaminant Level	EPA Region VI Tapwater (groundwater) RSL	MPL19				MPL19				MPL20				MPL20			
Field Sample ID					MPL19-0113-1				MPL19-0712-1				MPL20-0113-1				MPL20-0712-1			
Date					1/7/2013				7/20/2012				1/7/2013				7/20/2012			
Sample Type					Original Sample				Original Sample				Original Sample				Original Sample			
					Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL	Result	Valid Qual	RL	MDL
8260B Volatile Organic Compounds (Continued)																				
Methylene chloride	µg/l	100	5	9.9	1	U	1	0.25	1	U	1	0.25	0.252	J	1	0.25	1	U	1	0.25
Methyliodide	µg/l																			
Naphthalene	µg/l			0.14	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2	1	U	1	0.2
n-Butylbenzene	µg/l			780	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
n-Propylbenzene	µg/l			530	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
sec-Butylbenzene	µg/l				1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Styrene	µg/l		100	1100	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125	1	U	1	0.125
tert-Butylbenzene	µg/l				1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Tetrachloroethene	mg/l	0.02	0.005	0.0097	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025
Toluene	mg/l	0.75	1	0.86	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025	0.001	U	0.001	0.00025
trans-1,2-Dichloroethene	µg/l		100	86	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
trans-1,3-Dichloropropene	µg/l				1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
trans-1,4-Dichloro-2-butene	µg/l			0.0012																
Trichloroethene	µg/l	100	5	0.44	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Trichlorofluoromethane	µg/l			1100	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Vinylacetate	µg/l			410	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5	5	U	5	2.5
Vinylchloride	µg/l	1	2	0.015	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25	1	U	1	0.25
Xylene (Total)	µg/l	620	10000	190	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5	1	U	1	0.5
9014-9010C																				
Total Cyanide	mg/l	0.2	0.2		0.01	U	0.01	0.005	0.00557	J	0.01	0.005	0.343		0.01	0.005	0.304		0.01	0.005
SM4500-CN-C,G																				
Amenable Cyanide	mg/l	0.2	0.2		0.01	U	0.01	0.005	0.01	U	0.01	0.005	0.0739		0.01	0.005	0.304		0.01	0.005
SM4500-CN-I																				
Weak/Dissociable Cyanide	mg/l				0.01	U	0.01	0.005	0.01	U	0.01	0.005	0.0368		0.01	0.005	0.0365		0.01	0.005
9040C																				
Corrosivity pH	Std Unit	6 - 9 [a]			7.86				8				7.68				7.77			

Analyte concentration exceeds the standard for:

	NMWQCC Standard for Groundwater (NMWQCC, 2002)
	EPA Maximum Contaminant Level (EPA, 2012)
	EPA Region VI Tapwater (groundwater) RSL (EPA, 2012)

[a] NMWQCC standard for iron is for domestic drinking water

µmhos/cm	= micromhos per centimeter	MPL	
µg/l	= microcgrams per liter	NMWQCC	
EPA	= U.S. Environmental Protection Agency	RL	
ID	= identification	RSL	
MDL	= method detection limit	Std Unit	
mg/l	= milligrams per liter	Valid Qual	

APPENDIX E

NMED NOTICE OF APPROVAL WITH MODIFICATIONS (OCTOBER 16, 2014)

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NEW MEXICO
ENVIRONMENT DEPARTMENT

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SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lieutenant Governor

RYAN FLYNN
Cabinet Secretary
BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

October 16, 2014

Mr. Thomas A. Ladd, Director
Public Works (Building 102)
US Army Garrison White Sands
White Sands Missile Range,
New Mexico 88002-5000

RE: APPROVAL WITH MODIFICATIONS
REVISED RCRA FACILITY INVESTIGATION REPORT
SWMUs 86 AND 87, MAIN POST SANITARY AND
CONSTRUCTION LANDFILLS
WHITE SANDS MISSILE RANGE, NEW MEXICO
EPA ID# NM2750211235
WSMR-13-006

Dear Mr. Ladd:

The New Mexico Environment Department (NMED) has completed its review of White Sands Missile Range's (Permittee) *Revised RCRA Facility Investigation Report, SWMUs 86 and 87, Main Post Sanitary and Construction Landfills* (Report), dated May 2014. NMED hereby issues this Approval with Modifications and provides the following comments.

Comment 1
In the Response to Comments table, regarding NMED's Disapproval Comment 2, the Permittee states, "[t]he version of Figure 6-2 included in the report was originally created to display the potentiometric surface for the Former Sewage Treatment Plant (STP) Ditches (SWMU 82) and did not depict the contours around the MPL in detail. Figure 6-2 will be revised to focus on the area surrounding SWMUs 86 and 87 and additional contours will be added as requested." The groundwater contour maps for the STP Ditches and the landfills should not be significantly different, since the groundwater potentiometric surface likely does not change significantly over the short distance between STP Ditches and the landfills.

Comment 2
In Section 2.1.1 (Site Description and History), page 2-2, the Permittee states, "[t]renches were excavated, waste materials (MSW or C&D) were placed within the unlined cells and the waste was covered with soil per the regulations." In future reports clearly state which regulations were followed regarding placement of the landfill covers.

Comment 3
Table 3-3 (Groundwater Level Measurements, November 2012) should present more information, such as the total depth of the well and the screened interval to provide a more complete picture of the groundwater at the site. In future reports ensure that adequate information is provided in order for readers to evaluate groundwater level measurements.

Comment 4
In Section 6.2 (Groundwater Analytical Results), page 6-2, the Permittee states, "There were no exceedances of the NMWQCC standards (2002) or the EPA MCLs (2012) for any other analytes at monitoring well MPL-03. The duplicate sample from the December sampling event had a nitrate/nitrite concentration (measured as nitrogen) of 11.4 mg/L, above the NMWQCC standard of 10 mg/L. The parent sample had a concentration of 9.86 mg/L, just below the NMWQCC limit. This is the first record of an exceedance (duplicate sample) for this parameter from this well since 2001. The well has always been near the standard, the parent sample has not had an exceedance." Nitrate is a product of cyanide degradation; however, nitrate can also be a product of landfilled municipal waste, the Permittee must continue to monitor well MPL-03.

Comment 5
In Section 6.2 (Groundwater Analytical Results), page 6-2 and 6-3, the Permittee states, "[t]he December 2012 sample from monitoring well MPL-06, a downgradient well, was below the NMWQCC criteria for amenable and total cyanide of 0.2 mg/L with nondetect values. The July 2012 sample had similarly low concentrations of 0.0073 and 0.00913 mg/L (J qualified), respectively. There was an exceedance for nitrate/nitrite in the December 2012 sample. The sample had a reading of 14.4 mg/L for nitrate/nitrite, above the NMWQCCstandard of 10 mg/L (2002). This result is believed to be an anomaly as this parameter has been consistently well below the standard of 10 mg/L. There were no other exceedances of the NMWQCC standard or the EPA MCLs (2012) for any other analytes at monitoring well MPL-06." There are no wells downgradient from MPL-06. NMED commented on this issue in Comment 3 of the Disapproval letter. If the exceedance of nitrate continues, the Permittee must install additional groundwater monitoring wells downgradient from MPL-06.

If you have any questions regarding this letter, please contact Kristen Van Horn at (505) 476-6046.

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
N. Dhawan, NMED HWB
K. Van Horn, NMED HWB
J. Gallegos, WSMR
B. Avalos, WSMR

File: WSMR 2014 and Reading
WSMR-13-006