MINIMUM SITE ASSESSMENT

PINO'S GAS AND LIQUORS
LAS VEGAS, NEW MEXICO
USTB FACILITY #589002

Submitted To:

New Mexico Environment Department
Underground Storage Tank Bureau
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, New Mexico 87502

Submitted By:

AGRA Earth & Environmental, Inc.
8519 Jefferson, N.E.
Albuquerque, New Mexico 87113

21 August, 1998

AEE Job No. 8-517-000097

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

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AGRA Earth &
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8519 Jefferson, N.E.
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Tel: (505) 821-1801
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21 August 1998
AEE Job No. 8-517-000097

Immaculate Conception Church
c/o Alan Franken
1025 Douglas Avenue
Las Vegas, New Mexico 87701

Attention: Mr. Alan Franken

Re: MINIMUM SITE ASSESSMENT
PINO'S GAS AND LIQUORS
701 GRAND AVENUE
LAS VEGAS, NEW MEXICO
FACILITY # 589002

Enclosed is AGRA Earth and Environmental's, (AEE) On-Site Investigation Report for the Minimum Site Assessment for the above referenced site. This report includes results from a field exploratory drilling program, sampling of subsurface soils and groundwater, and chemical analysis of select samples.

If you have any questions, please give me a call at 821-1801.

Respectfully submitted,

AGRA Earth and Environmental, Inc.

Bob Wilcox, Project Manager/Geologist
Certified Scientist No. 14

Reviewed by:

Otto C. Holmquist, P.E.
Project Coordinator

BW:rrg

Attachment

cc: Addressee (1)
Jerry Schoeppner, NMED-USTB(1)

COVER PAGE
FORM 1206
ON-SITE INVESTIGATION REPORT

Please include the following information:

1. Site name: Pino's Gas and Liquors

2. Responsible party: Mr. Alan Franken

3. Responsible party mailing address (list contact person if different):

   Immaculate Conception Church
   c/o Mr. Alan Franken
   1025 Douglas Avenue
   Las Vegas, New Mexico 87701

4. Facility number: No. 589002

1. Address/legal description: 701 Grand Avenue
   Las Vegas, NM

2. Author/consulting company: Bob Wilcox/AGRA Earth & Environmental, Inc.

3. Date of report: 21 August 1998

4. Date of confirmation of release or date USTB was notified of the release: November 21, 1997 by Adrian Jaramillo of the New Mexico Environment Department

STATEMENT OF FAMILIARITY

I, the undersigned, am personally familiar with the information submitted in this report and the attached documents and attest that it is true and complete.

Signature: Bob Wilcox

Name: Bob Wilcox

Affiliation: AGRA Earth and Environmental, Inc.

Title: Geologist / Project Manager

Certified Scientist #: 14

Date: 21 August 1998

I. EXECUTIVE SUMMARY

This investigation report addresses the Minimum Site Assessment (MSA) performed by AGRA Earth and Environmental (AEE) at the Pino's Gas and Liquor facility located at 701 Grand Avenue, Las Vegas, New Mexico. This report is submitted pursuant to a workplan approval by the New Mexico Environment Department (NMED) Underground Storage Tank Bureau (USTB) to perform a MSA at the site. AEE submitted a workplan dated April 28, 1998 and an amended workplan dated June 25, 1998 outlining the scope of services to be performed for the project. NMED-USTB approved the scope of work and budget in correspondence dated June 1, 1998 and amended on June 28, 1998. The purpose of the investigation was to perform a subsurface investigation in soils and groundwater underlying the three underground storage tank (UST) excavations located at the facility. NMED-USTB requested this additional information for completing a MSA for this facility.

During the field investigation, an AEE geologist supervised the drilling of three soil borings that were competed as monitor wells. Soil samples were obtained from the borings and water samples were obtained from the newly installed wells. In addition, water samples were collected from two previously installed monitor wells. The work performed during the project is summarized below.

Three soil borings/monitor wells (AEE-1, AEE-2 and AEE-3) were completed in the vicinity of the UST excavations. Total Petroleum Hydrocarbon (TPH) concentrations for gasoline range detected 67 mg/kg from a soil sample collected from AEE-1 through the center of the former tank hold located south of the fueling island area at 16 feet below ground surface (bgs). Laboratory results from a soil sample collected from AEE-3, which was drilled through the UST excavation north of the fueling island area indicated 550 mg/kg at 10 feet bgs, and benzene, toluene, ethylbenzene and total xylene (BTEX) concentrations totaled 90.9 mg/kg at the same depth. All other soil samples submitted for laboratory testing were below NMED-USTB standards or non-detectable for TPH and BTEX concentrations.

Groundwater samples were obtained from the newly installed monitor wells AEE-1, AEE-2, AEE-3 and existing monitor wells MW-8 and PF-3. Laboratory analyses for benzene concentrations that were above the New Mexico Water Quality Control commission (NMWQCC) standards included 2,700 ug/L in AEE-1, 130 ug/L in AEE-2 880 ug/L in AEE-3, and 13 ug/L in MW-8. The benzene concentration was 5.84 ug/L in PF-3. Concentration levels reported for methyl tertiary butyl ether (MTBE) in water samples from AEE-1, AEE-3 and MW-8 exceeded the New Mexico Underground Storage Tank Regulations (NMUSTR) standards set at 100 ug/L.

Depth to groundwater in the vicinity of the site ranged from 16.10 feet bgs in monitor well AEE-1 to 17.77 feet bgs in monitor well PF-3. A groundwater flow direction was not calculated for this investigation as AEE believes that the groundwater levels measured may not indicate a static groundwater elevation. Earlier reports indicate a groundwater flow direction to the east.

II. REGIONAL GEOLOGY AND HYDROLOGY

The Pino's Gas and Liquors site is located at 701 Grand Avenue in Las Vegas, New Mexico. Soils underlying the site consists of Quaternary alluvium, predominantly clays, derived from the Cretaceous Graneros Shale which is present in the shallow subsurface in the Las Vegas, New Mexico area. At depths approximately 22 to 24 feet bgs, weathered Graneros Shale was encountered in the exploratory soil borings. As indicated in the boring logs, shallow groundwater was encountered where the weathered shale is in contact with overlying soils.

There are numerous groundwater monitor wells installed in the site vicinity. These monitor wells were completed as part of previous subsurface site investigations for leaking UST sites that are located in the general vicinity. This subsurface investigation evaluated groundwater conditions in two (2) previously installed wells and three (3) monitor wells that were completed as part of this investigation. Groundwater levels range from 16.10 feet bgs to 17.77 feet bgs. Groundwater flow direction from the previous investigations indicated a flow direction to the east with an undetermined gradient.

III. UST SYSTEM INFORMATION:

A. Contaminant information

1. Number of tanks/size/substances stored:
   a. 4-USTs including 2,000, 3,000 6,000 and 500 gallon tanks were discovered during the UST removal on November 21, 1997.
2. Past and current use of site: Filling station/garage 3. Date of release: Unknown
4. Cause of release: Holes and corrosion noted from tank removal
5. Substance(s) released/estimated (gallons) amount released:
   a. Unknown
   b. _____
   c. _____

B. Previous reports:

1. Verbal notification of the release (24-Hour Report):
   a. Date: November 21, 1997 b. Caller name and affiliation: Mr. Adrian Jaramillo was on-site for the UST removal and observed evidence of the release.
   c. USTB Recipient of call: Mr. Adrian Jaramillo
2. 72-Hour Report called in:
   a. Date: Unknown
   b. Caller name and affiliation: Unknown _____
   c. USTB Recipient of call: Unknown
3. 7-Day Report
   a. Date submitted: Unknown
   b. Name and affiliation: _____
4. 30-Day Verbal Report
   a. Date: Unknown
   b. Caller name and affiliation: _____
   c. USTB Recipient of call: Unknown

IV. ON-SITE INVESTIGATION:

A. Risk assessment (refer to figures if applicable)

1. Identification of underground utilities: (Figure 1)
   a. Is there potential for vapor accumulation or explosion?
      _____ YES or ___X___ NO
      IF YES, please comment briefly: _____
   b. Is there potential for preferential migration of the contaminant associated with the utility corridors?
      _____ YES or ___X___ NO

IF YES, please comment briefly:_____

_____

2. Identification of surface water courses within ½ mile: (Figure 2)
   7-Day Report information was not available
3. Identification of public and private wells (Figure 2, Table 1)
   7 Day Report information was not available
4. Are there any sensitive receptors? Unknown
   _____ YES or _____ NO
   IF YES, please comment briefly: 7 Day Report was not available

B. Soil contamination (Figure 3, Table 2, Appendix 2)
1. Were highly contaminated soils encountered?
   _____ YES or ___X___ NO
   IF YES, have any abatement measures been taken?
   _____ YES or _____ NO
2. Has the horizontal extent of soil contamination been defined?
   _____ YES or ___X___ NO
   IF NO,
   a. Does soil contamination extend off-site?
      Possibly YES or _____ NO
   b. Was a variance granted from defining soil contamination in any specific direction?
      _____ YES or ___X___ NO
   IF YES, date of letter granting the variance:_____

   _____
   signed by USTB Project Manager_____

   _____
3. Was the vertical extent of soil contamination determined?
   ___X___ YES or _____ NO
   IF YES, maximum depth 17 (feet)
   IF NO, was a variance granted from defining the vertical extent of soil contamination?
   _____ YES or _____ NO
   IF YES, date of letter granting the variance:_____

   _____
   signed by USTB Project Manager_____
4. Is there 50 feet of vertical separation between soil (above NM USTR standards) and groundwater?
   _____ YES or ___X___ NO

C. Groundwater impact (Figure 4, Table 3, Appendix 3)
1. Depth to groundwater?___16 - 17___ feet below ground surface
   How was this determined?
   ___X___ FIELD or _____ WELL RECORD SEARCH
2. Is the aquifer,
   _____ CONFINED or ___X___ UNCONFINED

3. Type of aquifer in,
   __X__a. Alluvium
   _____b. Cobble/gravel (Will special drilling techniques be required?)
   _____ YES or ____X____ NO
   _____c. Bedrock (Will special drilling techniques be required?)
   _____ YES or ____X____ NO
4. Geologic Formation name:_____Qal_____
5. Is ground water contaminated?
   ____X____ YES or _____ NO
   IF YES, indicate appropriate answer below
   _____a. Below NM WQCC and NM USTR standards
   __X__b. Above NM WQCC and NM USTR standards
   __X__c. Greater than 10 times NM WQCC and NM USTR standards
6. Was free product observed in any of the wells?
   _____ YES or ____X____ NO
   IF YES,
   a. How was free product detected?_____
   _____
   b. Include Table 5--well numbers and corresponding free product thickness
   c. Have any abatement measures been taken?
   _____ YES or ____X____ NO
   IF YES, include summary of free product recovery in Table 5.
7. Water quality:
   a. TDS_____Unknown_____mg/l or ppm
   b. pH____Not measured_____
   c. Dissolved Oxygen__Not Measured_____mg/l or ppm
8. Ground water flow direction___East___ (quadrant) and gradient__undetermined__ feet/foot (Figure 3)

Provide a discussion of how the above information was calculated in Appendix 4.

D. Is the Minimum Site Assessment complete pursuant to NM USTR § 1508? ____X____ YES or _____ NO
   IF NO, list deficiencies_____

V. FIELD INVESTIGATION

Previous Work

NMED-USTB provided analytical data of groundwater analyses reported by Daniel B. Stephens & Associates, Inc. that were prepared to evaluate the Ross Texaco UST site located east of the Pino's Gas and Liquors facility. In addition, Glorieta Geoscience, Inc. and Sierra Environmental, Inc. also prepared soil boring logs, well completion data, surface elevation and groundwater elevation data for monitor wells completed at the Pino's Gas and Liquors facility and on adjacent properties.

A historic summary of water sampling data including laboratory results is not included as part of this evaluation.

Site Investigation

The investigation performed by AEE on 29 June, 1998, consisted of drilling three (3) exploratory soil borings at the locations of the former UST excavations. All three soil borings were completed as groundwater monitor wells. Soil boring AEE-1 tested a former tank hold excavation that contained two USTs of unknown volume (the NMED-USTB Inspection Report does not detail volumes or contents for the excavated USTs) and is located south of the facility building. Soil boring AEE-2 was drilled in an excavated tank hold that was located north of the pump island area. Soil boring AEE-3 was drilled in a third tank hold location located northwest of the Pino's facility and adjacent to the Mexican Kitchen. That tank hold contained one UST, again of unknown volume and content. The location of the soil borings/monitor wells are shown in Figure 1.

Investigation Procedures

SHIB, Inc. was subcontracted to perform the drilling and monitor well installations. The drill rig and hollow stem augers were steam cleaned prior to use on-site. In addition, samplers were decontaminated with a cleaning reagent and two clean water rinses between sampling intervals, while used augers were steam cleaned between borings.

A MSA Photon photoionization detector (PID) calibrated to 100 ppm isobutylene, was used to qualitatively detect the presence of volatiles which may be related to potential petroleum hydrocarbon contamination. Samples were collected and measured using "field headspace" tests.

To conduct field headspace tests, soil samples were collected in glass jars, sealed with aluminum foil, and appropriately warmed for a minimum of 10 minutes, pursuant to standard AEE and NMED field screening protocol. Readings were obtained by puncturing the foil seal with the PID probe and field-screening the headspace gases. Results of field screening tests performed on selected soil samples are shown on the exploratory logs presented in Appendix A.

All drilling and sampling was completed in accordance with our standard Quality Assurance/Quality Control (QA/QC) procedures. These procedures have been designed to ensure that sampling is performed in a manner to minimize cross-contamination between samples and to collect represen-

tative samples that provide reliable, reproducible laboratory results. A copy of AEE's Health & Safety Plan is presented in Appendix D.

Groundwater Monitor Wells

Groundwater monitor wells consisted of 2-inch diameter, flush-joint, threaded PVC riser pipe and 15 feet of factory slotted 0.01-inch screen. The annular space was filled with silica sand (graded to match screen slot size) with a 10-20 gradation to about 4 feet above the screen, followed by a bentonite pellet plug (5 feet thick) above the sand pack. The remainder of the annular space was backfilled with a cement/bentonite slurry to the ground surface. The screened interval intersected the top of the water table and provided for seasonal fluctuations of water levels. Protective casings flush with the ground surface were installed to prevent potential damage or tampering with the finished monitor wells. Monitor well completion diagrams are presented in Appendix B.

After well development and prior to subsequent water quality sampling, water depths were measured to the nearest one-hundredth (0.01) foot at the top of the casing on the north side of the monitor well. The reference point elevations were surveyed by AEE field personnel. The known elevation of MW-8 was used as a reference point during the survey. A summary of groundwater measurements and elevations are shown in Table 1.

Soil and Groundwater Sampling Procedures

Six (6) soil samples from borings AEE-1, AEE-2 and AEE-3 were collected and submitted to AGRA's Portland Analytical Laboratory (PAL) for chemical analysis. The selected soil samples were analyzed for gasoline range total petroleum hydrocarbons (TPH) in accordance with EPA Method 8015 modified and for aromatic volatile organics by EPA Method 8021. Methanol extraction sampling procedures in accordance with the current New Mexico Environment Department - Underground Storage Tank Bureau's "UST Soil/Water Sampling & Disposal Guidelines" revised April, 1995 were utilized to collect samples to be analyzed by EPA Method 8021.

Five (5) groundwater samples collected from existing monitor wells (PF-3 and MW-8) and the newly installed monitor wells (AEE-1, AEE-2 and AEE-3) were submitted to PAL for chemical analysis by EPA methods listed below. Each groundwater sample was collected, containerized, and preserved according to standard laboratory protocol.

Water samples were analyzed for volatile organic compounds (VOCs) by GC/MSD utilizing modified EPA Methods 8260B. Target analytes for the VOCs included benzene, toluene, ethyl benzene, total xylenes (BTEX), methyl tertiary butyl ether (MTBE), 1,2 dichloroethane (EDC) and 1,2 dibromoethane (EDB).

Immediately after sampling, soil and groundwater samples were placed in a cooler to maintain a temperature of approximately four (4) degrees Celsius, and were then shipped by AEE personnel to PAL. Copies of the chain-of-custodies and chemical analyses for soil and groundwater samples are provided in with the laboratory reports in Appendix C.

VI. SITE GEOLOGY AND HYDROGEOLOGY

Soil stratigraphy encountered during drilling consisted of low to medium plasticity sandy clays. The sandy clay units were encountered at the surface to approximately 16 feet bgs and are described as grayish brown with orange and rust colored iron staining. From 16 to approximately 22 feet bgs, drilling penetrated gray clay lithologic units that contained gravelly fragments composed of shale. Field headspace analyses indicated that the soil beneath the noted depth for the excavation backfill for AEE-1 and AEE-3 at 15 and 10 feet bgs respectively, contained 1,100 and 1,800 parts per million (ppm).

Groundwater was reported at depths ranging from 16.10 to 17.77 feet bgs. Table 1 summarizes the ground water elevation data. The groundwater elevations were not contoured because the collected water levels did not correspond with historic water levels and flow directions as provided by the NMED-USTB. Previous investigations (Glorieta Geoscience, Inc. dated July, 1993) indicated that groundwater flow is in an eastward direction with an undetermined gradient. AEE believes that the groundwater levels in the newly installed wells were measured before the water levels stabilized and are not representative of the potentiometric surface for the shallow ground water underlying this facility. Figure 2 shows the groundwater elevation information, for each well measured at the site.

VII. SOIL AND GROUNDWATER GEOCHEMICAL ANALYSES AND RESULTS

Soils

Field headspace sampling results indicated intervals in soil borings AEE-1 at 15 feet bgs, and in AEE-3 from 10 to 15 feet bgs which contained PID measurements that exceeded the USTR Section 1209 standard of 100 parts per million (ppm). AEE-1 and AEE-2 contained samples with PID measurements of 120 and 105 ppm respectively at depths below the water table. All other soil samples taken indicated PID measurements that were below 100 ppm. A summary of the field screening results are presented in Table 2.

Selected soil samples were also collected for chemical analysis. Samples were properly labeled, packed in a cooler and shipped to PAL. The samples were tested for TPH by EPA Method 8015 and for BTEX by EPA Method 8021B. TPH concentrations from AEE-1 that tested the excavated area south of the facility building measured 67 mg/kg for gasoline range hydrocarbons at 16 feet bgs. Laboratory results from a soil sample collected from AEE-3 that tested the UST excavation north of the fueling island area indicated 550 mg/kg at 10 feet bgs, and benzene, toluene, ethylbenzene and total xylene (BTEX) concentrations totaled 90.9 mg/kg at the same depth. All other soil samples submitted for laboratory testing were below NMED-USTB standards or non-detectable for TPH and BTEX concentrations. The laboratory reports are presented in Appendix C, and a summary of analytical testing results for soil is shown in Table 3.

Groundwater

Groundwater samples were obtained from newly installed monitor wells AEE-1, AEE-2, AEE-3 and existing monitor wells MW-8 and PF-3. Laboratory analyses for benzene concentrations that were above the New Mexico Water Quality Control commission (NMWQCC) reported

2,700 ug/L in AEE-1, 130 ug/L in AEE-2 880 ug/L in AEE-3, and 13 ug/L in MW-8. The benzene concentration was 5.84 ug/L in PF-3. Analytical results for monitor wells AEE-1, AEE-2 and AEE-3 indicated concentration levels for toluene, ethylbenzene, and total xylenes that also exceeded the NMWQCC standards. Concentration levels reported 520 ug/L, 243 ug/L and 680 ug/L for methyl tertiary butyl ether (MTBE) in water samples from AEE-1, AEE-3 and MW-8, respectively, which exceeded the New Mexico Underground Storage Tank Regulations (NMUSTR) standards set as 100 ug/L. Naphthalene concentrations reported 487 ug/L, 176 ug/L, and 1,300 ug/L from AEE-1, AEE-2 and AEE-3, respectively, and those results exceeded the NMWQCC standards of 30 ug/L.

A contaminant concentration map is presented as Figure 3. Table 4 summarizes the laboratory testing results for groundwater.

VIII. CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER STUDY

- A release of gasoline impacted soil and groundwater in the former UST pits tested by AEE-1 and AEE-3 as evidenced by detected TPH concentration for gasoline range that measured 67 ug/L and 550 mg/kg, and by detected BTEX and MTBE in groundwater.

- A release of diesel or waste oil is indicated by the naphthalene concentrations in groundwater underlying the facility, especially for the area underlying AEE-3 where laboratory analyses indicated naphthalene concentrations of 1,300 ug/L.

- Contaminant concentration levels for benzene, toluene, ethylbenzene, total xylenes, MTBE and naphthalene were reported for the newly completed wells and MTBE analyses exceeded regulatory standards in MW-8. The lateral limits of contaminated soil and groundwater have not been determined and the presence of multiple sources for contaminants in the site vicinity may not allow for definition of horizontal extent of petroleum hydrocarbon contamination.

- The on-site extent of contamination in soil and in groundwater beneath the facility was determined and a Minimum Site Assessment (MSA) for this facility has been completed pursuant to NMUSTR 20 NMAC 5.1205 and 5.1206.

At this time, AEE recommends that a comprehensive ground water sampling program be implemented to assist in determining contaminant concentrations for BTEX, MTBE and polynuclear aromatic hydrocarbons for all on-site monitor wells.

TABLE 1
Summary of Groundwater Elevations

Monitor Well	Top of Casing Elevation (Ft)	Depth to Water (Ft)	Groundwater Elevation (Ft)
AEE-1	6410.35	16.98	6393.37
AEE-2	6411.31	17.31	6394.00
AEE-3	6411.93	17.01	6394.92
MW-8	6410.76	16.10	6394.66
PF-3	6411.78	17.77	6394.01

Note: Groundwater levels were measured on June 29, 1998
Elevations are referenced to mean sea level. Elevations provided by others for monitor well MW-8 were assumed as a datum for the remainder of the wells measured.

TABLE 2
Summary of Field Screening

	Headspace Reading (ppm) Sample Depth (Ft)			
Boring No.	5	10	15	20
AEE-1	ND	ND	1100	120
AEE-2	ND	2.2	79	105
AEE-3	ND	1800	1500	78

Note: A MSA photoionization detector (PID) calibrated to 100 ppm isobutylene was used to perform the testing.
Shaded values shown exceed NMED-USTB standards of 100 ppm.

TABLE 3
Summary of Analytical Testing Results - Soils[1]
Concentrations in mg/kg (ppm)

Sample No.	Depth (Ft)	Benzene	Toluene	Ethyl benzene	Xylenes	TPH Gasoline
AEE-1 16	14-16	ND[2]	0.99	2.1	12	67[3]
AEE-1 19	19-21	ND	0.93	0.39	1.5	26
AEE-2 16	14-16	ND	ND	0.09	0.30	ND
AEE-2 20	19-21	ND	ND	0.10	ND	6.1
AEE-3 10	9-11	ND	ND	9.8	81	550
AEE-3 16	14-16	ND	ND	0.57	1.9	19
NMED-USTB		10				50

Note:

(1) Samples were obtained on June 29, 1998 and analyzed by EPA Method 8021B and 8015 Modified for gasoline range. Reports of test results provided by the analytical laboratory are presented in Appendix C.

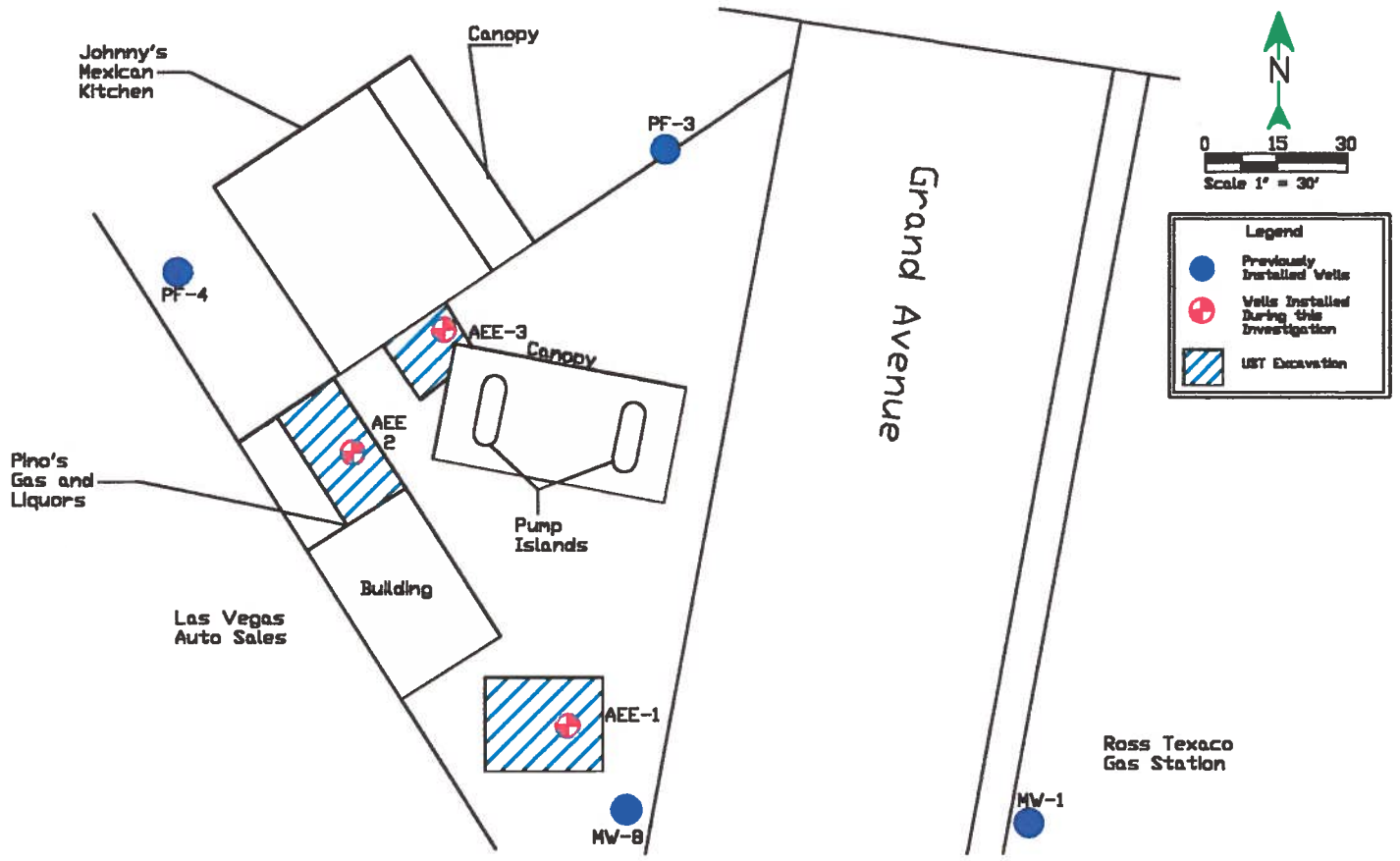
(2) Non-detected

(3) Shaded values shown exceed NMED-USTB standards.

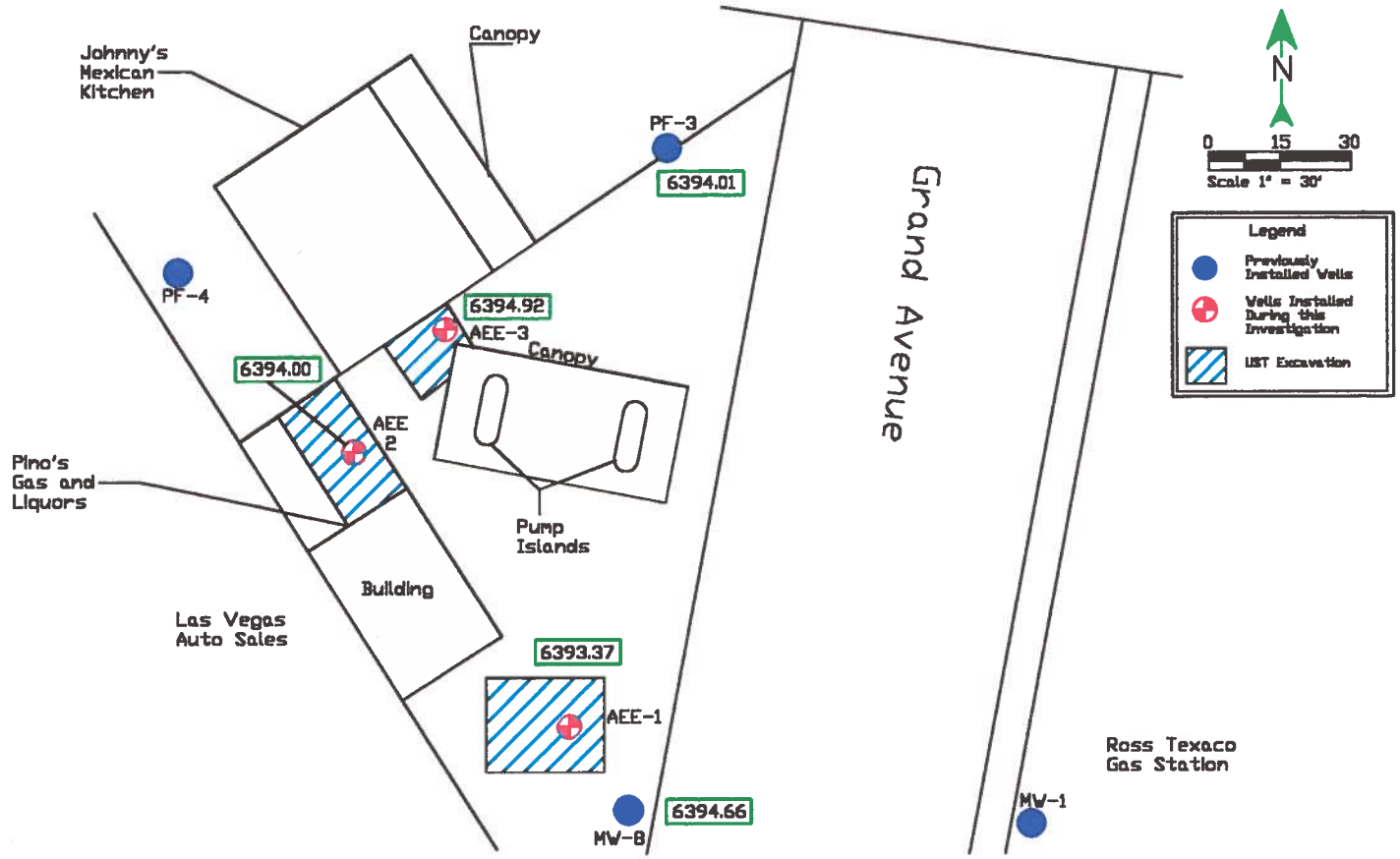
TABLE 4
Summary of Analytical Testing Results - Water[11]
Concentrations in ug/L (ppb)

Well No.	B[1] (ppb)	T[3] (ppb)	E[3] (ppb)	X[4] (ppb)	MTBE[5] (ppb)	EDB[6] (ppb)	EDC[7] (ppb)	NAP[8] (ppb)
AEE-1	2,700[12]	23,000	3,000	11,800	520	ND[9]	ND	487
AEE-2	130	62	1,400	2,240	18	ND	ND	176
AEE-3	880	5,300	3,700	14,400	243	ND	ND	1,300
MW-8	13	2.8	<5.0	<15	680	ND	ND	<125
PF-3	5.84	ND	1.84	2.43	25.1	ND	ND	ND
NMWQCCR[10]	10	750	750	620	100	0.1	10	30

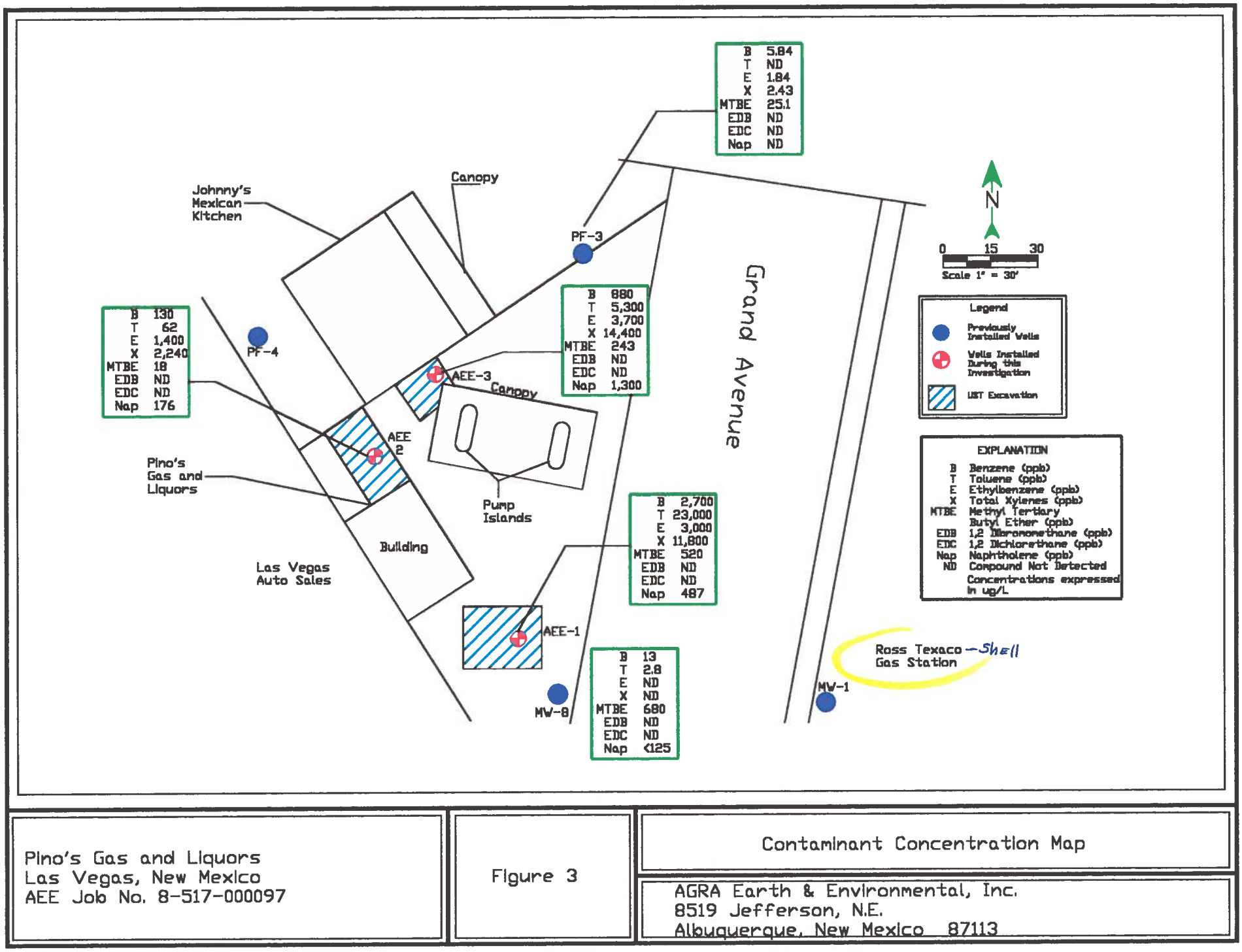
Notes:
(1) Benzene
(2) Toluene
(3) Ethyl benzene
(4) Total xylenes
(5) Methyl tert butyl ether (MTBE)
(6) 1,2 dibromoethane (EDB)
(7) 1,2 dichloroethane (EDC)
(8) Total naphthalenes
(9) Non detected
(10) NMWQCC-New Mexico Water Quality Control Commission
(11) Samples were obtained on June 30, 1998 and analyzed by EPA Method 8260B. Reports of test results provided by the analytical laboratory are presented in Appendix C.
(12) Shaded values shown exceed NMED-USTB and NMWQCCR standards.



Pino's Gas and Liquors Las Vegas, New Mexico AEE Job No. 8-517-000097	Figure 1	Site Plan
		AGRA Earth & Environmental, Inc. 8519 Jefferson, N.E. Albuquerque, New Mexico 87113



Pino's Gas and Liquors Las Vegas, New Mexico AEE Job No. 8-517-000097	Figure 2	Ground Water Elevations
		AGRA Earth & Environmental, Inc. 8519 Jefferson, N.E. Albuquerque, New Mexico 87113



Pino's Gas and Liquors
Las Vegas, New Mexico
AEE Job No. 8-517-000097

Figure 3

Contaminant Concentration Map

AGRA Earth & Environmental, Inc.
8519 Jefferson, N.E.
Albuquerque, New Mexico 87113

APPENDIX A

BORING LOGS

PROJECT Pino's Gas and Liquors
Las Vegas, New Mexico

JOB NO. 8-517-000097 **DATE** 6/29/98

LOG OF TEST BORING NO. AEE-1

LOCATION
RIG TYPE CME-55
BORING TYPE 4.5" HSA
SURFACE ELEV. 6410.35
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/6-in. 140 lb. 30" free-fall drop hammer	Downhole LEL/PID	Headspace PID (ppm)	Unified Soil Classification	ANALYTICAL SAMPLE NUMBER	VISUAL CLASSIFICATION
0								CL		**CLAY**, grayish-brown with orange/reddish iron staining, moist, slightly plastic, no odor
				S	14		ND			
5										
				S	17		ND			
10										
15				S	18		1100	CL	AEE 1-16	**CLAY**, gray with numerous gray shale fragments, moist, slightly plastic, strong hydrocarbon odor
▽										
				S	32		120		AEE 1-19	
20										
25										Stopped auger @ 24' Stopped sampler @ 21'

ENV BH NO WELL 8517-097.GPJ AGRA_ALB.GDT 8/21/98

GROUNDWATER

	DEPTH	HOUR	DATE
▽	17.0	12:45	5/29/98
▼			

SAMPLE TYPE
A-ANALYTICAL SAMPLE
S-STRATIGRAPHIC SAMPLE

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ENGINEERING GLOBAL SOLUTIONS

PROJECT Pino's Gas and Liquors
Las Vegas, New Mexico

JOB NO. 8-517-000097 **DATE** 6/29/98

LOG OF TEST BORING NO. AEE-2

LOCATION
RIG TYPE CME-55
BORING TYPE 4.5" HSA
SURFACE ELEV. 6411.31
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/6-in. 140 lb. 30" free-fall drop hammer	Downhole LEL/PID	Headspace PID (ppm)	Unified Soil Classification	ANALYTICAL SAMPLE NUMBER	VISUAL CLASSIFICATION
0								CL		FILL: **CLAY**, dark brown, with gravel, slightly sandy, moist
5				S			ND			
10				S	11		2.2	CL		**CLAY**, grayish brown with orange, reddish iron staining, moist, slightly plastic, no odor
15				S	15		79		AEE 2-16	
▽								SED		**SHALE**, dark gray, weathered, fractured, moist, slight odor
20				S	19		105		AEE 2-20	Hard @ 22.5'
25										Stopped auger @ 23' Stopped sampler @ 21'

ENV BH NO WELL 8517-097.GPJ AGRA_ALB.GDT 8/21/98

GROUNDWATER

	DEPTH	HOUR	DATE
▽	17.3	12:55	5/29/98
▼			

SAMPLE TYPE
A-ANALYTICAL SAMPLE
S-STRATIGRAPHIC SAMPLE

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

PROJECT Pino's Gas and Liquors
Las Vegas, New Mexico

JOB NO. 8-517-000097 **DATE** 6/29/98

LOG OF TEST BORING NO. AEE-3

LOCATION
RIG TYPE CME-55
BORING TYPE 4.5" HSA
SURFACE ELEV. 6411.93
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows/6-in. 140 lb. 30" free-fall drop hammer	Downhole LEL/PID	Headspace PID (ppm)	Unified Soil Classification	ANALYTICAL SAMPLE NUMBER	VISUAL CLASSIFICATION
0								CL		FILL: **CLAY**, sandy, silty, slightly gravelly, brown, slightly moist, low plasticity, strong hydrocarbon odor @ 10'
				S	6		ND			
5										
				S	7		1800		AEE 3-10	
10										
								CL		**CLAY**, grayish brown with orange, reddish iron staining, moist, slightly plastic, strong hydrocarbon odor
				S	21		1500			
15									AEE 3-16	
▽								CL		**CLAY**, gray with weathered shale fragments, moist, slightly plastic, strong hydrocarbon odor
				S	32		78			
20										Hard @ 21.5'
										Stopped auger @ 22' Stopped sampler @ 21'
25										

ENV BH NO WELL 8517-097.GPJ AGRA_ALB.GDT 8/21/98

GROUNDWATER

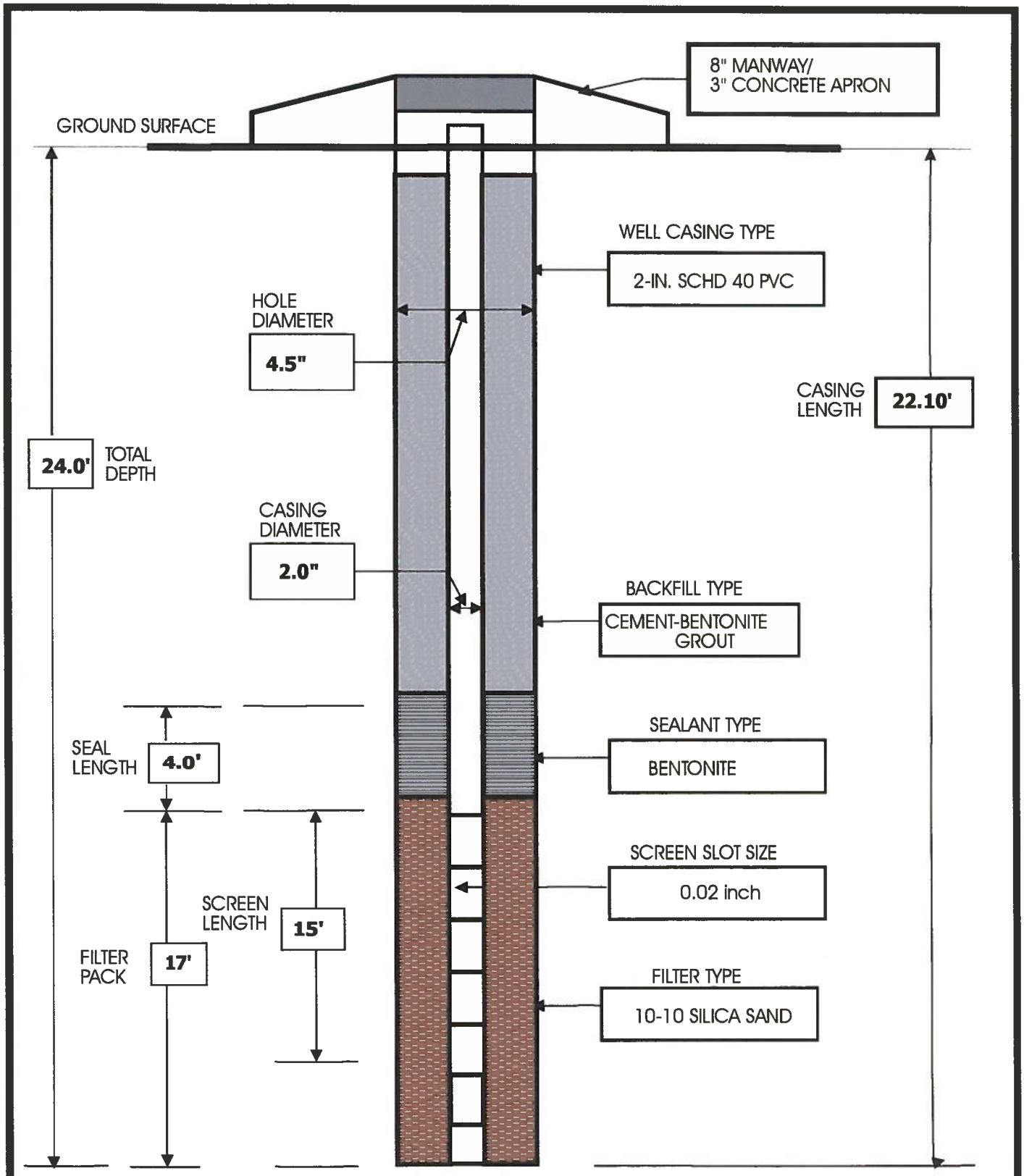
	DEPTH	HOUR	DATE
▽	17.0	1:15	6/24/98
▼			

SAMPLE TYPE
A-ANALYTICAL SAMPLE
S-STRATIGRAPHIC SAMPLE

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

APPENDIX B

MONITOR WELL COMPLETION DIAGRAMS

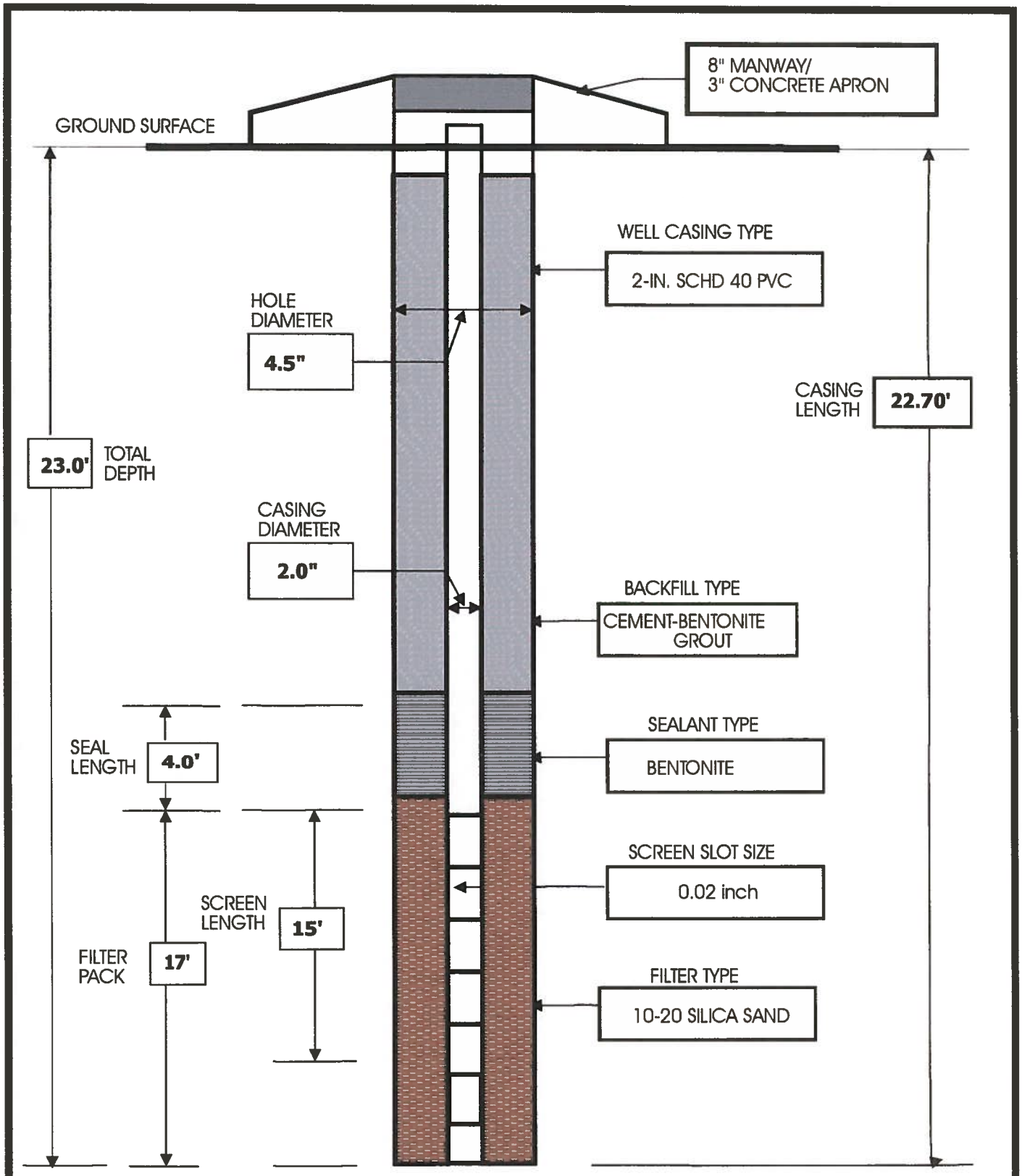


AGRA
EARTH & ENVIRONMENTAL
8519 JEFFERSON, N.E
ALBUQUERQUE, NM 87113

WELL NO. AEE-1
DATE INSTALL 6/29/98
GW DEPTH 16.98'
Job No. 8-517-000097

WELL COMPLETION LOG

PINO'S GAS AND LIQUORS
LAS VEGAS, NEW MEXICO

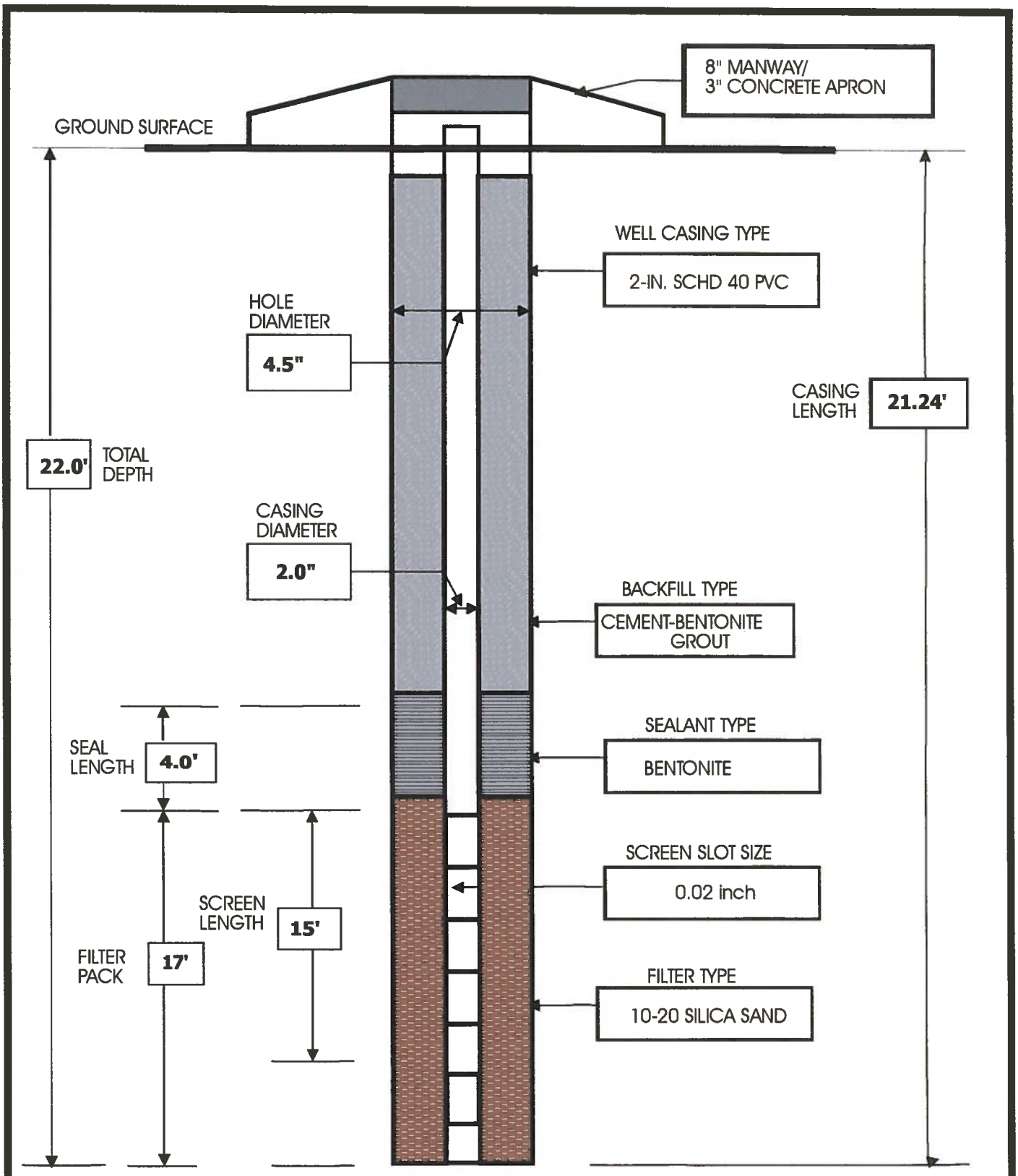


AGRA
EARTH & ENVIRONMENTAL
8519 JEFFERSON, N.E
ALBUQUERQUE, NM 87113

WELL NO. AEE-2
DATE INSTALL 6/29/98
GW DEPTH 17.31'
Job No. 8-517-000097

WELL COMPLETION LOG

PINO'S GAS AND LIQUORS
LAS VEGAS, NEW MEXICO



AGRA
EARTH & ENVIRONMENTAL
8519 JEFFERSON, N.E
ALBUQUERQUE, NM 87113

WELL NO. AEE-3
DATE INSTALL 6/29/98
GW DEPTH 17.01'
Job No. 8-517-000097

WELL COMPLETION LOG

PINO'S GAS AND LIQUORS
LAS VEGAS, NEW MEXICO

APPENDIX C

LABORATORY REPORTS

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

AGRA Earth & Environmental, Inc.
7477 SW Tech Center Drive
Portland, Oregon
USA 97223-8025
Tel (503) 639-3400
Fax (503) 620-7892

July 16, 1998

AGRA Earth & Environmental
8519 Jefferson NE
Albuquerque, NM 87113

Attention: Mr. Bob Wilcox

Dear Mr. Wilcox:

RE: Analytical Results For Project 8517-000097

Attached are the results for the samples submitted on July 6, 1998 from the above referenced project. For your reference, our project number associated with these samples is NM980374.

The samples were analyzed for volatile organic compounds by GC/MSD, and gasoline range petroleum hydrocarbons & BTEX & MTBE at the AGRA Earth & Environmental Portland Chemistry Laboratory.

All analyses were conducted in accordance with applicable QA/QC guidelines. The results apply only to the samples submitted.

Please feel free to contact me if you have any questions regarding this report, or if I can be of any assistance in any other matter.

Respectfully submitted,

AGRA Earth & Environmental

Sean Gormley
Laboratory Manager

Project: Pino's Gas & Liquor's
Project No.: 8517-000097
Project Manager: Bob Wilcox
Sample Matrix: Soil

Service Request No.: NM980374
Report Date: 7/13/98
Report No.: 98037403
C.O.C. No.: 1524

Gasoline Range Petroleum Hydrocarbons & BTEX & MTBE
EPA Methods 5030/8021B/8015B
mg/kg(ppm)

Sample Name:	(a) AEE-1 16'	(b) AEE-1 19'	AEE-2 16'	AEE-2 20'	(c) AEE-3 10'	AEE-3 16'	Lab Blank	**Method Reporting Limit**
Lab Code:	0374-1	0374-2	0374-3	0374-4	0374-5	0374-6	0374-MB	
Gasoline:	67	26	ND	6.1	550	19	ND	5.0
Benzene:	ND	ND	ND	ND	ND	ND	ND	0.05
Toluene:	0.99	0.93	ND	ND	ND	ND	ND	0.05
Ethylbenzene:	2.1	0.39	0.09	0.10	9.8	0.57	ND	0.05
Total Xylenes:	12	1.5	0.30	ND	81	1.9	ND	0.15
MTBE:	ND	ND	ND	ND	ND	0.083	ND	0.05
Sample Date:	6/29/98	6/29/98	6/29/98	6/29/98	6/29/98	6/29/98	7/8/98	
Analysis Date:	7/10/98	7/10/98	7/10/98	7/10/98	7/10/98	7/10/98	7/9/98	**AEE Acceptance Limits**
Surrogate Recovery: (a,a,a-Trifluorotoluene):								
Gasoline Analysis(FID):	(d)	(d)	61%(e)	92%	(d)	61%(e)	86%	70%-136%
BTEX Analysis(PID):	(d)	(d)	54%(e)	52%(e)	(d)	48%(e)	72%	70%-135%

ND Not Detected
(a) Results are from 1:10 dilution.
(b) Results are from 1:2 dilution.
(c) Results are from 1:25 dilution.
(d) Not applicable because the analysis of the sample required a dilution that reduced the surrogate concentration below the analytical detection limit.
(e) Outside of acceptance limits. Since the samples were field preserved, no corrective action is possible.

Signature of Chemist

QA/QC Review

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

Project: Pino's Gas & Liquor's
Project No.: 8517-000097
Project Manager: Bob Wilcox
Sample Matrix: Soil

Service Request No.: NM980374
Report Date: 7/13/98
Report No.: 98037404
C.O.C. No.: 1524

QC Data Report
Blank Spike Recoveries
Gasoline Range Petroleum Hydrocarbons & BTEX & MTBE
EPA Methods 5030/8021B/8015B
mg/kg(ppm)

Sample Name: / **Lab Code:**	Lab Blank 0374-MB	Spike Level (mg/kg)	Blank Spike (BS)	Percent Recovery (BS)	Blank Spike Duplicate (BSD)	Percent Recovery (BSD)	Relative Percent Difference	AEE Acceptance Limits
Gasoline:	<5.0	25	21	84	21	84	<1	72%-107%
Benzene:	<0.05	1.0	0.99	95	1.0	100	5	70%-130%
Toluene:	<0.05	1.0	1.0	100	1.0	100	<1	73%-127%
Ethylbenzene:	<0.05	1.0	1.0	100	1.0	100	<1	73%-129%
Total Xylenes:	<0.15	3.0	3.2	107	3.2	107	1	80%-131%
MTBE:	0.05	1.0	0.94	94	0.95	95	1	70%-130%
Sample Date:	7/8/98	~	7/8/98	~	7/8/98	~	~	
Extraction Date:	7/8/98	~	7/8/98	~	7/8/98	~	~	
Analysis Date:	7/9/98	~	7/9/98	~	7/9/98	~	**AEE Acceptance Limits**	
Surrogate Recovery (a,a,a-Trifluorotoluene):								
Gasoline Analysis(FID):	83%	~	88%	~	87%	~	77% - 146%	
BTEX Analysis(PID):	72%	~	79%	~	81%	~	68% - 125%	

ND Not Detected
Spike Source: Ultra Scientific RGO-601, Lot # K-1364.
Spike Source: Accustandard, Lot # A7060438.

Signature of Chemist

QA/QC Review

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

Project: Pino's Gas & Liquor's
Project No.: 8517-000097
Project Manager: Bob Wilcox
Sample Matrix: Water

Service Request No.: NM980374
Report Date: 7/9/98
Report No.: 98037401a
C.O.C. No.: 1524

Volatile Organic Compounds by GC/MSD
EPA Methods 5030B/8260B
µg/L(ppb)

Sample Name:	AEE-1	AEE-2	AEE-3	MW-8 (a)	PF-3	Trip Blank	Reporting
Lab Code:	0374-7	0374-8	0374-9	0374-10	0374-11	0374-12	Limit
Dichlorodifluoromethane	ND	ND	ND	<5.0	ND	ND	1.0
Chloromethane	ND	ND	ND	<5.0	ND	ND	1.0
Vinyl Chloride	ND	ND	ND	<5.0	ND	ND	1.0
Bromomethane	ND	ND	ND	<5.0	ND	ND	1.0
Chloroethane	ND	ND	ND	<5.0	ND	ND	1.0
Trichlorofluoromethane	ND	ND	ND	<5.0	ND	ND	1.0
1,1-Dichloroethene	ND	ND	ND	<5.0	ND	ND	1.0
Acetone	ND	ND	ND	<100	ND	ND	20
Carbon Disulfide	ND	ND	ND	<5.0	ND	ND	1.0
Methylene Chloride	ND	ND	ND	<5.0	ND	ND	1.0
trans-1,2-Dichloroethene	ND	ND	ND	<5.0	ND	ND	1.0
MTBE	520(b)	18(c)	243	680	25.1	ND	1.0
1,1-Dichloroethane	ND	ND	ND	<5.0	ND	ND	1.0
2,2-Dichloropropane	ND	ND	ND	<5.0	ND	ND	1.0
cis-1,2-Dichloroethene	ND	ND	ND	<5.0	ND	ND	1.0
2-Butanone(MEK)	ND	ND	61	<50	ND	ND	10
Bromochloromethane	ND	ND	ND	<5.0	ND	ND	1.0
Chloroform	ND	ND	ND	<5.0	ND	ND	1.0
1,1,1-Trichloroethane	ND	ND	ND	<5.0	ND	ND	1.0
Carbon Tetrachloride	ND	ND	ND	<5.0	ND	ND	1.0
1,1-Dichloropropene	ND	ND	ND	<5.0	ND	ND	1.0
Benzene	2700(b)	130(c)	880(d)	13	5.84	ND	1.0
1,2-Dichloroethane	ND	ND	ND	<5.0	ND	ND	1.0
Trichloroethene	ND	ND	ND	<5.0	ND	ND	1.0
1,2-Dichloropropane	ND	ND	ND	<5.0	ND	ND	1.0
Dibromomethane	ND	ND	ND	<5.0	ND	ND	1.0
Bromodichloromethane	ND	ND	ND	<5.0	ND	ND	1.0
cis-1,3-Dichloropropene	ND	ND	ND	<5.0	ND	ND	1.0
4-Methyl-2-Pentanone(MIBK)	ND	ND	33.9	<50	ND	ND	10
Toluene	23,000(b)	62(c)	5300(d)	2.8J	ND	ND	1.0
trans-1,3-Dichloropropene	ND	ND	ND	<5.0	ND	ND	1.0
1,1,2-Trichloroethane	ND	ND	ND	<5.0	ND	ND	1.0
Tetrachloroethene	ND	ND	ND	<5.0	ND	ND	1.0
2-Hexanone	ND	ND	ND	<50	ND	ND	10
1,3-Dichloropropane	ND	ND	ND	<5.0	ND	ND	1.0
Dibromochloromethane	ND	ND	ND	<25	ND	ND	5.0
1,2-Dibromoethane	ND	ND	ND	<5.0	ND	ND	1.0
Chlorobenzene	ND	ND	ND	<5.0	ND	ND	1.0
1,1,1,2-Tetrachloroethane	ND	ND	ND	<5.0	ND	ND	1.0
Ethylbenzene	3000(b)	1400(c)	3700(d)	<5.0	1.84	ND	1.0
m,p-Xylene	8400(b)	2100(c)	11,000(d)	<10	2.43	ND	2.0
o-Xylene	3400(b)	140(c)	3400(d)	<5.0	ND	ND	1.0
Styrene	ND	ND	ND	<5.0	ND	ND	1.0

ND Not Detected
(a) Results are from a 1:5 dilution. Note elevated reporting limits.
(b) Result is from a 1:100 dilution analyzed on 7/9/98.
(c) Result is from a 1:10 dilution analyzed on 7/9/98.
(d) Result is from a 1:20 dilution analyzed on 7/9/98.
J - Estimated value because the analyte concentration is between the method reporting limit and the detection limit.

Project: Pino's Gas & Liquor's
Project No.: 8517-000097
Project Manager: Bob Wilcox
Sample Matrix: Water

Service Request No.: NM980374
Report Date: 7/9/98
Report No.: 98037401a
C.O.C. No.: 1524

Volatile Organic Compounds by GC/MSD
EPA Methods 5030B/8260B
µg/L(ppb)

Sample Name:	AEE-1	AEE-2	AEE-3	MW-8	PF-3	Trip Blank	**Reporting**
Lab Code:	0374-7	0374-8	0374-9	0374-10	0374-11	0374-12	**Limit**
Bromoform	ND	ND	ND	<5.0	ND	ND	1.0
Isopropylbenzene	73.3	54(c)	107	<5.0	ND	ND	1.0
Bromobenzene	ND	ND	ND	<5.0	ND	ND	1.0
1,1,2,2-Tetrachloroethane	ND	ND	ND	<5.0	ND	ND	1.0
1,2,3-Trichloropropane	ND	ND	ND	<5.0	ND	ND	1.0
n-Propylbenzene	216	180(c)	390(d)	<5.0	ND	ND	1.0
2-Chlorotoluene	ND	ND	ND	<5.0	ND	ND	1.0
4-Chlorotoluene	ND	ND	ND	<5.0	ND	ND	1.0
1,3,5-Trimethylbenzene	370(b)	240(c)	670(d)	<5.0	ND	ND	1.0
tert-Butylbenzene	ND	ND	ND	<5.0	ND	ND	1.0
1,2,4-Trimethylbenzene	1200(b)	830(c)	2600(d)	<5.0	1.74	ND	1.0
sec-Butylbenzene	ND	ND	ND	<5.0	ND	ND	1.0
1,3-Dichlorobenzene	ND	ND	ND	<5.0	ND	ND	1.0
4-Isopropyltoluene	2.64	4.75	6.37	<5.0	ND	ND	1.0
1,4-Dichlorobenzene	ND	ND	ND	<5.0	ND	ND	1.0
1,2-Dichlorobenzene	ND	ND	ND	<5.0	ND	ND	1.0
n-Butylbenzene	ND	ND	ND	<5.0	ND	ND	1.0
1,2-Dibromo-3-Chloropropane	ND	ND	ND	<5.0	ND	ND	1.0
1,2,4-Trichlorobenzene	ND	ND	ND	<125	ND	ND	25
Hexachlorobutadiene	ND	ND	ND	<125	ND	ND	25
Naphthalene	487	176	1300(d)	<125	ND	ND	25
1,2,3-Trichlorobenzene	ND	ND	ND	<125	ND	ND	25
Sample Date:	6/30/98	6/30/98	6/30/98	6/30/98	6/30/98	6/24/98	
Analysis Date:	7/7/98	7/7/98	7/7/98	7/9/98	7/9/98	7/7/98	
Surrogate Recoveries:							**AEE Acceptance Limits**
Dibromofluoromethane:	100%	98%	96%	102%	102%	100%	93%-106%
Toluene-d_8:	92%	98%	98%	99%	98%	96%	92%-105%
4-Bromofluorobenzene:	95%	95%	94%	99%	98%	107%	84%-126%
	(1:100 dilution)	(1:10 dilution)	(1:20 dilution)				
Dibromofluoromethane:	102%	102%	98%				93%-106%
Toluene-d_8:	97%	98%	98%				92%-105%
4-Bromofluorobenzene:	100%	94%	95%				84%-126%

ND Not Detected

Signature of Chemist

QA/QC Review

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

Project: Pino's Gas & Liquor's
Project No.: 8517-000097
Project Manager: Bob Wilcox
Sample Matrix: Water

Service Request No.: NM980374
Report Date: 7/9/98
Report No.: 98037401b
C.O.C. No.: 1524

Volatile Organic Compounds by GC/MSD
EPA Methods 5030B/8260B
µg/L(ppb)

Sample Name:	Lab Blank	Lab Blank	**Reporting**
Lab Code:	0374-MB	0374-MB2	**Limit**
Dichlorodifluoromethane	ND	ND	1.0
Chloromethane	ND	ND	1.0
Vinyl Chloride	ND	ND	1.0
Bromomethane	ND	ND	1.0
Chloroethane	ND	ND	1.0
Trichlorofluoromethane	ND	ND	1.0
1,1-Dichloroethene	ND	ND	1.0
Acetone	ND	ND	20
Carbon Disulfide	ND	ND	1.0
Methylene Chloride	ND	ND	1.0
trans-1,2-Dichloroethene	ND	ND	1.0
MTBE	ND	ND	1.0
1,1-Dichloroethane	ND	ND	1.0
2,2-Dichloropropane	ND	ND	1.0
cis-1,2-Dichloroethene	ND	ND	1.0
2-Butanone(MEK)	ND	ND	10
Bromochloromethane	ND	ND	1.0
Chloroform	ND	ND	1.0
1,1,1-Trichloroethane	ND	ND	1.0
Carbon Tetrachloride	ND	ND	1.0
1,1-Dichloropropene	ND	ND	1.0
Benzene	ND	ND	1.0
1,2-Dichloroethane	ND	ND	1.0
Trichloroethene	ND	ND	1.0
1,2-Dichloropropane	ND	ND	1.0
Dibromomethane	ND	ND	1.0
Bromodichloromethane	ND	ND	1.0
cis-1,3-Dichloropropene	ND	ND	1.0
4-Methyl-2-Pentanone(MIBK)	ND	ND	10
Toluene	ND	ND	1.0
trans-1,3-Dichloropropene	ND	ND	1.0
1,1,2-Trichloroethane	ND	ND	1.0
Tetrachloroethene	ND	ND	1.0
2-Hexanone	ND	ND	10
1,3-Dichloropropane	ND	ND	1.0
Dibromochloromethane	ND	ND	5.0
1,2-Dibromoethane	ND	ND	1.0
Chlorobenzene	ND	ND	1.0
1,1,1,2-Tetrachloroethane	ND	ND	1.0
Ethylbenzene	ND	ND	1.0
m,p-Xylene	ND	ND	2.0
o-Xylene	ND	ND	1.0
Styrene	ND	ND	1.0

ND Not Detected

Project: Pino's Gas & Liquor's
Project No.: 8517-000097
Project Manager: Bob Wilcox
Sample Matrix: Water

Service Request No.: NM980374
Report Date: 7/9/98
Report No.: 98037401b
C.O.C. No.: 1524

Volatile Organic Compounds by GC/MSD
EPA Methods 5030B/8260B
µg/L(ppb)

Sample Name:	Lab Blank	Lab Blank	**Reporting**
Lab Code:	0374-MB	0374-MB2	**Limit**
Bromoform	ND	ND	1.0
Isopropylbenzene	ND	ND	1.0
Bromobenzene	ND	ND	1.0
1,1,2,2-Tetrachloroethane	ND	ND	1.0
1,2,3-Trichloropropane	ND	ND	1.0
n-Propylbenzene	ND	ND	1.0
2-Chlorotoluene	ND	ND	1.0
4-Chlorotoluene	ND	ND	1.0
1,3,5-Trimethylbenzene	ND	ND	1.0
tert-Butylbenzene	ND	ND	1.0
1,2,4-Trimethylbenzene	ND	ND	1.0
sec-Butylbenzene	ND	ND	1.0
1,3-Dichlorobenzene	ND	ND	1.0
4-Isopropyltoluene	ND	ND	1.0
1,4-Dichlorobenzene	ND	ND	1.0
1,2-Dichlorobenzene	ND	ND	1.0
n-Butylbenzene	ND	ND	1.0
1,2-Dibromo-3-Chloropropane	ND	ND	1.0
1,2,4-Trichlorobenzene	ND	ND	25
Hexachlorobutadiene	ND	ND	25
Naphthalene	ND	ND	25
1,2,3-Trichlorobenzene	ND	ND	25
Sample Date:	7/7/98	7/9/98	
Analysis Date:	7/7/98	7/9/98	
Surrogate Recoveries:			**AEE Acceptance Limits**
Dibromofluoromethane:	102%	101%	93%-106%
Toluene-d_8:	98%	100%	92%-105%
4-Bromofluorobenzene:	105%	99%	84%-126%

ND Not Detected

Signature of Chemist

QA/QC Review

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

Project: Pino's Gas & Liquor's
Project No.: 8517-000097
Project Manager: Bob Wilcox
Sample Matrix: Water

Service Request No.: NM980374
Report Date: 7/9/98
Report No.: 98037402
C.O.C.: 1524

QC Data Report
MS/MSD Summary
Volatile Organic Compounds by GC/MSD
EPA Methods 5030B/8260B
µg/L(ppb)

Sample Name: / **Lab Code:**	Batch QC 0369-1	Spike Level (µg/L)	Matrix Spike	Percent Recovery (MS)	Matrix Spike Duplicate	Percent Recovery (MSD)	AEE % Recovery Acceptance Criteria	Relative Percent Difference (RPD)
1,1 - Dichloroethene	<1.0	50.0	52.8	106	52.3	105	78% - 129%	<1
Benzene	<1.0	50.0	53.1	106	52.7	105	92% - 116%	<1
Trichloroethene	<1.0	50.0	49.7	99	49.9	100	81% - 110%	<1
Toluene	<1.0	50.0	50.8	102	49.8	100	89% - 113%	2
Chlorobenzene	1.79	50.0	54.4	105	54.2	105	95% - 114%	<1
Sample Date:	6/29/98	~	6/29/98	~	6/29/98	~	~	
Analysis Date:	7/7/98	~	7/7/98	~	7/7/98	~	~	
Surrogate Recovery:							**AEE Acceptance Limits**	
Dibromofluoromethane:	101%	~	102%	~	101%	~	93%-106%	
Toluene-d_8:	97%	~	97%	~	96%	~	92%-105%	
4-Bromofluorobenzene:	105%	~	97%	~	102%	~	84%-126%	

ND Not Detected

Signature of Chemist

QA/QC Review

AGRA Earth & Environmental Portland Chemistry Laboratory
Sample Receipt Documentation Form

Project: Pinos Gas: Liquors	Cooler Temperatures
SR No.: NM980374	8.4 4.5
Date:	3.7
Time:	10.0 5.6
Temperature of Cooler Upon Receipt (Record to the Right):	
Received By:	

Section One: Shipping/Delivery Issues

1.	Method of Sample Delivery: UPS			
2.	Airbill or Courier Receipt Number: N192 065 6212			
3.	Is a copy of the airbill or courier receipt available to be placed in the job file?	(Yes)	No	NA

Section Two: Sample Custody Issues

4.	Are custody seals on the shipping container intact?	Yes	No	NA
5.	Is a COC or other sample transmittal document present?	(Yes)	No	NA
6.	Is the COC complete?	Yes	(No)	NA
7.	Are the sample seals intact?	Yes	No	(NA)
8.	Does the COC match the samples received?	(Yes)	No	NA

Section Three: Sample Integrity Issues

9.	Are all sample containers intact and not leaking?	(Yes)	No	NA
10.	Are all samples preserved properly?	(Yes)	No	NA
11.	Are all samples within holding time for the required tests?	(Yes)	No	NA
12.	Were all samples received at the proper temperature?	Yes	No	NA
13.	Are samples for volatiles and other headspace sensitive parameters free of headspace or bubbles?	Yes	(No)	NA

Section Four: Sample Containers Received:

14.	4 oz. glass jars: 6	19.	2oz. amber (MeOH): 6
15.	8 oz. glass jars:	20.	Encore samplers:
16.	40ml VOA vials: 17	21.	500ml plastic:
17.	1 liter glass:	22.	1liter plastic:
18.	Other (describe):		

#6 - Quantity of sample containers shipped was not indicated on COC.

#13 - All VOA vials with the exception of the trip blank contain air bubbles.

Reviewed By:

Laboratory Manager or Designee

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

AGRA
ENGINEERING GLOBAL SOLUTIONS
7477 SW Tech Center Drive
Portland, Oregon, U.S.A. 97223-8025
Tel (503)639-3400 Fax (503) 620-7892

CHAIN OF CUSTODY

PROJECT: Pino's Gas & Liquor's	PROJECT No.: 8517 000097
REPORT TO: Bob Wilcox	PHONE No.: 821-1801 505 [redacted]-
PROJECT MANGER: Bob Wilcox	PHONE No.
SAMPLER'S NAME (please print): Bob Wilcox	PHONE No.
SAMPLER'S SIGNATURE: Bob Wilcox	

ANALYSIS REQUESTED (circle, check box or write preferred method in box)

	SAMPLE I.D.	DATE	TIME	MATRIX	PRESERVATIVE	CONTAINERS No.	CONTAINERS VOL.	8015M Gas Range TPH	8021+MTBE	[redacted]	0010
1	1. AEE-1 16'	6/29/98	0915	soil	methanol	1			X		
	2. AEE-1 16'	6/29/98	0915	soil		1		X			
2	3. AEE-1 19'	6/29/98	0925	soil	methanol	1			X		
	4. AEE-1 19'	6/29/98	0925	soil		1		X			
3	5. AEE-2 16'	6/29/98	0950	soil	methanol	1			X		
	6. AEE-2 16'	6/29/98	0950	soil		1		X			
4	7. AEE-2 20'	6/29/98	1010	soil	methanol	1			X		
	8. AEE-2 20'	6/29/98	1010	soil		1		X			
5	9. AEE-3 10'	6/29/98	1045	soil	methanol	1			X		
	10. AEE-3 10'	6/29/98	1045	soil		1		X			

SAMPLE RECEIPT	LABORATORY	TURNAROUND TIME	QC Reporting Requirements (Add'l charges may apply)	COMMENTS / INSTRUCTIONS
TOTAL # CONTAINERS	SHIPPING I.D. / AIRBILL #	☐ 8 HOUR	☐ LEVEL I	Can MTBE be tested using 8260? Please advise
CONDITION OF CONTAINERS	CARRIER	☐ 24 HOUR	☐ LEVEL II	
CONDITION OF SEALS	DOT DESIGNATION	☐ 1 WEEK	☐ LEVEL II w/project specific Duplicates/Spikes	
		☒ 2 WEEK (standard)	☐ Level III (Full validation package)	
		☐ OTHER ____		

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
1. Bob Wilcox AEE Alb.	7/1/98	11:03	1.		
2.			2.		
3.			3. Cynthia Nuccoll	7/6/98	730am

PAGE 1 OF 2

NM980274

AGRA
Earth & Environmental, Inc.
4700 Lincoln NE
Albuquerque, NM 87109

TO LABORATORY: _____
ADDRESS: _____
PHONE: _____
CONTACT PERSON: Bob Wilcox

Chain of Custody

DATE 7/1/98 PAGE 2 OF 2

PROJECT NAME: Pine's Gas + Liquors
JOB NO: 85170000097
SITE LOCATION: Las Vegas, New Mexico

SAMPLERS (SIGNATURE): Bob Wilcox (PHONE NO.): 505 821-8201

	SAMPLE I.D.	DATE	TIME	MATRIX	LAB I.D.
6	AEE-3 16' (methanol pres.)	6/29/98	1100	soil	
6	AEE-3 16'	6/29/98	1100	soil	
7	AEE-1	6/30/98	0915	water	
8	AEE-2	6/30/98	1000	water	
9	AEE-3	6/30/98	1045	water	
10	[redacted] MW-8	6/30/98	0840	water	
11	PF-3	6/30/98	1130	water	
12	Trip Blank	6/29/98		water	

ANALYSES REQUESTED

HALOGENATED 601/8010 VOLATILES	AROMATIC 602/8020 VOLATILES	TPH 4.18.1 BLS 181	ORGANOCHLORINE PESTICIDES & PCB'S 608/8080	TPH MODIFIED 8015 BLS 191	TOTAL LEAD (PB)	TOTAL CHROMIUM (CR)	ARIZONA SDWA PRIMARY INORGANICS	ARIZONA SDWA SECONDARY INORGANICS	PRIORITY POLLUTANT METALS (TCLP)	BULK ASBESTOS (PLM)	TPH 8015 M Gas	8021	8260 + MTBE if possible					NUMBER OF CONTAINERS
												X						
											X							
													X					
													X					
													X					
													X					
													X					
													X					

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT MANAGER Bob Wilcox	TOTAL NO. OF CONTAINERS	
	CHAIN OF CUSTODY SEALS	
SHIPPING I.D. NO.	REC'D GOOD CONDITION/COLD	
VIA:	CONFORMS TO RECORD	
P.O.	LAB NO. NM980314	

SPECIAL INSTRUCTIONS/COMMENTS:
Can MTBE be tested using 8260? Please advise

	1.	2.	3.
RELINQUISHED BY	Bob Wilcox 11:03		
(SIGNATURE) (TIME)	Bob Wilcox 7/1/98		
(PRINTED NAME) (DATE)	AEE Alb.		
(COMPANY)			
RECEIVED BY			Cynthia Nuyoll 730
(SIGNATURE) (TIME)			CYNTHIA NUYOLL 7/10/98
(PRINTED NAME) (DATE)			AEE Portland
(COMPANY)			

DISTRIBUTION: WHITE-YELLOW - LABORATORY - PINK - AGRA

APPENDIX D

HEALTH AND SAFETY PLAN

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

AGRA Earth &
Environmental, Inc.
8519 Jefferson, N.E.
Albuquerque, NM 87113
Tel: (505) 821-1801
Fax: (505) 821-7371

SITE HEALTH & SAFETY PLAN
MINIMUM SITE ASSESSMENT

PINO'S GAS AND LIQUORS
LAS VEGAS, NEW MEXICO
AEE Job No. 8-517-000097

I have read the Site Health and Safety Plan developed for use during environmental investigations at the above referenced project site. I have discussed any questions which I have regarding these materials with my supervisor, and I understand the requirements.

Signed:	Date:
	6/29/98
	6/29/98
	6/29/98

Emergency Phone Numbers

Fire	911
First Aid	911
Ambulance	911
Police	911
Northeastern Regional Hospital	(505) 425-6751
AGRA - Albuquerque	(800) 279-0950

Nearest Medical Facility

Northeastern Regional Hospital
1235 8th Street
Las Vegas, New Mexico

Directions: West two blocks on University to 8th Street. Turn right and go four blocks and the hospital will be on the left.

A map showing the route is presented on the following page.

PARK VIEW

HOSPITAL ROUTE MAP

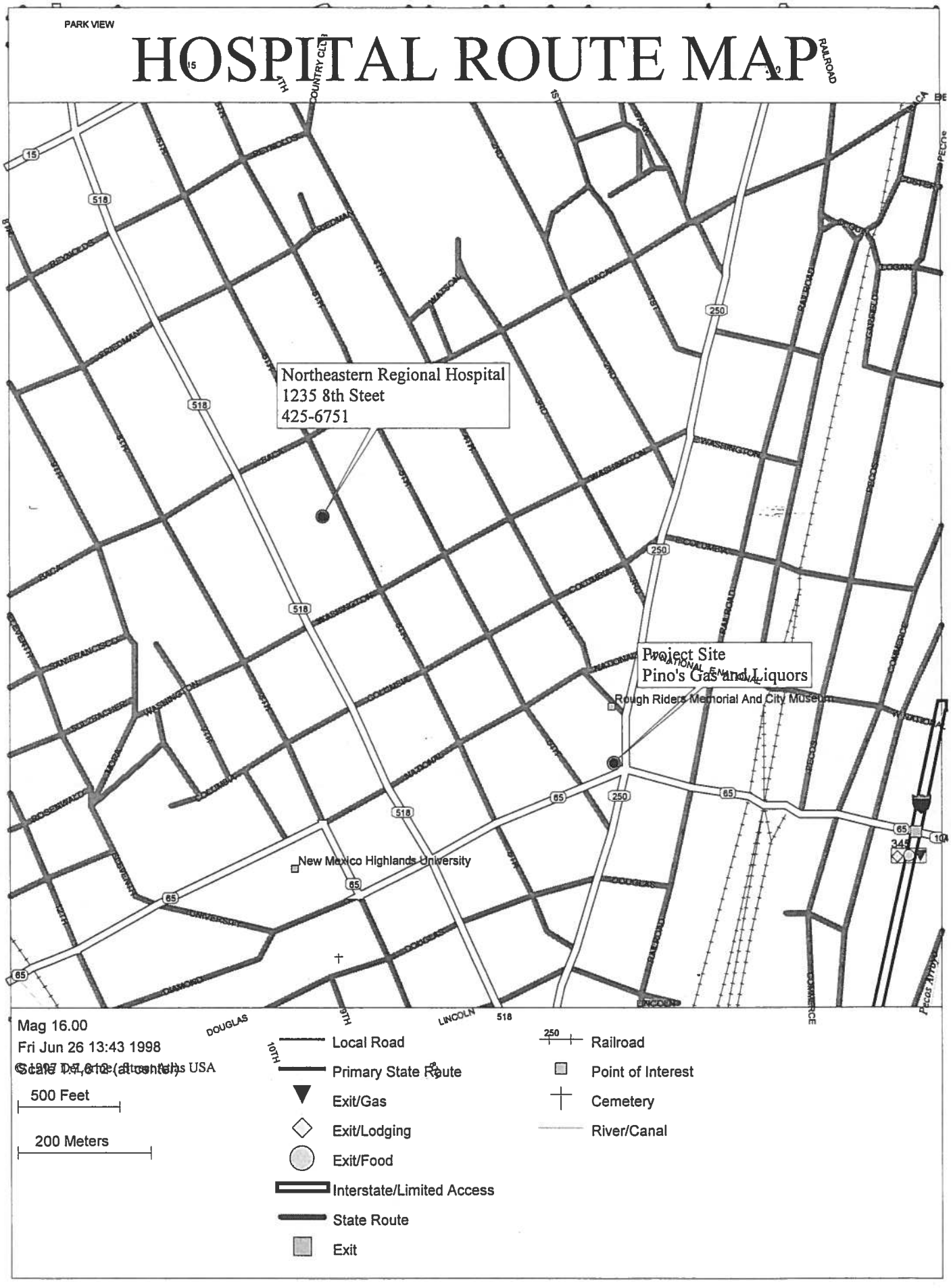


TABLE OF CONTENTS

SITE HEALTH & SAFETY PLAN
MINIMUM SITE ASSESSMENT
PINO'S GAS AND LIQUORS
LAS VEGAS, NEW MEXICO

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

This document details the health and safety guidelines which are to be followed by all AGRA Earth & Environmental, Inc. (AEE) employees and personnel of AEE subcontractors involved in the Additional Minimum Site Assessment (Phase I) at the Pino's Gas and Liquors located in Las Vegas New Mexico. It supplements, but does not supersede the standard AEE health and safety plan. All general health and safety guidelines contained in the standard AEE health and safety plan will also apply to this investigation.

This document also does not supersede the standard health and safety plans and/or normal operating health and safety guidelines established by AEE subcontractors for the use of their employees.

All personnel must read and sign the site health and safety plan prior to conducting field work. These signed acknowledgments will be retained in AEE's project files.

1.2 PROJECT DESCRIPTION

Exploratory efforts will consist of drilling approximately 3 exploratory borings to 25 feet. The borings will be advanced with 8-1/2 inch O.D. hollow-stem auger and CME-75 drill rig. Two-inch groundwater monitor wells will be installed in the borings.

1.3 RESPONSIBILITIES

1.3.1 Site Health & Safety Officer

Otto Holmquist has been designated as the site Health and Safety Officer. Mr. Holmquist has designated Bob Wilcox to serve as the site Health and Safety Officer during his absence. He may also designate more than one Health and Safety Officer. At least one Health and Safety Officer must be present at the project site during all field activities.

The overall responsibilities of the Health and Safety Officer during field work at the referenced site include, but are not limited to, the following:

- First aid and emergency procedures and equipment.
- Delineation of restricted work zones and barricading of openings in ground.
- Securing of equipment and materials against accident or tampering.
- Air monitoring for detection of possible explosive or toxic vapors, or oxygen deficient atmospheres.
- Designated "No Smoking" areas.
- Personal protective equipment requirements.

- Employee training in pertinent safety procedures including fire and explosion prevention and toxic vapors identification.
- Designation of sanitation/eating/drinking facilities.
- Dust control.
- Housekeeping.
- Site restoration, including filling excavations and removing dirt piles and mud pits incidental to drilling operations.
- Proper disposal of hydrocarbon-contaminated soil and sludge.
- Posting, if necessary, of any unsafe areas.

1.3.2 Other Personnel

Other personnel subject to the provisions of the site health and safety plan include the following:

- All AEE project personnel.
- All AEE subcontracted project personnel.

It is the responsibility of each and every one of the above named individuals to read the site health and safety plan prior to beginning field work at the site, and to sign the acknowledgment of it in the presence of the designated site Health and Safety Officer. The signature of the individual implies that he/she has read and clearly understands all aspects of the site health and safety plan and agrees to comply with all of its provisions. If any of the information contained herein is not clear to the individual, it is his/ her responsibility to contact the designated site Health and Safety Officer for clarification prior to signing the site health and safety plan. No individual who has not read and signed the site health and safety plan will be allowed to perform environmental or geotechnical investigation work on the project site. Individuals who fail to comply with the provisions of the site health and safety plan will be ordered to cease work and leave the project site immediately.

1.3.3 Disclaimer of Responsibility

This health and safety plan has been prepared by AEE for the exclusive use of AEE personnel and AEE subcontractor's personnel only. It has been developed specifically for their use during AEE project related activities at the referenced site only.

Under no circumstances will AEE be responsible for health and safety guidelines or procedures established or followed by any other persons.

AEE will assume no responsibility for any injury or damages to any other persons or their property, except those caused by the gross negligence of AEE employees.

2.0 EVALUATION OF SITE HAZARDS

2.1 FIRE AND EXPLOSION HAZARDS

A potential could exist for explosion, fire or flash burns due to the following causes:

- Concentrations of combustible vapors in native soils, tank and/or pipeline backfill, boreholes or in the atmosphere.
- Sparks caused by excavating and sampling equipment.
- Sparks caused by other (non AEE and non AEE contracted) personnel or equipment in the project area.
- Any other potential sources of heat, sparks or flame in the work area.

2.2 PERSONAL INJURY

Potential causes for personal injury during field operations at the project site may include, but are not necessarily limited to the following:

- Operation of drill rigs and other drilling and sampling equipment.
- Non-project related vehicular traffic through the project site area.

Risk factors which could result in physical injury include loss of footing, falling, rotating equipment, surface failure or surface collapse, puncture wounds, cuts, abrasions, electrical shock and burns. Potential for eye injuries should also be considered when site personnel use tools or are in an area where tools are used or machinery is being operated.

2.3 CHEMICAL EXPOSURE

Chemical exposure risks at the project site include potential inhalation, ingestion or contact with petroleum projects. These contain a number of components which are potentially hazardous to human health. These components may include, but are not necessarily limited to, the following:

• Benzene	x	• MTBE	x
• Ethyl Benzene	x	• EDC	x
• Toluene	x	• EDB	x
• Xylene	x	• Total Naphthalenes	x

Attachment A is a listing of the available information for these components. This information includes Permissible Exposure Limits (PEL), and Immediately Dangerous to Life or Health (IDLH) Limits for these components, as well as routes of exposure, target organs, possible carcinogenicity and exposure symptoms.

2.4 HEAT STRESS

Project activities are proposed for the month of June, in open, unshaded areas.

Due to the possibility of daytime temperatures as high as 95° Fahrenheit, the potential for heat stress is high.

2.5 COLD STRESS

Because this work is being performed during the Summer months, the potential for workers to experience cold stress is remote.

3.0 HEALTH & SAFETY GUIDELINES

3.1 PERSONAL PROTECTION

The basic work uniform C and D) is considered to be adequate for all field activities planned at the project site. Personal protective equipment should include the following:

- Long pants and shirt or coveralls
- Safety shoes or boots
- Safety glasses
- Hard hat
- Gloves
- Respirators with VOC filters.

Since drilling and sampling activities will take place in an open area, respirator protection will not be required. **However, proper respirators shall be available on-site in case of need.**

Should site conditions at any time warrant upgrading the specified level of protection, the site Health and Safety Officer will suspend operations until the appropriate protective equipment is provided.

3.2 FIRE AND EXPLOSION HAZARDS

The following procedures will be followed to reduce the potential risk to the safety of project personnel from fire and explosions:

- Monitoring of combustible vapor concentrations will be performed by the site Health and Safety Officer. Records of combustible vapor concentrations will be maintained during all site activities and retained in project files.
- Two fire extinguishers of the dry chemical type shall be available within easy access of the work area. All on-site project personnel shall be aware of their locations and familiar with their use.

- Smoking or open flames shall be prohibited within 100 feet of the work area or as directed by the site Health and Safety Officer.
- Construction equipment shall be equipped with a vertical exhaust at least 5 feet above grade and/or with spark arresters.
- Motors utilized in the excavation area shall be explosion proof.
- No welding shall be permitted in or within 50 feet of the work area.
- Startup and shutdown of equipment shall not be done in areas possible subject to flammable hydrocarbon level.

3.3 PERSONAL INJURY

The general range of personal injury hazards common to environmental investigations will exist on the project site. No additional site-specific personal injury hazards are recognized in the project area, other than the specific hazards detailed elsewhere in this document.

AEE project personnel will be responsible for adherence to all general health and safety guidelines contained in the standard AEE Health and Safety plan.

Subcontracted personnel will be responsible for adherence to the standard health and safety plans and/or normal operating health and safety guidelines established by AEE subcontractors for the use of their employees.

3.4 CHEMICAL EXPOSURE

Contact with contaminated or suspected contaminated surfaces should be avoided. Whenever possible, project personnel should avoid walking through puddles, mud and other discolored surfaces; kneeling on ground; leaning, sitting or placing equipment on drums, containers, vehicles or the ground.

Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking or any other activities.

Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any area except those areas designated by the Health and Safety Officer.

Periodic monitoring of ambient air in the work area will be performed to determine whether toxic gases or vapors are present. The results of the monitoring will be recorded by the Health and Safety Officer and kept in project files. An initial air quality survey should be done before work on the site begins.

3.5 HEAT STRESS

Working under warm to hot conditions is most likely to affect workers who have not been acclimatized to heat. Personnel who have not been given time to adjust to working in the heat should be gradually acclimatized to the hot environment before performing stressful work.

To avoid the excessive heat of midday, as much strenuous work as possible should be scheduled for the cooler early morning hours. All project personnel should be given periodic rest periods throughout the course of the work day. The frequency and duration of rest periods should be adequate for the ambient temperature, and should be based on the degree of acclimatization of project personnel. Fans or air blowers provided for the purpose of venting possible flammable or toxic vapors may also be used to cool down the work area, if possible.

Adequate supplies of clean, cool drinking water should be on hand for all project personnel. If salt replacement is necessary, this should be accomplished by adding extra salt to food at meals.

The consumption of alcoholic beverages during prolonged periods of heat can cause additional dehydration and should be avoided. Persons taking certain medications (e.g., medications for blood pressure control, diuretics, or water pills) should consult their physicians in order to determine if any side effects could occur during excessive heat exposure. Daily fluid intake must be sufficient to prevent significant weight loss during the work day and over the work week.

3.6 COLD STRESS

The potential for experiencing cold stress can be reduced by workers wearing adequate clothing and protective coverings, particularly on the hands and head. Temporary wind blocks can be constructed on windy days to help reduce wind chill.

4.0 EMERGENCY PROCEDURES

4.1 FIRE OR EXPLOSION

The following procedures should be performed if a fire or explosion occurs, or if an imminent risk of either is suspected:

- Evacuate all personnel from the area of danger.
- If possible, shut down all mechanical operations and equipment.
- Attempt to extinguish fires with fire extinguishers or soil. Do not attempt to extinguish petroleum or electrical fires with water.
- Immediately contact the Fire Department by dialing 911 from the nearest telephone.
- Administer first aid if necessary to any personnel suffering from burns or other injuries.
- Request emergency medical assistance if needed by dialing 911 from the nearest telephone.
- If appropriate, conduct air monitoring.

- Evacuate persons in the surrounding area if necessary.

4.2 PERSONAL INJURY

In the event of an injury requiring medical attention, all work should stop and appropriate emergency medical care should commence.

To obtain emergency medical care, the site Health and Safety Officer or someone delegated by him should call 911 from the nearest telephone and request assistance from the paramedics.

Serious emergency cases can be transported directly from the accident site (dial 911) to Rehobeth McKinley Hospital.

For injuries not requiring emergency medical assistance (minor cuts, scrapes or burns) the site Health and Safety Officer should administer first aid as required.

4.3 CHEMICAL EXPOSURE

In the event that any field personnel experience adverse symptoms of exposure while working on-site, or if air monitoring indicates the presence of hazardous concentrations of toxic chemicals, all work shall stop immediately. The site Health and Safety Officer should be notified immediately. The site Health and Safety Officer will be responsible for assessing the situation and issuing appropriate instructions to field personnel.

Any personnel who have been exposed to toxic chemicals shall be administered first aid immediately. If appropriate, the Health and Safety Officer or someone delegated by him will dial 911 from the nearest telephone to summon emergency medical assistance.

ATTACHMENT A

CHEMICAL EXPOSURE DATA

BENZENE

Colorless liquid with an aromatic odor.

ROUTES OF EXPOSURE:

Skin Absorption:	Yes
Inhalation:	Yes
Ingestion:	Yes

POSSIBLE SYMPTOMS OF EXPOSURE:

Eye irritation, nausea, headaches, staggering gait, abdominal pain, drunkenness symptoms, and blood and bone marrow abnormalities.

TARGET ORGANS:

Blood, CNS, bone marrow, eyes and respiratory system.

CARCINOGENESIS:

ACGIH considers this a potential human carcinogen.

EXPOSURE LIMITS

PEL	1:00 ppm
REL	10.00 ppm
TLV	10.00 ppm
STEL	25.00 ppm
IDLH	2000.00 ppm
TWA-C	25.00 ppm
AL	N.E.

ETHYL BENZENE

Colorless liquid with an aromatic odor.

ROUTES OF EXPOSURE:

Skin Absorption:	Yes
Inhalation:	Yes
Ingestion:	Yes

POSSIBLE SYMPTOMS OF EXPOSURE:

Eye and mucous membrane irritation, headaches, dermatitis, a stupor-like feeling and coma.

TARGET ORGANS:

Eyes, upper respiratory system, skin and the CNS.

CARCINOGENESIS:

This chemical is not considered carcinogenic.

EXPOSURE LIMITS

PEL	100.00 ppm
REL	N.E.
TLV	100.00 ppm
STEL	125.00 ppm
IDLH	2000.00 ppm
TWA-C	N.E.
AL	N.E.

TOLUENE

Colorless liquid with an odor similar to benzene.

ROUTES OF EXPOSURE:

Skin Absorption: Yes
Inhalation: Yes
Ingestion: Yes

POSSIBLE SYMPTOMS OF EXPOSURE:

Fatigue, weakness, dizziness, headache, insomnia, a confused, nervous, or euphoric feeling, dilated eyes, prickly feeling, and sun sensitivity.

TARGET ORGANS:

CNS, liver, kidneys and the skin.

CARCINOGENESIS:

This chemical is not considered carcinogenic.

EXPOSURE LIMITS

PEL	200.00 ppm
REL	100.00 ppm
TLV	100.00 ppm
STEL	150.00 ppm
IDLH	2000.00 ppm
TWA-C	300.00 ppm
AL	N.E.

XYLENE (O-, M-, and P-ISOMERS)

Colorless liquid with an aromatic odor.

ROUTES OF EXPOSURE:

Skin Absorption:	Yes
Inhalation:	Yes
Ingestion:	Yes

POSSIBLE SYMPTOMS OF EXPOSURE:

Dizziness, excited feeling, drowsiness, incoherent eye, nose, and throat irritation, vomiting, corneal vacuolation and abdominal pain.

TARGET ORGANS:

CNS, eyes, gastrointestinal tract, blood, liver, kidneys and skin.

CARCINOGENESIS:

This chemical is not considered carcinogenic.

EXPOSURE LIMITS

PEL	100.00 ppm
REL	100.00 ppm
TLV	100.00 ppm
STEL	150.00 ppm
IDLH	1000.00 ppm
TWA-C	N.E.
AL	N.E.

LEAD

Bluish-gray, soft metal, inorganic, dust or fumes; physical properties vary for specific compounds.

ROUTES OF EXPOSURE:

Skin Absorption:	Yes
Inhalation:	Yes
Ingestion:	Yes

POSSIBLE SYMPTOMS OF EXPOSURE:

Lassitude, insomnia, pallor, anorexia, colic, low weight, abdominal pain, constipation, anemia, tremors and paralysis.

TARGET ORGANS:

Gastrointestinal tract, CNS, kidneys, and blood.

CARCINOGENESIS:

This chemical is not considered carcinogenic.

EXPOSURE LIMITS

PEL	50.00 ug/kg
REL	0.00 mg/kg
TLV	0.15 mg/kg
STEL	N.E.
IDLH	N.E.
TWA-C	30.00 ug/kg
AL	N.E.

METHYL ETHYL KETONE (MEK)

Clear liquid, non-residual odor.

ROUTES OF EXPOSURE:

Skin Absorption:	Yes
Inhalation:	Yes
Ingestion:	Yes

POSSIBLE SYMPTOMS OF EXPOSURE:

Headaches, vomiting, abdominal discomfort, diarrhea, redness/cracking of skin.

TARGET ORGANS:

Blood, CNS, bone marrow, eyes and respiratory system.

CARCINOGENESIS:

NPT, IARC & OSHA do not consider this a human carcinogen.

EXPOSURE LIMITS

PEL	200 ppm/300 ppm STEL
TLV	200 ppm/300 ppm STEL
LEL	1.4
UEL	11.4

FIRE FIGHTING

Carbon dioxide or dry chemical.

ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists.
AL	Action Level - Established by OSHA - A concentration of a chemical above which the governmental regulations require specific personnel protection and monitoring.
CNS	Central Nervous System - Brain and Spinal cord.
CVS	Cardiovascular System - Heart and blood vessels.
IDLH	Immediately Dangerous to Life and Health - Established by OSHA - for concentrations that can be tolerated only 30 minutes without irreversible health effects.
N.E.	Not Established.
NIOSH	National Institute of Occupational Safety and Health.
OSHA	Occupational Safety and Health Administration.
PEL	Permissible Exposure Limit - Established by OSHA - Based on an 8-hour day, 40-hour week.
PNS	Peripheral Nervous Limit - Cranial nerves, spinal nerves, and the autonomic nervous system.
ppm	Parts per million.
REL	Relative Exposure Limit - Established by NIOSH - Based on a 10-hour day, 40-hour week.
STEL	Short Term Exposure Limit - Established by ACGIH - Maximum exposure for 15 minutes, four times per day.
TLV	Threshold Limiting Value - Established by ACGIH - Based on an 8-hour day, 40-hour week.
TWA-C	Time Weighted Average - Ceiling Limits - Established by OSHA - The concentration of a chemical that should not be exceeded during any part of the working exposure.

REFERENCES FOR CHEMICAL EXPOSURE DATA

NIOSH POCKET GUIDE TO CHEMICAL HAZARDS, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, September, 1985.

Threshold Limit Values and Biological Exposure Indices for 1987-1988, American Conference of Governmental Industrial Hygienists.

The Merck Index, An Encyclopedia of Chemicals, Drugs, and Biologicals, Tenth Edition, Published by Merck & co., Inc., Rahway, N.J., U.S.A., 1983.

Handbook of Dangerous Materials, by N. Irving Sax, Reinhold Publishing Corporation, 330 West Forty-Second Street, New York, N.Y., U.S.A., 1951.

Code of Federal Regulations, 29 1900-1910, Published by Office of the Federal Register, National Archives and Records Administration, July 1, 1986.