3R - 303

REPORTS

DATE:

July 31, 1995

GCL
Environmental Science and Engineering
A BDM International Company

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

July 31, 1995

Mr. William Olson, Hydrogeologist
Environmental Bureau
Oil Conservation Division
2040 So. Pacheco
Santa Fe, New Mexico 87505

RE: ABRAMS GAS/COM L1 GROUNDWATER INVESTIGATION REPORT

Dear Mr. Olson:

On behalf of Public Service Company of New Mexico/Gas Company of New Mexico (PNM/GCNM), Geoscience Consultants, Ltd. (GCL) is pleased to submit the Abrams Gas/Com L1 Groundwater Investigation Report. This report provides a description of the recent installation and sampling of groundwater monitoring wells at the Abrams Gas/Com L1 site located near Bloomfield, New Mexico. In addition, the report includes the results of the sampling and recommendations relating to future activities at the site.

Please contact me at (505) 842-0001 if you have any questions on the contents of the document. Thank you for your attention.

Sincerely,
Geoscience Consultants, Ltd. (GCL)

Maureen D. Gannon
Senior Engineer

MDG/3078/OLSON04.LTR

cc: D. Bearden, GCNM-Farmington
D. Foust, OCD-Aztec
T. Ristau, PNM-Albuquerque

Gas Company of New Mexico
Groundwater Investigation Report
Abrams Gas/Com L1

July 31, 1995

Prepared for:

PUBLIC SERVICE COMPANY OF NEW MEXICO/
GAS COMPANY OF NEW MEXICO
Mr. Denver Beardan
Gas Company of New Mexico
603 W. Elm St.
Farmington, New Mexico 87401

Prepared by:

GEOSCIENCE CONSULTANTS, LTD.
ALBUQUERQUE OFFICE
505 Marquette Avenue, NW
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1.0 Introduction

On behalf of Public Service Company of New Mexico and Gas Company of New Mexico (PNM/GCNM), Geoscience Consultants, Ltd. (GCL) has completed the installation and sampling of five groundwater monitoring wells at the Abrams Gas/Com L1 well site located in Township 29N, Range 10W, Section 26, near Bloomfield, New Mexico. Field work commenced at the site on June 21, 1995, and was completed on June 23, 1995. The monitoring well installations and sampling activities were completed in accordance with the GCNM Work Plan for Monitoring Well Installation at the Abrams Gas/Com L1, submitted to the Oil Conservation Division (OCD) on January 31, 1995. The OCD approved the work plan in a letter from Mr. William Olson of the OCD to Mr. Denver Beardan, GCNM, dated February 20, 1995. The approval included the condition that GCNM would submit a report on the investigation to the OCD by June 2, 1995.

On May 17, 1995, Mr. Beardan sent a written request to OCD for extension of the time frame for submission of the investigatory report. The basis of the request resulted from a delay in obtaining a right-of-way access agreement from the Bureau of Reclamation. The extension was granted by Mr. Olson on July 13, 1995, and specified a report submission of July 31, 1995.

2.0 Site History

GCNM began soil excavation at the Abrams Gas/Com L1 on October 5, 1994, after an initial site assessment conducted by GCNM indicated the presence of hydrocarbon-contaminated soil. Excavation activities ceased when groundwater was encountered at 17 feet. A groundwater sample taken from the bottom of the pit provided a total benzene, toluene, ethylbenzene, and xylenes (BTEX) concentration of 473 micrograms per liter (µg/L).

In November 1994, On Site Technologies was contracted to perform a soil-vapor survey to assist with delineation of soil and potential groundwater contamination at the site. Soil vapor samples were qualitatively analyzed with an organic vapor meter (OVM) and a photoionization detector (PID).

The highest recorded hydrocarbon vapor concentration was 18 parts per million (ppm) at two separate locations situated approximately 30 and 80 feet, respectively, from the GCNM pit in the northwest direction. The soil contamination appeared to trend parallel to the suspected groundwater gradient.

Soil excavation resumed in December 1994 at the GCNM pit. Contaminated soil was removed and stored on site until all soil was transported to an approved landfarm for final disposal. After soil sampling and laboratory analysis indicated that TPH/BTEX source removal had occurred, clean soil was imported and the pit was backfilled.

3.0 Monitoring Well Installation

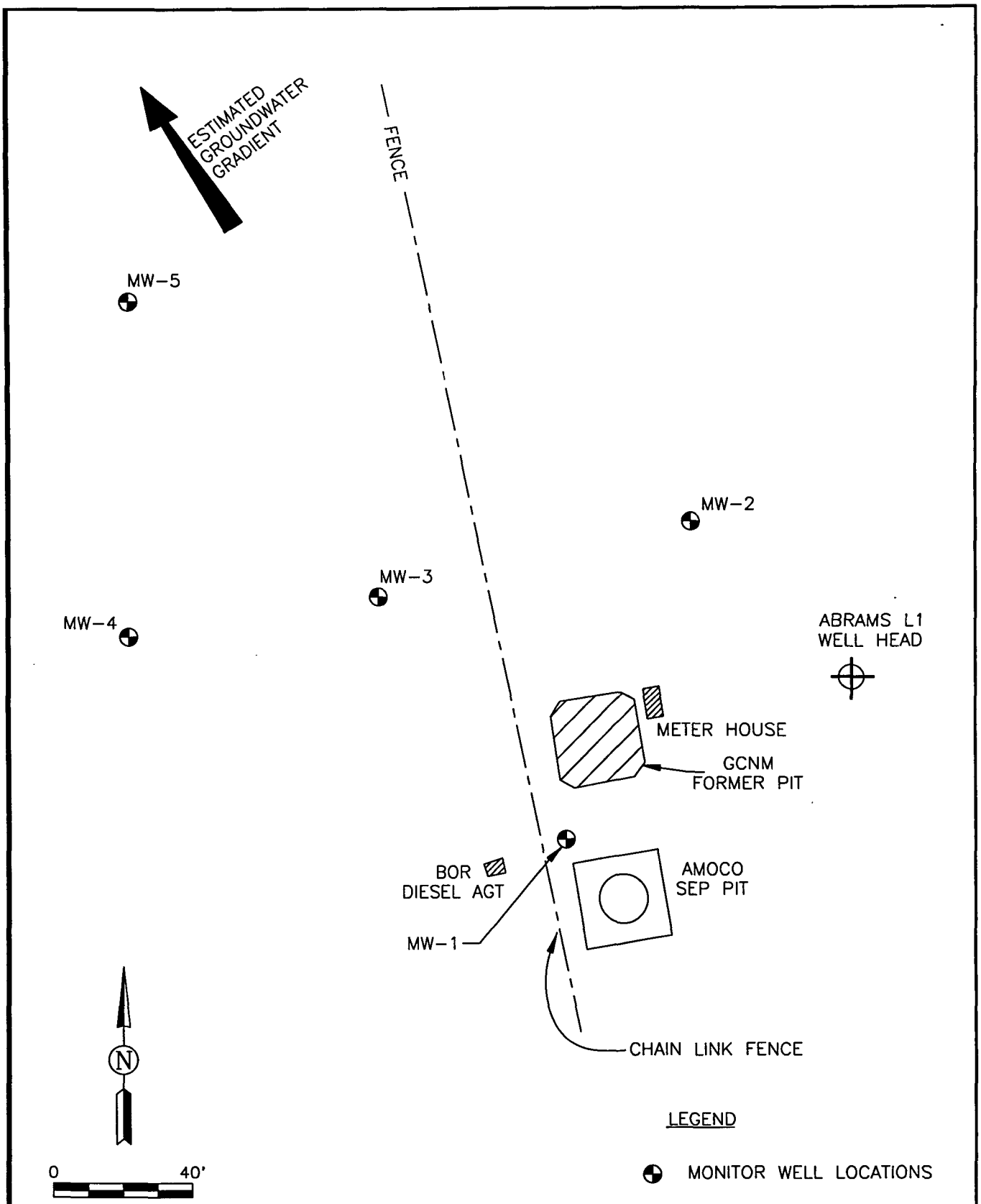
GCL installed five monitoring wells at the site to determine if and to what extent groundwater contamination exists. The monitoring well locations were based on the results of the soil-vapor survey conducted in November 1994. Figure 1 is a site map showing the actual locations of the installed monitoring wells.

Prior to drilling, GCL obtained a static water level from an existing temporary monitoring well at the site. The static water level in this well was 19.6 feet below ground surface (bgs). Mr. Denny Foust of the OCD (Aztec office) stated the static water level in the area typically fluctuates between 15 and 20 feet bgs. A screen interval of 14 to 29 feet bgs was selected to accommodate these water table fluctuations.

The monitoring wells were installed using a hollow-stem auger drilling rig. Total depth of each of the five monitoring wells was approximately 29 feet bgs. GCL collected lithologic samples from the drill cutting every 5 feet and recorded the observations on GCL's lithologic log forms. Lithologic log forms for these wells are located in Appendix A.

GCL monitored the site at all times using a combustible gas indicator (CGI) and an organic vapor meter (OVM). The presence of organic vapors was not detected in any of soil borings.

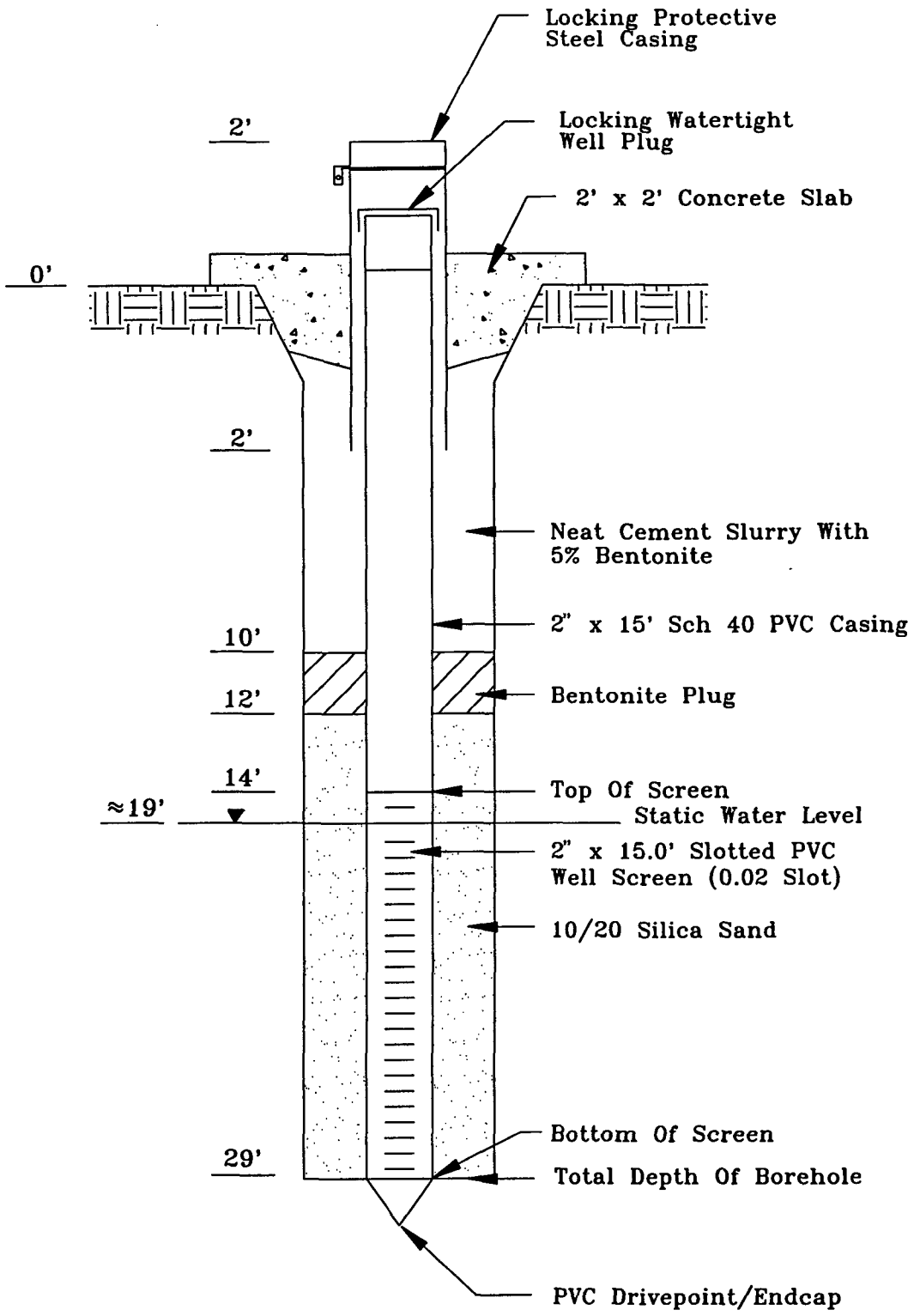
Figure 2 provides a typical completion diagram for each monitoring well. The wells were completed with 2-inch diameter, flush joint, schedule 40 polyvinyl chloride (PVC) pipe, precleaned and prepackaged by the manufacturer. The well screen consist of 2-inch, 0.020-inch slotted PVC. The casing and well screen were installed by connecting individual sections and lowering them into the borehole through the hollow center of the auger column. A 15-foot well screen with end cap was placed across the air/water interface to a total depth of 29 feet bgs.



GCL

CLIENT: PNM/GCNM	
DATE: 7/28/95	REV. NO.: 1
AUTHOR: MDG	DRAWN BY: MP
CK'D BY: MS	FILE:ABRAMS1.DWG

FIGURE 1
MONITORING WELL LOCATIONS
ABRAMS GAS/COM L1



GCL	CLIENT: PNM/GCNM	
	DATE: 7/19/95	REV. NO.: 0
	AUTHOR: BC	DRAWN BY: MP
	CK'D BY: MDG	FILE: ABRMSCD

FIGURE 2
TYPICAL MONITOR WELL COMPLETION DIAGRAM: ABRAMS MONITORING WELLS

After the well casing and screen was installed, the auger flights were retrieved in 5-foot intervals. Precleaned and prepackaged 10/20 silica sand was poured down the auger annulus to fill the void left as each 5-foot flight was removed. This sand filter pack was brought to a level approximately 2 feet above the top of the well screen. The well was surged using an 1.7-inch diameter bailer to settle the gravel pack. The 10/20 silica sand was added to bring the filter pack back up to approximately 2 feet above the well screen. A 2-foot bentonite pellet seal was then placed on top of the filter pack to form an impervious barrier and prevent downward migration of moisture through the wellbore. The bentonite layer was hydrated with 5 gallons of potable water. The remainder of the well annulus was grouted up to the ground surface using a Portland cement slurry mixed with 5 percent bentonite. A protective steel casing with locking lid was installed into the grout with approximately 2 feet below grade and 2 feet above grade. A 2-foot by 2-foot square by 4-inch thick concrete pad was placed around each well. Each well casing was fitted with a PVC water-tight locking cap.

GCL bailed water from the well to remove gross amounts of clay and silt. The wells were developed in this manner until the indicator parameters of pH, temperature, and electrical conductance of water sampled from the well had stabilized over three consecutive measurements. GCL kept a record of well installation and development activities in a field notebook. All produced water and drill cuttings were disposed of on site to grade. The drill cuttings were spread in the vicinity of the wellpad.

4.0 Monitoring Well Sampling

After completion and development of each monitoring well, GCL allowed the wells to recover at least 12 hours before collecting groundwater samples. All sampling was conducted in accordance with Environmental Protection Agency (EPA) protocol and following strict chain-of-custody procedures. A new, prepackaged 1-inch diameter disposable polyethylene bailer was used for each well to prevent cross-contamination between wells during sampling. GCL removed a minimum of three well casing volumes of water, and measured pH, conductivity, and temperature periodically until these parameters stabilized. All purged water from the wells was disposed of on site to grade.

Each monitoring well was sampled for the following parameters:

- EPA Method 8020 (BTEX)
- Major Cations/Anions (various EPA or standard methods)

- EPA Method 610 (polynuclear aromatic hydrocarbons, or PAHs)
- WQCC Metals (arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury (inductively coupled plasma [ICP] for heavy metals, atomic absorption spectroscopy [AAS] for mercury and selenium)

Samples were stored on ice in a cooler and hand-delivered via GCL personnel to Analytica Laboratories located at 807 S. Carlton, Farmington, New Mexico.

5.0 Groundwater Sampling Results

Table 1 provides the groundwater sampling results and the Water Quality Control Commission (WQCC) standard for each constituent. In each groundwater monitoring well, the BTEX concentration was below laboratory detection limits. PAHs were not detected in any well. In MW-3 and MW-4, arsenic (As) and barium (Ba) concentrations were determined to be above WQCC standards. Chromium (Cr) levels in MW-1, MW-2, MW-3, and MW-4 were detected above WQCC standards. Concentrations of lead (Pb) in MW-3 and MW-4 were above the WQCC standards. Silver (Ag) was also detected in MW-3 and MW-4, although not above the WQCC standard. See Appendix B for detailed laboratory analytical results.

6.0 Conclusions and Recommendations

Based on the results obtained from groundwater samples taken from the newly-installed monitoring wells, there is no current evidence of BTEX contamination at the Abrams Gas/Com L1 site. As, Ba, Cr, and Pb are present in concentrations above WQCC standards in MW-3 and MW-4. These two wells are located downgradient and to the northwest of the former GCNM pit. Cr was also detected above the WQCC standards in MW-1 (upgradient from the pit), MW-2 (downgradient and to the northeast of the pit), and MW-3 and MW-4. GCL conducted a limited discussion with OCD-Aztec and a review of the U.S. Geological Survey (USGS) Open File Report 83-203 titled "Hydrology of Area 60, Northern Great Plains, and Rocky Mountain Coal Provinces, New Mexico, Colorado, Utah, and Arizona". Although these two sources indicated there is evidence of background metals in the region, the concentrations of As, Ba, Cr, and Pb are anomalously high compared to those background levels. To the best of PNM/GCNM's knowledge, no past or present activities have occurred that could constitute a source of these elevated metals concentrations at the site.

TABLE 1

ABRAMS L1 JUNE SAMPLING RESULTS

	WQCC Stds.	MW-1	MW-2	MW-3	MW-4	MW-5	Duplicate MW-1	Trip Blank
B	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL
T	0.75	BDL	BDL	BDL	BDL	BDL	BDL	BDL
E	0.75	BDL	BDL	BDL	BDL	BDL	BDL	BDL
X	0.62	BDL	BDL	BDL	BDL	BDL	BDL	BDL
PAHs	0.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL
As	0.1	0.041	0.04	**0.157**	**0.131**	0.012	NA	NA
Ba	1	0.53	0.49	**2.4**	**1.68**	0.3	NA	NA
Cd	0.01	<0.002	<0.002	<0.002	<0.002	<0.002	NA	NA
Cr	0.05	**0.056**	**0.051**	**0.169**	**0.157**	0.033	NA	NA
Pb	0.05	0.035	0.022	**0.173**	**0.085**	0.009	NA	NA
Se	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA
Ag	0.05	<0.01	<0.01	0.026	0.013	<0.01	NA	NA
Hg	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	NA	NA
Major Cations		317	268	293	195	268	NA	NA
Major Anions		417	534	637	267	657	NA	NA

BDL: Below Detection Limit

NA: Not Analyzed

Notes: Concentrations in mg/l

Bold Indicates Concentrations Above WQCC Standards

Based upon the results of the investigation, PNM/GCNM recommends the initiation of quarterly monitoring for BTEX to demonstrate that BTEX contamination in groundwater is non-existent or below WQCC standards at the site. PNM/GCNM will perform quarterly monitoring of BTEX and submit a report of the results as directed by the OCD.

To address the elevated metals concentrations, PNM/GCNM will resample each monitoring well for the entire suite of WQCC metals, including arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury by August 31, 1995. Resampling for metals will accomplish two purposes: 1) verification of results obtained during the initial round of sampling (June 1995), and 2) establishment of baseline metals' concentrations for future monitoring and/or other investigation activities. Samples will be split and sent to Analytica Laboratories in Farmington, New Mexico, and Core Laboratories in Aurora, Colorado for analysis. A duplicate of one metals sample will also be sent to each laboratory. Based upon the results of the resampling, PNM/GCNM will make further recommendations regarding the metals' issue. A letter report presenting these recommendations and the laboratory results will be submitted to the OCD within two weeks after receipt of the results.

Appendix A

Lithologic Logs

BORING LOG

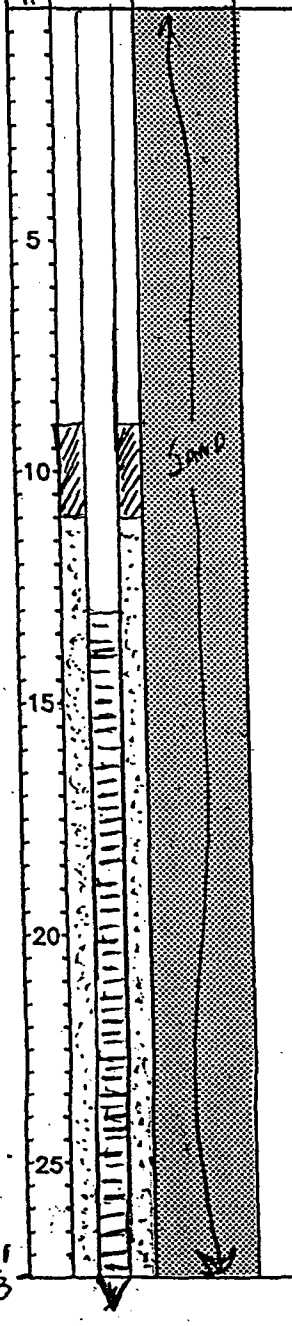
LOCATION MAP:

SITE ID: ABRAMS L-1 LOCATION ID: ABRAMS/MW-1
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
STATE: NM COUNTY: SAN JUAN
DRILLING METHOD: HOLLOW-STEM AUGER
DRILLING CONTR.: ENVIRO-DRILL INC.
DATE STARTED: 6/21/95 DATE COMPLETED: 6/22/95
FIELD REP.: Bob COOPER
COMMENTS: _____

__1/4 __1/4 __1/4 __1/4 S 26 T 29N R 10W

LOCATION DESCRIPTION: _____

DEPTH	WELL CONST.	LITH.	SAMPLE USCS	FROM	TO	% REC	BLOW-COUNT	NUMBER OR PID READING	LITHOLOGIC DESCRIPTION (LITH., USCS, GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SORT., CONSOL., DIST. FEATURES)
									0-10' SAND: MEDIUM- TO COARSE GRAINED sand containing 5-10% clay; sand is light olive grey (5Y 6/1) in color. Sand grains are subrounded to rounded in shape. Formation is unconsolidated, very slightly moist
									10'-20' Sand as above but contain slightly more clay (10-15%) and is slightly more moist from 10'-18', from 18'-20' sand is damp
									20'-28' SAND: medium-to coarse-grained sand containing minor amounts (≤ 10%) fine gravel
									Medium size (0.25-0.5mm) sand particles comprise 80-90% of formation, remaining 10-20% are coarse size (0.5-1.0mm)



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BORING LOG

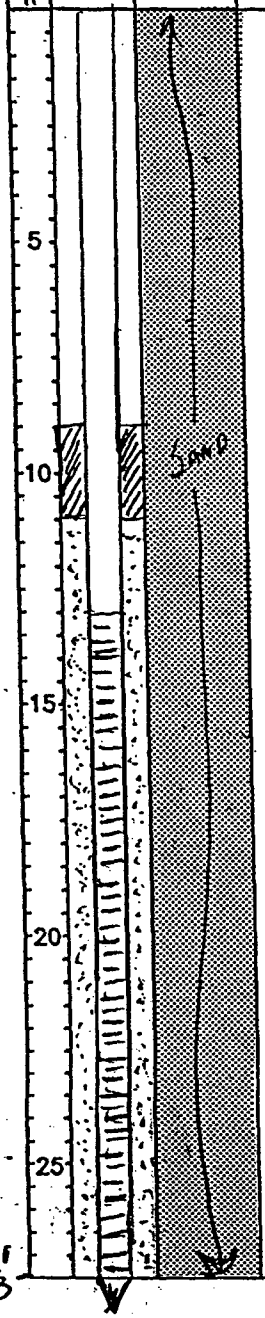
LOCATION MAP:

SITE ID: ABRAMS L-1 LOCATION ID: ABRAMS/MW-2
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
STATE: NM COUNTY: SAN JUAN
DRILLING METHOD: HOLLOW-STEM AUGER
DRILLING CONTR.: ENVIRO-DRILL INC.
DATE STARTED: 6/21/95 DATE COMPLETED: 6/22/95
FIELD REP.: BOB COOPER
COMMENTS: _____

__1/4 __1/4 __1/4 __1/4 S 26 T 29N R 10W

LOCATION DESCRIPTION: _____

DEPTH	WELL CONST.	LITH.	SAMPLE USCS	FROM	TO	% REC	BLOW-COUNT	NUMBER OR PID READING	LITHOLOGIC DESCRIPTION (LITH., USCS, GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SORT., CONSOL., DIST. FEATURES)
									0-10' SAND: MEDIUM- TO COARSE GRAINED sand containing 5-10% clay; sand is light olive grey (5Y 6/1) in color. Sand grains are subrounded to rounded in shape. Formation is unconsolidated, very slightly moist
									10'-20' Sand as above but contain slightly more clay (10-15%) and is slightly more moist from 10'-18', from 18'-20' sand is damp
									20'-28' Sand: medium-to coarse-grained sand containing minor amounts (≤ 10%) fine gravel
									(0.25-0.5mm) Medium size sand particles comprise 80-90% of formation, remaining 10-20% are coarse size (0.5-1.0mm)



28

BORING LOG

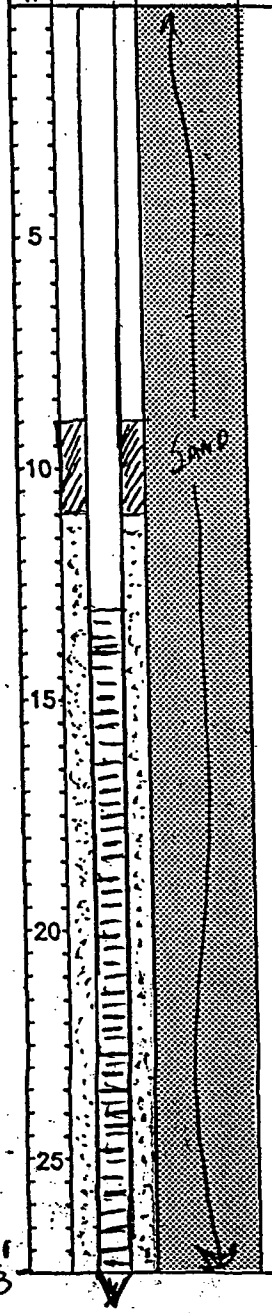
LOCATION MAP:

SITE ID: ABRAMS L-1 LOCATION ID: ABRAMS/MW-3
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
STATE: NM COUNTY: SAN JUAN
DRILLING METHOD: HOLLOW-STEM AUGER
DRILLING CONTR.: ENVIRO-DRILL INC.
DATE STARTED: 6/21/95 DATE COMPLETED: 6/22/95
FIELD REP.: BOB COOPER
COMMENTS: _____

__1/4 __1/4 __1/4 __1/4 S 26 T 29N R 10W

LOCATION DESCRIPTION: _____

DEPTH	WELL CONST.	LITH.	SAMPLE USCS	FROM	TO	% REC	BLOW-COUNT	NUMBER OR PID READING	LITHOLOGIC DESCRIPTION (LITH., USCS, GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SORT., CONSOL., DIST. FEATURES)
									0-10' SAND: MEDIUM- TO COARSE GRAINED sand containing 5-10% clay; sand is light olive grey (5Y 6/1) in color. Sand grains are subrounded to rounded in shape. Formation is unconsolidated, very slightly moist
									10'-20' Sand as above but contain slightly more clay (10-15%) and is slightly more moist from 10'-18', from 18'-20' sand is damp
									20'-28' Sand: medium-to coarse-grained sand containing minor amounts (≤ 10%) fine gravel
									(0.25-0.5mm) Medium size sand particles comprise 80-90% of formation, remaining 10-20% are coarse size (0.5-1.0mm)



BORING LOG

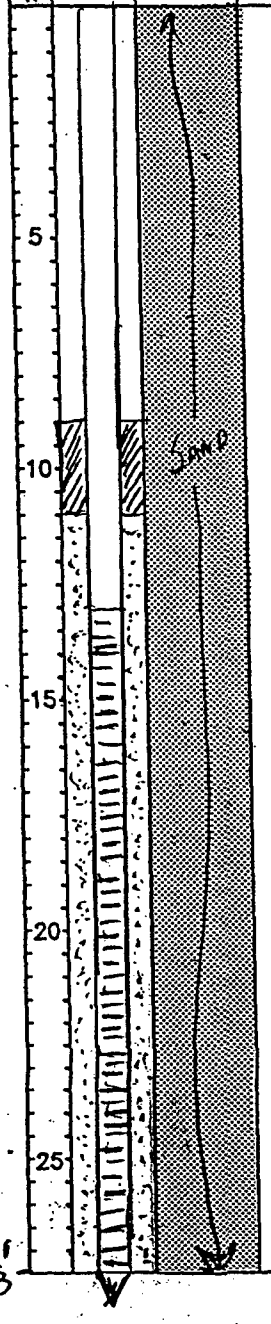
LOCATION MAP:

SITE ID: ABRAMS L-1 LOCATION ID: ABRAMS/MW-4
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
STATE: N M COUNTY: SAN JUAN
DRILLING METHOD: HOLLOW-STEM AUGER
DRILLING CONTR.: ENVIRO-DRILL INC.
DATE STARTED: 6/21/95 DATE COMPLETED: 6/22/95
FIELD REP.: Bob Cooper
COMMENTS: _____

__1/4 __1/4 __1/4 __1/4 S 26 T 29N R 10W

LOCATION DESCRIPTION: _____

DEPTH	WELL CONST.	LITH.	SAMPLE USCS	FROM	TO	% REC	BLOW-COUNT	NUMBER OR PID READING



LITHOLOGIC DESCRIPTION (LITH., USCS, GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SORT., CONSOL., DIST. FEATURES)

0-10' Sand: medium- to coarse grained sand containing 5-10% clay; sand is light olive grey (5Y 6/1) in color. Sand grains are subrounded to rounded in shape. Formation is unconsolidated, very slightly moist

10'-20' Sand as above but contain slightly more clay (10-15%) and is slightly more moist from 10'-18', from 18'-20' sand is damp

20'-28' Sand: medium-to coarse-grained sand containing minor amounts (≤ 10%) fine gravel

Medium size (0.25-0.5mm) sand particles comprise 80-90% of formation, remaining 10-20% are coarse size (0.5-1.0mm)

28

BORING LOG

LOCATION MAP:

SITE ID: ABRAMS L-1 LOCATION ID: ABRAMS/MW-5
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
STATE: NM COUNTY: SAN JUAN
DRILLING METHOD: HOLLOW-STEM AUGER
DRILLING CONTR.: ENVIRO-DRILL INC.
DATE STARTED: 6/21/95 DATE COMPLETED: 6/22/95
FIELD REP.: Bob COOPER
COMMENTS: _____

__1/4 __1/4 __1/4 __1/4 S 26 T 29N R 10W

LOCATION DESCRIPTION: _____

DEPTH	WELL CONST.	LITH.	SAMPLE USCS	FROM	TO	% REC	BLOW-COUNT	NUMBER OR PID READING	LITHOLOGIC DESCRIPTION (LITH., USCS, GRAIN SIZE PROPORTIONS, WET COLOR, RNDG., SORT., CONSOL., DIST. FEATURES)
0		SAND							0-10' SAND: MEDIUM- TO COARSE GRAINED sand containing 5-10% clay; sand is light olive grey (5Y 6/1) in color. Sand grains are subrounded to rounded in shape. Formation is unconsolidated, very slightly moist 10'-20' Sand as above but contain slightly more clay (10-15%) and is slightly more moist from 10'-18', from 18'-20' sand is damp 20'-28' SAND: medium-to coarse-grained sand containing minor amounts (≤ 10%) fine gravel Medium size (0.25-0.5mm) sand particles comprise 80-90% of formation, remaining 10-20% are coarse size (0.5-1.0mm)
5									
10									
15									
20									
25									

28

Appendix B

Initial Groundwater Sampling Analytical Results

RECEIVED JUL 1 7 1995

ANALYTICA

ENVIRONMENTAL LABORATORY

July 13, 1995

Denver Bearden
Gas Company of New Mexico
PO Box 1899
Bloomfield, NM 87413

Dear Denver:

Enclosed are the results for the analysis of samples received on June 23, 1995, from Mark Sikelianos of GCL. The samples from the Abrams L1 site and were received cool and intact. Analysis for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) was performed on six samples and a trip blank. Analyses for RCRA metals, Polyaromatic hydrocarbons and general waster quality were performed on five of the samples, as per the accompanying chain of custody.

Polyaromatic hydrocarbons were analyzed according to EPA Method 8270 by Aquatech Labs.

Analysis was performed according to EPA Method 602, using a Hewlett-Packard 5890 gas chromatograph equipped with an OI Analytical Purge and Trap (model 4560) and a photoionization detector. Detectable levels of btex analytes were not found in any of the samples.

Metals were digested according to EPA Method 3010. Metal concentrations were determined with a Varian Spectra AA 250 Plus, using flame or furnace as appropriate. Mercury was run according to EPA Method 245.1, Cold Vapor.

Water parameters were determined for the sample according to the appropriate methodologies as outlined in Standard Methods for the Examination of Water and Wastewater, 18th ed., 1992.

Quality control reports appear at the end of the analytical package and can be identified by title. Should you have any questions regarding the analysis, feel free to call.

Sincerely,

Denise A. Bohemier
Lab Director

807 SOUTH CARLTON • FARMINGTON, NEW MEXICO 87401 • (505) 326-2395

ANALYTICA
ENVIRONMENTAL LABORATORY

PURGEABLE AROMATICS

Gas Company of New Mexico

Project ID:	Abram L1	Report Date:	06/30/95
Sample ID:	9506231000	Date Sampled:	06/23/95
Lab ID:	1151	Date Received:	06/23/95
Sample Matrix:	Water	Date Analyzed:	06/26/95
Preservative:	Cool, HCl		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50
Total BTEX	**ND**	

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	101	88 - 110%
Bromofluorobenzene	96	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments: MW - 1

Analyst

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

Polyaromatic Hydrocarbons

EPA Method 8270

Gas Company of New Mexico

Project ID:	Abram L1	Report Date:	07/05/95
Sample ID:	9506231000/MW-1	Date Sampled:	06/23/95
Lab ID:	1151	Date Received:	06/23/95
Sample Matrix:	Water	Date Analyzed:	06/29/95
Preservative:	HCl		
Condition:	Intact		

Target Analyte	Concentration (µg/L)
Acenaphthene	<2.0
Acenaphthylene	<2.0
Anthracene	<2.0
Benzo(a)anthracene	<3.0
Benzo(a)pyrene	<4.0
Benzo(b)fluoranthene	<4.0
Benzo(k)fluoranthene	<4.0
Benzo(ghi)perylene	<5.0
Chrysene	<3.0
Dibenzo(a,h)anthracene	<5.0
Fluoranthene	<2.0
Fluorene	<3.0
Indeno(1,2,3-cd)pyrene	<5.0
Naphthalene	<2.0
Phenanthrene	<2.0
Pyrene	<3.0
Dibenzofuran	<2.0
2-Methylnaphthalene	<2.0

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

General Water Quality
Gas Company of New Mexico

Project ID:	Abram L1	Date Reported:	07/13/95
Sample ID:	9506231000/MW-1	Date Sampled:	06/23/95
Laboratory ID:	1151	Time Sampled:	10:00
Sample Matrix:	Water	Date Received:	06/23/95

Parameter		Analytical Result	Units
General	Lab pH	7.4	s.u.
	Lab Conductivity @ 25° C	1,220	µmhos/cm
	Total Dissolved Solids @ 180°C	826	mg/L
	Total Dissolved Solids (Calc)	763	mg/L
Anions	Total Alkalinity as $CaCO_3$	317	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	317	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	11.2	mg/L
	Sulfate	308	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	417	mg/L
	Calcium	149	mg/L
	Magnesium	10.7	mg/L
	Potassium	5.10	mg/L
	Sodium	88.0	mg/L

Data Validation			Acceptance Level
	Cation/Anion Difference	3.11	+/- 5 %
	TDS (180):TDS(calculated)	1.1	1.0 - 1.2

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

Client:	Gas Company of New Mexico	Date Reported:	07/13/95
Project ID:	Abram L1	Date Sampled:	06/23/95
Sample ID:	9506231000/MW-1	Time Sampled:	10:00
Laboratory ID:	1151	Date Received:	06/23/95

Parameter	Analytical Result	Units
Trace Metals, Total		
Arsenic	0.041	mg/L
Barium	0.530	mg/L
Cadmium	<0.002	mg/L
Chromium	0.056	mg/L
Lead	0.035	mg/L
Mercury	<0.001	mg/L
Selenium	<0.005	mg/L
Silver	<0.01	mg/L

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983. Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

PURGEABLE AROMATICS

Gas Company of New Mexico

Project ID:	Abram L1	Report Date:	06/30/95
Sample ID:	9506231015	Date Sampled:	06/23/95
Lab ID:	1152	Date Received:	06/23/95
Sample Matrix:	Water	Date Analyzed:	06/26/95
Preservative:	Cool, HCl		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50
Total BTEX	**ND**	

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	100	88 - 110%
Bromofluorobenzene	92	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments: MW - 6

Analyst

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

PURGEABLE AROMATICS

Gas Company of New Mexico

Project ID:	Abram L1	Report Date:	06/30/95
Sample ID:	9506231100	Date Sampled:	06/23/95
Lab ID:	1153	Date Received:	06/23/95
Sample Matrix:	Water	Date Analyzed:	06/26/95
Preservative:	Cool, HCl		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50
Total BTEX	**ND**	

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	102	88 - 110%
Bromofluorobenzene	91	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments: MW - 2

Analyst

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

Polyaromatic Hydrocarbons

EPA Method 8270

Gas Company of New Mexico

Project ID:	Abram L1	Report Date:	07/05/95
Sample ID:	9506231100/MW-2	Date Sampled:	06/23/95
Lab ID:	1153	Date Received:	06/23/95
Sample Matrix:	Water	Date Analyzed:	06/29/95
Preservative:	HCl		
Condition:	Intact		

Target Analyte	Concentration (µg/L)
Acenaphthene	<2.0
Acenaphthylene	<2.0
Anthracene	<2.0
Benzo(a)anthracene	<3.0
Benzo(a)pyrene	<4.0
Benzo(b)fluoranthene	<4.0
Benzo(k)fluoranthene	<4.0
Benzo(ghi)perylene	<5.0
Chrysene	<3.0
Dibenzo(a,h)anthracene	<5.0
Fluoranthene	<2.0
Fluorene	<3.0
Indeno(1,2,3-cd)pyrene	<5.0
Naphthalene	<2.0
Phenanthrene	<2.0
Pyrene	<3.0
Dibenzofuran	<2.0
2-Methylnaphthalene	<2.0

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

General Water Quality
Gas Company of New Mexico

Project ID:	Abram L1	Date Reported:	07/13/95
Sample ID:	9506231100/MW-2	Date Sampled:	06/23/95
Laboratory ID:	1153	Time Sampled:	11:00
Sample Matrix:	Water	Date Received:	06/23/95

Parameter		Analytical Result	Units
General	Lab pH	7.4	s.u.
	Lab Conductivity @ 25° C	1,510	µmhos/cm
	Total Dissolved Solids @ 180°C	1,110	mg/L
	Total Dissolved Solids (Calc)	1,000	mg/L
Anions	Total Alkalinity as $CaCO_3$	268	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	268	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	6.25	mg/L
	Sulfate	533	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	534	mg/L
	Calcium	167	mg/L
	Magnesium	28.6	mg/L
	Potassium	4.50	mg/L
	Sodium	100	mg/L

Data Validation			Acceptance Level
	Cation/Anion Difference	4.78	+/- 5 %
	TDS (180):TDS(calculated)	1.1	1.0 - 1.2

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

Client:	Gas Company of New Mexico	Date Reported:	07/13/95
Sample ID:	9506231100/MW-2	Date Sampled:	06/23/95
Laboratory ID:	1153	Time Sampled:	11:00
Sample Matrix:	Water	Date Received:	06/23/95

Parameter	Analytical Result	Units
Trace Metals, Total		
Arsenic	0.040	mg/L
Barium	0.490	mg/L
Cadmium	<0.002	mg/L
Chromium	0.051	mg/L
Lead	0.022	mg/L
Mercury	<0.001	mg/L
Selenium	<0.005	mg/L
Silver	<0.01	mg/L

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

PURGEABLE AROMATICS

Gas Company of New Mexico

Project ID:	Abram L1	Report Date:	06/30/95
Sample ID:	9506231130	Date Sampled:	06/23/95
Lab ID:	1154	Date Received:	06/23/95
Sample Matrix:	Water	Date Analyzed:	06/26/95
Preservative:	Cool, HCl		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50
Total BTEX	**ND**	

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	99	88 - 110%
Bromofluorobenzene	93	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments: MW - 3

Analyst

Review

Polyaromatic Hydrocarbons
EPA Method 8270

Gas Company of New Mexico

Project ID:	Abram L1	Report Date:	07/05/95
Sample ID:	9506231130/MW-3	Date Sampled:	06/23/95
Lab ID:	1154	Date Received:	06/23/95
Sample Matrix:	Water	Date Analyzed:	06/29/95
Preservative:	HCl		
Condition:	Intact		

Target Analyte	Concentration (ug/L)
Acenaphthene	<2.0
Acenaphthylene	<2.0
Anthracene	<2.0
Benzo(a)anthracene	<3.0
Benzo(a)pyrene	<4.0
Benzo(b)fluoranthene	<4.0
Benzo(k)fluoranthene	<4.0
Benzo(ghi)perylene	<5.0
Chrysene	<3.0
Dibenzo(a,h)anthracene	<5.0
Fluoranthene	<2.0
Fluorene	<3.0
Indeno(1,2,3-cd)pyrene	<5.0
Naphthalene	<2.0
Phenanthrene	<2.0
Pyrene	<3.0
Dibenzofuran	<2.0
2-Methylnaphthalene	<2.0

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

General Water Quality
Gas Company of New Mexico

Project ID:	Abram L1	Date Reported:	07/13/95
Sample ID:	9506231130/MW-3	Date Sampled:	06/23/95
Laboratory ID:	1154	Time Sampled:	11:30
Sample Matrix:	Intact	Date Received:	06/23/95

Parameter		Analytical Result	Units
General	Lab pH	7.4	s.u.
	Lab Conductivity @ 25° C	1,510	µmhos/cm
	Total Dissolved Solids @ 180°C	1,130	mg/L
	Total Dissolved Solids (Calc)	935	mg/L
Anions	Total Alkalinity as $CaCO_3$	293	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	293	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	6.25	mg/L
	Sulfate	440	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	637	mg/L
	Calcium	234	mg/L
	Magnesium	13.1	mg/L
	Potassium	4.55	mg/L
	Sodium	62.0	mg/L

Data Validation			Acceptance Level
	Cation/Anion Difference	1.16	+/- 5 %
	TDS (180):TDS(calculated)	1.2	1.0 - 1.2

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

Client:	Gas Company of New Mexico	Date Reported:	07/13/95
Sample ID:	9506231130/MW-3	Date Sampled:	06/23/95
Laboratory ID:	1154	Time Sampled:	11:30
Sample Matrix:	Water	Date Received:	06/23/95

Parameter	Analytical Result	Units
Trace Metals, Total		
Arsenic	0.157	mg/L
Barium	2.40	mg/L
Cadmium	<0.002	mg/L
Chromium	0.169	mg/L
Lead	0.173	mg/L
Mercury	<0.001	mg/L
Selenium	<0.005	mg/L
Silver	0.026	mg/L

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

PURGEABLE AROMATICS

Gas Company of New Mexico

Project ID:	Abram L1	Report Date:	06/30/95
Sample ID:	9506231200	Date Sampled:	06/23/95
Lab ID:	1155	Date Received:	06/23/95
Sample Matrix:	Water	Date Analyzed:	06/26/95
Preservative:	Cool, HCl		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50
Total BTEX	**ND**	

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	98	88 - 110%
Bromofluorobenzene	93	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments: MW - 4

Analyst

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

Polyaromatic Hydrocarbons

EPA Method 8270

Gas Company of New Mexico

Project ID:	Abram L1	Report Date:	07/05/95
Sample ID:	9506231200/MW-4	Date Sampled:	06/23/95
Lab ID:	1155	Date Received:	06/23/95
Sample Matrix:	Water	Date Analyzed:	06/29/95
Preservative:	HCl		
Condition:	Intact		

Target Analyte	Concentration (µg/L)
Acenaphthene	<2.0
Acenaphthylene	<2.0
Anthracene	<2.0
Benzo(a)anthracene	<3.0
Benzo(a)pyrene	<4.0
Benzo(b)fluoranthene	<4.0
Benzo(k)fluoranthene	<4.0
Benzo(ghi)perylene	<5.0
Chrysene	<3.0
Dibenzo(a,h)anthracene	<5.0
Fluoranthene	<2.0
Fluorene	<3.0
Indeno(1,2,3-cd)pyrene	<5.0
Naphthalene	<2.0
Phenanthrene	<2.0
Pyrene	<3.0
Dibenzofuran	<2.0
2-Methylnaphthalene	<2.0

D Carman
Review

ANALYTICA
ENVIRONMENTAL LABORATORY

General Water Quality
Gas Company of New Mexico

Project ID:	Abram L1	Date Reported:	07/13/95
Sample ID:	9506231200/MW-4	Date Sampled:	06/23/95
Laboratory ID:	1155	Time Sampled:	12:00
Sample Matrix:	Water	Date Received:	06/23/95

Parameter		Analytical Result	Units
General	Lab pH	7.4	s.u.
	Lab Conductivity @ 25° C	962	µmhos/cm
	Total Dissolved Solids @ 180°C	505	mg/L
	Total Dissolved Solids (Calc)	467	mg/L
Anions	Total Alkalinity as $CaCO_3$	195	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	195	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	6.25	mg/L
	Sulfate	180	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	267	mg/L
	Calcium	105	mg/L
	Magnesium	1.07	mg/L
	Potassium	4.20	mg/L
	Sodium	53.0	mg/L

Data Validation			Acceptance Level
	Cation/Anion Difference	0.53	+/- 2 %
	TDS (180):TDS(calculated)	1.1	1.0 - 1.2

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

Client:	Gas Company of New Mexico	Date Reported:	07/13/95
Sample ID:	9506231200/MW-4	Date Sampled:	06/23/95
Laboratory ID:	1155	Time Sampled:	12:00
Sample Matrix:	Water	Date Received:	06/23/95

Parameter	Analytical Result	Units
Trace Metals, Total		
Arsenic	0.131	mg/L
Barium	1.68	mg/L
Cadmium	<0.002	mg/L
Chromium	0.157	mg/L
Lead	0.085	mg/L
Mercury	<0.001	mg/L
Selenium	<0.005	mg/L
Silver	0.013	mg/L

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

PURGEABLE AROMATICS

Gas Company of New Mexico

Project ID:	Abram L1	Report Date:	06/30/95
Sample ID:	9506231230	Date Sampled:	06/23/95
Lab ID:	1156	Date Received:	06/23/95
Sample Matrix:	Water	Date Analyzed:	06/26/95
Preservative:	Cool, HCl		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50
Total BTEX	**ND**	

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	95	88 - 110%
Bromofluorobenzene	91	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments: MW - 5

Analyst

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

Polyaromatic Hydrocarbons

EPA Method 8270

Gas Company of New Mexico

Project ID:	Abram L1	Report Date:	07/05/95
Sample ID:	9506231230/MW-5	Date Sampled:	06/23/95
Lab ID:	1156	Date Received:	06/23/95
Sample Matrix:	Water	Date Analyzed:	06/29/95
Preservative:	HCl		
Condition:	Intact		

Target Analyte	Concentration (µg/L)
Acenaphthene	<2.0
Acenaphthylene	<2.0
Anthracene	<2.0
Benzo(a)anthracene	<3.0
Benzo(a)pyrene	<4.0
Benzo(b)fluoranthene	<4.0
Benzo(k)fluoranthene	<4.0
Benzo(ghi)perylene	<5.0
Chrysene	<3.0
Dibenzo(a,h)anthracene	<5.0
Fluoranthene	<2.0
Fluorene	<3.0
Indeno(1,2,3-cd)pyrene	<5.0
Naphthalene	<2.0
Phenanthrene	<2.0
Pyrene	<3.0
Dibenzofuran	<2.0
2-Methylnaphthalene	<2.0

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

General Water Quality
Gas Company of New Mexico

Project ID:	Abram L1	Date Reported:	07/13/95
Sample ID:	9506231230/MW-5	Date Sampled:	06/23/95
Laboratory ID:	1156	Time Sampled:	12:30
Sample Matrix:	Water	Date Received:	06/23/95

Parameter		Analytical Result	Units
General	Lab pH	7.3	s.u.
	Lab Conductivity @ 25° C	1,810	µmhos/cm
	Total Dissolved Solids @ 180°C	1,330	mg/L
	Total Dissolved Solids (Calc)	1,120	mg/L
Anions	Total Alkalinity as $CaCO_3$	268	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	268	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	38.7	mg/L
	Sulfate	580	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	657	mg/L
	Calcium	220	mg/L
	Magnesium	26.2	mg/L
	Potassium	7.30	mg/L
	Sodium	90.0	mg/L
Data Validation			Acceptance Level
	Cation/Anion Difference	3.64	+/- 5 %
	TDS (180):TDS(calculated)	1.2	1.0 - 1.2

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

Client:	Gas Company of New Mexico	Date Reported:	07/13/95
Sample ID:	9506231230/MW-5	Date Sampled:	06/23/95
Laboratory ID:	1156	Time Sampled:	12:30
Sample Matrix:	Water	Date Received:	06/23/95

Parameter	Analytical Result	Units
Trace Metals, Total		
Arsenic	0.012	mg/L
Barium	0.30	mg/L
Cadmium	<0.002	mg/L
Chromium	0.033	mg/L
Lead	0.009	mg/L
Mercury	<0.001	mg/L
Selenium	<0.005	mg/L
Silver	<0.01	mg/L

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

PURGEABLE AROMATICS

Gas Company of New Mexico

Project ID:	Abram L1	Report Date:	06/30/95
Sample ID:	Trip	Date Sampled:	06/23/95
Lab ID:	1157	Date Received:	06/23/95
Sample Matrix:	Water	Date Analyzed:	06/26/95
Preservative:	Cool, HCl		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50
Total BTEX	**ND**	

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	100	88 - 110%
Bromofluorobenzene	92	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments: Trip Blank

Analyst

Review

PURGEABLE AROMATICS

Quality Control Report

Method Blank Analysis

Sample Matrix:	Water	Report Date:	06/30/95
Lab ID:	MB34876	Date Analyzed:	06/26/95

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	98	88 - 110%
Bromofluorobenzene	91	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

Purgeable Aromatics

Matrix Spike Analysis

Lab ID:	1151Spk	Report Date:	06/30/95
Sample Matrix:	Water	Date Sampled:	06/23/95
Preservative:	Cool, HCl	Date Received:	06/23/95
Condition:	Intact	Date Analyzed:	06/26/95

Target Analyte	Spike Added (ug/L)	Original Conc. (ug/L)	Spiked Sample Conc. (ug/L)	% Recovery	Acceptance Limits (%)
Benzene	10	ND	10.2	101%	39 -150
Toluene	10	0.22	10.2	99%	46 - 148
Ethylbenzene	10	ND	10.2	102%	32 - 160
m,p-Xylenes	20	ND	20.3	101%	NE
o-Xylene	10	ND	10.0	100%	NE

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.
NE - Spike acceptance range not established by the EPA.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	103	88 - 110%
Bromofluorobenzene	103	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

VOLATILE AROMATIC HYDROCARBONS

Matrix Spike Duplicate Analysis

Lab ID:	1151Spkdup	Report Date:	06/30/95
Sample Matrix:	Water	Date Sampled:	06/23/95
Preservative:	Cool, HCl	Date Received:	06/23/95
Condition:	Intact	Date Analyzed:	06/26/95

Target Analyte	Spike Added (ug/L)	Sample Spike Recovery (%)	Duplicate Spike Recovery (%)	Acceptance Limits (%)
Benzene	10	101%	91%	77.6 - 115
Toluene	10	99%	89%	76.2 - 112
Ethylbenzene	10	102%	93%	63.3 - 131
m,p-Xylenes	20	101%	91%	NE
o-Xylene	10	100%	91%	NE

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.
NE - Spike acceptance range not established by the EPA.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	88	88 - 110%
Bromofluorobenzene	90	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

General Water Quality

Quality Control Report

Gas Company of New Mexico

Report Date: 07/13/95

Parameter	Analytical Result	Acceptance Range	Units
Laboratory pH	9.0	8.9-9.3	s.u.
Conductivity	1141	940-1270	µmhos/cm
Total Dissolved Solids	910	715-929	mg/L
Total Alkalinity	146	130-188	mg/L
Chloride	135	131-151	mg/L
Sulfate	107	106-140	mg/L
Total Hardness	397	370-490	mg/L
Calcium	110	96.3-128	mg/L
Magnesium	NA	NA	mg/L
Potassium	109	96.9-131	mg/L
Sodium	148	134-182	mg/L

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Comments:

Reviewed

General Water Quality

Quality Control Report

Gas Company of New Mexico

Report Date: 07/13/95

Parameter	Analytical Result	Acceptance Range	Units
Arsenic	10.2	9.0-11.0	µg/L
Barium	2.00	1.80-2.20	mg/L
Cadmium	2.07	1.80-2.20	µg/L
Chromium	0.414	0.347-0.425	mg/L
Lead	10.7	9.0-11.0	µg/L
Mercury	7.34	3.97-8.34	µg/L
Selenium	10.6	8.5-11.5	µg/L
Silver	0.199	0.189-0.230	mg/L

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Comments:

Reviewed

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Las Cruces, NM 88004
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№ 9553

Chain of Custody

Date 6/23/95 Page 1 Of 1

Lab Name ANALYTICA
Address 807 S. CARLSBAD
FARMINGTON
Telephone (505) 326-2326
Samplers (SIGNATURES)

Analysis Request

Sample Number	Matrix	Location	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020 (TEX)	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 8 Metals(8)	Priority Pollutant Metals (13)	CAM Metals (18) TTLC/STLC	Flash Point	Corrosivity	Reactivity	Oil & Grease	Cyanide Total/Amenable	Chemical Oxygen Demand (COD)	MAJOR CATIONS/ ANIONS			Number of Containers
950623 1000	Aqueous	MW-1		X			X									X									X			5
950623 1015	Aqueous	MW-6		X																								2
950623 1100	Aqueous	MW-2		X			X									X									X			5
950623 1130	Aqueous	MW-3		X			X									X									X			5
950623 1200	Aqueous	MW-4		X			X									X									X			5
950623 1230	Aqueous	MW-5		X			X									X									X			5
TRIP	Aqueous			X																								1

Project Information	Sample Receipt	
Project ABRAMS LF	Total No. of Containers	
Project Director CLARKE	Chain of Custody Seals	
Charge Code No. N/A	Rec'd Good Condition/Cold	
Shipping ID. No. N/A	Conforms to Record	
Via: HAND DELIVERED	Lab No.	

Special Instructions/Comments:
INVOICE GCL DIRECTLY
COPY TO GCL c/o Maureen Gannon

Relinquished By 1.	Relinquished By 2.	Relinquished By 3.
Maureen Gannon 1400 (Signature) (Time)	(Signature) (Time)	(Signature) (Time)
Maureen D Gannon 6/23/95 (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)	(Signature) (Time)	(Signature) DENISE BOHEMIER 4:00 (Time)
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) ANALYTICA 6/23/95 (Date)
(Company)	(Company)	(Laboratory)

Distribution: White, Canary-Laboratory • Pink, GCL