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SUBSURFACE INVESTIGATION AND PRELIMINARY REMEDIAL RESPONSE FOR THE MONUMENT BOOSTER GAS COMPRESSOR STATION LEA COUNTY, NEW MEXICO

July 25, 1995

Prepared for:

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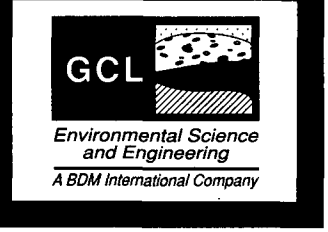

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Subsurface Investigation and
Preliminary Remedial Response for the
Monument Booster Gas Compressor Station
Lea County, New Mexico

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1.0 Executive Summary

Hydrocarbon-impacted soil and groundwater caused by historic releases at the Monument Booster Gas Compressor Station (formerly Hobbs Compressor Station No. 2) in Lea County, New Mexico were caused by past operations of Enron Gas and Oil Company (Enron). Preliminary subsurface investigations performed by Geoscience Consultants, Ltd. (GCL) in February 1994 and Daniel B. Stephens and Associates (DBS&A) in May 1994 verified the impact from one underground storage tank (UST) and one aboveground storage tank (AST) on site. The subsurface investigation described in this report included the installation of four additional monitoring wells (MW-1D, MW-3, MW-4, and MW-5) and one soil boring (SB-7) to define the areal and vertical extent of hydrocarbon-impacted groundwater conditions in order to develop a suitable remedial response.

Based on the analytical results obtained during this subsurface investigation and previous investigations conducted by DBS&A and GCL, the soil with hydrocarbon concentrations above the New Mexico Oil Conservation Division (OCD) recommended action level of 50 parts per million (ppm) benzene, toluene, ethylbenzene, and xylenes (BTEX) and 100 ppm total petroleum hydrocarbons (TPH) does not extend beyond an approximate radius of 120 feet around the former AST and UST.

The presence of 2.52 feet of free product (crude oil) in MW-1 appears to extend an estimated 50 to 100 feet downgradient (southeast) of the former AST location. The areal extent of hydrocarbon-impacted groundwater has been estimated as covering a triangular-shaped area that covers most of the southern half of the facility (approximately 5 acres), however, hydrocarbon-impacted groundwater is not likely to have migrated beyond the north, east, and south boundaries of the facility. Due to the elevated benzene levels (0.265 mg/L) in MW-5, we cannot conclude whether the groundwater is impacted beyond the west or southwestern property boundaries. Installation of an additional monitoring well in this area is recommended. Based on the analytical results for monitoring well MW-1D and the presence of a low permeable red clay layer at the bottom of the aquifer, the vertical extent of hydrocarbon-impacted groundwater does not extend beyond approximately 24 to 34 feet below the ground surface.

The inorganic chemical analyses indicate that water samples from several monitoring wells exceed the New Mexico Water Quality Control Commission (WQCC) standards for various constituents, including aluminum, boron, chloride, fluoride, iron, manganese, and/or total dissolved solids. These elevated constituents could represent natural conditions and/or off-site sources and are not believed to be contributed from on-site operations.

Based upon the calculation of the average linear velocity of groundwater flow (365 to 730 feet/year), the age of the release (1970s to 1980s), and the documented extent of hydrocarbon impact, GCL concludes that natural processes (intrinsic bioremediation, adsorption, and volatilization) are effectively limiting the migration of dissolved-phase hydrocarbons but removal of the free product (crude oil) is necessary to effectively eliminate the source of hydrocarbons in the

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subsurface media. While intrinsic bioremediation is clearly occurring and the rate at which this hydrocarbon removal process appears to be sufficient to contain the plume, additional data will be required over time to evaluate its effectiveness for in situ remediation.

SECTION 2.0

2.0 Introduction

Prior to GPM Gas Corporation's (GPM) acquisition of the Monument Booster Gas Compressor Station (formerly Hobbs Gas Compressor Station No. 2) in December 1994, the facility was owned and operated by Enron or its subsidiaries since approximately 1971. Hydrocarbon-impacted soil and groundwater caused by the historic releases at this site was previously identified during preliminary subsurface investigations performed by GCL in February 1994 and DBS&A in May 1994. The earlier investigations were conducted during the due diligence activities prior to the property transfer to establish a baseline assessment of the subsurface conditions with respect to past operations by Enron.

The purpose of the subsurface soil and groundwater investigation described in this report is to define the horizontal and vertical extent of hydrocarbon-impacted groundwater conditions at the Monument Booster Gas Compressor Station in order to develop a suitable remedial response. The subsurface investigation was performed in accordance with the work plan submitted by GPM to the OCD on February 23, 1995, and as approved by Mr. William Olson of the OCD in his letter to GPM dated April 5, 1995. GCL initiated the subsurface investigation at the Monument Booster Gas Compressor Station on May 8, 1995.

2.1 Site Description

The Monument Booster Gas Compressor Station is located in the NW1/4 NW1/4 NE1/4 of section 33 township 19 south, range 37 east in Lea County, New Mexico. The site is located approximately one half mile east of Monument, New Mexico. According to the Monument South, NM USGS 7.5-minute quadrangle map and survey data, the elevation of the site is approximately 3,590 feet above sea level.

The Monument Booster Gas Compressor Station covers approximately 10.75 acres within a rectangular tract of land that measures roughly 600 feet by 800 feet. The western half of the facility (approximately 5.75 acres), which contains all of the gas production equipment, is secured by a chain-link fence and locked gate as depicted in Figure 1. The eastern half of the facility, approximately 5 acres of pasture land, is not fenced. The facility is well-maintained and undergoing numerous improvements to make the facility more automated and less prone to the hydrocarbon releases that occurred under the manually controlled operations during Enron's ownership. This investigation is focused on the former hydrocarbon release sources identified in previous reports as described below:

- One former pipeline liquids AST located near the east central portion of the facility. The AST, which lacked secondary containment and had no automatic emergency overflow shutoff devices, appears to be the major source of hydrocarbon releases identified on site. In 1992, this AST was moved to a concrete secondary containment area located approximately 120 feet south-southwest of its former location. According to the GPM superintendent of the facility, the AST was used to contain crude oil that accumulates as a low volume byproduct of the natural gas and

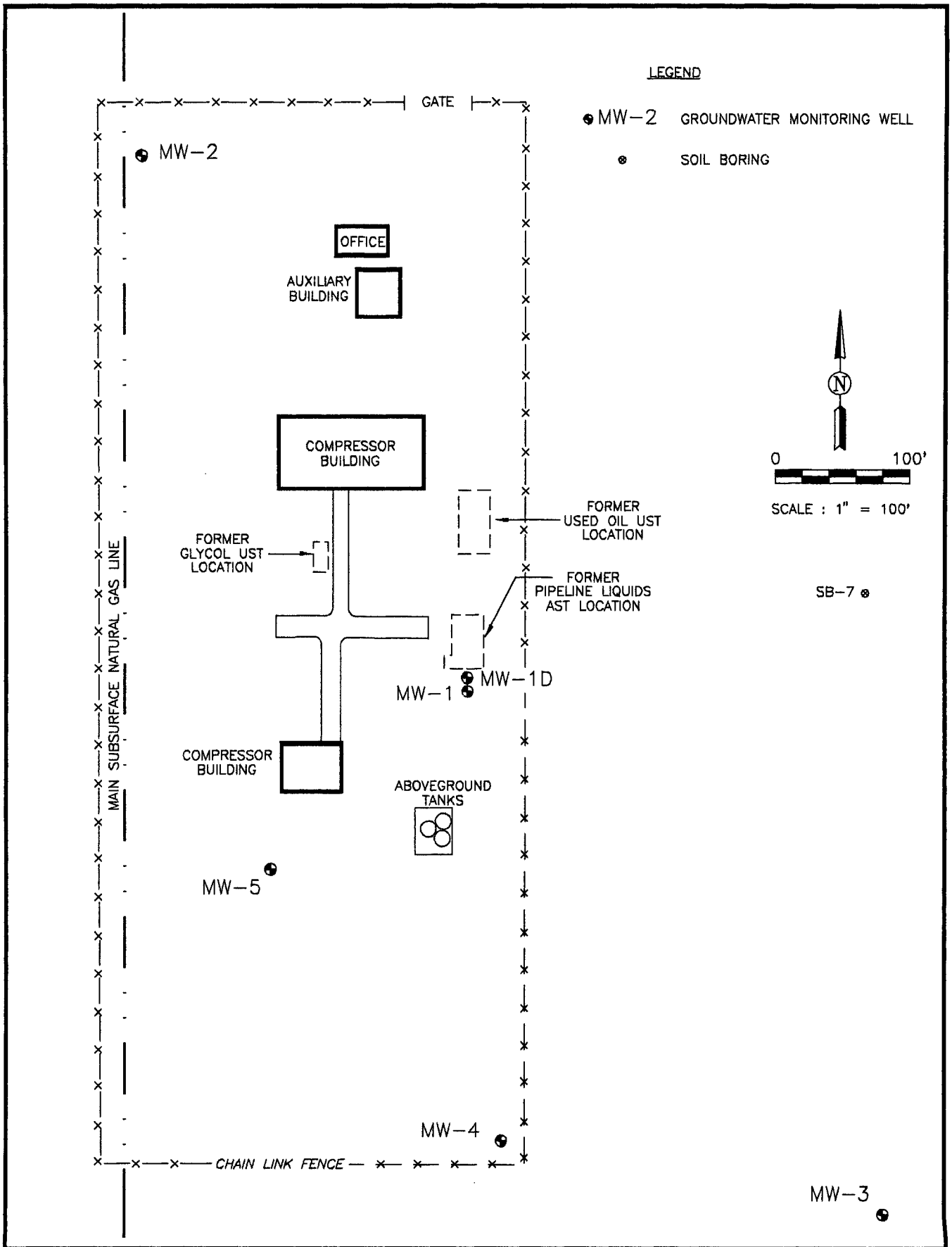

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FIGURE 1
MONUMENT
BOOSTER STATION
SITE MAP

natural gas liquids production in the area. Approximately 35 cubic yards of hydrocarbon-impacted soils were excavated beneath the former AST location in May 1994. An unknown amount of soils were over-excavated from this area in July 1992 during the UST closure operations.

- Two used oil USTs were located approximately 100 feet north of the AST. The USTs contained used lubrication oil generated from the gas compressor engines at the facility. The two USTs were removed in September 1992 under New Mexico Environment Department (NMED) oversight. Approximately 322 cubic yards of hydrocarbon-impacted soils were removed during over-excavation operations of the former UST tank holds in May 1994.

- One used oil UST located adjacent to the north side of the former AST location. The UST contained used lubrication oil generated from the gas compressor engines at the facility. The UST was removed in September 1992 under NMED oversight. An unknown volume of hydrocarbon-impacted soils was excavated from this former UST along with those excavated beneath the adjacent AST in July 1992 during the UST closure operations.

The surrounding area is primarily used for cattle grazing and oil and gas production operations. The nearest residential dwelling is located approximately one quarter mile west of the site. According to information provided by Mr. Ken Fresquez of the New Mexico State Engineer Office, there are three registered water wells located within one half mile of the site. One well is registered for the Monument Booster Gas Compressor Station and was permitted to Northern Natural Gas on April 16, 1971. The well was permitted for use for the condensing and cooling system. According to the GPM superintendent, the well is no longer in use, as water for the compressor station is supplied by municipal water supply in Monument. The nearest off-site registered water well is located approximately one half mile west of the site, and was permitted to Mr. Darel Taylor on June 6, 1985 for domestic water supply purposes. The third registered well is located approximately one half mile south of the Monument Booster Gas Compressor Station. This well was permitted to Ms. Annie Schwertfeger on October 27, 1948, and is currently not in use. A list of the permitted water wells is provided in Appendix A. Based on the results of this investigation and previous investigations, these water wells are not likely to be adversely impacted from petroleum hydrocarbon releases from the site.

2.2 Regulatory Considerations

Environmental issues of concern to the Monument Booster Gas Compressor Station are under the jurisdiction of the OCD. Generally, releases of unrefined hydrocarbons to the soil and/or groundwater are subject to OCD guidelines as published in the document titled "Guidelines for the Remediation of Leaks, Spills and Releases" (August 13, 1993). These guidelines recommend soil remediation

action levels based on certain ranking criteria. Based on the OCD guidelines for Category I sites (ranking score > 19 points), the soil remediation action levels for benzene, BTEX, and TPH are 10 ppm, 50 ppm, and 100 ppm, respectively. Groundwater remediation action levels are compared to the WQCC standards as published in Section 3-103. The WQCC groundwater standards are listed with the analytical results in Section 4.0.

Pending OCD notification and approval, "procedures may deviate from the guidelines if it can be shown that the proposed procedure will either remediate, remove, isolate, or control contaminants in such a manner that fresh waters, public health and the environment will not be impacted. Specific constituents and/or requirements for soil and groundwater analysis and/or remediation may vary depending on site-specific conditions" (OCD, August 1993, page 1).

2.3 Regional Hydrogeology

According to published information (Nicholson and Clebsch, 1961 and Barnes, 1976), the Monument Booster Gas Compressor Station is underlain by Quaternary colluvial deposits composed of sand, silt, and gravel deposited by slopewash, and talus from the Ogallala Formation. The colluvial deposits are often calichified (indurated with cemented calcium carbonate) with caliche layers from 1 to 20 feet thick. The lithology of the colluvial deposits is very similar to that of the Ogallala since the Ogallala is the source of the re-deposited colluvial sediments. The nearest outcropping of the Ogallala Formation occurs approximately one mile north of Monument along what is known as the Llano Estacado (caprock). The thickness of the colluvium deposits and Ogallala Formation varies locally as a result of significant paleo-topography at the top of the underlying Triassic Dockum Group. Since Cretaceous Age rocks in the region have been removed by pre-Tertiary erosion, the colluvial deposits and Ogallala Formation rest unconformably on the Triassic Dockum Group. Consequently, the top of the Dockum Group varies from approximately 14 to 34 feet below ground surface across the site. The uppermost unit of the Dockum Group is the Chinle Formation which primarily consists of micaceous red clay and shale but also contains thin interbeds of fine-grained sandstone and siltstone. The red clays and shale of the Chinle Formation act as an aquitard beneath the waterbearing colluvial deposits and therefore limit the amount of recharge to the underlying Dockum Group. The thickness of the Dockum Group is estimated at approximately 300 feet in the site area although its thickness in southern Lea County varies from 0 to 1,270 feet thick (Nicholson and Clebsch, 1961). A geologic map is provided in GCL's previous report, "Evaluation of Groundwater Contamination at the Hobbs Gas Plant and Hobbs Gas Compressor Station No. 2".

Potable groundwater used in southern Lea County is derived primarily from the Ogallala Formation (including the colluvial deposits) and the Quaternary alluvium. Lower yields have also been provided by waterbearing zones within the Triassic Dockum Group in a few scattered areas within southern Lea County. No potable water is known to be derived below the Triassic Dockum Group. Water from the Ogallala and alluvium aquifers in

southern Lea County is used for irrigation, stock, domestic, industrial, and public supply purposes.

The regional gradient of the Ogallala aquifer in the site area generally flows toward the southeast. Based on data provided by the State Engineer Office, the hydraulic gradient varies from approximately 0.002 to 0.1 feet/feet. Recharge to the Ogallala aquifer occurs primarily by infiltration of precipitation at a slow rate (typically one quarter to one half inch of water per year) due to the characteristically arid climate of southern Lea County (Nicholson and Clebsch, 1961). Hydraulic conductivity values are estimated between 26 and 50 feet per day and specific yields of 0.23 for the Ogallala aquifer near the site area based on limited published information (McAda, 1984); aquifer testing (pump test, slug test, etc.) would be necessary to determine actual values on site.

SECTION 3.0

3.0 Methods of Investigation

3.1 Soil Boring and Monitoring Well Locations

The objective of the placement of the soil borings and monitoring wells during this investigation was to determine the vertical and areal extent of hydrocarbon-impacted groundwater. Monitoring well locations are depicted on the site map (Figure 1). Monitoring well MW-1 is located at the suspected source area (former pipeline liquids AST and used oil UST location). Monitoring well MW-2 is located in the upgradient (northwest) direction of the source area. Monitoring wells MW-1 and MW-2 were installed by GCL in February 1994. During this investigation, MW-1D was placed immediately adjacent (approximately 8 feet north) to MW-1 to vertically define the groundwater conditions in the source area. The construction method utilized for MW-1D also allows its potential usage as an air sparging well for remedial purposes if later deemed appropriate. Monitoring well MW-3 was placed approximately 500 feet southeast of the source area to delineate the downgradient extent of the hydrocarbon-impacted groundwater. MW-4 was placed near the southeast corner of the fenced portion of the site as requested by the OCD for additional downgradient delineation. Monitoring well MW-5 was located approximately 200 feet southwest of the source area for cross-gradient delineation. Another cross-gradient monitoring well (location of soil boring SB-7) was intended to be placed approximately 300 feet east-northeast of the source area, however, no groundwater was encountered during soil sampling operations at this location, therefore, the borehole was terminated at 42 feet. The installation of a monitoring well at this location was determined unnecessary since the presence of a subsurface groundwater barrier (Triassic Dockum Group) composed of red clay was encountered at a shallow depth (14 feet) and extended well below (beyond 42 feet) the anticipated depth of groundwater which averages approximately 23 feet across the site.

3.2 Soil Sampling Procedures

Drilling and sampling operations were conducted by Diversified Water Wells of Abilene, Texas, using an air-rotary drilling rig. After drilling to the proper depth, soil samples were collected with a split-spoon sampling tool at 5-foot intervals. Each soil sample was field-screened (headspace analysis) using a Thermal Scientific Model 580D organic vapor meter (OVM) equipped with a 10.6 eV photoionization detector (PID). Prior to use, the instrument was calibrated with 100 ppm isobutylene, which is directly proportional to benzene with respect to relative concentrations detected. Field PID measurements were used to determine the presence of actionable soils (PID reading greater than 100 ppm) as defined in the OCD "Guidelines for Remediation of Leaks, Spills and Releases" (August 13, 1993). The soil sample that registered the highest PID reading and/or samples with PID readings above 100 ppm and the sample immediately above the groundwater table were submitted to Trace Analysis, Inc. of Lubbock, Texas, to be analyzed for TPH using Environmental Protection Agency (EPA) Method 8015 (gas and diesel range) and BTEX using EPA Method 8020. Soil samples were placed in 125-milliliter (4-ounce) glass jars with teflon-lined lids sealed with quality assurance/quality control (QA/QC) seals, and preserved at

4°C with zero headspace according to EPA requirements (EPA 600/4-82-029). A chain-of-custody (COC) form documenting sample identification numbers, collection times, and delivery times to the laboratory was completed for each set of samples.

3.3 Monitoring Well Construction Procedures

The monitoring wells were constructed of 4-inch diameter schedule 40 PVC well casing and 0.01-inch slotted screen, with the exception of MW-1D, which was constructed of 2-inch diameter well casing and screen. The 15 feet of well screen for the 4-inch diameter monitoring wells was placed approximately 10 feet below the water table leaving approximately 5 feet of well screen above the water table. In the 2-inch monitoring well, the 2.5 feet of well screen was placed at the bottom of the well to screen only the bottom-most portion of the aquifer. The screened portion of each monitoring well was surrounded with a filterpack that was capped with a bentonite seal. The bentonite seal for the 4-inch diameter monitoring wells varied from approximately 2 to 4 feet thick. The bentonite seal for the 2-inch diameter monitoring well was approximately 14 feet thick. The remaining annular space for each monitoring well was sealed using a grout composed of Portland cement with a 5 percent bentonite mixture, emplaced from the top of the bentonite plug to ground surface. A 4-foot by 4-foot concrete pad was constructed at the surface and the top of casing protected with a locked steel well cover. The monitoring well construction diagrams are provided in Appendix B.

3.4 Groundwater Sampling Procedures

Each newly installed monitoring well was developed using a decontaminated submersible pump, with the exception of the 2-inch monitoring well (MW-1D), which was hand bailed to reduce the amount of fine sediments and improve well yield performance. Immediately prior to collecting groundwater samples, each of the on-site monitoring wells was purged of a minimum of three well volumes of development water using a decontaminated 2-inch diameter submersible pump. An approximate total of 250 gallons was developed and purged from the on-site monitoring wells. Field parameters, including pH, conductivity, and temperature, were measured with a Hydac Model 910 meter. Groundwater samples were obtained after field parameters stabilized during purging operations. The pumping rate of the submersible sampling pump was reduced to below 300 milliliters per minute for samples being obtained for volatile organic analysis to minimize the volatilization of organic constituents during sampling operations. The water samples were transferred into air-tight, septum-sealed 40-milliliter glass VOA sample vials with zero headspace for analysis of total BTEX, and 1-liter glass jars for analysis of polynuclear aromatic hydrocarbon (PAH), total metals, and major cations and anions analyses in accordance with EPA protocol (EPA 600/2-82-029) using EPA-approved methods (SW-846). The water samples were placed in an ice-filled cooler immediately after collection and transported to Trace Analysis, Inc. in Lubbock, Texas.

Additional groundwater samples were collected from monitoring wells MW-1D, MW-2, and MW-5 and sent to Trace Analysis, Inc. for analysis of total aerobic heterotrophic plate count and total hydrocarbon utilizing bacteria in order to assess the potential intrinsic bioremedial activity currently taking place. For each set of samples, COC forms documenting sample identification numbers, collection times, and delivery times to the laboratory were completed.

SECTION 4.0

4.0 Results

4.1 Local Geology

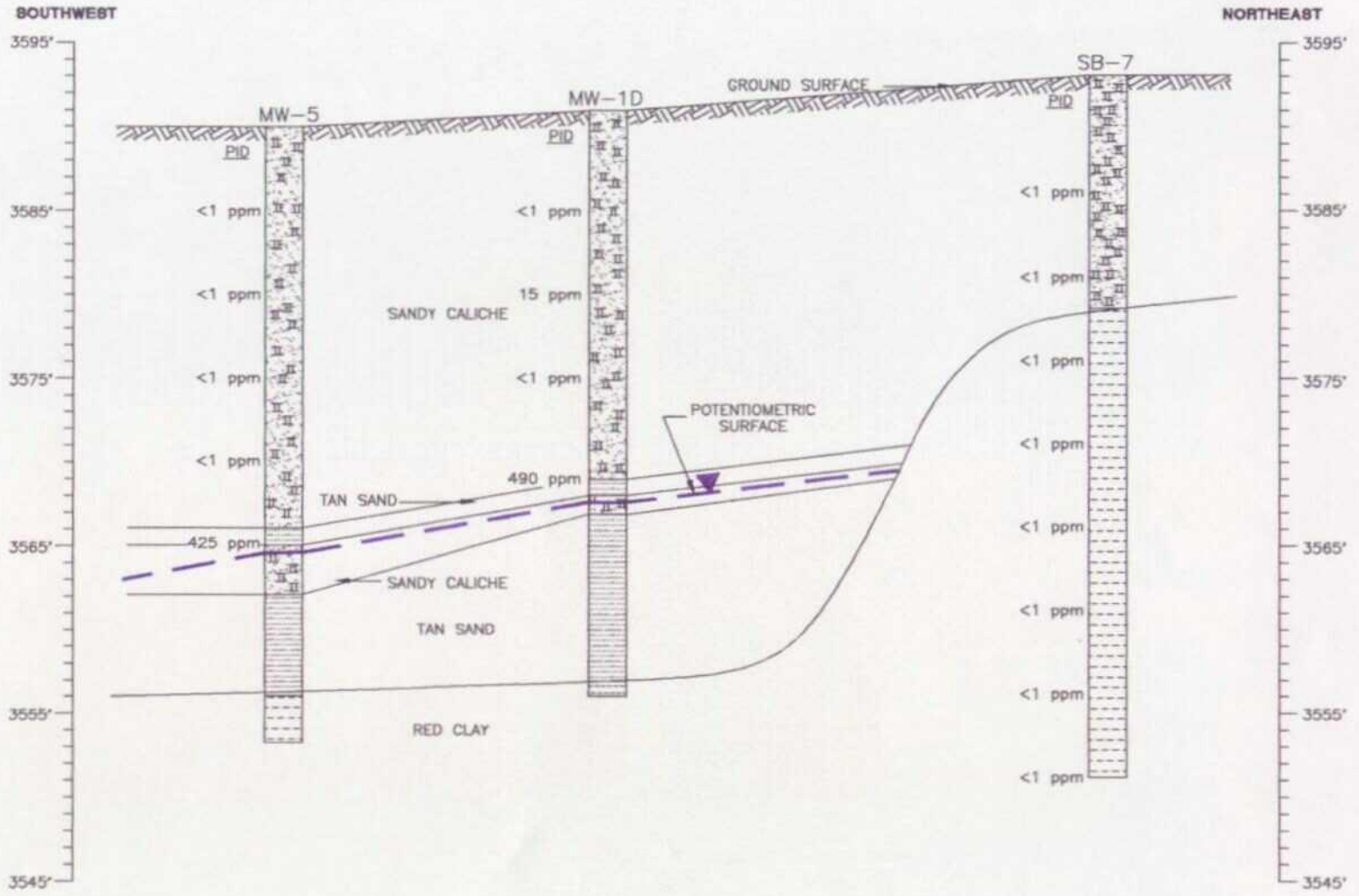
The lithology of the subsurface soils in monitoring wells MW-1D, MW-3, MW-4, and MW-5 were similar to those described during the previous investigations (MW-1, MW-2, and SB-1 through SB-6). The subsurface soils generally consist of an upper unsaturated sandy zone 14 to 22 feet thick (colluvial deposits/Ogallala Formation). This unit was commonly calichified (indurated with cemented calcium carbonate) and moderately fractured (weathered). Beneath this unit, a saturated fine-grained sand was observed (approximately 8 to 12 feet thick). The saturated sand unit was underlain by a red clay (Upper Dockum Group). The lithology of the subsurface soils in boring SB-7, however, differed significantly from all other borings on site in that there was no saturated fine-grained sand zone encountered because the red clay was encountered at a depth shallower (14 feet) than where the on-site groundwater had been observed (approximately 23 feet). The red clay continued to the bottom of this boring (42 feet) indicating that it acts as a groundwater barrier at this portion of the site. Based on its lithology and the absence of groundwater, boring SB-7 was not completed as a monitoring well and effectively delineates the eastern extent of the hydrocarbon-impacted groundwater on site. Geologic cross sections developed from the lithologic descriptions are included in Figures 2 and 3, and depict the uneven red clay surface beneath the site. A more detailed description of the subsurface soils is provided on the lithologic logs in Appendix B.

PID readings varied from less than 1 ppm in various intervals from each of the soil borings to 490 ppm in monitoring well MW-1D. Only two sampled intervals exceeded the OCD recommended action level of 100 ppm. These were the 22 to 23-foot interval of MW-1D (490 ppm) and the 24- to 25-foot interval of MW-5 (425 ppm). A complete listing of PID readings is included in the lithologic logs in Appendix B.

4.2 Soil Sample Analytical Results

Based on a Category I ranking for the site (> 19 points), only one sample exceeded the OCD recommended action level of 50 ppm for BTEX (the 22- to 23-foot sample interval of MW-1D). Two sample intervals exceeded the OCD recommended action level of 100 ppm for TPH (the 22- to 23-foot interval of MW-1D and the 24- to 25-foot interval of MW-5). Hydrocarbon-impacted soils were not observed in borings SB-7, MW-3, and MW-4, and PID measurements in these borings were less than 1 ppm throughout. Soil sample analytical results are summarized in Table 1. Laboratory analytical reports and the COC documentation is provided in Appendix C.

Based on the soil sample analytical results from this investigation and the headspace measurements taken from previous investigations by GCL and DBS&A, the hydrocarbon-impacted soil concentrations above the OCD recommended action levels for BTEX (50 ppm) and/or TPH (100 ppm) are estimated to be limited within a 120-foot radius of the former AST. Some hydrocarbon-impacted soils above the OCD recommended action levels extend beyond the near vicinity of the source areas (the 24-to 25-foot interval of MW-5, for example), however, these soils are limited to a thin zone immediately



0 100'

HORIZONTAL SCALE
1" = 100'

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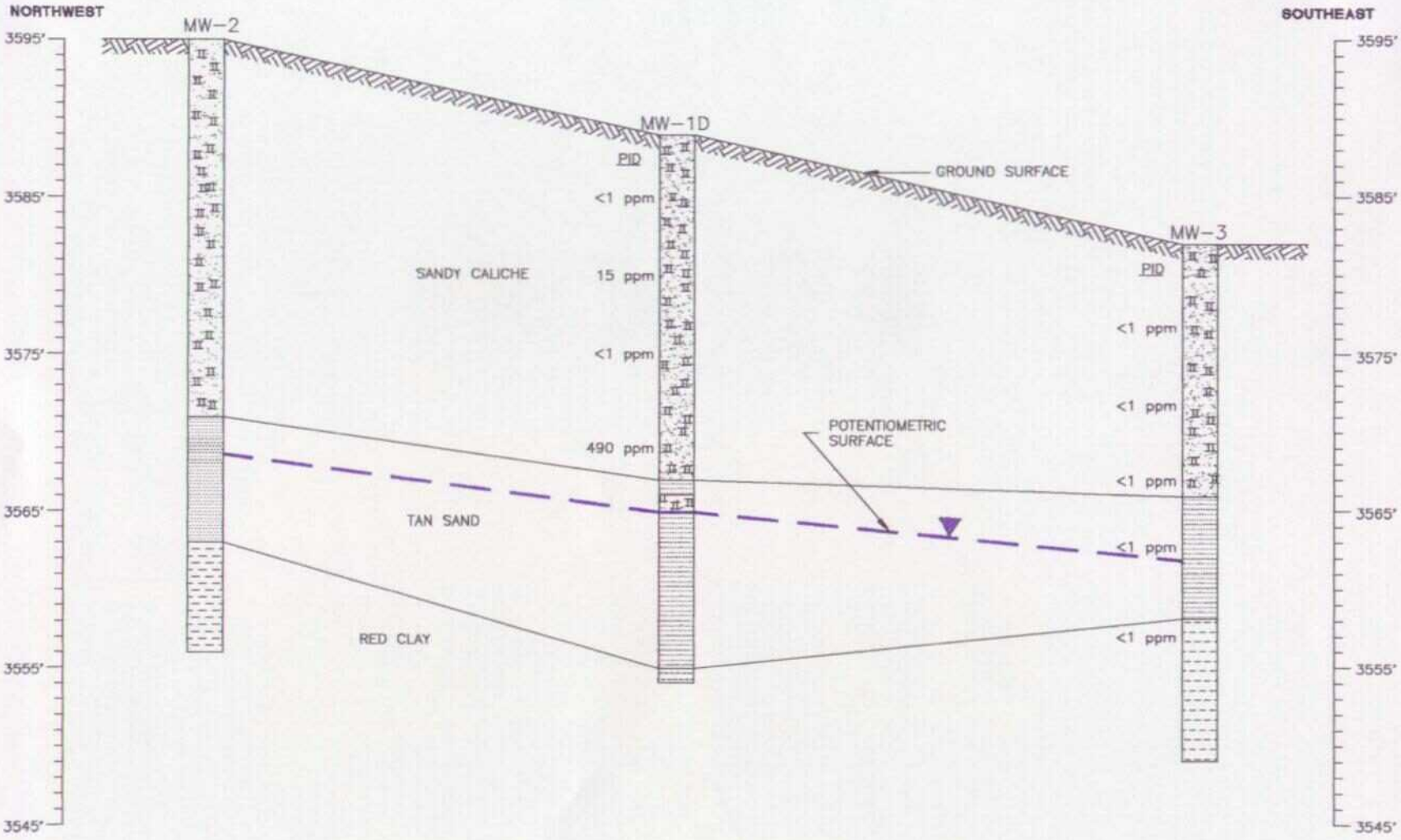
FIGURE 2
MONUMENT BOOSTER STATION
GEOLOGIC CROSS-SECTION
(SOUTHWEST TO NORTHEAST)



0 200'

HORIZONTAL SCALE
1" = 200'

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FIGURE 3
MONUMENT BOOSTER STATION
GEOLOGIC CROSS-SECTION
(NORTHWEST TO SOUTHEAST)

Table 1
Summary of Soil Sample Analytical Results for BTEX and TPH
Monument Booster Station

Monitoring Well/Boring No.	Date	Sample Interval	PID Reading (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH[g] (mg/kg)	TPH[d] (mg/kg)
MW-1D	05-09-95	10-10.5	15	<0.01	0.018	<0.01	<0.01	0.018	< 10	< 20
		22-23	490	2.6	< 1	28	58	89	3,194	2,452
MW-1D (Duplicate)	05-09-95	22-23	490	<0.2	<0.2	18	62	80	6,360	5,372
MW-3	05-08-95	20-21	< 1	<0.01	0.016	<0.01	<0.01	0.016	< 10	23
MW-4	05-08-95	22-22.5	< 1	<0.01	<0.01	<0.01	<0.01	<0.01	< 10	< 20
MW-5	05-09-95	24-25	425	0.66	2.7	9.5	26	39	1,374	1,968
SB-7	05-08-95	15-16	< 1	<0.01	0.024	0.011	0.031	0.066	< 10	< 20
		40-42	< 1	<0.01	0.013	<0.01	0.026	0.039	< 10	< 20

Analyses performed by Trace Analysis, Inc. of Lubbock, Texas.
BTEX indicates benzene, toluene, ethylbenzene, and xylenes and analyzed using EPA Method 8020. BTEX values rounded to two significant figures.
TPH[g] indicates total petroleum hydrocarbons (gas range) and analyzed using EPA Method 8015 (purge method).
TPH[d] indicates total petroleum hydrocarbons (diesel range) and analyzed using EPA Method 8015 (extraction method).
Values shaded indicate concentrations exceed remediation action levels as specified by the NMOCD in Guidelines For Remediation of Leaks, Spills and Releases (August 13, 1993) for sites with a NMOCD ranking score greater than 19 points.
SB-7 is a designated soil boring which was not converted into a monitoring well because groundwater was not encountered at its location.

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above the groundwater table and have likely adsorbed hydrocarbons that have migrated downgradient from the source area along the groundwater pathway. Off-site impact to subsurface soils is not probable.

4.3 Groundwater Gradient

The monitoring wells and soil boring locations were surveyed by John W. West Engineering of Hobbs, New Mexico using the existing grid system of the facility. Ground surface elevations and top-of-well casing elevations were determined within 0.01 feet relative to mean sea level. The survey plats prepared by John W. West Engineering Company are provided in Appendix D. The on-site monitoring wells were gauged on May 15, 1995 to determine the groundwater elevation, direction of groundwater flow, and the presence of free product (crude oil). Depth to groundwater varied from approximately 19 to 26 feet below ground surface across the site. Groundwater elevations are summarized in Table 2. Free product (crude oil) was encountered in monitoring well MW-1 with a measured thickness of 2.52 feet. A potentiometric surface map that depicts the elevation of the potentiometric surface (groundwater table) and direction of groundwater flow is illustrated in Figure 4.

The apparent direction of groundwater flow is toward the southeast with a hydraulic gradient of approximately 0.01 feet/feet. Assuming a hydraulic conductivity of 26 to 50 feet/day (McAda, 1984) and an estimated effective porosity of 0.25, the average linear velocity of groundwater flow on site varies from approximately 365 to 730 feet/year based on the version of the Darcy equation presented below:

$$v_{avg} = \frac{k \times i}{p_e}$$

where,
v_{avg} = average linear velocity
k = hydraulic conductivity
i = hydraulic gradient
p_e = effective porosity

$$v_{avg} = \frac{k \times i}{p_e} = \frac{26 \text{ feet/day} \times 0.01 \text{ feet/feet}}{0.25}$$

$$= 1 \text{ foot/day} = 365 \text{ feet/year}$$

$$v_{avg} = \frac{k \times i}{p_e} = \frac{50 \text{ feet/day} \times 0.01 \text{ feet/feet}}{0.25}$$

$$= 2 \text{ feet/day} = 730 \text{ feet/year}$$

4.4 Groundwater Sample Analytical Results

The analytical results from the May 16, 1995, groundwater sampling event are summarized in Tables 3 through 7. The WQCC standard is also presented in each table for comparison. Those constituents that recorded concentrations above the WQCC standards are highlighted in boldface type. The laboratory analytical reports and the COC documentation for the groundwater sampling operations are provided in Appendix C.

4.4.1 Hydrocarbon Analytical Results

The only hydrocarbon concentrations above WQCC standards occurred in monitoring wells MW-1D and MW-5. MW-1 was not analyzed for hydrocarbon compounds due to the presence of free product (crude oil). The analytical results for MW-1D and MW-5 indicate benzene

Table 2
Summary of Groundwater Elevations
Monument Booster Station

Well	Date	Relative Ground Surface Elevations (feet)*	Relative Top of Casing Elevation (feet)*	Depth to Groundwater Below Top of Casing (feet)	Corrected Relative Groundwater Elevation (feet)**	Phase-Separated Hydrocarbon Thickness (feet)
MW-1	05-16-95	3588.85	3591.15	28.05	3565.17	2.52
MW-1D	05-16-95	3589.06	3591.31	26.04	3565.27	0.00
MW-2	05-16-95	3594.13	3596.30	29.28	3567.02	0.00
MW-3	05-16-95	3581.46	3583.86	22.72	3561.14	0.00
MW-4	05-16-95	3586.10	3588.77	26.45	3562.32	0.00
MW-5	05-16-95	3589.62	3592.16	28.10	3564.06	0.00

* Elevations surveyed by John W. West Engineering Company of Hobbs, New Mexico. The monitor well casings were marked on the north side to provide consistent reference points for future gauging operations.
** Correction Equation for Phase-Separated Hydrocarbons: Corrected Relative Groundwater Elevation = Top of Casing Elevation - [Depth to Groundwater Below Top of Casing - (SG) (PSH Thickness)]
Specific Gravity (SG) = 0.82 for crude oil.
PSH indicates phase separated hydrocarbons (crude oil).

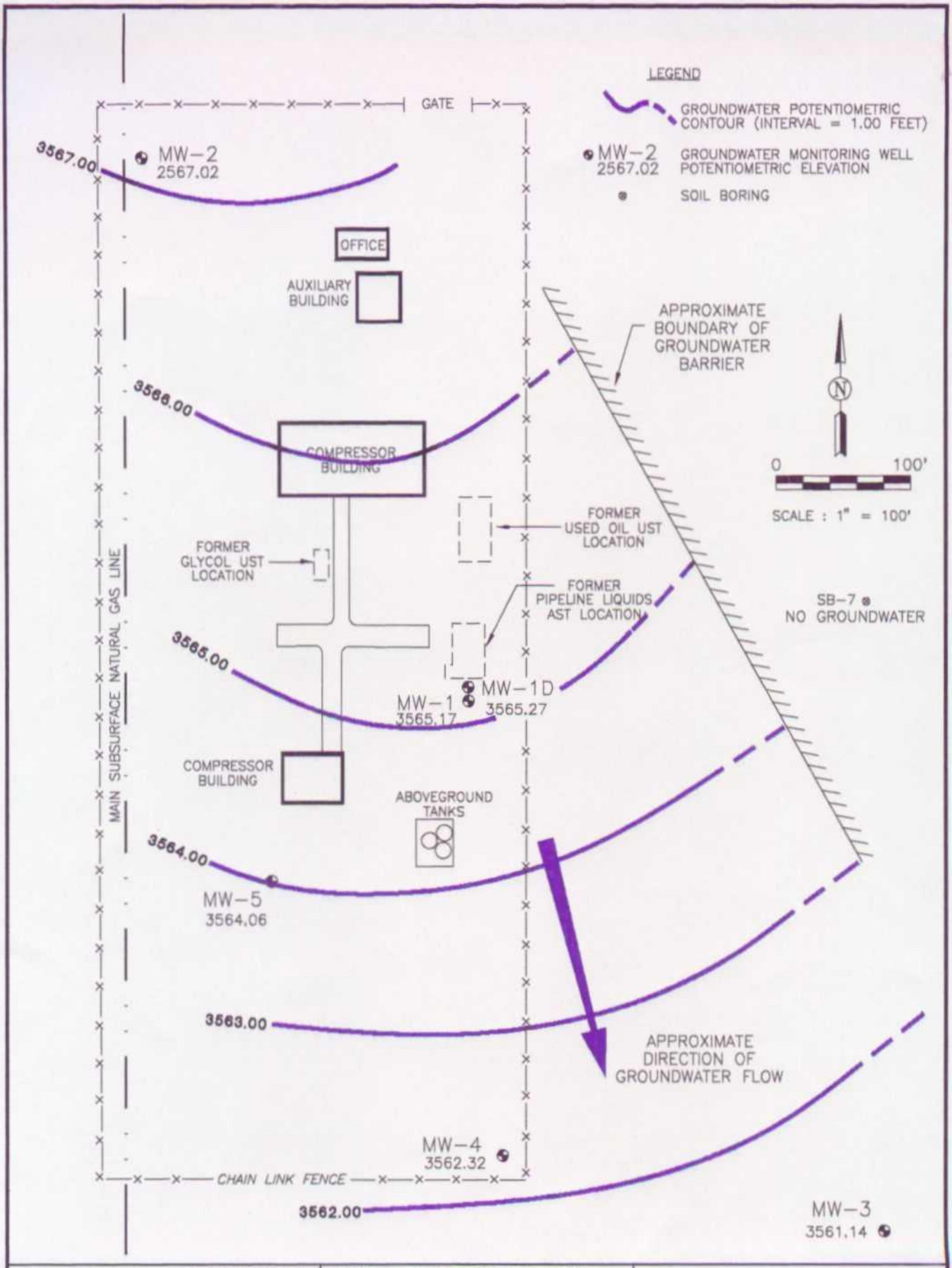

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FIGURE 4
MONUMENT
BOOSTER STATION
POTENTIOMETRIC SURFACE MAP

Table 3
Summary of Groundwater Analytical Results for Aromatic Volatile Organic Compounds
Monument Booster Station
Sampling Operations Conducted on May 16, 1995

Constituent	Monitoring Well Numbers					NMWQCC Standards (mg/L)
	MW-1D (mg/L)	MW-2 (mg/L)	MW-3 (mg/L)	MW-4 (mg/L)	MW-5 (mg/L)	
Benzene	0.018	<0.001	<0.001	<0.001	0.265	0.010
Toluene	0.006	<0.001	<0.001	<0.001	0.009	0.75
Ethylbenzene	0.015	<0.001	<0.001	<0.001	0.261	0.75
Xylenes (Total)	0.016	<0.001	<0.001	<0.001	0.050	0.62

Analyses performed by Trace Analysis, Inc. using EPA Method 8240.
New Mexico Water Quality Control Commission (NMWQCC) Standards are listed as specified in Regulation 3-103.
Values shaded indicate concentrations exceed NMWQCC groundwater standards.
Monitoring well MW-1 was not measured for aromatic volatile organic compounds (due to presence of free phase floating product).

Table 4
Summary of Groundwater Analytical Results for Polynuclear Aromatic Hydrocarbons
Monument Booster Station
Sampling Operations Conducted on May 16, 1995

Constituent	Monitoring Well Numbers					NMWQCC Standards (mg/L)
	MW-1D (mg/L)	MW-2 (mg/L)	MW-3 (mg/L)	MW-4 (mg/L)	MW-5 (mg/L)	
Naphthalene	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	
Total monomethylnaphthalenes	<0.001	<0.001	<0.001	<0.001	<0.001	0.03
Benzo(a)pyrene	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.0007

Analyses performed by Trace Analysis, Inc. using EPA Method 8270.
New Mexico Water Quality Control Commission (NMWQCC) Standards are listed as specified in Regulation 3-103.
Monitoring well MW-1 was not measured for polynuclear aromatic hydrocarbons(due to presence of free phase floating product).

Table 5
Summary of Groundwater Analytical Results for Halogenated Volatile Organic Compounds
Monument Booster Station
Sampling Operations Conducted on May 16, 1995

Constituent	Monitoring Well Numers					NMWQCC Standards (mg/L)
	MW-1D (mg/L)	MW-2 (mg/L)	MW-3 (mg/L)	MW-4 (mg/L)	MW-5 (mg/L)	
Carbon Tetrachloride	<0.001	<0.001	<0.001	<0.001	<0.001	0.01
Chloroform	<0.001	<0.001	<0.001	<0.001	<0.001	0.1
1,1-Dichloroethane	<0.001	<0.001	<0.001	<0.001	<0.001	0.025
1,2-Dichloroethane	<0.001	<0.001	<0.001	<0.001	<0.001	0.01
1,1-Dichloroethylene	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Methylene chloride	<0.005	<0.005	<0.005	<0.005	<0.005	0.1
1,1,2,2-Tetrachloroethane	<0.001	<0.001	<0.001	<0.001	<0.001	0.01
1,1,2,2-Tetrachloroethylene	<0.001	<0.001	<0.001	<0.001	<0.001	0.02
1,1,1-Trichloroethane	<0.001	<0.001	<0.001	<0.001	<0.001	0.06
1,1,2-Trichloroethane	<0.001	<0.001	<0.001	<0.001	<0.001	0.01
1,1,2-Trichloroethylene	<0.001	<0.001	<0.001	<0.001	<0.001	0.1
Vinyl chloride	<0.001	<0.001	<0.001	<0.001	<0.001	0.0001*

Analyses performed by Trace Analysis, Inc. using EPA Methods 8240.
New Mexico Water Quality Control Commission (NMWQCC) Standards are listed as specified in Regulation 3-103.
*Indicates NMWQCC standard is below method detection limit.
Monitoring well MW-1 was not measured for halogenated volatile organic compounds due to presence of free phase floating product).

Table 6
Summary of Groundwater Analytical Results for Total Metals
Monument Booster Station
Sampling Operations Conducted on May 16, 1995

Constituent	Monitoring Well Numbers						NMWQCC Standards (mg/L)
	MW-1 (mg/L)	MW-1D (mg/L)	MW-2 (mg/L)	MW-3 (mg/L)	MW-4 (mg/L)	MW-5 (mg/L)	
Aluminum (Al)	0.55	1.34	13.10	0.88	8.04	0.24	5.0
Arsenic (As)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Barium (Ba)	0.13	0.12	0.08	0.05	0.10	0.14	1.0
Boron (B)	0.85	0.22	0.37	0.09	0.14	0.39	0.75
Cadmium (Cd)	0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01
Cobalt (Co)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Copper (Cu)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.0
Chromium (Cr)	0.01	<0.01	0.02	0.01	0.02	0.02	0.05
Iron (Fe)	25.58	4.6	5.82	0.53	4.68	1.75	1.0
Lead (Pb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.05
Manganese (Mn)	0.67	0.31	0.12	0.08	0.11	0.58	0.2
Mercury (Hg)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
Molybdenum (Mo)	0.07	0.09	0.05	0.07	0.07	0.07	1.0
Nickel (Ni)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.2
Selenium (Se)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.05
Silver (Ag)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05
Zinc (Zn)	0.03	0.06	0.05	0.04	0.05	0.04	10.0

Analyses performed by Trace Analysis, Inc. using EPA Methods 200.7, 239.2, 270.2, and 272.2
New Mexico Water Quality Control Commission (NMWQCC) Standards are listed as specified in Regulation 3-103.
Shaded values indicate concentrations exceed NMWQCC groundwater standards.

Table 7
Summary of Groundwater Analytical Results for Major Ions and Field Parameters
Monument Booster Station
Sampling Operations Conducted on May 16, 1995

Constituent	Monitoring Well Numbers						NMWQCC Standards (mg/L)
	MW-1 (mg/L)	MW-1D (mg/L)	MW-2 (mg/L)	MW-3 (mg/L)	MW-4 (mg/L)	MW-5 (mg/L)	
Total Dissolved Solids (TDS)	NM	634	1,478	516	716	692	1,000
Calcium (Ca)	12.8	123	315	99.7	160	122	NS
Fluoride (F)	NM	1.8	1.1	1.8	1.2	1.4	1.6
Magnesium (Mg)	1.6	46.2	72.0	25.0	37.2	52.9	NS
Silica (Si)	8.7	8.0	20.0	7.9	16.5	6.8	NS
Sodium (Na)	14.5	79.1	154.5	76.1	82.5	110.7	NS
Bicarbonate (HCO_3)	NM	333	197	166	277	532	NS
Chloride (Cl)	NM	77	812	188	152	80	250
Nitrate (NO_3-N)	NM	1.37	7.42	5.62	3.69	0.56	10.0
Sulfate (SO_4)	NM	174	509	115	136	67	600
Field Parameters							
pH (standard units)	NM	7.90	8.22	8.27	7.88	7.72	6 - 9
Conductivity (µS/cm)	NM	1,605	3,160	1,350	1,652	1,582	NS
Temperature (°F)	NM	75.3	69.7	73.3	75.8	70.1	NS
Dissolved Oxygen (mg/L)	NM	1.05	6.48	6.85	4.85	1.10	NS

Analyses performed by Trace Analysis, Inc. using EPA Methods 160.1, 200.7, 340.2, 375.4, 353.3, 4500 Cl-B, and 310.1
New Mexico Water Quality Control Commission (NMWQCC) Standards are listed as specified in Regulation 3-103.
NM = Indicates parameter was not measured (due to presence of free phase floating product).
NS = Indicates no standard established or applicable.
Values shaded indicate concentrations exceed NMWQCC groundwater standards.

concentrations of 0.018 mg/L and 0.265 mg/L, respectively, which exceed the WQCC standard of 0.01 mg/L. The groundwater analyses indicate that the hydrocarbon concentrations in monitoring wells MW-2, MW-3, and MW-4 were below the laboratory detection limits.

The estimated extent of the hydrocarbon-impacted groundwater on site that exceeds the WQCC standards for benzene based on the May 15, 1995 sampling event is depicted in Figure 5. Based on the results of this investigation and previous investigations by GCL and DBS&A, the areal extent of hydrocarbon-impacted groundwater has been estimated as covering a triangular-shaped area that covers most of the southern half of the facility (approximately 5 acres), however, hydrocarbon-impacted groundwater is not likely to have migrated beyond the north, east, and south boundaries of the facility. Due to elevated benzene levels (0.265 mg/L) in MW-5, we cannot conclude whether the groundwater is impacted beyond the west or southwestern property boundaries without the installation of an additional monitoring well in this area.

Based on the analytical results for monitoring MW-1D and the presence of a low permeable red clay layer at the bottom of the aquifer, the vertical extent of hydrocarbon-impacted groundwater does not extend beyond approximately 24 to 34 feet below the ground surface.

4.4.2 *Inorganic Analytical Results*

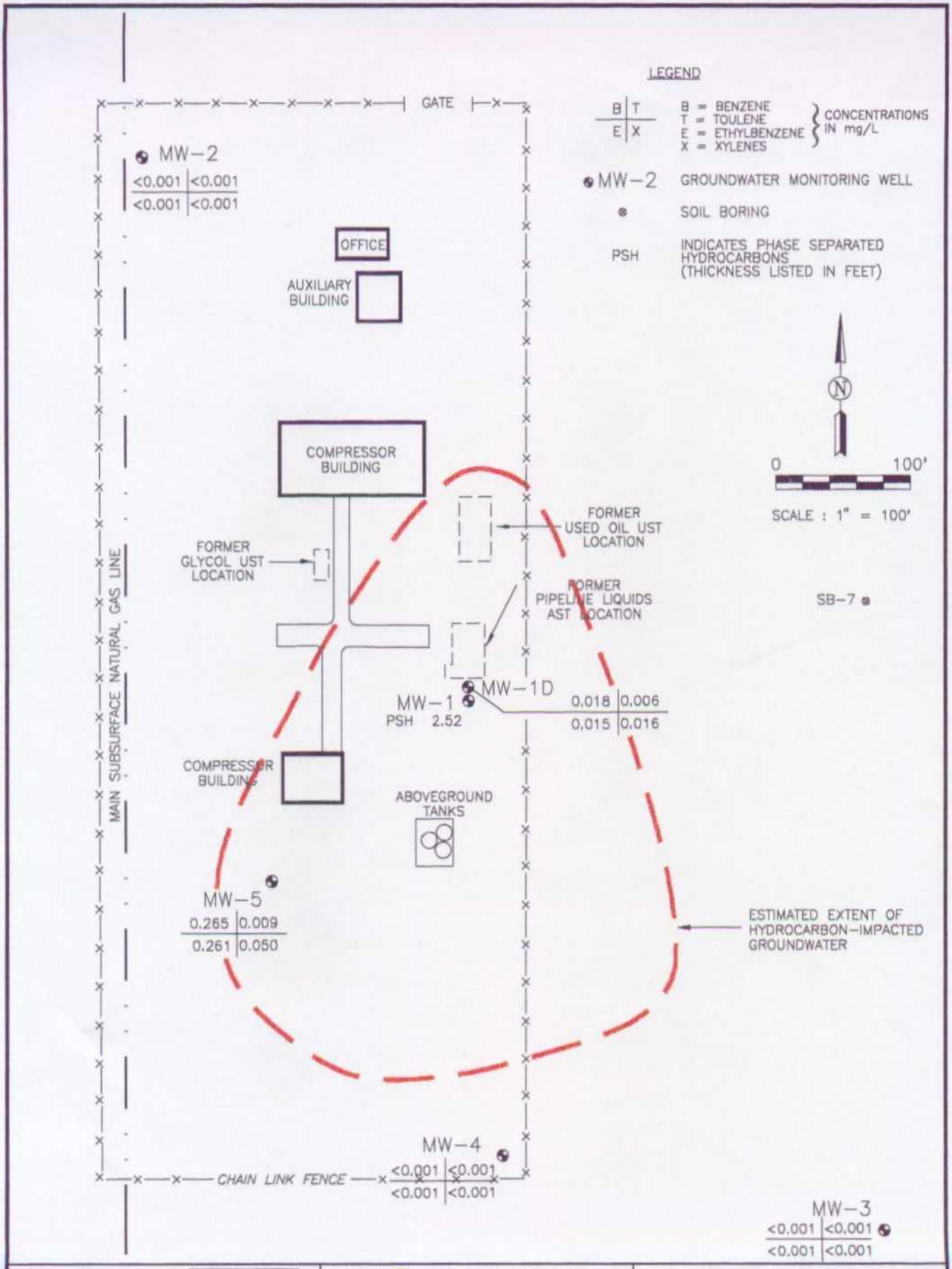
The inorganic chemical analyses indicate that water samples from several monitoring wells exceed the WQCC standards for various constituents, including aluminum, boron, chloride, fluoride, iron, manganese, and/or total dissolved solids. It should be noted that upgradient monitoring well MW-2 has anomalous concentrations of each of these inorganic constituents. These elevated constituents could represent natural conditions and/or off-site sources, and are not believed to be contributed from on-site operations.

Aluminum and boron do not represent a risk to human health based on WQCC classification (Section 3-103 A-C), therefore, remedial response is not deemed necessary for the relatively low concentrations of these constituents.

Fluoride concentrations are slightly elevated (approximately 10 percent above WQCC standards) in two on-site monitoring wells, however, elevated fluoride levels are a common natural occurrence in southeast New Mexico. Furthermore, fluoride is not a constituent for the natural gas production process on site, therefore, a remedial response to the fluoride levels in the groundwater is not warranted.

The elevated iron and manganese levels in the on-site monitoring wells may be partially due to the chemically reduced conditions caused by the presence of hydrocarbons in the on-site soils and groundwater, however, natural conditions and off-site sources may also be a contributing factor.

Chloride and TDS concentrations are exceeded only in monitoring well MW-2, which strongly suggests an upgradient, off-site source. Based on the extensive oil and gas production in the area, this is the most logical explanation.



GCL

CLIENT: GPM GAS CORPORATION	
DATE: 5/16/95	REV. NO.: 1
AUTHOR: GJV	DRAWN BY: MP
CK'D BY: RTH	FILE: MONUMNT

FIGURE 5
MONUMENT
BOOSTER STATION
BTEX CONCENTRATION MAP

4.5 Intrinsic Bioremediation Assessment

GCL performed a preliminary evaluation of hydrocarbon remediation by intrinsic bioremediation, which relies on the degradation activity of indigenous microorganisms. The evaluation of intrinsic bioremediation as a hydrocarbon removal mechanism requires evaluation of electron acceptor availability and use patterns, the enumeration of microorganisms with the capability to degrade the contaminant of concern, and the groundwater conditions that allow for electron acceptor and nutrient transport.

Electron acceptors that can be used by in situ microorganisms to achieve significant hydrocarbon degradation include oxygen, nitrogen, and sulfate, in relative order of preference. Often, more than one degradation process is operative during intrinsic bioremediation, and the key lies in determining whether or not sufficient electron acceptors are available to arrest contaminant migration and/or attain remediation.

Hydrocarbon-impacted wells (MW-1, MW-1D, and MW-5) are compared against unimpacted wells (MW-2, MW-3, and MW-4) to observe whether or not significant differences are observed in electron acceptor concentration that may be related to subsurface biodegradation. Table 7 shows significant depletions of nitrate and dissolved oxygen in hydrocarbon-impacted wells relative to wells not impacted by hydrocarbons. Sulfate concentrations are slightly depleted in MW-5 relative to other wells.

The depletion of electron acceptors in wells impacted by hydrocarbons suggests that bacteria have been and are actively degrading hydrocarbons and are likely limited by the availability of the electron acceptors within the zone of hydrocarbon impact. As indicated by current water quality in downgradient wells MW-3 and MW-4, the electron acceptor concentrations may be sufficient to permit natural biodegradation to contain contaminant migration in a downgradient direction and thereby stabilize the spreading of hydrocarbons in groundwater.

Enumeration of bacterial populations (colony forming units) was also performed on hydrocarbon-impacted wells (MW-1D and MW-5) and upgradient well (MW-2) to assess whether or not hydrocarbon-degrading bacteria were stimulated to grow in the presence of hydrocarbons. As summarized in Table 8, total aerobic (oxygen-utilizing) bacterial populations in hydrocarbon-impacted wells MW-1D and MW-5 are several orders of magnitude greater than bacterial populations observed for upgradient well MW-2. Likewise, hydrocarbon degraders in MW-1 were approximately three times greater in number than those detected in MW-2. Total bacterial populations greater than 10^5 are indicators that there is significant potential for intrinsic bioremediation and/or enhanced bioremediation.

While intrinsic bioremediation is clearly occurring and the rate at which this hydrocarbon removal process appears to be sufficient to contain the plume, additional data will be required over time to evaluate its effectiveness for in situ remediation.

Table 8
Summary of Groundwater Analytical Results for Bacterial Activity
Monument Booster Station
Sampling Operations Conducted on May 16, 1995

Constituent	Monitoring Well Numbers		
	MW-1D (cfu/ml)	**MW-2 (cfu/ml)**	**MW-5 (cfu/ml)**
Total Aerobic Bacterial Populations	900,000	34,000	1,550,000
Total Hydrocarbon Degraders	61,000	28,000	24,500

Total Aerobic Bacterial Populations equivalent to Total Aerobic Heterotrophic Plate Count.
Total Hydrocarbon Degraders equivalent to Total Hydrocarbon Utilizing Bacteria.
Analyses performed by Trace Analysis, Inc. with assistance from the Biological Sciences Department of Texas Tech University using modified standard plate count methods (Appendix D).
Units reported in colony forming units per milliliter (cfu/ml).

SECTION 5.0

5.0 Conclusions

- Based on the analytical results from subsurface investigations conducted by DBS&A and GCL, the estimated areal extent of hydrocarbon-impacted soil above the OCD recommended action level of 50 ppm BTEX and 100 ppm TPH does not extend beyond an approximate 120 feet radius around the former AST and UST.

- The presence of 2.52 feet of free product (crude oil) in MW-1 appears to be limited to within an estimated 25 to 100 feet downgradient (southeast) of the former AST location.

- The apparent direction of groundwater flow is toward the southeast with a hydraulic gradient of approximately 0.01 feet/feet and an estimated average linear velocity of 365 to 730 feet/year.

- The areal extent of hydrocarbon-impacted groundwater has been estimated as covering a triangular-shaped area that covers most of the southern half of the facility (approximately 5 acres), however, hydrocarbon-impacted groundwater is not likely to have migrated beyond the north, east, and south boundaries of the facility.

- Based on elevated benzene levels (0.265 mg/L) in MW-5, we cannot conclude whether the groundwater is impacted beyond the west or southwestern property boundaries without the installation of an additional monitoring well in this area.

- Based on the analytical results for monitoring well MW-1D and the presence of a low permeable red clay layer at the bottom of the aquifer, the vertical extent of hydrocarbon-impacted groundwater does not extend beyond approximately 24 to 34 feet below the ground surface.

- The inorganic chemical analyses indicate that water samples from several monitoring wells exceed the WQCC standards for various constituents, including aluminum, boron, chloride, fluoride, iron, manganese, and/or total dissolved solids. These elevated constituents could represent natural conditions and/or off-site sources and are not believed to be contributed from on-site operations.

- While intrinsic bioremediation is clearly occurring and the rate at which this hydrocarbon removal process appears to be sufficient to contain the plume, additional data will be required over time to evaluate its effectiveness for in situ remediation.

- Based upon the calculation of the average linear velocity of groundwater flow, the age of the release, and the documented extent of hydrocarbon impact, GCL concludes that natural processes (intrinsic bioremediation, adsorption, and volatilization) are effectively

limiting the migration of dissolved-phase hydrocarbons to the on-site boundaries of the facility. Removal of the free product (crude oil) is necessary to effectively eliminate the source of hydrocarbons in the subsurface media.

6.0 Preliminary Remedial Response

GCL believes the following remedial response initiatives should be implemented at the Monument Booster Station:

- Removal of product from monitoring well MW-1 should commence as soon as practable. GPM is currently exploring options for the most appropriate product removal techniques. A product recovery system demonstration has been scheduled prior to July 31 with an area vendor. Initial recovery operations will be conducted at that time. Subsequent recovery operations will continue at a regular frequency dependent on the results of the initial recovery operations/demonstrations.

- Installation of an additional recovery well downgradient (southeast) of MW-1 for more effective product recovery operations.

- Installation of a monitoring well near the southwest boundary of the facility to complete delineation of dissolved-phase hydrocarbons beyond those observed in monitoring well MW-5.

- Continued sampling and monitoring of the on-site monitoring wells on a quarterly frequency. The primary parameters to be monitored and sampled should include free product thicknesses, groundwater elevations, BTEX concentrations, dissolved oxygen, nitrate, and aerobic bacteria populations.

- Sampling for dissolved metals, PAHs, and major ions should be discontinued.

SECTION 7.0

7.0 References

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U. S. Geological Survey, 1985 (provisional edition). Monument South, NM USGS 7.5-minute quadrangle map.

APPENDIX A

Appendix A

Permitted Water Well Information

10792	L	00010				05	00	1925	DCL	IRR		19S	37E	32	240	19S	37E	32	0364	64	ANDERSON E A		50.00	150.00	125
10793	L	05849				02	18	1963	PMT	STK		19S	37E	33	300	19S	37E	33	1064	64	BARBER J DEL		0.00	3.00	0
10794	L	03938				07	20	1958	PMT	DOM		19S	37E	32	400	19S	37E	32	0964	64	PATE ROBERT L		0.00	3.00	0
10795	L	01817				01	14	1953	BEN	NOT		19S	37E	32	410	19S	37E	32	0664	64	COLLINS V F		0.00	0.00	0
10796	L	05135				05	02	1963	CAN	NOT		19S	37E	32	410	19S	37E	32	0776	64	JOHNSTON EDWIN		0.00	0.00	0
10797	L	07230	L	05135		05	28	1974	CAN	NOT		19S	37E	32	410	19S	37E	32	1279	64	JOHNSTON EDWIN		0.00	0.00	0
10798	L	07626				11	10	1976	LIC	IRR		19S	37E	32	411	19S	37E	32	1279	64	JOHNSTON EDWIN		10.00	33.20	26
10799	L	01256				10	12	1951	PMT	NOT		19S	37E	32	417	19S	37E	32	0564	64	GULF OIL CORP		0.00	0.00	0
12183	L	09692				04	06	1985	PMT	DOM		19S	37E	33	1	19S	37E	33	0685	64	TAYLOR BAKER		0.00	3.00	0 10/87
10800	L	06796				04	16	1971	PMT	CCS		19S	37E	33	210	19S	37E	33	0771	64	NORTHERN NAT GAS		0.00	3.00	0
10801	L	04405				04	01	1960	PMT	DOM		19S	37E	33	300	19S	37E	33	1064	64	TILLEY H D		0.00	3.00	0
10802	L	04944				07	15	1962	PMT	DOM		19S	37E	33	300	19S	37E	33	1064	64	COLBERT JAMES F		0.00	3.00	0
10803	L	04809				02	13	1962	PMT	DOM		19S	37E	33	300	19S	37E	33	1064	64	CLARK VERNON A		0.00	3.00	0
10804	L	04929				07	01	1962	PMT	DOM		19S	37E	33	300	19S	37E	33	1064	64	WELCH I A		0.00	3.00	0
10805	L	03993				05	06	1958	PMT	DOM		19S	37E	33	330	19S	37E	33	0964	64	BARNER L F		0.00	3.00	0
10806	L	04821				02	21	1962	PMT	DOM		19S	37E	33	330	19S	37E	33	1064	64	ADAMS BUDDY		0.00	3.00	0
10807	L	04822				02	21	1962	PMT	DOM		19S	37E	33	330	19S	37E	33	1064	64	BARNES E D		0.00	3.00	0
10808	L	04842				03	14	1962	PMT	DOM		19S	37E	33	330	19S	37E	33	1064	64	ROGERS ROSCOE		0.00	3.00	0
10809	L	09128				03	16	1983	PMT	DOM		19S	37E	33	331	19S	37E	33	0383	64	WILLIAMS JOE R		0.00	3.00	0
10810	L	04819				02	22	1962	PMT	DOM		19S	37E	33	331	19S	37E	33	1064	64	GLENN E R		0.00	3.00	0
10811	L	04820				02	21	1962	PMT	DOM		19S	37E	33	331	19S	37E	33	1064	64	BARNER BILL F		0.00	3.00	0
10812	L	01902				01	26	1953	PMT	STK		19S	37E	33	333	19S	37E	33	0764	64	SPEARS CLYDE		0.00	3.00	0
10813	L	01903				01	26	1953	PMT	DOM		19S	37E	33	333	19S	37E	33	0764	64	SPEARS CLYDE		0.00	3.00	0
10814	L	03988				09	02	1958	PMT	DOM		19S	37E	33	333	19S	37E	33	0964	64	KOPCZYNSKI		0.00	3.00	0
10815	L	04448				05	25	1960	PMT	DOM		19S	37E	33	333	19S	37E	33	1064	64	KOPCZYNSKI HAROLD		0.00	3.00	0
10816	L	06761				02	01	1971	PMT	DOM		19S	37E	33	333	19S	37E	33	0771	64	SMITH J B		0.00	3.00	0
10817	L	01904	A	L	01904	01	26	1959	LIC	COM		19S	37E	33	3333	19S	37E	33	0764	64	SPEARS CLYDE		0.00	2.40	2
10818	L	01904		L	01904 A	01	26	1953	LIC	IRR		19S	37E	33	3333	19S	37E	33	0764	64	SPEARS CLYDE		7.87	23.61	20
10819	L	04331				12	04	1957	CAN	NOT		19S	37E	33	334	19S	37E	33	0884	64	SPEARS CLYDE		0.00	0.00	0
10820	L	08246		L	07513	04	03	1980	PMT	DOM		19S	37E	33	400	19S	37E	33	0684	64	WILLIAMS JOE R		0.00	3.00	0

1/2 mile west
Onsite

≈ ½ mile south

dicates not in use

10821	L	00751					10	27	1948	PMT	NOT	19S	37E	33	412	19S	37E	33	0564	64	SCHWERTFEGER ANNIE	0.00	0.00	0	
~~10822~~	~~L~~	~~07513~~					~~04~~	~~19~~	~~1976~~	~~PMT~~	~~IRR~~	~~19S~~	~~37E~~	~~33~~	~~4134~~	~~19S~~	~~37E~~	~~33~~	~~0884~~	~~64~~	~~WILLIAMS JOE R~~	~~89.71~~	~~268.75~~	~~224~~	
10823	L	08885					07	14	1982	PMT	DOM	19S	37E	33	43	19S	37E	33	0782	64	WILLIAMS JOE R	0.00	3.00	0	
10824	L	09129					03	16	1983	PMT	DOM	19S	37E	33	43	19S	37E	33	0383	64	WILLIAMS JOE R	0.00	3.00	0	
~~12195~~	~~L~~	~~09681~~					~~05~~	~~09~~	~~1985~~	~~PMT~~	~~STK~~	~~19S~~	~~37E~~	~~33~~	~~43~~	~~19S~~	~~37E~~	~~33~~	~~0585~~	~~64~~	~~WILLIAMS JOE R~~	~~0.00~~	~~3.00~~	~~0~~	~~10/87~~
10825	L	07513	S2		L0751	3	04	19	1976	PMT	IRR	19S	37E	33	4312	19S	37E	34	1183	64	WILLIAMS JOE R	0.00	0.00	0	
10826	L	08501					07	02	1981	PMT	DOM	19S	37E	33	434	19S	37E	33	0781	64	WEBB EDWARD	0.00	3.00	0	
~~10827~~	~~L~~	~~03738~~					~~12~~	~~04~~	~~1957~~	~~PMT~~	~~GWD~~	~~19S~~	~~37E~~	~~33~~	~~440~~	~~19S~~	~~37E~~	~~33~~	~~0964~~	~~64~~	~~MAKIN BRO CO~~	~~0.00~~	~~0.00~~	~~0~~	
10828	L	00744	S3	L	00744		06	23	1976	PMT	IRR	19S	37E	33	442	19S	37E	33	0779	64	DOYAL COY	0.00	0.00	0	
10829	L	09127					03	16	1983	PMT	DOM	19S	37E	33	443	19S	37E	33	0383	64	WILLIAMS JOE R	0.00	3.00	0	
~~10830~~	~~L~~	~~00744~~		~~L~~	~~00744~~	~~S~~	~~10~~	~~14~~	~~1948~~	~~LIC~~	~~IRR~~	~~19S~~	~~37E~~	~~33~~	~~444~~	~~19S~~	~~37E~~	~~34~~	~~0672~~	~~64~~	~~DOYAL COY~~	~~78.77~~	~~236.31~~	~~197~~	
10831	L	00744		L	00744	S	10	14	1948	LIC	IRR	19S	37E	33	4440	19S	37E	33	0672	64	DOYAL COY	0.00	29.64	25	
10832	L	00744	S	L	00744		10	14	1948	LIC	IRR	19S	37E	33	4444	19S	37E	33	0564	64	DOYAL COY	0.00	0.00	0	
~~12107~~	~~L~~	~~09768~~					~~12~~	~~10~~	~~1985~~	~~PMT~~	~~DOM~~	~~19S~~	~~37E~~	~~34~~	~~11~~	~~19S~~	~~37E~~	~~34~~	~~1285~~	~~64~~	~~DOWELL JAMES~~	~~0.00~~	~~3.00~~	~~0~~	~~10/87~~
10833	L	08803					05	17	1982	PMT	DOM	19S	37E	34	111	19S	37E	34	0582	64	EVANS TOMMY	0.00	3.00	0	
10834	L	00743	S4	L	00743		05	13	1976	PMT	IRR	19S	37E	34	112	19S	37E	34	0284	64	SETZLER V O & S M	0.00	0.00	0	
~~10835~~	~~L~~	~~00743~~	~~S~~	~~L~~	~~00743~~		~~05~~	~~09~~	~~1968~~	~~PMT~~	~~IRR~~	~~19S~~	~~37E~~	~~34~~	~~112~~	~~19S~~	~~37E~~	~~34~~	~~0676~~	~~64~~	~~SETZLER V O & S M~~	~~0.00~~	~~0.00~~	~~0~~	
10836	L	00743	S2	L	00743		05	09	1968	PMT	IRR	19S	37E	34	112	19S	37E	34	0676	64	SETZLER V O & S M	0.00	0.00	0	
12387	L	00743	A	L	00743		10	14	1948	LIC	IRR	19S	37E	34	112	19S	37E	34	0287	64	PEACOCK GARY D & TAMMY R	3.15	9.45	8	02/89
~~10837~~	~~L~~	~~00743~~					~~10~~	~~14~~	~~1948~~	~~LIC~~	~~IRR~~	~~19S~~	~~37E~~	~~34~~	~~1123~~	~~19S~~	~~37E~~	~~34~~	~~0564~~	~~64~~	~~SETZLER V O & S M~~	~~65.68~~	~~197.07~~	~~164~~	~~02/89~~
10838	L	00743	S3	L	00743		05	13	1976	PMT	IRR	19S	37E	34	121	19S	37E	34	0284	64	SETZLER V O & S M	0.00	0.00	0	
10839	L	07513	S				04	19	1976	PMT	IRR	19S	37E	34	3131	19S	37E	34	0884	64	WILLIAMS JOE R	42.26	126.78	106	
~~10840~~	~~L~~	~~00744~~	~~S2~~	~~L~~	~~00744~~		~~04~~	~~12~~	~~1973~~	~~PMT~~	~~IRR~~	~~19S~~	~~37E~~	~~34~~	~~340~~	~~19S~~	~~37E~~	~~34~~	~~0776~~	~~64~~	~~DOYAL COY~~	~~0.00~~	~~0.00~~	~~0~~	
10841	L	05569				PSA	03	08	1965	LIC	SRO	19S	37E	35	4443	19S	37E	35	0776	64	GETTY	0.00	193.53	0	
10842	L	07014					11	06	1972	PMT	DOM	19S	38E	01	100	19S	38E	01	1172	65	JACKSON LEROY	0.00	3.00	0	
~~10843~~	~~L~~	~~03028~~					~~11~~	~~23~~	~~1955~~	~~PMT~~	~~NOT~~	~~19S~~	~~38E~~	~~01~~	~~111~~	~~19S~~	~~38E~~	~~01~~	~~0864~~	~~65~~	~~CARR B H~~	~~0.00~~	~~0.00~~	~~0~~	
10844	L	09282					07	21	1983	PMT	DOM	19S	38E	01	113	19S	38E	01	0783	65	HERNANDEZ TINA	0.00	3.00	0	
10845	L	07708					06	15	1977	PMT	DOM	19S	38E	01	120	19S	38E	01	0677	65	POTTER WILL	0.00	3.00	0	
~~10846~~	~~L~~	~~06064~~					~~11~~	~~24~~	~~1966~~	~~PMT~~	~~STK~~	~~19S~~	~~38E~~	~~01~~	~~210~~	~~19S~~	~~38E~~	~~01~~	~~1063~~	~~65~~	~~GUAGARDO LUPE~~	~~0.00~~	~~3.00~~	~~0~~	
10847	L	05472					09	05	1964	PMT	DOM	19S	38E	01	240	19S	38E	01	1164	65	HINAJOS HERBERTO	0.00	3.00	0	

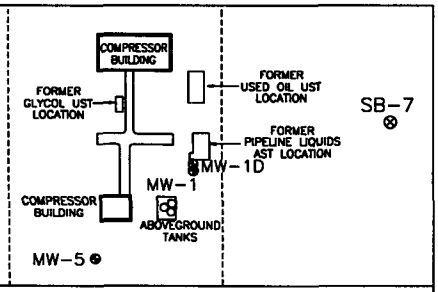
APPENDIX B

Appendix B

Lithologic Logs and Well Construction Diagrams

LITHOLOGIC LOG (SPLIT SPOON)

LOCATION MAP:



__1/4 __1/4 NE 1/4 NW 1/4 S 33 T 19S R 37E

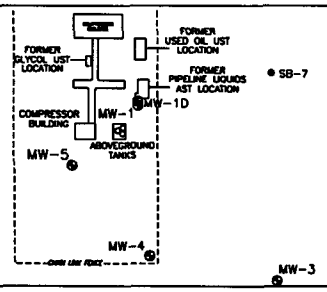
SITE ID: MONUMENT BOOSTER STATION LOCATION ID: MW-1D
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 3,590
STATE: NEW MEXICO COUNTY: LEA
DRILLING METHOD: AIR ROTARY
DRILLING CONTR.: DIVERSIFIED WATER WELL
DATE STARTED: 5/9/95 DATE COMPLETED: 5/10/95
FIELD REP.: GIL VAN DEVENTER
COMMENTS: STRONG HYDROCARBON ODORS AND STAINING NEAR TOP OF SATURATED ZONE

LOCATION DESCRIPTION: LOCATED APPROXIMATELY 6 FT. NORTH OF MW-1

DEPTH	WELL CONST.	LITH.	SAMPLE USCS	FROM	TO	% REC	PID READING	LITHOLOGIC DESCRIPTION (LITH., USCS, GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SORT., CONSOL., DIST. FEATURES)
5				5	5.5	12	<1 ppm	SANDY CALICHE, WHITE, TAN, ORANGE-PINK, HARD, WEATHERED AND FRACTURED (0 TO 22 FEET), DRY.
10			CAL	10	10.5	12	15 ppm	
15				15	15.5	12	<1 ppm	
20								
			SM	22	23	50	490 ppm	SAND, GRAY-BROWN, FINE GRAINED, STRONG HYDROCARBON ODOR.
			CAL					SANDY CALICHE, WHITE, TAN, ORANGE-PINK.
25								SAND, TAN, V. FINE TO FINE GRAINED, MOIST. GROUNDWATER ENCOUNTERED AT APPROXIMATELY 23.5 FEET BELOW GROUND SURFACE.
30			SM					
35			CL					CLAY, RED, DRY.
								BOTTOM OF BORING AT 35 FEET.
40								
45								
50								

LITHOLOGIC LOG (SPLIT SPOON)

LOCATION MAP:



___1/4 ___1/4 NE 1/4 NW 1/4 S 33 T 19S R 37E

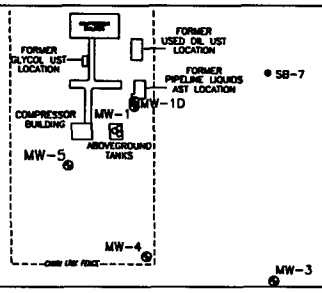
SITE ID: MONUMENT BOOSTER STATION LOCATION ID: MW-3
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 3,590
STATE: NEW MEXICO COUNTY: LEA
DRILLING METHOD: AIR ROTARY
DRILLING CONTR.: DIVERSIFIED WATER WELLS
DATE STARTED: 5/8/95 DATE COMPLETED: 5/8/95
FIELD REP.: GIL VAN DEVENTER
COMMENTS: NO HYDROCARBON ODORS OR STAINING OBSERVED

LOCATION DESCRIPTION: APPROXIMATELY 500 FT. DOWNGRADIENT (SOUTHEAST) OF MW-1

DEPTH	WELL CONST.	LITH.	SAMPLE USCS	FROM	TO	% REC	PID READING	LITHOLOGIC DESCRIPTION (LITH., USCS, GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SORT., CONSOL., DIST. FEATURES)
5			CAL	5	5.5	12	<1 ppm	SANDY CALICHE, WHITE, TAN, ORANGE-PINK, VERY HARD, WEATHERED AND FRACTURED PARTICULARLY BETWEEN SURFACE AND 12 FEET, DRY.
10				10	10.5	12	<1 ppm	
15				15	15.5	12	<1 ppm	
20			SM	20	21	50	<1 ppm	SAND, TAN V FINE TO FINE GRAINED, REDDISH-TAN, MOIST. GROUNDWATER ENCOUNTERED AT APPROXIMATELY 20 FEET BELOW GROUND SURFACE.
25			CL	25	27	100	<1 ppm	CLAY, RED, DRY.
30								
35								BOTTOM OF BORING AT 33 FEET.
40								
45								
50								

LITHOLOGIC LOG (SPLIT SPOON)

LOCATION MAP:



__1/4 __1/4 NE 1/4 NW 1/4 S 33 T 19S R 37E

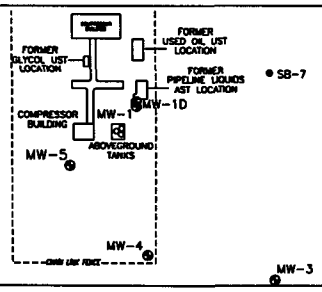
SITE ID: MONUMENT BOOSTER STATION LOCATION ID: MW-4
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 3,590
STATE: NEW MEXICO COUNTY: LEA
DRILLING METHOD: AIR ROTARY
DRILLING CONTR.: DIVERSIFIED WATER WELL
DATE STARTED: 5/8/95 DATE COMPLETED: 5/9/95
FIELD REP.: GIL VAN DEVENTER
COMMENTS: NO HYDROCARBON ODORS OR STAINING OBSERVED

LOCATION DESCRIPTION: LOCATED APPROXIMATELY 350 FT. DOWNGRADIENT (SOUTH) OF MW-1

DEPTH	WELL CONST.	LITH.	SAMPLE USCS	FROM	TO	% REC	PID READING	LITHOLOGIC DESCRIPTION (LITH., USCS, GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SORT., CONSOL., DIST. FEATURES)
5			CAL	5	5.5	12	<1 ppm	SANDY CALICHE, WHITE-TAN, HARD, WEATHERED AND FRACTURED (0 TO 20 FEET), DRY.
10				10	11	50	<1 ppm	
15				15	16	50	<1 ppm	
20				20	20.5	12	<1 ppm	
25			SM	22	22.5	12	<1 ppm	SAND, TAN V, FINE TO FINE GRAINED, MOIST. GROUNDWATER ENCOUNTERED AT APPROXIMATELY 23.5 FEET BELOW GROUND SURFACE.
30			CL					CLAY, RED, DRY.
35								BOTTOM OF BORING AT 36 FEET.
40								
45								
50								

LITHOLOGIC LOG (SPLIT SPOON)

LOCATION MAP:



___1/4 ___1/4 NE 1/4 NW 1/4 S 33 T 19S R 37E

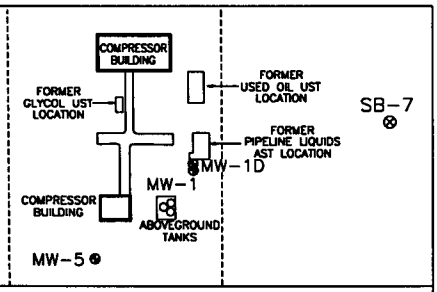
SITE ID: MONUMENT BOOSTER STATION LOCATION ID: MW-5
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 3,590
STATE: NEW MEXICO COUNTY: LEA
DRILLING METHOD: AIR ROTARY
DRILLING CONTR.: DIVERSIFIED WATER WELL
DATE STARTED: 5/9/95 DATE COMPLETED: 5/10/95
FIELD REP.: GIL VAN DEVENTER
COMMENTS: _____

LOCATION DESCRIPTION: LOCATED APPROXIMATELY 200 FT. SOUTHWEST OF MW-1

DEPTH	WELL CONST.	LITH.	SAMPLE USCS	FROM	TO	% REC	PID READING	LITHOLOGIC DESCRIPTION (LITH., USCS, GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SORT., CONSOL., DIST. FEATURES)
5				5	5.5	12	<1 ppm	SANDY CALICHE, WHITE, TAN, ORANGE-PINK HARD, WEATHERED AND FRACTURED (0 TO 24 FEET), DRY.
10			CAL	10	10.5	12	<1 ppm	
15				15	15.5	12	<1 ppm	
20				20	20.5	12	<1 ppm	
25			SM	24	25	50	425 ppm	SAND, GRAY-BROWN, FINE GRAINED, STRONG HYDROCARBON ODOR, MOIST.
			CAL					SANDY CALICHE/SANDSTONE, TAN, ORANGE-PINK, HARD/FIRM, MOIST.
30			SM					SAND, LIGHT BROWN, FINE GRAINED, MOIST.
35			CL					CLAY, RED, DRY.
								BOTTOM OF BORING AT 37 FEET.
40								
45								
50								

LITHOLOGIC LOG (SPLIT SPOON)

LOCATION MAP:

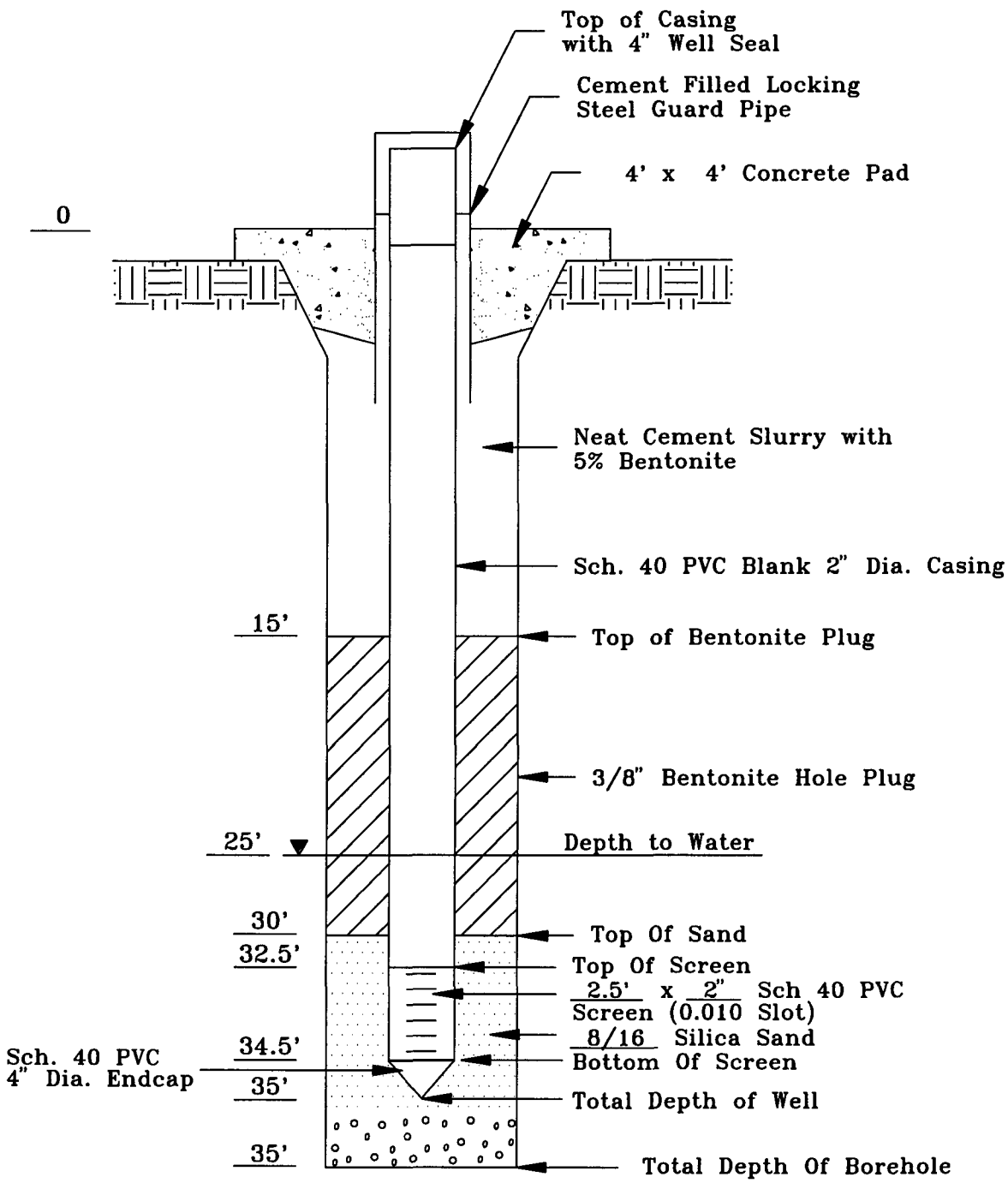


___1/4 ___1/4 NE 1/4 NW 1/4 S 33 T 19S R 37E

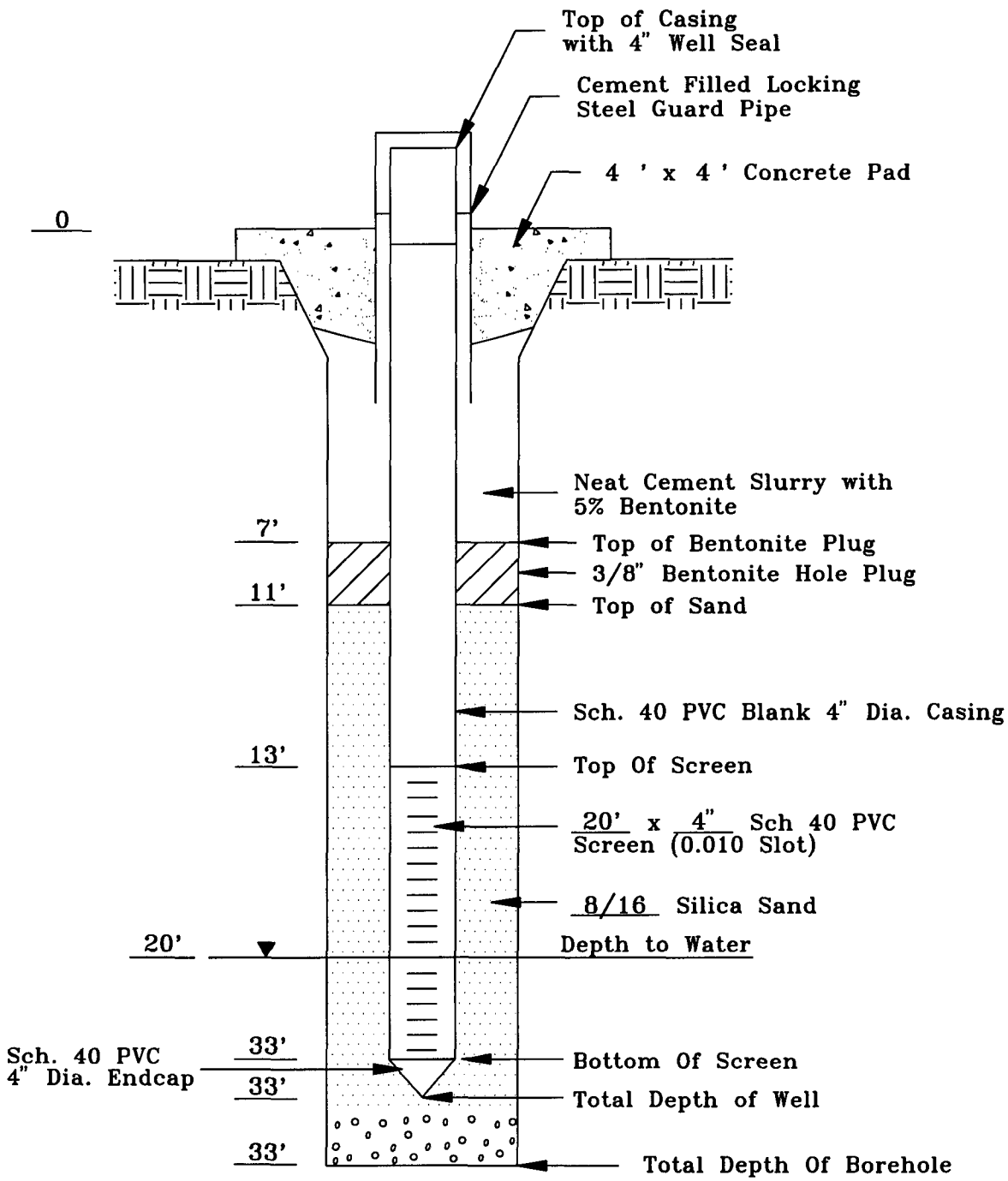
SITE ID: MONUMENT BOOSTER STATION LOCATION ID: SB-7
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 3,590
STATE: NEW MEXICO COUNTY: LEA
DRILLING METHOD: AIR ROTARY
DRILLING CONTR.: DIVERSIFIED WATER WELL
DATE STARTED: 5/8/95 DATE COMPLETED: 5/10/95
FIELD REP.: GIL VAN DEVENTER
COMMENTS: NO HYDROCARBON ODOR OR STAINING OBSERVED. NO GROUNDWATER ENCOUNTERED

LOCATION DESCRIPTION: LOCATED APPROXIMATELY 300 FT. EAST-NORTHEAST OF MW-1

DEPTH	WELL CONST.	LITH.	SAMPLE USCS	FROM	TO	% REC	PID READING	LITHOLOGIC DESCRIPTION (LITH., USCS, GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SORT., CONSOL., DIST. FEATURES)
5			CAL	5	5.5	12	<1 ppm	SANDY CALICHE, WHITE, TAN, ORANGE-PINK, HARD, WEATHERED & FRACTURED (0 TO 14 FEET), DRY.
10				10	10.5	12	<1 ppm	
15			CL	15	16	50	<1 ppm	CLAY, RED, WITH SOME SOFT CALICHE NODULES (0-5%), DRY.
20				20	22	100	<1 ppm	
25				25	27	100	<1 ppm	
30				30	30.5	12	<1 ppm	
35				35	37	100	<1 ppm	
40				40	42	100	<1 ppm	NO GROUNDWATER ENCOUNTERED.
45								BOTTOM OF BORING AT 42 FEET.
50								



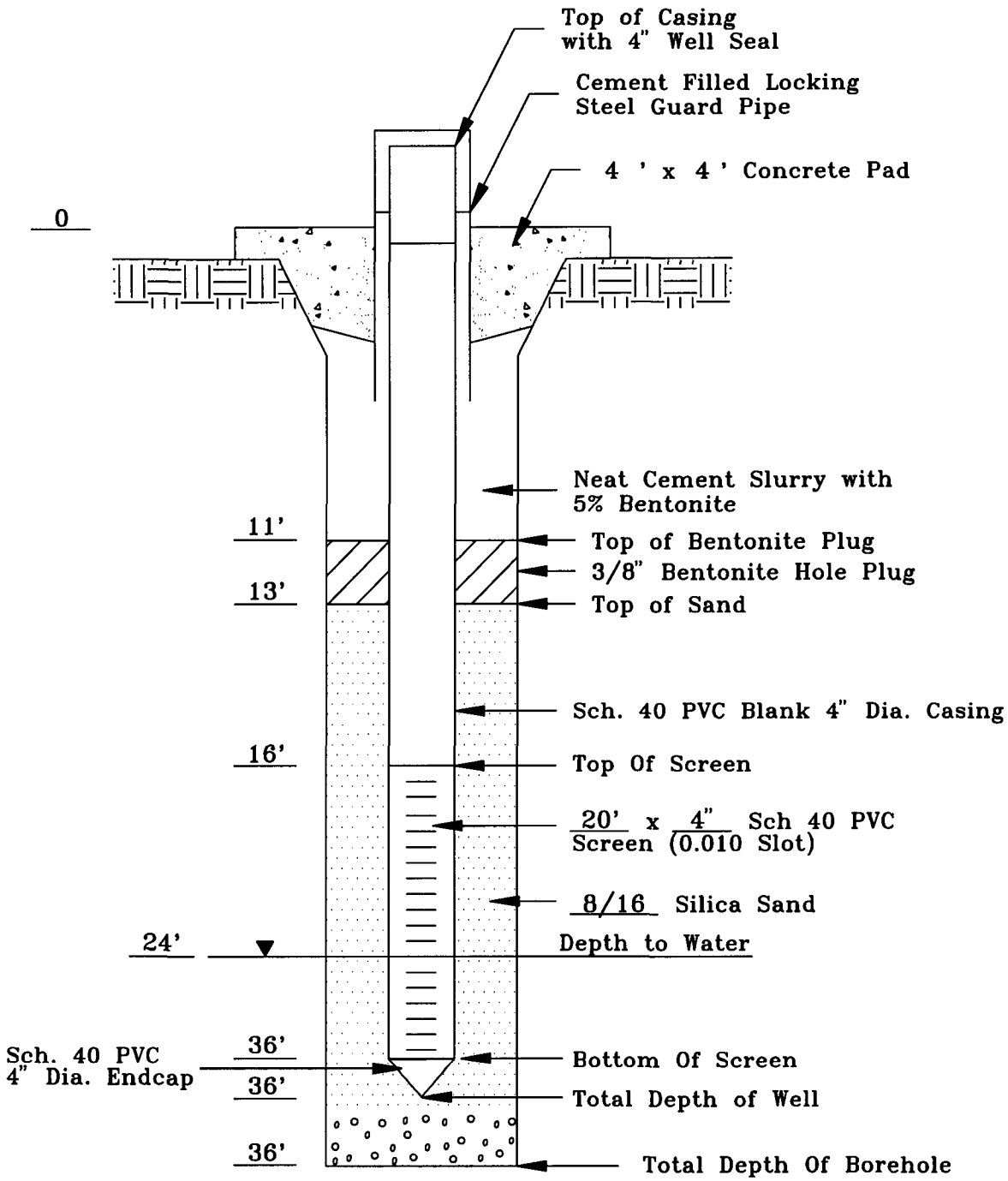
GCL	CLIENT: GPM GAS CORPORATION		MONUMENT BOOSTER STATION MONITORING WELL MW-1D COMPLETION DIAGRAM
	DATE: 5/10/95	REV. NO.: 0	
	AUTHOR: GJV	DRAWN BY: MP	
	CK'D BY: RTH	FILE: MTM01DCD	



GCL

CLIENT: GPM GAS CORPORATION	
DATE: 5/8/95	REV. NO.: 0
AUTHOR: GJV	DRAWN BY: MP
CK'D BY: RTH	FILE: MTMW03CD

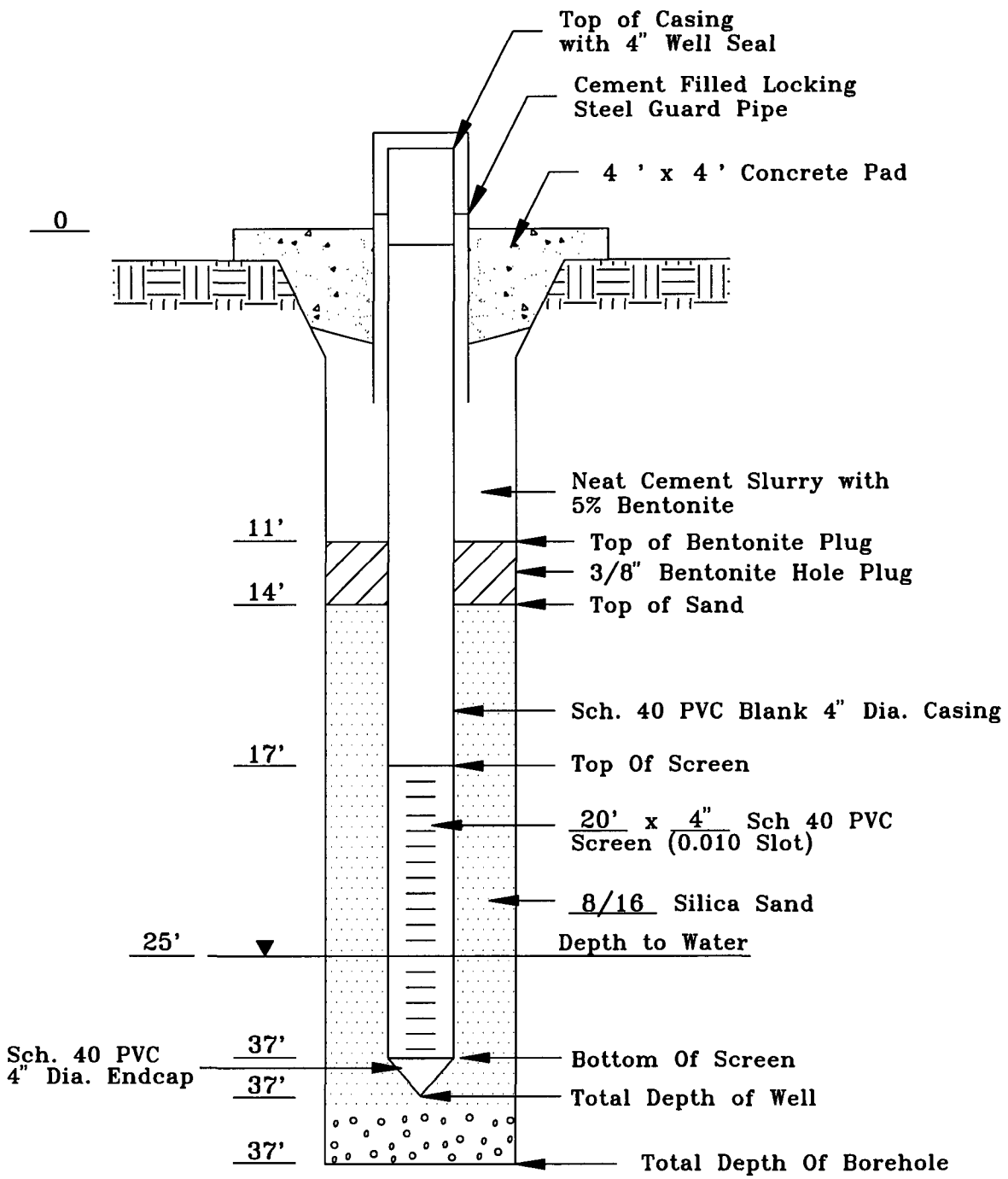
MONUMENT BOOSTER STATION
MONITORING WELL MW-3
COMPLETION DIAGRAM



GCL

CLIENT: GPM GAS CORPORATION	
DATE: 5/9/95	REV. NO.: 0
AUTHOR: GJV	DRAWN BY: MP
CK'D BY: RTH	FILE: MTMW04CD

MONUMENT BOOSTER STATION
MONITORING WELL MW-4
COMPLETION DIAGRAM



GCL

CLIENT: GPM GAS CORPORATION	
DATE: 5/10/95	REV. NO.: 0
AUTHOR: GJV	DRAWN BY: MP
CK'D BY: RTH	FILE: MTMW05CD

MONUMENT BOOSTER STATION
MONITORING WELL MW-5
COMPLETION DIAGRAM

APPENDIX C

Appendix C

Laboratory Reports and Chain-of-Custody Documentation

131 AE

GCL
Environmental Science and Engineering
A BDM International Company

❑ Albuquerque
505 Marquette NW, Ste. 1100
Albuquerque, NM 87102
(505) 842-0001
FAX: (505) 842-0595

❑ Mid Atlantic Region
4221 Forbes Blvd., Ste. 240
Lanham, MD 20706-4325
(301) 459-9677
FAX: (301) 459-3064

❑ NASA-WSTF
PO Drawer MM
Las Cruces, NM 88004
(505) 524-5353
FAX: (505) 524-5315

№ 9612

Chain of Custody

Date May 9, 1995 Page 1 Of 1

Lab Name Trace Analysis
Address 6701 Aberdeen Av.
Lubbock, Tx 79424
Telephone 806-794-1296

Samplers (SIGNATURES) Gil Van Deventer

Analysis Request

Sample Number	Matrix	Location	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020 BTEX	Phenols, Sub Phenols 604/8040	Pesticides/PCB 608/8080	Polynuclear Aromatic Hydrocarbons 610/8310	Volatile Compounds GC/MS 624/8240	Base/Neu/Acid Compounds GC/MS 625/8270	Total Organic Carbon (TOC) 415/9060	Total Organic Halides (TOX) 9020	Petroleum Hydrocarbons 418.1	TPH/BTEX Modified 8015 GAS & Diesel	TCLP- Vol., Semi-Vol. Herbicides, Pesticides	TCLP- Metals	RCRA Metals(8)	Priority Pollutant Metals (13)	CAM Metals (18) TTLC/STLC	Flash Point	Corrosivity	Reactivity	Oil & Grease	Cyanide Total/Amenable	Chemical Oxygen Demand (COD)					Number of Containers
950508 1305	soil	SB-7 (15-16')		✓			35775						✓																1
950508 1600	soil	SB-7 (40-42')		✓			35776						✓																1
950509 1105	soil	MW-1D (10-10.5')		✓			35777						✓																1
950509 1238	soil	MW-1D (22-23')		✓			35778						✓																1
950508 1129	soil	MW-3 (20-21')		✓			35779						✓																1
950508 1750	soil	MW-4 (22-22.5')		✓			35780						✓																1
950509 1708	soil	MW-5 (24-25')		✓			35781						✓																1

Project Information		Sample Receipt	
Project	Monument Booster A	Total No. of Containers	7
Project Director	G. Van Deventer	Chain of Custody Seals	N
Charge Code No.	3100-005	Rec'd Good Condition/Cold	Y
Shipping ID. No.		Conforms to Record	Y
Via:		Lab No.	35775-81

Special Instructions/Comments: Invoice to GPM
GPM Project Code LRMON-U-20-300

Relinquished By 1.	Relinquished By 2.	Relinquished By 3.
Gil Van Deventer 1000 (Signature) (Time)	(Signature) (Time)	(Signature) (Time)
Gil Van Deventer 5/7/95 (Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
GCL (Company)	(Company)	(Company)
Received By 1.	**Received By 2.**	**Received By (Laboratory) 3.**
(Signature) (Time)	YL 5-11-95 1/c (Signature) (Time)	DB McDonell 1000 (Signature) (Time)
(Printed Name) (Date)	(Printed Name) (Date)	DB McDonell 5/11/95 (Printed Name) (Date)
(Company)	(Company)	TRACE ANALYSIS (Laboratory)

Distribution: White, Canary-Laboratory • Pink, GCL

GCL775

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
GCL ENVIRONMENTAL
Attention: Gil Van Deventer
306 W. Wall, Suite 818
Midland, TX 79701

May 17, 1995
Receiving Date: 05/11/95
Sample Type: Soil
Project No: LRMON-U-20-300
Project Location: Monument Booster Station
COC# 9612

Analysis Date: 05/12/95
Sampling Date: 05/08-09/95
Sample Condition: I & C
Sample Received by: YL
Project Name: Monument Booster Station

TA#	Field Code	TRPHC Gasoline Range (ppm)	TRPHC Diesel Range (ppm)	BENZENE (ppm)	TOLUENE (ppm)	ETHYL-BENZENE (ppm)	M,P,O XYLENE (ppm)	TOTAL BTEX (ppm)
T35775	950508 1305 SB-7 (15-16')	<10	<20	<0.010	0.024	0.011	0.031	0.066
T35776	950509 1600 SB-7 (40-42')	<10	<20	<0.010	0.013	<0.010	0.026	0.039
T35777	950509 1105 MW-1D (10-10.5')	<10	<20	<0.010	0.018	<0.010	<0.010	0.018
T35778	950509 1238 MW-1D (22-23')	3,914	2,452	2.625	<1.000	27.955	58.176	88.756
T35779	950508 1129 MW-3 (20-21')	<10	23	<0.010	0.016	<0.010	<0.010	<0.010
T35780	950508 1750 MW-4 (22-22.5')	<10	<20	<0.010	<0.010	<0.010	<0.010	<0.010
T35781	950509 1708 MW-5 (24-25')	1,374	1,968	0.657	2.685	9.538	26.546	39.426
QC	Quality Control	4.6	112	0.102	0.101	0.103	0.311	
Reporting Limit		10	20	10	10	10	10	
% Precisio		113	100	106	106	106	106	
% Extracti		99	87	90	90	89	90	
% Instrument Accuracy		92	112	102	101	103	104	

METHODS: EPA SW 846-8020; EPA Modified 8015.
BTEX SPIKE AND QC: Sample and Blank Spiked with 0.100 ppm each volatile organics.
TRPHC (Diesel Range) SPIKE AND QC: Sample and Blank spiked with 100 ppm TRPHC DIESEL RANGE.
TRPHC (Gasoline Range) QC: Blank spiked with 5 ppm TRPHC GASOLINE RANGE.

BL

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-23-95
Date

GCL
Environmental Science and Engineering
A BDM International Company

☐ Albuquerque
505 Marquette NW, Ste. 1100
Albuquerque, NM 87102
(505) 842-0001
FAX: (505) 842-0595

☐ Mid Atlantic Region
4221 Forbes Blvd., Ste. 240
Lanham, MD 20706-4325
(301) 459-9677
FAX: (301) 459-3064

☐ NASA-WSTF
PO Drawer MM
Las Cruces, NM 88004
(505) 524-5353
FAX: (505) 524-5315

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136 AH

~~EOTAC~~

№ 9723

Chain of Custody

Date 5-15-95 Page 1 Of 1

Lab Name Trace Analysis
Address 6701 Aberdeen Ave.
Lubbock, Tx 79424
Telephone 806-794-1296

Samplers (SIGNATURES)

Analysis Request

Sample Number	Matrix	Location	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020	Phenols, Sub Phenols 604/8040	Pesticides/PCB 608/8080	Polynuclear Aromatic Hydrocarbons 610/8310	Volatile Compounds GC/MS 624/8240	Base/Neu/Acid Compounds GC/MS 625/8270	Total Organic Carbon (TOC) 415/9060	Total Organic Halides (TOX) 9020	Petroleum Hydrocarbons 418.1	TPH/BTEX Modified 8015 (Gas/Diesel)	TCLP- Vol., Semi-Vol. Herbicides, Pesticides	TCLP- Metals	RCRA Metals(8)	Priority Pollutant Metals (13)	CAM Metals (18) TTLC/STLC	Flash Point	Corrosivity	Reactivity	Oil & Grease	Cyanide Total/Amenable	Chemical Oxygen Demand (COD)					Number of Containers
35965 9505091256	Soil	MW-1DUP		✓ (BTex)									✓ (Gas/Diesel)																1

Project Information	Sample Receipt		Relinquished By 1.	Relinquished By 2.	Relinquished By 3.
Project GPM-Monument Booster	Total No. of Containers	1	(Signature) 1600 (Time)	(Signature) 7:00P.M (Time)	(Signature) (Time)
Project Director Gil Van Deventer	Chain of Custody Seals	N	Gil Van Deventer 5-15-95	HELEN SHELTON 5-15-95	
Charge Code No. LRMON-U-20-3	Rec'd Good Condition/Cold	Y	(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
Shipping ID. No.	Conforms to Record	Y	GCL	TRACE ANALYSIS	
	Lab No.	35965	(Company)	(Company)	(Company)
Via:			Received By 1.	Received By 2.	Received By (Laboratory) 3.
Special Instructions/Comments: Invoice GPM direct			(Signature) 4:15P.M (Time)	(Signature) (Time)	(Signature) 5/16/95 (Time)
C/I DM			HELEN SHELTON 5-15-95	(Printed Name) (Date)	(Printed Name) DAVID HENZLIK (Date) 10:00
			TRACE ANALYSIS	(Company)	(Laboratory)
			(Company)		

Distribution: White, Canary-Laboratory • Pink, GCL

RECEIVED MAY 2 4 1995

140 AK

№ 9613

GCL
Environmental Science and Engineering
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☒ Albuquerque
505 Marquette NW, Ste. 1100
Albuquerque, NM 87102
(505) 842-0001
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☐ NASA-WSTF
PO Drawer MM
Las Cruces, NM 88004
(505) 524-5353
FAX: (505) 524-5315

Chain of Custody

Date 5-16-95 Page 1 Of 1

Lab Name Trace Analysis
Address 6701 Aberdeen Ave
Lubbock, Tx 79424
Telephone 800-378-1296

Samplers (SIGNATURES)
Duwayne Salisbury

Analysis Request

Sample Number	Matrix	Location	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020	Phenols, Sub Phenols 604/8040	Pesticides/PCB 608/8080	Polynuclear Aromatic Hydrocarbons 610/8310	Volatile Compounds GC/MS 624 (8240)	Base/Neu/Acid Compounds GC/MS 625 (8270)	Total Organic Carbon (TOC) 415/9060	Total Organic Halides (TOX) 9020	Petroleum Hydrocarbons 418.1	TPH/BTEX Modified 8015	TCLP- Vol., Semi-Vol. Herbicides, Pesticides	TCLP- Metals	RCRA Metals(8)	Priority Pollutant Metals (13)	CAM Metals (18) TTLC/STLC	Flashpoint / Bacteria analysis	Corrosivity / Hydrocarbon degraders	Reactivity	Oil & Grease	Cyanide Total/Amenable	Chemical Oxygen Demand (COD)	Major ions + F + Si	Ag, Al, As, B, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Se, Zn Na Ca Mg	Number of Containers
9505161115	H2O	MW-4		8260 BTEX		36320		✓	✓																✓	✓	6
9505161300	H2O	MW-3				21		X	X																X	X	6
9505161335	H2O	MW-1				22																				X	1
9505161340	H2O	MW-1D				23		X	X										X	X					X	X	7 bos.
9505161350	H2O	MW-2D				24		X																			3

Project Information	Sample Receipt	
Project Monument Booster Station	Total No. of Containers	23
Project Director Gil VanDeventer	Chain of Custody Seals	Y
Charge Code No. LRMON-U-20-	Rec'd Good Condition/Cold	Y
Shipping ID. No. 300 5328207765	Conforms to Record	Y
Via: Fed-Ex	Lab No. 36320-24	

Special Instructions/Comments: Invoice GPM direct
8270 (total naphthalenes + monomethyl naphthalenes and benzo (a) pyrene)

Relinquished By 1.	Relinquished By 2.	Relinquished By 3.
Duwayne Salisbury 1200 (Signature) (Time)	(Signature) (Time)	(Signature) (Time)
Duwayne Salisbury 5-18 (Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
GCL (Company)	(Company)	(Company)
Received By 1.	**Received By 2.**	**Received By (Laboratory) 3.**
(Signature) (Time)	(Signature) (Time)	Blair Leftwich (Signature) (Time)
(Printed Name) (Date)	(Printed Name) (Date)	BLAIR LEFTWICH 930 5-19-95 (Printed Name) (Date)
(Company)	(Company)	Trace Analysis (Laboratory)

Distribution: White, Canary-Laboratory • Pink, GCL

Monument Booster Station

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

RECEIVED JUN 19 1995

ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1300
Albuquerque, NM 87102

June 13, 1995
Receiving Date: 05/20/95
Sample Type: Water
GPM Charge Code No: LRMON-U-20-300
Project Location: Monument Booster Station
COC #9613

Prep Date: 06/08/95
Analysis Date: 06/08/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: Monument

TA#	FIELD CODE	TDS (mg/L)
T36320	9505161115 MW-4	716
T36321	9505161300 MW-3	516
T36323	9505161340 MW-1D	634
RPD		2

METHODS: EPA 160.1.

6-13-95

Director, Dr. Blair Leftwich — DATE
Director, Dr. Bruce McDonell

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1100
Albuquerque, NM 87102

May 31, 1995
Receiving Date: 05/20/95
Sample Type: Water
Charge Code No: LRMON-U-20-300
Project Location: Monument Booster Station
COC# 9613

Prep Date: 05/20/95
Analysis Date: 05/20/95
Sampling Date: 05/16/95
Sample Condition: I & C
Sample Received by: BL
Project Name: Monument Booster Station

TA#	FIELD CODE		FLUORIDE (mg/L)	CHLORIDE (mg/L)	SO4 (mg/L)	NO3-N (mg/L)	CO3 as CaCO3 (mg/L)	HCO3 as CaCO3 (mg/L)
T36320	9505161115	MW-4	1.2	152	136	3.69	0	277
T36321	9505161300	MW-3	1.8	188	115	5.62	0	166
T36323	9505161340	MW-1D	1.8	77	174	1.37	0	333
QC	Quality Control		1.0	499	9		---	---
	Precision		1	0	6	0	4	4
%	Extraction Accuracy		100	98	98	106	---	---
%	Instrument Accuracy		102	100	90	100	---	---
REPORTING LIMIT			0.1	1.0	1.0	0.1	1	1

METHODS: EPA 340.2, 375.4, 353.3, 4500 Cl-B, 310.1.
CHLORIDE SPIKE AND QC: Sample spiked with 500 mg/L CHLORIDE and Blank spiked with 500 mg/L CHLORIDE.
SO4 SPIKE AND QC: Sample spiked with 10 mg/L SO4 and Blank spiked with 10 mg/L SO4.
FLUORIDE SPIKE AND QC: Sample spiked with 0.5 mg/L FLUORIDE and Blank spiked with 1.0 mg/L FLUORIDE.
NO3-N SPIKE AND QC: Sample spiked with 1.33 mg/L NO3-N and Blank spiked with 1.0 mg/L NO3-N.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-31-95
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

May 31, 1995
Receiving Date: 05/20/95
Sample Type: Water
Charge Code No: LRMON-U-20-300
Project Location: Monument Booster Station
COC #9613

ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1100
Albuquerque, NM 87102

Prep Date: 05/25/95
Analysis Date: 05/25/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: Monument Booster Station

TOTAL METALS

TA#	FIELD CODE	As (mg/L)	Se (mg/L)	Cr (mg/L)	Cd (mg/L)	Pb (mg/L)	Ag (mg/L)	Ba (mg/L)	Na (mg/L)	Al (mg/L)	B (mg/L)	Mg (mg/L)
T36320	9505161115 MW-4	<0.1	<0.2	0.02	<0.01	<0.1	<0.01	0.10	82.5	8.04	0.14	37.2
QC	Quality Control	4.6	5.1	4.8	4.7	4.7	4.2	4.7	9.3	4.8	4.8	5.1
REPORTING LIMIT		0.1	0.2	0.01	0.01	0.1	0.01	0.05	0.10	0.05	0.05	0.1
RPD		3	3	2	2	3	0	3	0	4	10	1
% Extraction Accuracy		78	78	80	79	88	100	88	113	90	90	87
% Instrument Accuracy		92	102	96	94	94	84	94	93	95	95	102

TA#	FIELD CODE	Ca (mg/L)	Mo (mg/L)	Zn (mg/L)	Ni (mg/L)	Fe (mg/L)	Co (mg/L)	Mn (mg/L)	Cu (mg/L)	Si (mg/L)	Hg (mg/L)
T36320	9505161115 MW-4	160	0.07	0.05	<0.05	4.68	<0.05	0.11	<0.05	16.5	<0.001
QC	Quality Control	10.4	5.2	5.3	5.3	5.2	5.1	5.1	4.8	2.3	0.0049
REPORTING LIMIT		0.05	0.05	0.01	0.05	0.05	0.05	0.05	0.05	0.1	0.001
RPD		0	2	2	3	2	3	2	2	12	0
% Extraction Accuracy		82	89	90	86	90	91	88	80	94	96
% Instrument Accuracy		104	104	106	105	104	103	103	97	94	98

METHODS: EPA SW 846-3015, 6010, 7470.
QC: Blank Spiked with 5.0 mg/L As, Se, Cr, Cd, Pb, Ag, Ba, Al, B, Mg, Mo, Zn, Ni, Fe, Co, Mn, Cu; 10.0 mg/L Na, Ca; 2.5 mg/L Si; 0.005 mg/L Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-31-95
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR

May 31, 1995
Receiving Date: 05/20/95
Sample Type: Water
Charge Code No: LRMON-U-20-300
Project Location: Monument Booster Station
COC #9613

GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1100
Albuquerque, NM 87102

Prep Date: 05/25/95
Analysis Date: 05/25/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: Monument Booster Station

TOTAL METALS

TA#	FIELD CODE	As (mg/L)	Se (mg/L)	Cr (mg/L)	Cd (mg/L)	Pb (mg/L)	Ag (mg/L)	Ba (mg/L)	Na (mg/L)	Al (mg/L)	B (mg/L)	Mg (mg/L)
T36321	9505161300 MW-3	<0.1	<0.2	0.01	<0.01	<0.1	<0.01	0.05	76.1	0.88	0.09	25.0
QC	Quality Control	4.6	5.1	4.8	4.7	4.7	4.2	4.7	9.1	4.8	4.8	4.8
REPORTING LIMIT		0.1	0.2	0.01	0.01	0.1	0.01	0.05	0.10	0.05	0.05	0.1
RPD		3	3	2	2	3	0	3	0	4	10	1
% Extraction Accuracy		78	78	80	79	88	100	88	97	90	90	87
% Instrument Accuracy		92	102	96	94	94	84	94	91	95	95	96

TA#	FIELD CODE	Ca (mg/L)	Mo (mg/L)	Zn (mg/L)	Ni (mg/L)	Fe (mg/L)	Co (mg/L)	Mn (mg/L)	Cu (mg/L)	Si (mg/L)	Hg (mg/L)
T36321	9505161300 MW-3	99.7	0.07	0.04	<0.05	0.53	<0.05	0.08	<0.05	7.9	<0.001
QC	Quality Control	10.1	5.2	5.3	5.3	5.2	5.1	5.1	4.8	2.3	0.00487
REPORTING LIMIT		0.05	0.05	0.01	0.05	0.05	0.05	0.05	0.05	0.1	0.001
RPD		1	2	2	3	2	3	2	2	12	2
% Extraction Accuracy		89	89	90	86	90	91	88	80	94	118
% Instrument Accuracy		101	104	106	105	104	103	103	97	94	97

METHODS: EPA SW 846-3015, 6010, 7470.
QC: Blank Spiked with 5.0 mg/L As,Se, Cr, Cd, Pb, A, Ba, Al, B, Mg, Mo, Zn, Ni, Fe, Co, Mn, Cu; 10.0 mg/L Na, Ca; 2.5 mg/L Si, 0.005 mg/L Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-31-95
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

May 31, 1995
Receiving Date: 05/20/95
Sample Type: Water
Charge Code No: LRMON-U-20-300
Project Location: Monument Booster Station
COC #9613

ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1100
Albuquerque, NM 87102

Prep Date: 05/25/95
Analysis Date: 05/25/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: Monument Booster Station

TOTAL METALS

TA#	FIELD CODE	As (mg/L)	Se (mg/L)	Cr (mg/L)	Cd (mg/L)	Pb (mg/L)	Ag (mg/L)	Ba (mg/L)	Na (mg/L)	Al (mg/L)	B (mg/L)	Mg (mg/L)
T36322	9505161335 MW-1	<0.1	<0.2	0.01	0.01	<0.1	<0.01	0.13	14.5	0.55	0.85	1.6
QC	Quality Control	4.6	5.1	4.8	4.7	4.7	4.2	4.7	9.1	5.0	4.9	4.8
REPORTING LIMIT		0.1	0.2	0.01	0.01	0.1	0.01	0.05	0.10	0.05	0.05	0.1
RPD		3	3	2	2	3	0	3	0	6	2	1
% Extraction Accuracy		78	78	80	79	88	100	88	97	90	90	87
% Instrument Accuracy		92	102	96	94	94	84	94	91	100	98	96

TA#	FIELD CODE	Ca (mg/L)	Mo (mg/L)	Zn (mg/L)	Ni (mg/L)	Fe (mg/L)	Co (mg/L)	Mn (mg/L)	Cu (mg/L)	Si (mg/L)	Hg (mg/L)
T36322	9505161335 MW-1	12.8	0.07	0.03	<0.05	25.58	<0.05	0.67	<0.05	8.7	<0.001
QC	Quality Control	10.1	5.2	5.3	5.3	5.2	5.1	5.1	4.8	2.3	0.00487
REPORTING LIMIT		0.05	0.05	0.01	0.05	0.05	0.05	0.05	0.05	0.1	0.001
RPD		1	2	2	3	2	3	2	2	1	2
% Extraction Accuracy		89	89	90	86	90	91	88	80	94	118
% Instrument Accuracy		101	104	106	105	104	103	103	97	94	97

METHODS: EPA SW 846-3015, 6010, 7470.
QC: Blank Spiked with 5.0 mg/L As, Se, Cr, Cd, Pb, Ag, Ba, Al, B, Mg, Mo, Zn, Ni, Fe, Co, Mn, Cu; 10.0 mg/L Na, Ca; 2.5 mg/L Si, 0.005 mg/L Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

5-31-95
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1100
Albuquerque, NM 87102

May 31, 1995
Receiving Date: 05/20/95
Sampling Date: 05/16/95
Sample Type: Water
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: Monument Booster Sta.
Project Location: Monument Booster
COC# 9613 Station
Extraction Date: 05/25/95
Analysis Date: 05/25/95

T36323
9505161340

PAH's

EPA 8270 (mg/L)	Reporting Limit	MW-1D	QC	RPD	%EA	%IA
Naphthalene	0.0004	ND	49.7			99
Acenaphthylene	0.0004	ND	47.9			96
Acenaphthene	0.0004	ND	47.5	0	90	95
Fluorene	0.0004	ND	46.8			94
Phenanthrene	0.0004	ND	47.1			94
Anthracene	0.0004	ND	46.8			94
Fluoranthene	0.0004	ND	45.7			91
Pyrene	0.0004	ND	52.4	1	105	105
Benzo[a]anthracene	0.0004	ND	48.8			98
Chrysene	0.0004	ND	49.4			99
Benzo[b]fluoranthene	0.0004	ND	49.6			99
Benzo[k]fluoranthene	0.0004	ND	46.5			93
Benzo[a]pyrene	0.0004	ND	49.2			98
Indeno[1,2,3-cd]pyrene	0.0004	ND	49.2			96
Dibenz[a,h]anthracene	0.0004	ND	49.0			98
Benzo[g,h,i]perylene	0.0004	ND	53.7			107

*ND = Not Detected

	% RECOVERY
2-Fluorophenol SURR	45
Phenol-d6 SURR	25
Nitrobenzene-d5 SURR	55
2-Fluorobiphenyl SURR	71
2,4,6-Tribromophenol SURR	59
Terphenyl-d14 SURR	126

METHODS: EPA SW 846-3510; EPA 8270.

5-31-95

Director, Dr. Blair Leftwich — DATE

Director, Dr. Bruce McDonell

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1300
Albuquerque, NM 87102

June 13, 1995
Receiving Date: 05/20/95
Sample Type: Water
GPM Charge Code No: LRMON-U-20-300
Project Location: Monument Booster Station
COC #9613

Extraction Date: 05/23/95
Analysis Date: 06/09/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: Monument Booster Station

TA#	FIELD CODE		TOTAL AEROBIC HETEROTROPHIC PLATE COUNT cfu/mL	TOTAL HYDROCARBON UTILIZING BACTERIA cfu/mL
T36323	9505161340	MW-1D	9.00E+05	6.10E+04

6-13-95

Director, Dr. Blair Leftwich — DATE
Director, Dr. Bruce McDonell

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1300
Albuquerque, NM 87102

June 13, 1995
Receiving Date: 05/20/95
Sample Type: Water
GPM Charge Code No: LRMON-U-20-300
Project Location: Monument Booster Station
COC #9613

Extraction Date: 05/23/95
Analysis Date: 05/23/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: Monument Booster Station

TA#	FIELD CODE	2-methylnaphthalene/ 1-methylnaphthalene (mg/L)
T36320	9505161115 MW-4	ND
T36321	9505161300 MW-3	ND
T36323	9505161340 MW-1D	ND
QC	Quality Control	49.2
Reporting Limit		0.001
RPD		0
% Extraction Accuracy		90
% Instrument Accuracy		98

ND = Not Detected

METHODS: EPA SW 846-8270, 3510.

6-13-95

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

DATE

GCL
Environmental Science and Engineering
A BDM International Company

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FAX: (301) 459-3064

☐ NASA-WSTF
PO Drawer MM
Las Cruces, NM 88004
(505) 524-5353
FAX: (505) 524-5315

№ 9764

Chain of Custody

Date 5-16-95 Page 1 Of 1

Lab Name TRACE ANALYSIS
Address 6701 ABERDEENE AVENUE
LUBBOCK, TEXAS 79424
Telephone (806) 794-1296

Samplers (SIGNATURES) Dwayne Schibery

Analysis Request

Sample Number	Matrix	Location	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020	Phenols, Sub Phenols 604/8040	Pesticides/PCB 608/8080	Polynuclear Aromatic Hydrocarbons 610/8310	Volatile Components GC/MS 624/8240	Base/Neu/Acid Compounds GC/MS 625/8270	Total Organic Carbon (TOC) 415/9060	Total Organic Halides (TOX) 9020	Petroleum Hydrocarbons 418.1	TPH/BTEX Modified 8015	TCLP- Vol., Semi-Vol. Herbicides, Pesticides	TCLP- Metals	RCRA Metals(8)	CAM Metals (18) TTLC/STLC	Flash Point	Corrosivity	Reactivity	Oil & Grease	Cyanide Total/Amenable	Chemical Oxygen Demand (COD)	Bacteria Analysis Hydrocarbon degraders	Major Ions + Si	Number of Containers
9505161440	H_2O	MW-5						X	X		investigative						X							X	X	7
9505161520	H_2O	MW-2						X	X		investigative						X							X	X	7

Project Information	Sample Receipt	Relinquished By 1.	Relinquished By 2.	Relinquished By 3.
Project GPM. Monument	Total No. of Containers	Dwayne Schibery 1200		
Project Director Van Deventer	Chain of Custody Seals	(Signature) (Time)	(Signature) (Time)	(Signature) (Time)
Charge Code No. 3100 005	Rec'd Good Condition/Cold	Dwayne Schibery 5-18		
Shipping ID. No. 5328207765	Conforms to Record	(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
Via: Fed-Ex	Lab No.	GCL (Company)	(Company)	(Company)
Special Instructions/Comments: Total Metals: Ag, Al, As, B, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Se, Zn.		Received By 1.	Received By 2.	Received By (Laboratory) 3.
* Invoice GPM directly.		(Signature) (Time)	(Signature) (Time)	(Signature) (Time)
		(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
		(Company)	(Company)	(Laboratory)

Distribution: White, Canary-Laboratory • Pink, GCL

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

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ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1300
Albuquerque, NM 87102

June 13, 1995
Receiving Date: 05/20/95
Sample Type: Water
GPM Charge Code No: LRMON-U-20-300
Project Location: Monument Booster Station
COC #9764

Prep Date: 06/08/95
Analysis Date: 06/08/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: Monument

TA#	FIELD CODE	TDS (mg/L)
T36318	9505161440 MW-5	692
T36319	9505161520 MW-2	1,478
RPD		2

METHODS: EPA 160.1

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

6-13-95
DATE

6701 Aberdeen Avenue
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ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1100
Albuquerque, NM 87102

June 01, 1995
Receiving Date: 05/20/95
Sample Type: Water
GPM Charge Code No: LRMON-U-20-300
Project Location: Monument

Analysis Date: 05/20/95
Sampling Date: 05/16/95
Sample Condition: I & C
Sample Received by: BL
Project Name: GPM
COC# 9764

TA#	FIELD CODE	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SO4 (mg/L)	NO3-N (mg/L)	CO3 as CaCO3 (mg/L)	HCO3 as CaCO3 (mg/L)
T36318	9505161440 MW-5	1.4	80	67	0.56	0	532
T36319	9505161520 MW-2	1.1	812	509	7.42	0	197
QC	Quality Control	1.0	499	9	1.00	---	---
RPD		1	0	6	0	4	4
% Extraction Accuracy		100	96	98	106	---	---
% Instrument Accuracy		102	100	90	100	---	---
REPORTING LIMIT		0.1	1.0	1.0	0.1	1	1

METHODS: EPA 340.2, 375.4, 353.3, 130.2, 4500 Cl-B,
CHLORIDE SPIKE AND QC: Sample spiked with 500 mg/L CHLORIDE and Blank spiked with 500 mg/L CHLORIDE.
SO4 SPIKE AND QC: Sample spiked with 10 mg/L SO4 and Blank spiked with 10 mg/L SO4.
FLUORIDE SPIKE AND QC: Sample spiked with 0.1 mg/L FLUORIDE and Blank spiked with 1.0 mg/L FLUORIDE.
NO3 SPIKE AND QC: Sample spiked with 1.33 mg/L NO3 and Blank spiked with 1.0 mg/L NO3.

6-1-95

Director, Dr. Blair Leftwich — DATE
Director, Dr. Bruce McDonell

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

June 01, 1995
Receiving Date: 05/20/95
Sample Type: Water
GPM Charge Code No: LRMON-U-20-300
Project Location: Monument
COC #9764

ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1100
Albuquerque, NM 87102

Prep Date: 05/22/95
Analysis Date: 05/23/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: GPM

TOTAL METALS

TA#	FIELD CODE	As (mg/L)	Se (mg/L)	Cr (mg/L)	Cd (mg/L)	Pb (mg/L)	Ag (mg/L)	Ba (mg/L)	Na (mg/L)	Al (mg/L)	B (mg/L)	Mg (mg/L)
T36318	9505161440 MW-5	<0.1	<0.2	0.02	<0.01	<0.1	<0.01	0.14	110.7	0.24	0.39	52.9
QC	Quality Control	4.6	5.1	4.8	4.7	4.7	4.2	4.7	9.27	4.75	4.76	5.1
REPORTING LIMIT		0.1	0.2	0.01	0.01	0.1	0.01	0.05	0.10	0.05	0.05	0.1
RPD		3	3	2	2	3	0	3	0	4	0	1
% Extraction Accuracy		78	78	80	79	88	100	88	113	90	90	87
% Instrument Accuracy		92	102	96	94	94	84	94	93	95	95	102

TA#	FIELD CODE	Ca (mg/L)	Mo (mg/L)	Zn (mg/L)	Ni (mg/L)	Fe (mg/L)	Co (mg/L)	Mn (mg/L)	Cu (mg/L)	Si (mg/L)	Hg (mg/L)
T36318	9505161440 MW-5	122	0.07	0.04	<0.05	1.75	<0.05	0.58	<0.05	6.8	<0.001
QC	Quality Control	10.4	5.19	5.29	5.26	5.22	5.13	5.14	4.84	2.50	0.0049
REPORTING LIMIT		0.05	0.05	0.01	0.05	0.05	0.05	0.05	0.05	0.1	0.001
RPD		0	2	2	3	2	3	2	2	2	0
% Extraction Accuracy		82	89	90	86	90	91	88	80	94	96
% Instrument Accuracy		104	104	106	105	104	13	103	97	94	98

METHODS: EPA SW 846-3015, 6010, 7470.
QC: Blank Spiked with 5.0 mg/L As, Se, Cr, Cd, Pb, A, Ba, Al, B, Mg, Mo, Zn, Ni, Fe, Co, Mn, Cu; 10.0 mg/L Na, Ca; 2.5 mg/L Si; 0.005 mg/L Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

6-1-95
DATE

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

June 01, 1995
Receiving Date: 05/20/95
Sample Type: Water
GPM Charge Code No: LRMON-U-20-300
Project Location: Monument
COC #9764

ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1100
Albuquerque, NM 87102

Prep Date: 05/22/95
Analysis Date: 05/23/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: GPM

TOTAL METALS

TA#	FIELD CODE	As (mg/L)	Se (mg/L)	Cr (mg/L)	Cd (mg/L)	Pb (mg/L)	Ag (mg/L)	Ba (mg/L)	Na (mg/L)	Al (mg/L)	B (mg/L)	Mg (mg/L)
T36319	9505161520 MW-2	<0.1	<0.2	0.02	0.01	<0.1	<0.01	0.08	154.5	13.10	0.37	72.0
QC	Quality Control	4.6	5.1	4.8	4.7	4.7	4.2	4.7	9.27	4.75	4.76	5.1
REPORTING LIMIT		0.1	0.2	0.01	0.01	0.1	0.01	0.05	0.10	0.05	0.05	0.1
RPD		3	3	2	2	3	0	3	0	4	0	1
% Extraction Accuracy		78	78	80	79	88	100	88	113	90	90	87
% Instrument Accuracy		92	102	96	94	94	84	94	93	95	95	102

TA#	FIELD CODE	Ca (mg/L)	Mo (mg/L)	Zn (mg/L)	Ni (mg/L)	Fe (mg/L)	Co (mg/L)	Mn (mg/L)	Cu (mg/L)	Si (mg/L)	Hg (mg/L)
T36319	9505161520 MW-2	315	0.05	0.05	<0.05	5.82	<0.05	0.12	<0.05	20.0	<0.001
QC	Quality Control	10.4	5.19	5.29	5.26	5.22	5.13	5.14	4.84	2.50	0.0049
REPORTING LIMIT		0.05	0.05	0.01	0.05	0.05	0.05	0.05	0.05	0.1	0.001
RPD		0	2	2	3	2	3	2	2	2	0
% Extraction Accuracy		82	89	90	86	90	91	88	80	94	96
% Instrument Accuracy		104	104	106	105	104	13	103	97	94	98

METHODS: EPA SW 846-3015, 6010, 7470.
QC: Blank Spiked with 5.0 mg/L As, Se, Cr, Cd, Pb, A, Ba, Al, B, Mg, Mo, Zn, Ni, Fe, Co, Mn, Cu; 10.0 mg/L Na, Ca; 2.5 mg/L Si; 0.005 mg/L Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

6-1-95
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
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FAX 806•794•1298

ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Ste. 1100
Albuquerque, NM 87102

June 01, 1995
Receiving Date: 05/20/95
Sample Type: Water
GPM Charge Code No: LRMON-U-20-300
Project Location: Monument
COC #9764

Prep Date: 05/27/95
Analysis Date: 05/27/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: GPM

EPA 8240 Compounds (ug/L)	T36318 9505161440 MW-5	Reporting Limit
Dichlorodifluoromethane	ND	2
Chloromethane	ND	2
Vinyl chloride	ND	2
Bromomethane	ND	10
Chloroethane	ND	2
Trichlorofluoromethane	ND	2
1,1-Dichloroethene	ND	2
Iodomethane	ND	10
Carbon disulfide	ND	2
Methylene chloride	ND	10
trans-1,2-Dichloroethene	ND	2
1,1-Dichloroethane	ND	2
Vinyl acetate	ND	2
2-Butanone	ND	100
Chloroform	ND	2
1,1,1-Trichloroethane	ND	2
1,2-Dichloroethane	ND	2
Benzene	265	2
Carbon Tetrachloride	ND	2
1,2-Dichloropropane	ND	2
Trichloroethene	ND	2
Bromodichloromethane	ND	2
cis-1,3-Dichloropropene	ND	2
4-Methyl-2-pentanone	ND	100
trans-1,3-Dichloropropene	ND	2
Toluene	9	2
1,1,2-Trichloroethane	ND	2
2-Hexanone	ND	100

GCL
Project Location: Monument
Project Name: GPM

EPA 8240 Compounds (ug/L)	T36318 9505161440 MW-5	Reporting Limit
Dibromochloromethane	ND	2
Tetrachloroethene	ND	2
Chlorobenzene	ND	2
Ethylbenzene	261	2
m & p-Xylene	ND	2
Bromoform	ND	2
Styrene	ND	2
o-Xylene	50	2
1,1,2,2-Tetrachloroethane	ND	2
trans 1,4-Dichloro-2-butene	ND	10
cis 1,4-Dichloro-2-butene	ND	10
1,4-Dichlorobenzene	ND	4
1,3-Dichlorobenzene	ND	4
1,2-Dichlorobenzene	ND	4

SURROGATES	% RECOVERY
Dibromofluoromethane	95
Toluene-d8	92
4-Bromofluorobenzene	91

*ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8240.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

6-1-95
Date

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ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Ste. 1100
Albuquerque, NM 87102

June 01, 1995
Receiving Date: 05/20/95
Sample Type: Water
GPM Charge Code No: LRMON-U-20-300
Project Location: Monument
COC #9764

Prep Date: 05/27/95
Analysis Date: 05/27/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: GPM

EPA 8240 Compounds (ug/L)	T36319 9505161520 MW-2	Reporting Limit
Dichlorodifluoromethane	ND	1
Chloromethane	ND	1
Vinyl chloride	ND	1
Bromomethane	ND	5
Chloroethane	ND	1
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Iodomethane	ND	5
Carbon disulfide	ND	1
Methylene chloride	ND	5
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Vinyl acetate	ND	1
2-Butanone	ND	50
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
1,2-Dichloroethane	ND	1
Benzene	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloropropane	ND	1
Trichloroethene	ND	1
Bromodichloromethane	ND	1
cis-1,3-Dichloropropene	ND	1
4-Methyl-2-pentanone	ND	50
trans-1,3-Dichloropropene	ND	1
Toluene	ND	1
1,1,2-Trichloroethane	ND	1
2-Hexanone	ND	50

GCL
Project Location: Monument
Project Name: GPM

EPA 8240 Compounds (ug/L)	T36319 9505161520 MW-2	Reporting Limit
Dibromochloromethane	ND	1
Tetrachloroethene	ND	1
Chlorobenzene	ND	1
Ethylbenzene	ND	1
m & p-Xylene	ND	1
Bromoform	ND	1
Styrene	ND	1
o-Xylene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
trans 1,4-Dichloro-2-butene	ND	5
cis 1,4-Dichloro-2-butene	ND	5
1,4-Dichlorobenzene	ND	2
1,3-Dichlorobenzene	ND	2
1,2-Dichlorobenzene	ND	2

SURROGATES	% RECOVERY
Dibromofluoromethane	94
Toluene-d8	92
4-Bromofluorobenzene	92

*ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8240.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

6-1-95
Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
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ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1100
Albuquerque, NM 87102

June 01, 1995
Receiving Date: 05/20/95
Sampling Date: 05/16/95
Sample Type: Water
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: GPM
Project Location: Monument
COC# 9764
Extraction Date: 05/25/95
Analysis Date: 05/25/95

T36318
Reporting: 9505161440

PAH's

EPA 8270 (mg/L)	Limit	MW-5	QC	RPD	%EA	%IA
Naphthalene	0.0004	0.006	49.7			99
Acenaphthylene	0.0004	ND	47.9			96
Acenaphthene	0.0004	ND	47.5	0	90	95
Fluorene	0.0004	ND	46.8			94
Phenanthrene	0.0004	ND	47.1			94
Anthracene	0.0004	ND	46.8			94
Fluoranthene	0.0004	ND	45.7			91
Pyrene	0.0004	ND	52.4	1	105	105
Benzo[a]anthracene	0.0004	ND	48.8			98
Chrysene	0.0004	ND	49.4			99
Benzo[b]fluoranthene	0.0004	ND	49.6			99
Benzo[k]fluoranthene	0.0004	ND	46.5			93
Benzo[a]pyrene	0.0004	ND	49.2			98
Indeno[1,2,3-cd]pyrene	0.0004	ND	49.2			96
Dibenz[a,h]anthracene	0.0004	ND	49.0			98
Benzo[g,h,i]perylene	0.0004	ND	53.7			107

*ND = Not Detected

	% RECOVERY
2-Fluorophenol SURR	53
Phenol-d6 SURR	31
Nitrobenzene-d5 SURR	72
2-Fluorobiphenyl SURR	71
2,4,6-Tribromophenol SURR	76
Terphenyl-d14 SURR	121

METHODS: EPA SW 846-3510; EPA 8270

6-1-95

Director, Dr. Blair Leftwich — DATE
Director, Dr. Bruce McDonell

6701 Aberdeen Avenue
Lubbock, Texas 79424
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ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1100
Albuquerque, NM 87102

June 01, 1995
Receiving Date: 05/20/95
Sampling Date: 05/16/95
Sample Type: Water
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: GPM
Project Location: Monument
COC# 9764
Extraction Date: 05/25/95
Analysis Date: 05/25/95

T36319
9505161520

PAH's

EPA 8270 (mg/L)	Reporting Limit	MW-2	QC	RPD	%EA	%IA
Naphthalene	0.0004	ND	49.7			99
Acenaphthylene	0.0004	ND	47.9			96
Acenaphthene	0.0004	ND	47.5	0	90	95
Fluorene	0.0004	ND	46.8			94
Phenanthrene	0.0004	ND	47.1			94
Anthracene	0.0004	ND	46.8			94
Fluoranthene	0.0004	ND	45.7			91
Pyrene	0.0004	ND	52.4	1	105	105
Benzo[a]anthracene	0.0004	ND	48.8			98
Chrysene	0.0004	ND	49.4			99
Benzo[b]fluoranthene	0.0004	ND	49.6			99
Benzo[k]fluoranthene	0.0004	ND	46.5			93
Benzo[a]pyrene	0.0004	ND	49.2			98
Indeno[1,2,3-cd]pyrene	0.0004	ND	49.2			96
Dibenz[a,h]anthracene	0.0004	ND	49.0			98
Benzo[g,h,i]perylene	0.0004	ND	53.7			107

*ND = Not Detected

	% RECOVERY
2-Fluorophenol SURR	48
Phenol-d6 SURR	24
Nitrobenzene-d5 SURR	52
2-Fluorobiphenyl SURR	61
2,4,6-Tribromophenol SURR	46
Terphenyl-d14 SURR	127

METHODS: EPA SW 846-3510; EPA 8270.

Director, Dr. Blair Leftwich

6-1-95
DATE

Director, Dr. Bruce McDonell

6701 Aberdeen Avenue
Lubbock, Texas 79424
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ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1300
Albuquerque, NM 87102

June 13, 1995
Receiving Date: 05/20/95
Sample Type: Water
GPM Charge Code No: LRMON-U-20-300
Project Location: Monument

Extraction Date: 05/23/95
Analysis Date: 06/09/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: GPM
COC #9764

TA#	FIELD CODE		TOTAL AEROBIC HETEROTROPHIC PLATE COUNT cfu/mL	TOTAL HYDROCARBON UTILIZING BACTERIA cfu/mL
T36318	9505161440	MW-5	1.55E+06	2.45E+04
T36319	9505161520	MW-2	3.40E+05	2.80E+04

6-13-95

Director, Dr. Blair Leftwich — DATE
Director, Dr. Bruce McDonell

6701 Aberdeen Avenue
Lubbock, Texas 79424
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FAX 806•794•1298

ANALYTICAL RESULTS FOR
GCL
Attention: Annette Montoya
505 Marquette NW, Suite 1300
Albuquerque, NM 87102

June 13, 1995
Receiving Date: 05/20/95
Sample Type: Water
GPM Charge Code No: LRMON-20-300
Project Location: Monument Booster Station
COC #9764

Extraction Date: 05/23/95
Analysis Date: 05/23/95
Sampling Date: 05/16/95
Sample Condition: Intact & Cool
Sample Received by: BL
Project Name: Monument Booster Station

TA#	FIELD CODE	2-methylnaphthalene/ 1-methylnaphthalene (mg/L)
T36318	9505161440 MW-5	ND
T36319	9505161520 MW-2	ND
QC	Quality Control	49.2
Reporting Limit		0.001
RPD		0
% Extraction Accuracy		90
% Instrument Accuracy		98

ND = Not Detected

METHODS: EPA SW 846-8270, 3510.

BB 6-13-95

Director, Dr. Blair Leftwich — DATE
Director, Dr. Bruce McDonell

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140 A J

GCL
Environmental Science and Engineering
A BDM International Company

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Albuquerque, NM 87102
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4221 Forbes Blvd., Ste. 240
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FAX: (301) 459-3064

☐ NASA-WSTF
PO Drawer MM
Las Cruces, NM 88004
(505) 524-5353
FAX: (505) 524-5315

Nº 9764

Chain of Custody

Date 5-16-95 Page 1 Of 1

Lab Name TRACE ANALYSIS
Address 6701 ABERDEENE AVENUE
LUBBOCK, TEXAS 79424
Telephone (806) 794-1296

Samplers (SIGNATURES) Dwayne Salisbury

Analysis Request

Sample Number	Matrix	Location	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020	Phenols, Sub Phenols 604/8040	Pesticides/PCB 608/8080	Polynuclear Aromatic Hydrocarbons 610/8310	Volatile Components GC/MS 624/8240	Base/Neu/Acid Compounds GC/MS 625/8270	Total Organic Carbon (TOC) 415/9060	Total Organic Halides (TOX) 9020	Petroleum Hydrocarbons 418.1	TPH/BTEX Modified 8015	TCLP- Vol., Semi-Vol. Herbicides, Pesticides	TCLP- Metals	RCRA Metals(8)	[illegible] Total Metals	CAM Metals (18) TTLC/STLC	Flash Point	Corrosivity	Reactivity	Oil & Grease	Cyanide Total/Amenable	Chemical Oxygen Demand (COD)	Bacteria Analysis Hydrocarbon degraders		F+ Major Ions + Si	Number of Containers
9505161440	H_2O	MW-5	3	6	3,18			X	X								X								X	X	X	7
9505161520	H_2O	MW-2			19			X	X								X								X	X	X	7

Project Information		Sample Receipt	
Project	GPM- Monument	Total No. of Containers	14
Project Director	Van Deventer	Chain of Custody Seals	Y
Charge Code No.	3100-005	Rec'd Good Condition/Cold	Y
Shipping ID. No.	LRMON-U-20-300 5328207765	Conforms to Record	Y
Via:	Fed-Ex	Lab No.	

Special Instructions/Comments: Total Metals: Ag, Al, As, B, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Se, Zn. Na Ca Mg Si Cl-F SO4 NO3 CO3 HCO3

*Invoice GPM directly. charge code: LRMON-U-20-300

Relinquished By 1.	Relinquished By 2.	Relinquished By 3.
Dwayne Salisbury (Signature) 1200 (Time)	(Signature) (Time)	(Signature) (Time)
Dwayne Salisbury (Printed Name) 5-18 (Date)	(Printed Name) (Date)	(Printed Name) (Date)
GCL (Company)	(Company)	(Company)
Received By 1.	**Received By 2.**	**Received By (Laboratory) 3.**
(Signature) (Time)	(Signature) (Time)	Blair Leftwich (Signature) (Time) 9:30 am
(Printed Name) (Date)	(Printed Name) (Date)	BLAIR LEFTWICH (Printed Name) (Date)
(Company)	(Company)	Trace Analysis (Laboratory) 5-20-95

Distribution: White, Canary-Laboratory • Pink, GCL

APPENDIX D

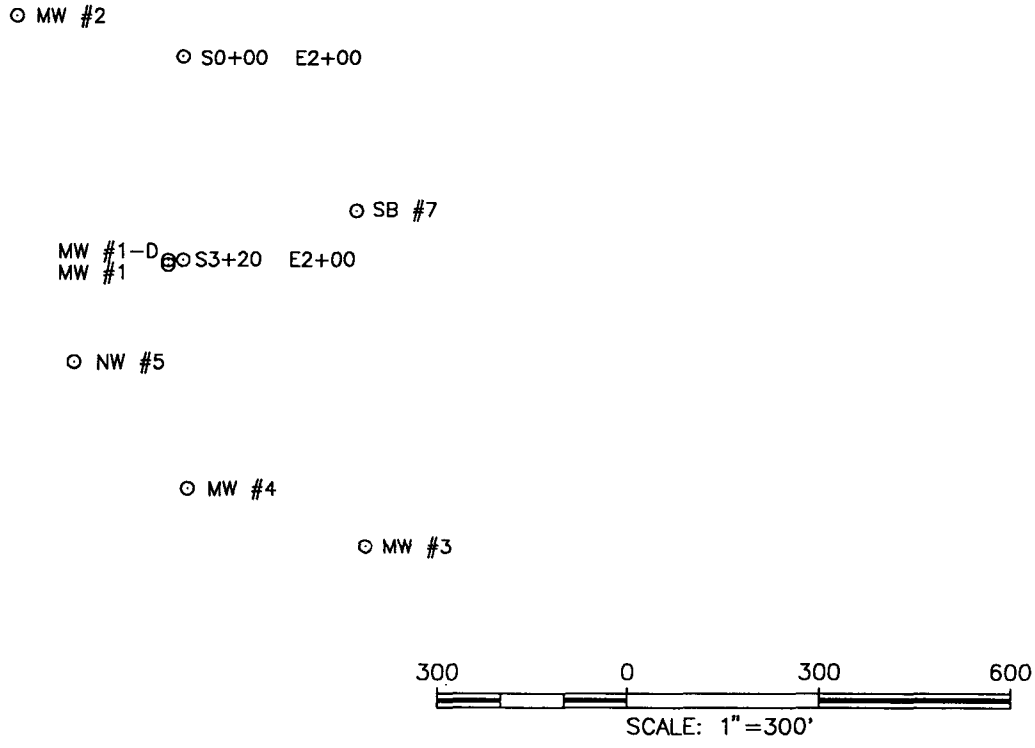
Appendix D

Survey Plat

PLANT COORDINATES AND ELEVATIONS

WELL NO.	COORDINATES		ELEVATION	LOC. OF ELEVATION
MW #1	S 3+27	E 1+76	3588.85 3591.15	TOP OF PLATE N. SIDE TOP OF PIPE N. EDGE
MW #1D	S 3+21	E 1+76	3589.06 3591.31	TOP OF ALU. CAP. N. SIDE TOP OF PIPE N. EDGE
MW #2	N 0+65	W 0+60	3594.13 3596.30	TOP OF PLATE N. SIDE TOP OF PIPE N. EDGE
MW #3	S 7+69	E 4+87	3581.46 3583.86	TOP OF ALU. CAP N. SIDE TOP OF PIPE N. EDGE
MW #4	S 6+78	E 2+07	3586.10 3588.77	TOP OF ALU. CAP N. SIDE TOP OF PIPE N. EDGE
MW #5	S 4+80	E 0+29	3589.62 3592.16	TOP OF ALU. CAP N. SIDE TOP OF PIPE N. EDGE
MW #7	S 2+42	E 4+72	3587.37	GROUND
	S 4+08	E 1+66		NE COR. CONTAINMENT WALL

NOTE: BENCH MARK ELEV. = 3588.26 AT 3 1/2" I.P.
W/3" BRASS PLATE AT S 3+20 E 2+00



I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

6-20-95

JOHN W. WEST,	N.M. P.E. & P.S.	No. 676
	TEXAS P.L.S.	No. 1138
RONALD J. EIDSON,	N.M. L.S.	No. 3239
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JOHN W. WEST ENGINEERING COMPANY
CONSULTING ENGINEERS & SURVEYORS – HOBBS, NEW MEXICO

GEOSCIENCE CONSULTANTS Ltd.

LOCATION OF MONITOR WELLS AND SOIL BORINGS
AT THE GPM CORP. MONUMENT BOOSTER STATION
IN SECTION 33, TOWNSHIP 19 SOUTH, RANGE 37 EAST
N.M.P.M., LEA COUNTY, NEW MEXICO.

Survey Date: 6/1/95		Sheet 1 of 1 Sheets
W.O. Number: 95-11-0861		Drawn By: JAMES L. PRESLEY
Date: 6/17/95	DISK: JLP#130	GEO0861

APPENDIX E

Appendix E

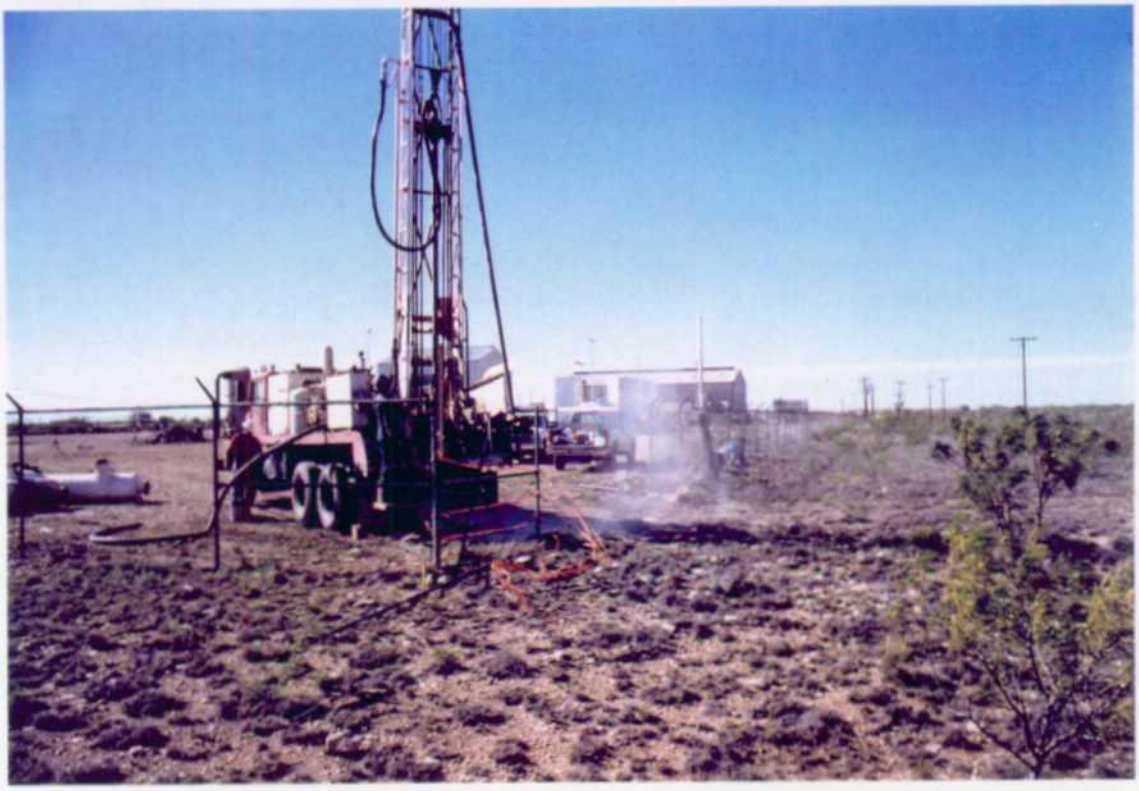
Photographic Documentation

View facing west showing well completion operations for monitoring well MW-1D located adjacent (6 feet north) to monitoring well MW-1.

View facing northeast showing wellpad completion operations for MW-1D.

View facing north showing drilling operations for soil boring SB-7 located approximately 300 feet cross-gradient (east-northeast) from monitoring well MW-1.

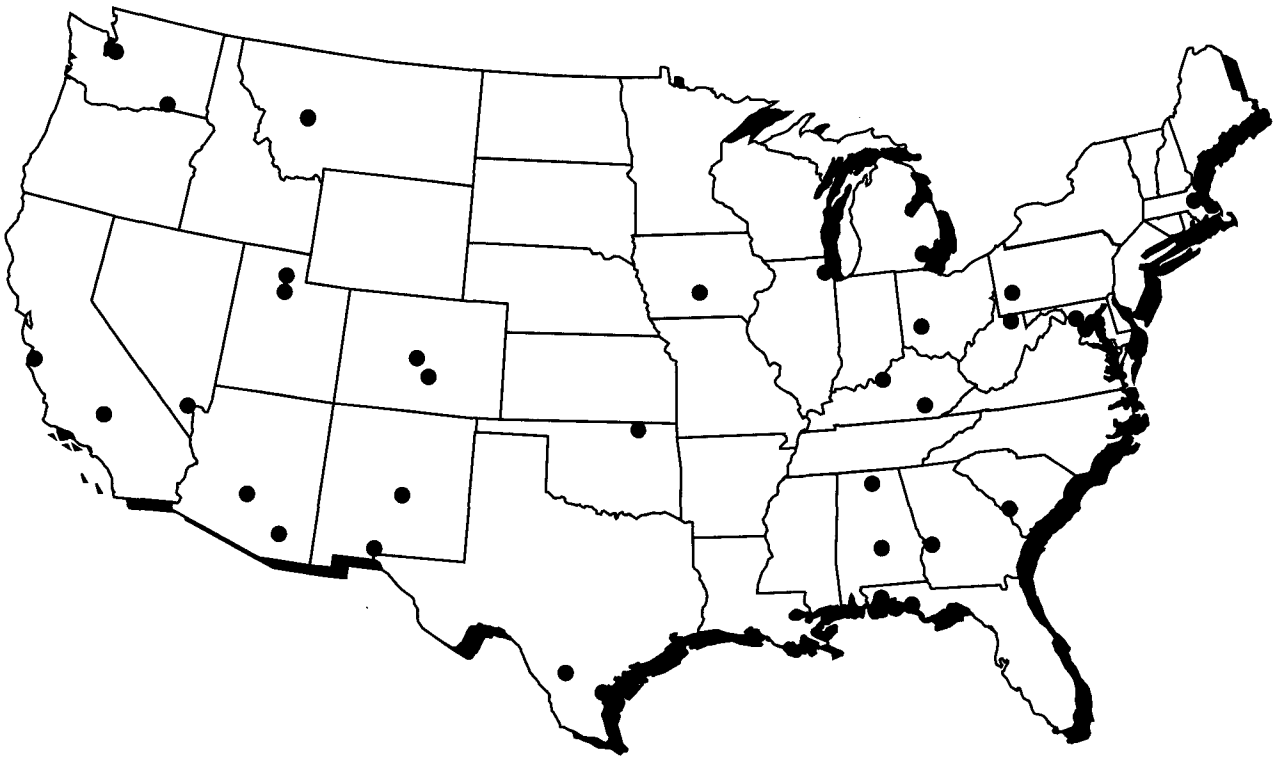
View facing southeast showing drilling operations for monitoring well MW-3 located approximately 500 feet downgradient (southeast) of monitoring well MW-1.



View facing northwest showing Monument Booster Station (background) and drilling operations for monitoring well MW-4 located approximately 350 feet south of monitoring well MW-1.

View facing east-northeast showing well completion operations for monitoring well MW-5 located approximately 200 feet southwest of monitoring well MW-1.

Office Locations



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