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REPORTS

DATE:

5/2002 PHASE II

May 6, 2002
AMEC Project No. 2-517-000002

PHASE II
MONITORING WELL INSTALLATION AND GROUNDWATER SAMPLING

ELDRIDGE RANCH PROJECT
LEA COUNTY, NEW MEXICO

Submitted To:

New Mexico Energy, Minerals,
and Natural Resources Department
Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

Submitted By:

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

May 6, 2002
AMEC Job No. 2-517-000002

Energy, Minerals and Natural Resources Department
New Mexico Oil Conservation Division
1220 St Francis Drive
Santa Fe, New Mexico 87505

Attention: Mr. Bill Olson

RE: PHASE II MONITORING WELL INSTALLATION AND SAMPLING
ELDRIDGE RANCH
LEA COUNTY, NEW MEXICO

Enclosed is the AMEC Earth and Environmental, (AMEC) report for the above referenced site. This report presents the results of the Phase II field exploratory drilling and groundwater sampling conducted at the site in February and March, 2002.

We appreciate the opportunity to provide environmental services to the Oil Conservation Division for this project. If you have any questions regarding this report, please give us a call at (505) 821-1801.

Respectfully submitted,

AMEC Earth & Environmental, Inc.

Bob Wilcox, P.G.
Senior Project Manager

Reviewed by:

Mike Schulz, P.M.P.
Unit Manager

BW:rrg

Attachment

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1.0 EXECUTIVE SUMMARY

This report presents the results of a Phase II groundwater investigation performed at the request of the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division (OCD) in the vicinity of the Eldridge Ranch located approximately one mile north of the township of Monument in Lea County, New Mexico. The purpose of this study was to further evaluate the horizontal extent of petroleum hydrocarbon concentrations in groundwater in the vicinity of the Eldridge residence after gasoline range total petroleum (GRO-TPH) and BTEX components (benzene, toluene, ethylbenzene and xylenes) were detected in groundwater from the Eldridge's irrigation and domestic wells. During the first phase of the project performed in August, 2001, AMEC Earth & Environmental (AMEC) drilled seven (7) soil borings and installed seven (7) monitor wells at the site. Groundwater samples obtained from the monitor wells indicated groundwater had been impacted by total petroleum hydrocarbons (TPH) and benzene derived from a source potentially located north of the Eldridge property.

The OCD determined that additional monitor wells were required to further assist in evaluating the source of hydrocarbon concentrations. Therefore, seven (7) soil borings and seven (7) additional monitor wells (MW-8, MW-9, MW-10, MW-11, MW-12, MW-13 and MW-14) were installed north and northwest of the Eldridge residence on adjacent private property on February 26 and 28 and March 1 and 2, 2002. Soil samples were obtained from the borings for field screening for volatile organic compounds (VOCs) during the drilling operation and seven (7) water samples were obtained from the newly installed wells following well development.

Headspace readings from a photoionization detector (PID) indicated a maximum of 726.1 parts per million (ppm) from a soil sample obtained from MW-11 at a depth of 20 feet below ground surface (bgs). Measured depth to groundwater in the monitor wells ranged from 16.0 feet below top of casing (toc) in MW-9 to 24.10 feet below toc in MW-13. Using groundwater elevations based on measurements provided by a licensed professional surveyor, the groundwater flow direction was determined to be toward the southeast with a measured gradient of 0.00415 feet/foot (ft/ft).

Representative groundwater samples obtained from the monitor wells on March 3, 2002 indicated benzene concentrations were 8.60 ppm in MW-8, less than detection limits (ND) in MW-9, 10.6 ppm in MW-10, 27.8 ppm in MW-4, 0.217 ppm in MW-11, 9.68 ppm in MW-12, 19.8 ppm in MW-13, and 1.04 ppm in MW-14. Toluene, ethylbenzene, and total xylenes concentrations were also detected in some of the wells. GRO-TPH concentrations detected were 20.6 ppm in MW-8, ND in MW-9, 19.7 ppm in MW-10, 68.3 ppm in MW-11, 22.2 ppm in MW-12, 58 ppm in MW-13, and 2.13 ppm in MW-14. No diesel range TPH (DRO-TPH) concentrations were detected in any of the samples obtained during the March sampling event.

As in the first phase of the project conducted in August, 2001, elevated levels of aluminum, barium, chromium, iron, and manganese were also detected in groundwater at the site. At this time, it is

unknown whether these metals are naturally occurring in groundwater in the site vicinity or are from an outside source.

The configuration and chemical signature of the hydrocarbon plume across the site indicates the dissolved-phase hydrocarbons found in groundwater in the vicinity of the Eldridge residence likely resulted from a release near MW-14, MW-10, MW-11, and MW-12. There are five petroleum product pipelines in the subsurface and several other oil and gas facilities in the area. Facilities which produce or transport condensate or refined petroleum products should be investigated to determine the source of possible release(s).

2.0 PURPOSE AND SCOPE

This report presents the results of a Phase II site investigation conducted by AMEC in the vicinity of the Eldridge Ranch (the site) in Lea County, near Monument, New Mexico. Access to drill additional wells on adjacent property to the north was granted on October 29, 2001. AMEC submitted a work plan dated December 19, 2001 outlining the scope of services to be performed for the investigation. The Phase II investigation was authorized by the OCD in correspondence to AMEC dated January 16, 2002. The location of the project site is in the southeast corner of Section 21, T19S, R37E as shown on Figure 1. This study was performed to further evaluate the horizontal extent of petroleum hydrocarbon concentrations identified in groundwater at the site during an earlier (Phase I) investigation and sampling of an irrigation and domestic well at the Eldridge Ranch.

The Phase II study consisted of drilling seven (7) exploratory borings and completing them as monitor wells, screening soils for VOCs during drilling, measuring groundwater levels in the seven newly installed wells, and obtaining and submitting groundwater samples for laboratory analysis. The scope of this evaluation did not include measuring or sampling groundwater from monitor wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6 and MW-7 which were installed during Phase I of the project during August, 2001.

3.0 SITE CONDITIONS

The Eldridge property is occupied by the Eldridge residence, a garage, and three water wells. One water well was used for domestic purposes at the residence and two wells were used for irrigation of farm crops. The wells are no longer in use since the groundwater was confirmed to be impacted by petroleum hydrocarbons following sampling by the Eldridges' (August 18, 2000), the New Mexico Environment Department (October 26, 2000 and February 28, 2001), and the OCD (October 26, 2000).

Two petroleum pipelines oriented north-south are located to the west of the site. Another pipeline right-of-way runs southwest-northeast approximately 1,400 feet north of the Eldridge Ranch. Other

oil field facilities are located within 2,000 feet northwest of the Eldridge property. Facilities near the site are shown on Figure 2.

During the Phase II investigation, the seven (7) new wells were drilled north of the site on property owned by the estate of Katherine Leonard and James H. Foley. Permission was granted by the estate to the OCD for access to perform the scope of work for this evaluation. The estate property consists of range land with numerous oil and gas wells and facilities. A copy of the access agreement is presented in Appendix A.

Surface drainage across the site is influenced by Monument Draw, an ephemeral stream which runs south to southeast through the site vicinity. Site structures and other features are presented in Figure 2.

4.0 SUBSURFACE INVESTIGATION

The soil borings/monitor wells installed during this Phase II investigation were designated as MW-8, MW-9, MW-10, MW-11, MW-12, MW-13, and MW-14. The borings were drilled to depths ranging from 27 to 36 feet bgs with 8-inch outside diameter (O.D.) hollow stem augers. The locations of the boring/monitor wells are shown on Figure 2. Exploratory boring logs are contained in Appendix B.

4.1 Investigation Procedures

The drilling contractor, Geomechanics Southwest (GSI), provided a CME-95 drill rig for the project. The drill rig and hollow stem augers were steam cleaned prior to use on-site. In addition, split-spoon samplers were decontaminated with a cleaning reagent and two clean water rinses between sampling intervals, while used augers were steam cleaned between borings.

A Photovac Model 2020 photoionization detector (PID) and an MSA Passport PID each calibrated to a 100 ppm isobutylene standard, were used to qualitatively detect the presence of VOCs 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 obtained every five feet to the top of the water table with split spoon samplers and were collected in glass jars, sealed with aluminum foil. 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 B and are summarized in Table 1.

Drilling and sampling was completed in accordance with AMEC's standard Quality Assurance/Quality Control (QA/QC) procedures. These procedures have been designed to ensure that samples are representative and sampling results are both accurate and precise. Copies of the

field notes are presented in Appendix C. A copy of AMEC's Health & Safety Plan for the project is presented in Appendix D.

4.2 Groundwater Monitor Wells

Groundwater monitor wells were constructed with 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 (10-20 gradation) to 2 to 3 feet above the screen, followed by a bentonite pellet plug (minimum 2 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. Above-ground protective casings with locked covers were installed to prevent potential damage or tampering with the finished monitor wells. Monitor well completion diagrams are presented in Appendix E.

After well development and prior to subsequent water quality sampling, water depths were measured to the nearest one-hundredth (0.01) foot bgs. The reference point elevations were surveyed by a professional licensed surveyor in the State of New Mexico, Basin Surveys of Hobbs, New Mexico. A summary of groundwater measurements and elevations are shown in Table 2.

4.3 Soil and Groundwater Sampling Procedures

Soil samples were obtained every five feet during the drilling operation with split-spoon samplers. Field headspace readings were obtained every five feet until groundwater was encountered at approximately 15 to 25 feet bgs. Headspace readings varied between 0 and 726.1 ppm. None of the soil samples were submitted for laboratory analysis. Headspace readings are summarized in Table 1.

Prior to sampling groundwater, each well was developed and purged until water temperature, pH, and conductivity stabilized. Water samples were obtained at least 24 hours after completion. A total of seven (7) groundwater samples were collected from the installed monitor wells and a trip blank was analyzed as well for quality assurance purposes. The samples were submitted to Trace Analysis of Lubbock, Texas for chemical analysis by EPA methods listed below. Each groundwater sample was collected, containerized, and preserved according to AMEC QA/QC procedures and standard laboratory protocol.

The water samples were analyzed for BTEX by EPA Method 8021 and for GRO-TPH and DRO-TPH by EPA Method 8015B. In addition, the samples were tested for pH, alkalinity, specific conductance, chloride, total dissolved solids, fluoride, nitrate, sulfate, calcium, magnesium, potassium, sodium, and a list of 16 metals using approved EPA methods. Copies of the chain-of-custody records and analytical reports for groundwater samples are provided in Appendix F.

5.0 SUBSURFACE CONDITIONS

Surface soils at the site consist of Quaternary alluvium and caliche which occur in the Monument Draw area. Soils encountered in the upper 25 feet in each borehole consisted of tan to brown, very fine-grained silty sand containing white caliche or caliche nodules. White to light brown caliche was encountered in all borings to depths of 20 to 35 feet. In all borings a tan to brown, very fine-grained silty to clayey sand was also encountered below the top of the water table. A noticeable hydrocarbon odor was encountered in soils during drilling in MW-8, MW-11, and MW-12.

The depth to groundwater measured from the top of casing in the monitor wells ranged from 16.0 feet below toc in MW-9 to 24.10 feet below toc in MW-13. The aquifer appears to be unconfined and occurs in both the caliche and the silty sand and clayey, silty sand. Using groundwater elevations based on measurements provided by Basin Surveys, the groundwater flow direction was determined to be toward the southeast with a measured gradient of 0.00415 ft/ft. A groundwater elevation contour map generated from both the current groundwater elevations and the August, 2001 investigation groundwater elevations is presented as Figure 3.

6.0 GROUNDWATER LABORATORY ANALYSES AND RESULTS

The groundwater samples indicated benzene concentrations were 8.60 ppm in MW-8, ND in MW-9, 10.6 ppm in MW-10, 27.8 ppm in MW-4, 0.217 ppm in MW-11, 9.68 ppm in MW-12, 19.8 ppm in MW-13, and 1.04 ppm in MW-14. Gasoline range total petroleum hydrocarbons (GRO -TPH) concentrations were 20.6 ppm in MW-8, ND in MW-9, 19.7 ppm in MW-10, 68.3 ppm in MW-11, 22.2 ppm in MW-12, 58 ppm in MW-13, and 2.13 ppm in MW-14. Toluene, ethylbenzene, and total xylenes concentrations were also detected in some of the wells. Table 3 summarizes the laboratory testing results for hydrocarbons detected in groundwater. No DRO-TPH concentrations were detected from the samples obtained during the Phase II investigation. A benzene contaminant concentration map combining the benzene concentrations from this investigation and the results from the August, 2001 investigation is presented as Figure 4. A GRO-TPH contaminant concentration map combining the GRO-TPH concentrations from this investigation and the results from the August, 2001 investigation is presented as Figure 5.

Water quality constituents such as total dissolved solids (TDS) ranged from 484 milligrams per liter (mg/l) in MW-9 to 850 mg/l in MW-12. Chlorides ranged from 34.8 mg/l in MW-9 to 234 mg/l in MW-12. These analytes are within New Mexico Water Quality Control Commission (NMWQCC) standards.

Other analyses performed included a list of 16 metal using EPA Method 6010B. The following parameters were detected at concentrations exceeding NMWQCC Standards: 2.03 mg/l barium and 3.21 mg/l iron in MW-8; 94.6 mg/l aluminum, 2.84 mg/l barium, 0.191 mg/l chromium, and 66.1 mg/l iron in MW-9; 60 mg/l aluminum, 3.34 mg/l barium, 0.316 mg/l chromium, 47.6 mg/l iron, and

0.376 mg/l manganese in MW-10, 2.94 mg/l barium and 3.42 mg/l iron in MW-11, 59.5 mg/l aluminum, 9.41 mg/l barium, 0.196 mg/l chromium, and 39.8 mg/l iron, and 0.554 mg/l manganese in MW-12, 7.28 mg/l aluminum, 4.61 mg/l barium, and 5.01 mg/l iron in MW-13, and 20.3 mg/l aluminum, 1.66 mg/l barium, 13.9 mg/l iron, and 0.353 mg/l manganese in MW-14.

Analytical methods and complete results for each analysis are presented in Appendix F.

7.0 GENERATED WASTE

Soils with high hydrocarbon odor were segregated and placed inside a 55-gallon drum which was labeled and sealed. Groundwater development and purge water from each well was placed in separate 55-gallon drums which were labeled and sealed. Groundwater from wells which contained non-detectable hydrocarbons, (i.e., MW-9) will be disposed of at the site. Groundwater from monitor wells MW-8, MW-10, MW-11, MW-12, MW-13, and MW-14 will be containerized together at a later date.

The drums of soil and water will be stored at the site until the project is complete. At that time, the drummed soil and water will be disposed of at an OCD approved disposal facility.

8.0 DISCUSSION OF POSSIBLE SOURCE OF GROUNDWATER IMPACT

The recent groundwater sampling results indicate elevated GRO- TPH and BTEX concentrations centered around the below ground Duke Energy and Conoco pipelines near the area of MW-14, MW-10, MW-11, and MW-12. The distribution of the dissolved hydrocarbon concentrations in the area are consistent with the southeast-trending groundwater flow direction (i.e., decreasing hydrocarbon concentrations in the up gradient, across gradient, and down gradient directions from the apparent plume center). Other oil and gas facilities in the vicinity of the hydrocarbon plume are an unmarked, east-west trending pipeline north of MW-13, the Chevron USA Elbert Shipp NCT-A#1 Unit F, located west of MW-13, an apparent former oil and gas facility pit west of MW-13, a Warren Petroleum gas pipeline west of MW-13, and two Sid Richardson Gas pipelines trending southwest-northeast located between MW-11 and MW-8. Another oil and gas facility, the Ameranda Hess Houston Unit is located west of MW-7. These facilities are shown on Figures 2, 3, 4, and 5.

The light hydrocarbon chemical fingerprint of the dissolved hydrocarbons in groundwater, (GRO-TPH and BTEX) found at the site are indicative of condensate or a refined petroleum product such as gasoline. The facilities in the vicinity of the plume which produce condensate or transport condensate or refined petroleum products may be the source of the elevated hydrocarbons detected in groundwater at the site.

The configuration and chemical signature of the hydrocarbon plume detected during this evaluation indicates the dissolved-phase hydrocarbons found in groundwater in the vicinity of the Eldridge

residence likely resulted from a release in the area near MW-14, MW-10, MW-11, and MW-12. Facilities which produce or transport condensate or refined petroleum products should be investigated to determine the source of possible release(s).

9.0 CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER STUDY

The following conclusions can be derived from the results of the site investigations performed at the Eldridge Ranch to date:

1. A release of refined gasoline, condensate, or other refined petroleum products has impacted groundwater in the vicinity of the Eldridge Ranch and the adjacent property to the north and northwest as indicated by hydrocarbon concentrations obtained from groundwater samples from new monitor wells MW-8, MW-10, MW-11, MW-12, MW-13, MW-14 and previously installed monitor wells MW-1, MW-4, MW-5, and MW-6. Benzene concentrations are above NMWQCC standards in these wells. Toluene concentrations were also above NMWQCC standards in MW-11, MW-13, and MW-4.

2. Groundwater elevations obtained during the project indicate groundwater flow direction is to the southeast in the site vicinity, with a hydraulic gradient of 0.00415 ft/ft.

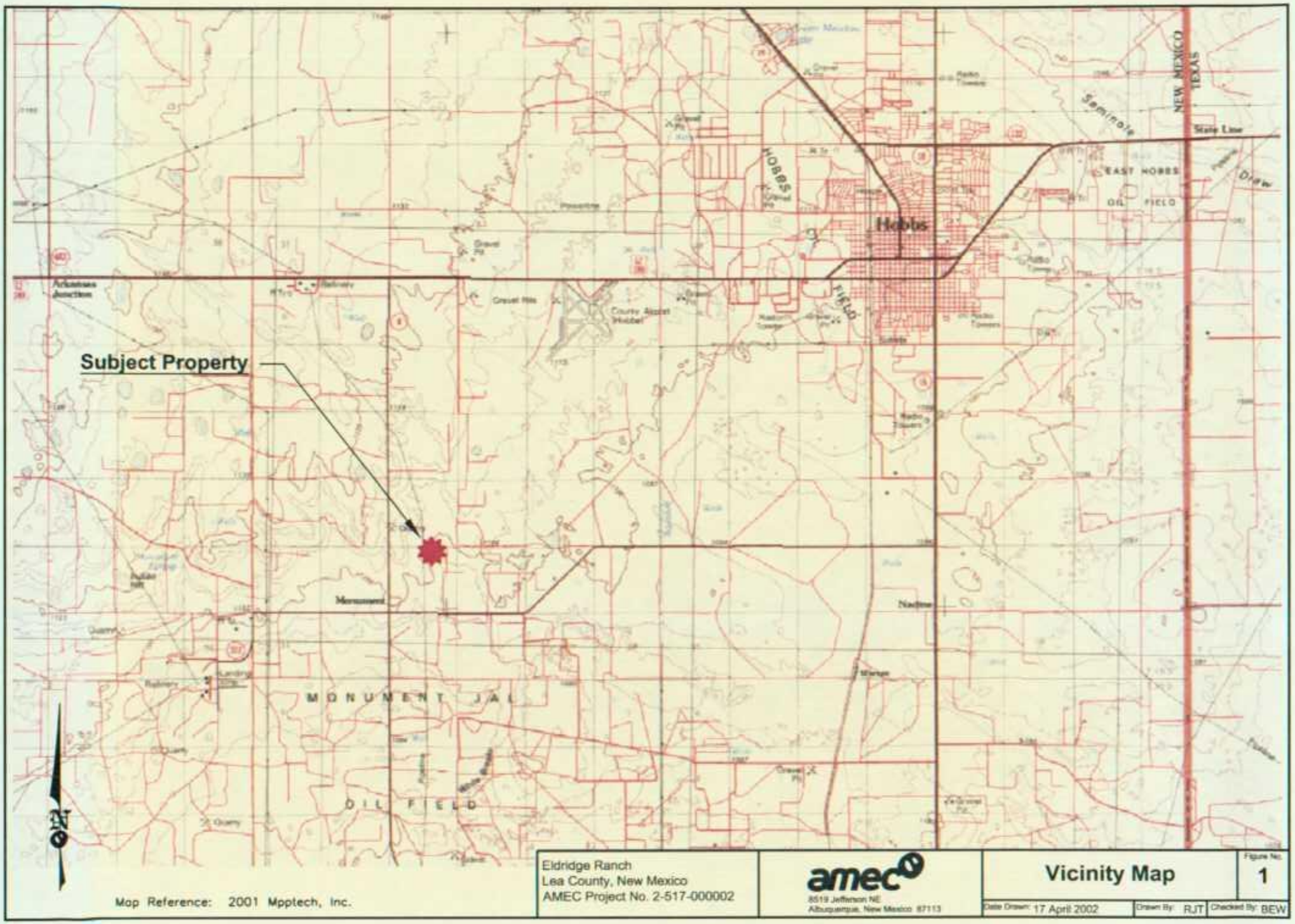
3. The groundwater flow direction and contaminant plume maps suggest the source of the contamination emanates from an area near MW-13, MW-10, MW-11, and MW-12 to the northwest of the Eldridge Ranch on adjacent property. The horizontal extent of hydrocarbons has not been completely defined.

4. Several oil and gas pipelines and other facilities are located in this area and may be the source(s) of the release.

5. Groundwater analytical results obtained from the monitor wells installed to date indicate the presence of concentrations of aluminum, barium, chromium, iron, and manganese above NMWQCC standards. It is not known if these concentrations are background levels for the site vicinity or if the concentrations are the result of a release.

At this time, AMEC recommends that additional monitors wells be installed to the west of MW-12, north of MW-14, east of MW-5, and south of the Eldridge residence to define the outer edges of the plume. After any new monitor wells are installed at the site, current ground conditions should be monitored and groundwater samples should be obtained from all monitor wells associated with site. The location of nearby pipelines and other oil field facilities in these directions should be documented to determine possible contaminant sources.

The elevated concentrations of metals detected at the site should be examined to determine if the concentrations are naturally occurring in the area or are from an outside source.



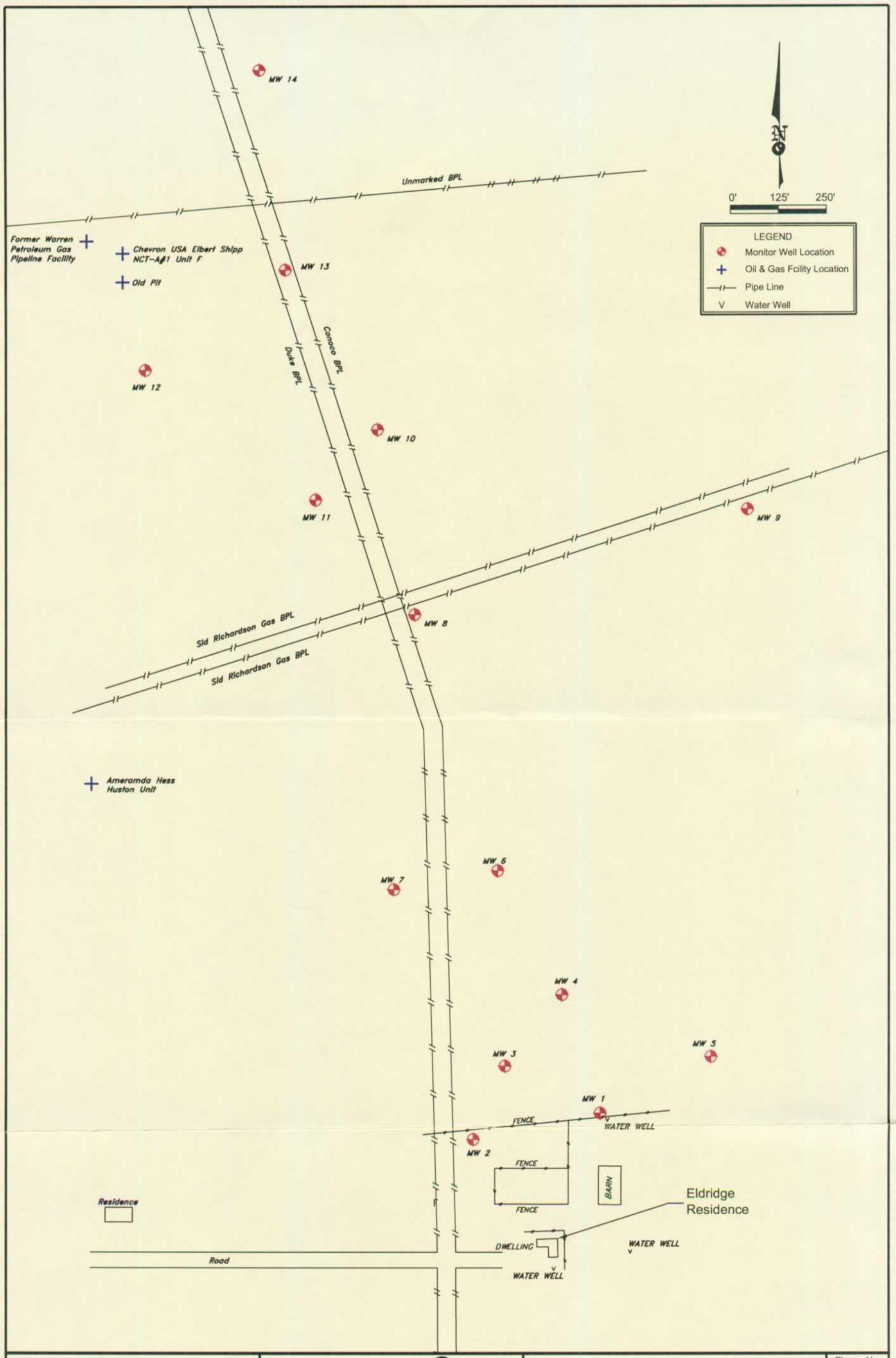
Eldridge Ranch
Lea County, New Mexico
AMEC Project No. 2-517-000002

amec
8519 Jefferson NE
Albuquerque, New Mexico 87113

Vicinity Map

Figure No. 1

Date Drawn: 17 April 2002 | Drawn By: RJT | Checked By: BEW



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Lea County, New Mexico
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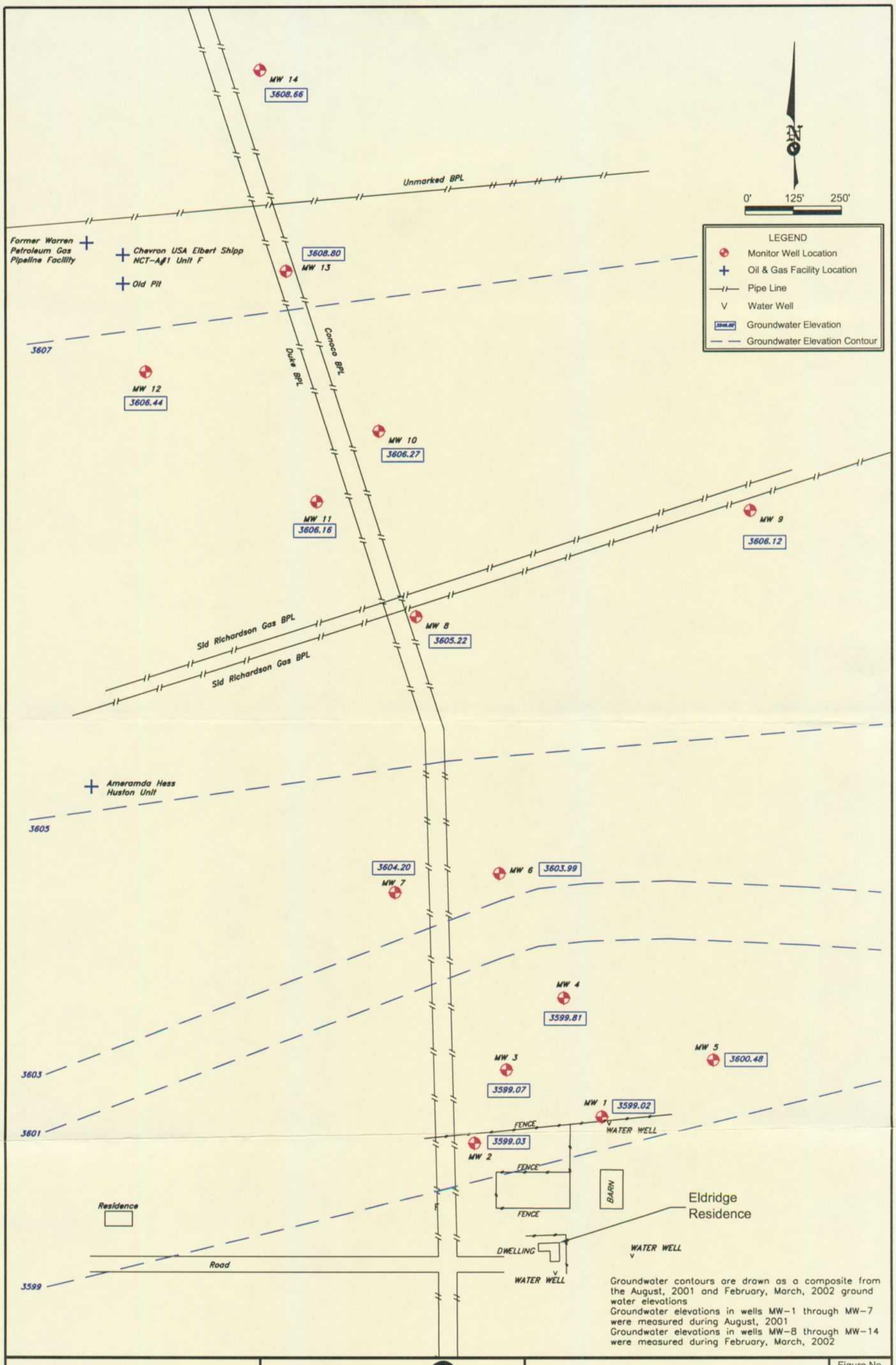
Site Plan

Figure No. **2**

Date Drawn: 5 April 2002 | Drawn By: RJT | Checked By: BW



Groundwater contours are drawn as a composite from the August, 2001 and February, March, 2002 ground water elevations
Groundwater elevations in wells MW-1 through MW-7 were measured during August, 2001
Groundwater elevations in wells MW-8 through MW-14 were measured during February, March, 2002

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Lea County, New Mexico
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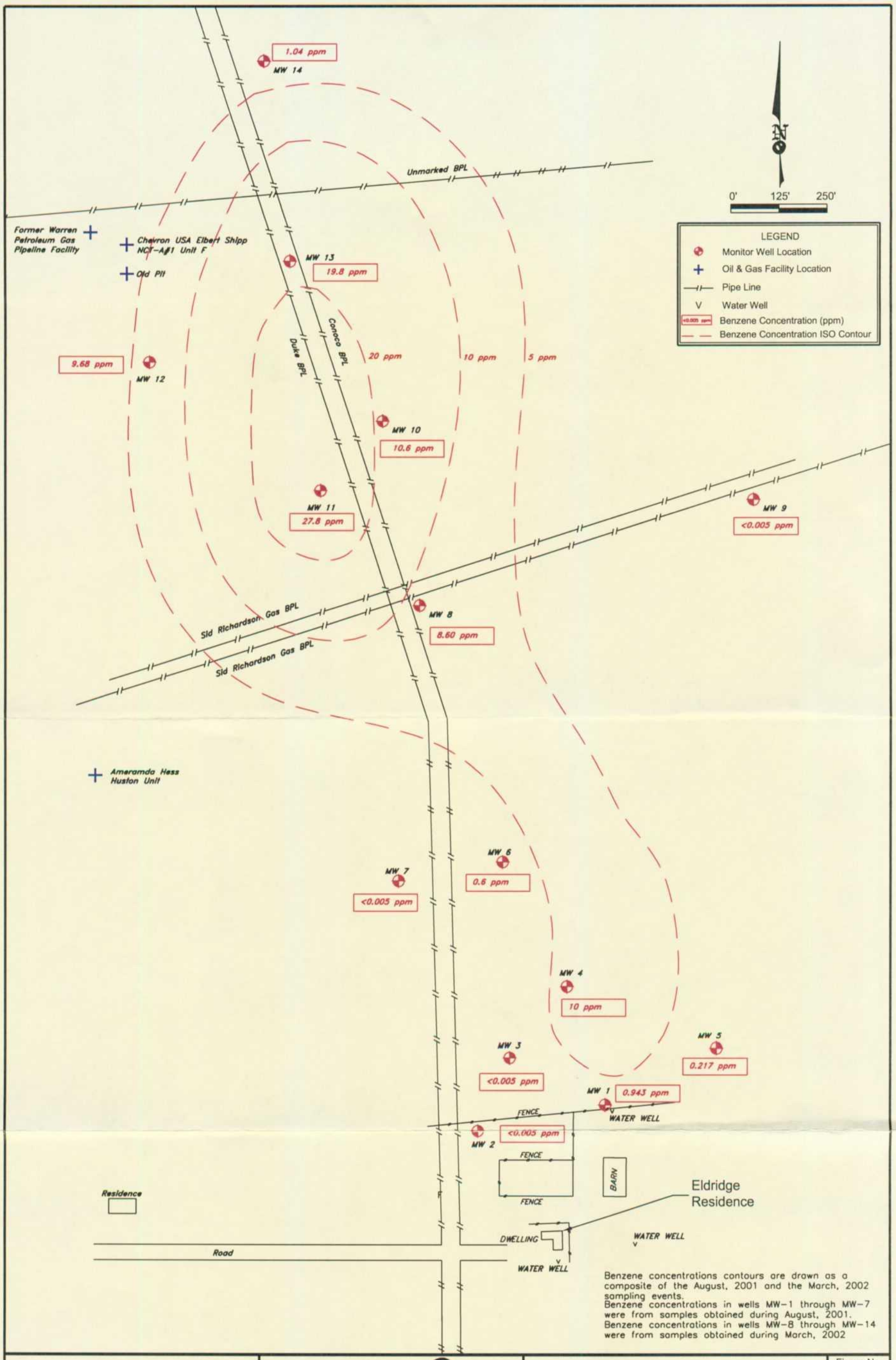
Groundwater Elevation Contour Map

Figure No. 3

Date Drawn: 5 April 2002 | Drawn By: RJT | Checked By: BW



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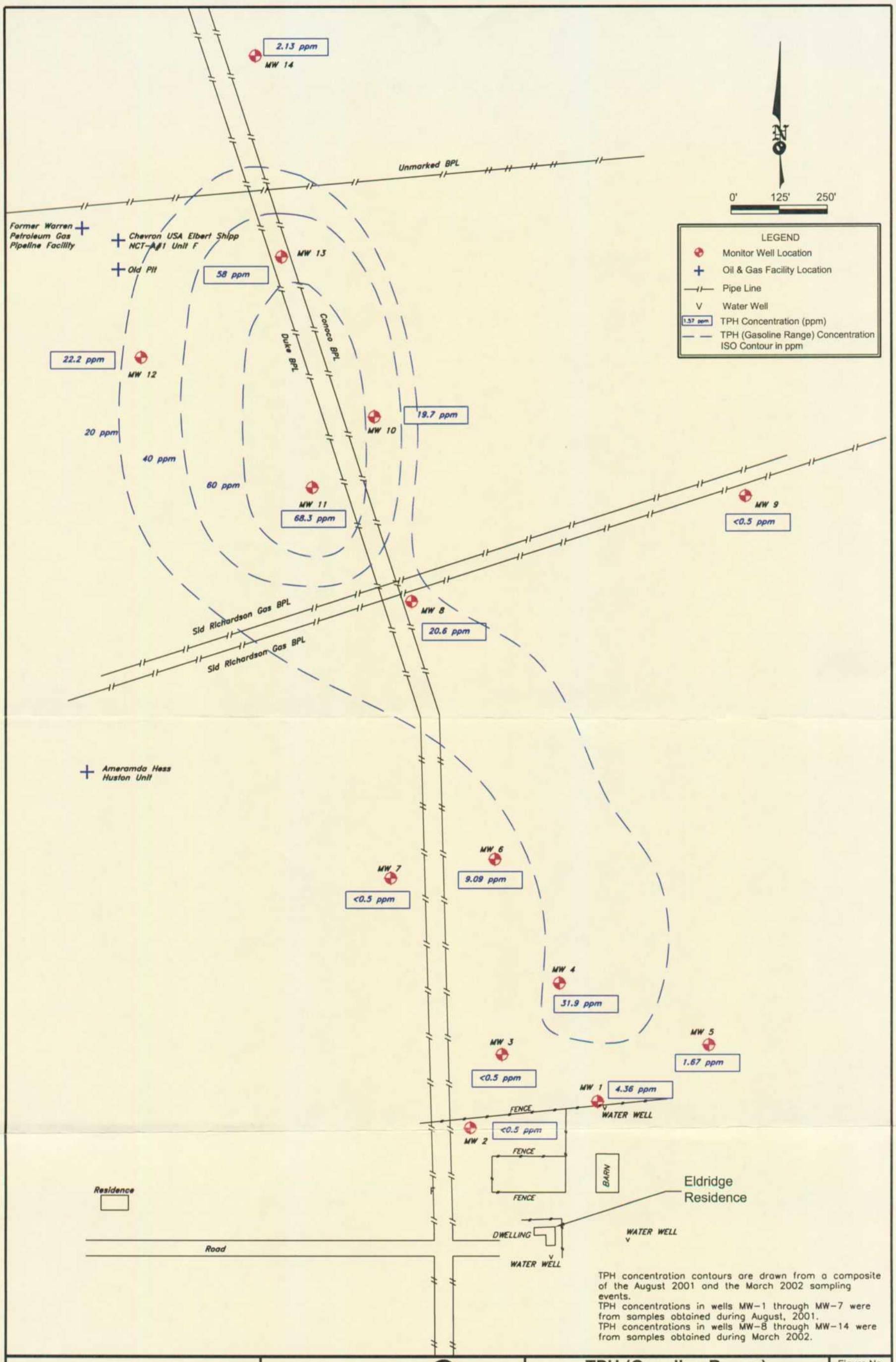
Benzene Concentration Contours in Ground Water

Figure No. **4**

Date Drawn: 5 April 2002 | Drawn By: RJT | Checked By: BW



TPH concentration contours are drawn from a composite of the August 2001 and the March 2002 sampling events.
TPH concentrations in wells MW-1 through MW-7 were from samples obtained during August, 2001.
TPH concentrations in wells MW-8 through MW-14 were from samples obtained during March 2002.

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TPH (Gasoline Range) Concentration Contours in Ground Water

Figure No. **5**

Date Drawn: 5 April 2002 | Drawn By: RJT | Checked By: BW

TABLE 1
SUMMARY OF FIELD SCREENING

	Sample Depth (feet)						
Boring No.	5	10	15	20	25	30	35
	Headspace Readings (ppm)						
MW-8	5.7	2	1.3	17.8	12.1	NS	NS
MW-9	13.1	6.1	3.5	2.7	0.2	NS	NS
MW-10	5.9	4.5	3.8	50.2	29.1	7.4	NS
MW-11	0.5	8.3	1.9	726.1	58.4	NS	NS
MW-12	0	0	0	15.1	330	NS	NS
MW-13	0	0	0	13.8	58	NS	NS
MW-14	0	0	0.4	0	0	NS	NS

Note: A Photovac Model 2020 Photoionization Detector (PID) and a MSA Passport PID each calibrated to a 100 ppm isobutylene were used to perform the headspace testing.
NS- No sample obtained

TABLE 2
SUMMARY OF GROUNDWATER ELEVATIONS

Monitor Well	Top of Casing Elevation (feet)	Depth to Water (feet below TOC)	Groundwater Elevation (feet)
MW-1	3618.22	19.20	3599.02
MW-2	3621.33	22.30	3599.03
MW-3	3619.07	20.00	3599.07
MW-4	3621.31	21.50	3599.81
MW-5	3618.08	17.60	3600.48
MW-6	3624.99	21.00	3603.99
MW-7	3630.62	26.60	3604.02
MW-8	3625.92	20.70	3605.22
MW-9	3622.12	16.00	3606.12
MW-10	3627.27	20.60	3606.27
MW-11	3627.56	21.40	3606.16
MW-12	3631.14	23.70	3606.44
MW-13	3632.90	24.10	3608.80
MW-14	3630.36	21.70	3608.66

Note: Groundwater levels were measured in MW-1 through MW-7 on August 7, 8, and 9, 2001. Elevations are referenced to mean sea level.

TABLE 3
SUMMARY OF ANALYTICAL TESTING RESULTS - GROUNDWATER [8]
CONCENTRATIONS IN PARTS PER MILLION (ppm)

Well ID.	Sample Date	B[1] (ppm)	T[2] (ppm)	E[3] (ppm)	X[4] (ppm)	TPH[5] GRO (ppm)	TPH[6] DRO (ppm)
MW-1	8/10/01	0.943[9]	0.12	0.052	0.06	4.36	<5
MW-2	8/10/01	<0.005	<0.005	<0.005	<0.005	<0.5	<5
MW-3	8/10/01	<0.005	<0.005	<0.005	<0.005	<0.5	<5
MW-4	8/10/01	10	6.960	0.190	0.632	31.9	<5
MW-5	8/10/01	0.217	0.185	0.024	0.129	1.67	<5
MW-5 Duplicate	8/10/01	0.182	0.159	0.020	0.109	1.23	<5
MW-6	8/10/01	0.600	0.502	0.024	0.100	<0.5	<5
MW-7	8/10/01	<0.005	<0.005	<0.005	<0.005	<0.5	<5
NMWQCC[7] Standard		0.0010	0.750	0.750	0.620	NS[10]	NS

Notes:

(1) Benzene
(2) Toluene
(3) Ethylbenzene
(4) Total Xylenes
(5) Total Petroleum Hydrocarbons Gasoline Range
(6) Total Petroleum Hydrocarbons Diesel Range
(7) NMWQCC - New Mexico Water Quality Control Commission
(8) Samples were analyzed by EPA Methods 8021 and 8015B. Reports of test results provided by the analytical laboratory are presented in Appendix F.
(9) Shaded values shown exceed NMWQCC standards.
(10) No Standard

TABLE 3 (continued)
SUMMARY OF ANALYTICAL TESTING RESULTS - WATER [8]
CONCENTRATIONS IN PARTS PER MILLION (ppm)

Well ID.	Sample Date	B[1] (ppm)	T[2] (ppm)	E[3] (ppm)	X[4] (ppm)	TPH[5] GRO (ppm)	TPH[6] DRO (ppm)
MW-8	3/3/02	8.60	0.482	<0.100	0.197	22.2	<5
MW-9	3/3/02	<0.005	<0.005	<0.005	<0.005	<0.5	<5
MW-10	3/3/02	10.6	<0.100	<0.100	<0.100	19.7	<5
MW-11	3/3/02	27.8	2.49	<0.200	0.376	68.3	<5
MW-12	3/3/02	9.08	0.281	<0.100	<0.100	22.2	<5
MW-13	3/3/02	19.8	5.95	0.205	0.432	58	<5
MW-14	3/3/02	1.04	0.0059	<0.005	0.0085	1.05	<5
NMWQCC[7] Standard		0.0010	0.750	0.750	0.620	NS	NS

Notes:

(1) Benzene
(2) Toluene
(3) Ethylbenzene
(4) Total Xylenes
(5) Total Petroleum Hydrocarbons Gasoline Range
(6) Total Petroleum Hydrocarbons Diesel Range
(7) NMWQCC - New Mexico Water Quality Control Commission
(8) Samples were analyzed by EPA Methods 8021 and 8015B. Reports of test results provided by the analytical laboratory are presented in Appendix F.
(9) Shaded values shown exceed NMWQCC standards.
(10) No Standard

APPENDIX A

ACCESS AGREEMENT

TEMPORARY GRANT OF EASEMENT

MARK LEONARD, individually and as personal representative of the ESTATE OF KATHERINE LEONARD, and JAMES H. FOLEY, grant to the NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES ("EMNRD") and its OIL CONSERVATION DIVISION ("OCD"), its agents, employees and contractors, a temporary and limited easement in, to, upon and over all that portion of the following described real estate in Lea County, New Mexico, to wit:

The Southeast Quarter of the Northwest Quarter (SE1/4NW1/4), the South Half of the Northeast Quarter (S1/2NE1/4), the Northeast Quarter of the Southwest Quarter (NE1/4SW1/4) and the North Half of the Southeast Quarter (N1/2SE1/4) of Section 21, Township 19 South, Range 37 East, N.M.P.M., Lea County, New Mexico,

together with reasonable access thereto.

Said easement is given for the limited purpose of drilling, constructing and maintaining upon the premises a monitor water well or wells with which the Oil Conservation Division will use to assess and monitor contaminants below the surface, and for the purpose of routinely visiting, sampling and inspecting the aforementioned monitor wells following initial construction and for no other purpose. Said easement shall not include the right to place roads on the above-described lands or the right to blade or scrape the surface or remove top soil. Said temporary easement shall terminate automatically two years from the date of execution of this document. Alternatively, said easement may be terminated earlier when the monitor wells are not needed for the purpose described at which time they shall be removed and the premises restored to its condition prior to the time this easement was granted.

Witness my hand and seal this 29th day of October, 2001.

Mark Leonard

MARK LEONARD, individually and as personal representative of the Estate of Katherine Leonard

James H. Foley

JAMES H. FOLEY

ACKNOWLEDGMENTS

STATE OF Wyoming)
)
COUNTY OF Natrona)

The foregoing instrument was acknowledged before me this 2 day of ~~October~~ November, 2001, by Mark Leonard, individually and as personal representative of the Estate of Katherine Leonard.

BONNIE GARRETT- NOTARY PUBLIC
County of Natrona State of Wyoming
My Commission Expires Jan. 29, 2004

Bonnie Garrett
Notary Public

My commission expires:

1-29-04

STATE OF New Mexico)
)
COUNTY OF Valencia)

The foregoing instrument was acknowledged before me this 31st day of October, 2001, by James H. Foley.

Notary Public

My commission expires:

3/23/05

APPENDIX B

BORING LOGS

PROJECT Eldridge Ranch
Lea County, New Mexico

JOB NO. 2-517-000002 **DATE** 2/28/02

LOG OF TEST BORING NO. MW-8

LOCATION See Site Plan
RIG TYPE CME-95
BORING TYPE Hollow Stem Auger Diameter 8"
SURFACE ELEV.
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphic Soil 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							1.7			Top Soil: 3" **CALICHE**, with cobbles and boulders, nonplastic, slightly moist, whitish-tan, hard
5				S	50/4" No Recv.		5.7			
10				S	50/2"		2.0			NOTE: 13' color change to light brown
15				S	52		1.3			
20 ▼				S	7		17.8	SC-SM		**CLAYEY SILTY SAND**, with rock fragments (limestone), loose to medium dense, slightly moist to moist, light brown-tan
25				S	35		12.1			NOTE: Light grade oil odor NOTE: Gypsum fragments at 25.8'
30										Stopped Auger @ 26.5' Stopped Sampler @ 30.0'
35										
40										
45										
50										

ENV BH NO WELL 2517-002.GPJ AGRA_ALB.GDT 4/26/02

GROUNDWATER

	DEPTH	HOUR	DATE
▽	20.8	15:00	2/28/02
▼	20.7	9:30	3/1/02

SAMPLE TYPE
A-ANALYTICAL SAMPLE
S-STRATIGRAPHIC SAMPLE
SC-SONIC CORE

amec

PROJECT Eldridge Ranch
Lea County, New Mexico

JOB NO. 2-517-000002 **DATE** 2/2/02

LOG OF TEST BORING NO. MW-9

LOCATION See Site Plan
RIG TYPE CME-95
BORING TYPE Hollow Stem Auger Diameter 8"
SURFACE ELEV.
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphic Soil 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							5.5	SC-SM		Top soil: 2" **CLAYEY SILTY SAND**, very fine grained, loose, medium dense, slightly moist, dark brown
5			X	S	27		13.1			
10			X	S	30		6.1			**CALICHE**, with cobbles and boulders, nonplastic, slightly moist, whitish-tan, hard
15 ▼			X	S	70		3.5			
20			X	S	15		2.7	SC-SM		**CLAYEY SILTY SAND**, with rock fragments (limestone), loose to medium dense, slightly moist to moist, light brown-tan
25			X	S	17		0.2			
30										Stopped Auger @ 26.5' Stopped Sampler @ 27.0'
35										
40										
45										
50										

ENV BH NO WELL 2517-002.GPJ AGRA_ALB.GDT 4/26/02

GROUNDWATER

	DEPTH	HOUR	DATE
▽	16.1	11:20	3/1/02
▼	16.0	15:40	3/1/02

SAMPLE TYPE

A-ANALYTICAL SAMPLE
S-STRATIGRAPHIC SAMPLE
SC-SONIC CORE

amec

PROJECT Eldridge Ranch
Lea County, New Mexico

JOB NO. 2-517-000002 **DATE** 2/28/02

LOG OF TEST BORING NO. MW-10

LOCATION See Site Plan
RIG TYPE CME-95
BORING TYPE Hollow Stem Auger Diameter 8"
SURFACE ELEV.
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphic Soil 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							5.8			Top Soil: 8" **CALICHE**, very dense, some cobbles, whitish-tan, slightly moist, hard
5				S	50/4"		5.9			
10				S	58		4.5			
								SC-SM		**CLAYEY SILTY SAND**, fine grained with some fine gravel and small rock fragments (Cemented caliche), slightly moist, dense to very dense, light brown-tan, some light brown
15				S	34		3.8			
								CL		NOTE: At 16.8' - 16.11' 3: silty clay layer, brown, moist, silty clay, brown, low to medium plasticity
▼ 20				S	8		50.2			NOTE: At 20.6' color change to gray, 1" zone of caliche
								SM		
25				S	20		29.1			**SILTY SAND**, gray with light gray caliche nodules, moist to wet, loose, medium dense
30				S	90/9"		7.4			
										Stopped Auger @ 31.0' Stopped Sampler @ 30.6'
35										
40										
45										
50										

ENV BH NO WELL 2517-002.GPJ AGRA_ALB.GDT 4/26/02

GROUNDWATER

	DEPTH	HOUR	DATE
▽	20.1	10:30	2/28/02
▼	20.0	9:20	3/1/02

SAMPLE TYPE

A-ANALYTICAL SAMPLE
S-STRATIGRAPHIC SAMPLE
SC-SONIC CORE

amec

PROJECT Eldridge Ranch
Lea County, New Mexico

JOB NO. 2-517-000002 **DATE** 2/28/02

LOG OF TEST BORING NO. MW-11

LOCATION See Site Plan
RIG TYPE CME-95
BORING TYPE Hollow Stem Auger Diameter 8"
SURFACE ELEV.
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphic Soil 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										Top Soil: 5" **CALICHE**, tan with fine angular gravel (Rock up to 8" fragments (limestone)), slightly moist, nonplastic, very dense, boulders first 8'
5				S	50/3"					
10				S	40					NOTE: Well graded silty sand with caliche, tan, slighly moist, nonplastic
15				S	18			SM		**SILTY SAND**, very fine grained, light brown-tan, slightly moist, nonplastic, medium dense
20				S	20					NOTE: @ 20.6' brown, wet, crude oil odor, saturated
25				S	24					NOTE: 25.6' - 27.2' rock fragments zone, limestone, angular, saturated, cemented caliche
30										Stopped Auger @ 30.0' Stopped Sampler @ 26.5'
35										
40										
45										
50										

ENV BH NO WELL 2517-002.GPJ AGRA_ALB.GDT 4/26/02

GROUNDWATER

	DEPTH	HOUR	DATE
▽	21.7	12:40	2/28/02
▼	21.4	9:40	3/1/02

SAMPLE TYPE
A-ANALYTICAL SAMPLE
S-STRATIGRAPHIC SAMPLE
SC-SONIC CORE

amec

PROJECT Eldridge Ranch
Lea County, New Mexico

JOB NO. 2-517-000002 **DATE** 2/26/02

LOG OF TEST BORING NO. MW-12

LOCATION See Site Plan
RIG TYPE CME-95
BORING TYPE Hollow Stem Auger Diameter 8"
SURFACE ELEV.
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphic Soil 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										Top Soil: 3" **CALICHE**, with some angular limestone fragments, tan-grayish-tan, slightly moist, very dense
5				S	50/5"		0			
10				S	13		0			NOTE: At 10.0' tan-light brown with light brown mottling
15				S	50/4"		0			NOTE: At 15.0' moist
20				S	50/4"		0			NOTE: At 20.0' caliche with clayey silty sand layers
▼										
▽ 25				S	50/5"		35			NOTE: At 25.6' wet with crude oil odor
30				S	50/5"			SC-SM		**CLAYEY SILTY SAND**, light brown-tan, saturated, loose
35										Stopped Auger @ 34.0' Stopped Sampler @ 30.0'
40										
45										
50										

ENV BH NO WELL 2517-002.GPJ AGRA_ALB.GDT 4/26/02

GROUNDWATER

	DEPTH	HOUR	DATE
▽	25.4	12:10	2/26/02
▼	23.7	11:15	2/27/02

SAMPLE TYPE

A-ANALYTICAL SAMPLE
S-STRATIGRAPHIC SAMPLE
SC-SONIC CORE

amec

PROJECT Eldridge Ranch
Lea County, New Mexico

JOB NO. 2-517-000002 **DATE** 2/26/02

LOG OF TEST BORING NO. MW-13

LOCATION See Site Plan
RIG TYPE CME-95
BORING TYPE Hollow Stem Auger Diameter 8"
SURFACE ELEV.
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphic Soil 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										Top soil: 3" **CALICHE**, with cobbles and boulders and some limestone fragments, tan, slighlty moist, very dense
5				S	50/4"		0			
10				S	50/4"		0			
15				S	57		11.5			NOTE: 15' light crude oil like odor
20				S	56		15.1			NOTE: At 20.0' light brown, moist, clayey nodules
25				S	50/3"		3.3			NOTE: Clay layer 3" at 25.3', heavy crude oil/gasoline odor
								SC-SM		**CLAYEY SILTY SAND**, with some coarse subrounded gravel and angular limestone fragments, light brown to tan, moist to wet, hard
30				S	50/3"					
35										NOTE: Light hydrocarbon odor
										Stopped Auger @ 36.0' Stopped Sampler @ 30.5'
40										
45										
50										

ENV BH NO WELL 2517-002.GPJ AGRA_ALB.GDT 4/26/02

GROUNDWATER

DEPTH	HOUR	DATE
25.6'	14:00	2/26/02
24.1	11:00	2/27/02

SAMPLE TYPE

A-ANALYTICAL SAMPLE
S-STRATIGRAPHIC SAMPLE
SC-SONIC CORE

amec

PROJECT Eldridge Ranch
Lea County, New Mexico

JOB NO. 2-517-000002 **DATE** 3/1/02

LOG OF TEST BORING NO. MW-14

LOCATION See Site Plan
RIG TYPE CME-95
BORING TYPE Hollow Stem Auger Diameter 8"
SURFACE ELEV.
DATUM

Depth in Feet	Continuous Penetration Resistance	Graphic Soil 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										*Top Soil:* 6" **CALICHE**, tan, slightly moist, some limestone fragments, very dense
5				S	50/4"		0			
10				S	50/2"		0			NOTE: At 10.0'-11.0' boulders
15				S	68		0.4			
20				S	50/4"		0			
▼								SM		**SILTY SAND**, with fragments (limestone), light brown, loose to wet
25				S	45		0			NOTE: 25.0'-26.0' limestone fragments
30										
										Stopped Auger @ 26.5' Stopped Sampler @ 32.0'
35										
40										
45										
50										

ENV BH NO WELL 2517-002.GPJ AGRA_ALB.GDT 4/26/02

GROUNDWATER

	DEPTH	HOUR	DATE
▽	22.7	13:30	3/1/02
▼	21.7	16:00	3/1/02

SAMPLE TYPE
A-ANALYTICAL SAMPLE
S-STRATIGRAPHIC SAMPLE
SC-SONIC CORE

amec

APPENDIX C

FIELD NOTES

DEVELOPMENT

GROUND-WATER SAMPLING LOG

amec

PROJECT NUMBER: 25170002 LOCATION: ELDRIDGE RANCH ~~WELL~~: 03·2·02

TIME	TEMP (C)	pH	~~TURB. (NTU)~~ COND	COND. (uS/cm)	ORP (mV)	DO (ppm)	flow rate (ml/min)	draw down (ft)	COMMENTS
11:30	YSI	CALIBRATION		#7 = 7.06					
				#4 = " UNDER"			} WILL NOT CALIBRATE		
				#10 = " UNDER"			(TOO COLD?)		
V. COLD ~ 3→4°C, V. WINDY "NE" + VARIOUS, P- CLOUDY									
				MW-~~4~~ 12					
12:50	H_2O LEVEL = 23.7 (GROUND LEVEL)								33.0
	WELL DEPTH = 33.0								- 23.7
13:15	START DEVEL. USING "WHALE" 12V PUMP ø 3/8 TUBBING								9.3 H_2O COLUMN
				5 gal / 5 min = 1 gal / min.					x 0.171
13:25	18.6	6.97	711 mS						1.59
13:30	19.2	6.95	1287						x 3 VOLUMES
13:35	19.3	6.94	1283						4.8 gal.
13:40	19.3	6.94	1285						
TOTAL = 8 gal.									
				MW-~~6~~ 9					
14:10	H_2O = 19 3 1/2 TOP OF PVC				PVC TOP = 3' 5"				= (15.10 1/2)
	WELL DEPTH = 26.4								
14:15	5 gal. DIRTY - SILT			PIC #17					
14:20				PIC #18					
14:30	17.7	7.31	641						
14:35	18.2	7.23	620						
14:40	18.4	7.21	618						
14:45	18.3	7.19	615	PIC #19					
TOTAL = 10 gal.									

NOTE: MW-~~4~~ 12 — MW-4 (WORK #)
MW-12 (CORRECT WELL #) USE IT FOR REPORT/FILE

Page 2 of 3

GROUND-WATER SAMPLING LOG

amec

PROJECT NUMBER: 25170002 LOCATION: ELDRIDGE RANCH WELL: 3.2.02

TIME	TEMP (C)	pH	COND TURB. (NTU)	COND. (uS/cm)	ORP (mV)	DO (ppm)	flow rate (ml/min)	draw down (ft)	COMMENTS
				MW-8					WELL STICK UP = 36"
15:10	H_2O = 23.2 (TOP OF PVC)								TOP OF PVC = -7"
	WELL DEPTH 32.5½" (32.4½ tenths)								TOP OF PVC = 2'5"
15:15		DRY	AFTER 2.5 gal SLOW RECHARGE						
15:30	15.6	7.07	771						
15:40	16.2	7.10	733						
15:50	17.0	6.98	805						
15:55	18.0	6.96	807						
TOTAL = 8 gal.									
				MW-11					
16:00	H_2O = 23.8								PVC = 2'5" ABOVE GR. LEVEL
	WELL DEPTH = 32'8" (32.7 tenths)								
16:05	2 gal =	DRY / SLOW RECHARGE							
16:15	15.1	6.87	877						
16:25	16.9	6.81	916						
16:30	16.6	6.83	918						
TOTAL = 7 gal.									
				MW-10					
									WELL PROTECTOR 35" (2'11")
16:40	H_2O = 23'1 (TOP OF PVC)								
	WELL DEPTH 33'1" (TOP OF PVC) (33½ tenths)								
16:55	17.6	6.88	775						
17:00	17.7	689	814						
17:05	17.8	6.88	810						
TOTAL = 7½ gal.									

17:20 TRANSFER DEVEL. H_2O FROM MW 1.2.3.6 TO STAGEING DRUM BY MW-6 (~45 gal).

DEVELOPMENT

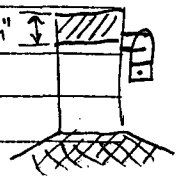
Page 1 of 3

GROUND-WATER SAMPLING LOG

amec

PROJECT NUMBER: 25170000 02 LOCATION: ELDRIDGE RANCH WELL: 03-2-01

TIME	TEMP (C)	pH	TURB. (NTU)	COND. (uS/cm)	ORP (mV)	DO (ppm)	flow rate (ml/min)	draw down (ft)	COMMENTS
				MW-~~8~~		13			
17:40	H_2O = 27.6 1/2 (tenths)								
	WELL DEPTH = 37' 4 1/2"			(37.4 tenths)					PVC 3" ABOVE GR. L.
17:45	2 gal. = DRY			SLOW RECHARGE					
17:50	NO READING			— " —					
18:00	17.0	7.12	322?						
18:10	16.6	7.10	699						
18:20	16.4	7.08	702						
TOTAL = 2 1/2 gal.									
				MW-~~7~~		14			
									PVC STICK UP = 2'6"
18:30	H_2O = 24.1 1/2 (tenths)								
	WELL DEPTH = 34' 4"			(34.5 tenths)					
18:35	16.2	7.06	353?				3 min = DRY ~ 2 1/2 gal.		
18:40	16.9	7.08	690				NEXT 0.5 hr 4 gal (ON/OFF)		
18:50	16.5	7.03	699				TOTAL = 8 gal.		
19:00	17.1	7.02	698						
TOTAL = 6 1/2 gal.									



SAMPLING

Page 1 of 7

GROUNDWATER SAMPLING LOG

amec

PROJECT NUMBER: 25170000 2 LOCATION: ELDRIDGE RANCH DATE: 3-3-02

WELL NO. MW8 (A) CLIMATIC CONDITIONS: _____ TIME: 14:58

REMARKS: DEDIC. BAILER SAMPLER: M.S

WELL PURGING: STATIC WATER LEVEL: _____ ft. WELL DEPTH: _____ ft.

LENGTH OF SATURATED ZONE: _____ linear ft. VOLUME OF WATER TO BE EVACUATED: _____ gals.

VOLUME OF WATER TO BE EVACUATED X 3 CASING VOLUMES = _____ gals.

REMOVAL METHOD: _____ PUMPING RATE: _____ ml/min.

WELL PURGE DATA:

TIME	TEMP (C) +/-3%	pH +/-0.1	TURB. (NTU) +/-10%	COND. (uS/cm) +/-3%	ORP (mV) +/-10mV	DO (ppm) +/-10%	flow rate (ml/min)	draw down (ft)	COMMENTS
14:25 → 14:40	(5 gal)								MW8 (A)
14:40	18.1	6.98	7.88						
14:45	18.4	7.01	802						
14:50	18.2	7.04	788?	3 gal	SLOW RECOVERY				
14:55	18.3	7.06	799						
14:58	SAMPLE				LT. CRUDE OIL SMELL				

COND.

SAMPLE ID NUMBER AND TIME: _____

COLORIMETRIC DO: _____

NUMBER AND TYPE OF SAMPLE CONTAINER(S) USED: _____

SAMPLE WITHDRAWAL METHOD: _____

DECON METHOD: SEE WORK PLAN

PURGE WATER DISPOSED OF IN DRUM NUMBER: _____

SAMPLES DELIVERED TO: _____ TRANSPORTER: _____

DATE: _____ TIME: _____

Acceptance Criteria for Three Consecutive Readings:

Temp.: +/-3%, pH: +/-0.1 unit, Turb.: +/-10% above 1NTU, Cond.: +/-3%, ORP: +/-10mV, D.O.: +/-10%

SAMPLING

Page 2 of 7

GROUNDWATER SAMPLING LOG

amec

PROJECT NUMBER: 25170902 LOCATION: ELDRIDGE RANCH DATE: 3-3-02

WELL NO. MW 9 (X) CLIMATIC CONDITIONS: _____ TIME: 14:01

REMARKS: DEDIC. BAILER SAMPLER: M.S

WELL PURGING: STATIC WATER LEVEL: _____ ft. WELL DEPTH: _____ ft.

LENGTH OF SATURATED ZONE: _____ linear ft. VOLUME OF WATER TO BE EVACUATED: _____ gals.

VOLUME OF WATER TO BE EVACUATED X 3 CASING VOLUMES = _____ gals.

REMOVAL METHOD: _____ PUMPING RATE: _____ ml/min.

WELL PURGE DATA:

TIME	TEMP (C) +/-3%	pH. +/-0.1	TURB. (NTU) +/-10%	COND. (uS/cm) +/-3%	ORP (mV) +/-10mV	DO (ppm) +/-10%	flow rate (ml/min)	draw down (ft)	COMMENTS
13:30 → 13:40 = 6 gal.									MW 9 (X)
13:40	16.7	7.27	540						
13:45	17.2	7.28	503						
13:50	16.6	7.26	506		3 gal.				
14:00	16.8	7.24	504						
14:01	SAMPLE								

SAMPLE ID NUMBER AND TIME: _____

COLORIMETRIC DO: _____

NUMBER AND TYPE OF SAMPLE CONTAINER(s) USED: _____

SAMPLE WITHDRAWAL METHOD: _____

DECON METHOD: SEE WORK PLAN

PURGE WATER DISPOSED OF IN DRUM NUMBER: _____

SAMPLES DELIVERED TO: _____ TRANSPORTER: _____

DATE: _____ TIME: _____

Acceptance Criteria for Three Consecutive Readings:

Temp.: +/-3%, pH: +/-0.1 unit, Turb.: +/-10% above 1NTU, Cond: +/-3%, ORP: +/-10mV, D.O.: +/-10%

Page 3 of 7

GROUNDWATER SAMPLING LOG

amec

PROJECT NUMBER: 25170 0002 LOCATION: ELDRIDGE RANCH DATE: 3-3-02

WELL NO. MW 10 (3) CLIMATIC CONDITIONS: _____ TIME: 16:25

REMARKS: _____ SAMPLER: M. S

WELL PURGING:

STATIC WATER LEVEL: _____ ft. WELL DEPTH: _____ ft.

LENGTH OF SATURATED ZONE: _____ linear ft. VOLUME OF WATER TO BE EVACUATED: _____ gals.

VOLUME OF WATER TO BE EVACUATED X 3 CASING VOLUMES = _____ gals.

REMOVAL METHOD: _____ PUMPING RATE: _____ ml/min.

WELL PURGE DATA:

TIME	TEMP (C) +/-3%	pH +/-0.1	TURB. (NTU) +/-10% (COND)	COND. (uS/cm) +/-3%	ORP (mV) +/-10mV	DO (ppm) +/-10%	flow rate (ml/min)	draw down (ft)	COMMENTS
16:00 → 16:10		= 5 gal.							MW 10 (3)
16:10	17.3	6.89	803						
16:15	18.1	6.88	765						
16:20	18.6	6.88	764						
16:25	SAMPLE				FUMING (SMALL BUBBLES IN 40ml VO's)				
						DISTINCT CRUDE OIL ODOR			

SAMPLE ID NUMBER AND TIME: _____

COLORIMETRIC DO: _____

NUMBER AND TYPE OF SAMPLE CONTAINER(S) USED: _____

SAMPLE WITHDRAWAL METHOD: _____

DECON METHOD: SEE WORK PLAN

PURGE WATER DISPOSED OF IN DRUM NUMBER: _____

SAMPLES DELIVERED TO: _____ TRANSPORTER: _____

DATE: _____ TIME: _____

Acceptance Criteria for Three Consecutive Readings:

Temp.: +/-3%, pH: +/-0.1 unit, Turb.: +/-10% above 1NTU Cond: +/-3% ORP: +/-10mV D.O.: +/-10%

SAMPLING

Page 4 of 7

GROUNDWATER SAMPLING LOG

amec

PROJECT NUMBER: 25170002 LOCATION: ELDRIDGE RANCH DATE: 3-3-02

WELL NO. MW-11 (X) CLIMATIC CONDITIONS: _____ TIME: 15:36

REMARKS: TRIP BLANK 16:45 (2 x 40ml +HCl) SAMPLER: M.S

WELL PURGING: STATIC WATER LEVEL: _____ ft. WELL DEPTH: _____ ft.

LENGTH OF SATURATED ZONE: _____ linear ft. VOLUME OF WATER TO BE EVACUATED: _____ gals.

VOLUME OF WATER TO BE EVACUATED X 3 CASING VOLUMES = _____ gals.

REMOVAL METHOD: _____ PUMPING RATE: _____ ml/min.

WELL PURGE DATA:

TIME	TEMP (C) +/-3%	pH +/-0.1	TURB. (NTU) +/-10%	COND. (uS/cm) +/-3%	ORP (mV) +/-10mV	DO (ppm) +/-10%	flow rate (ml/min)	draw down (ft)	COMMENTS
15:10 → 15:15	= 5 gal.			SLOW AFTER 1st 5 gal.					MW 11 (X)
15:20	18.2	7.01	878						
15:25	18.4	6.99	916						
15:30	17.4	6.97	871	~ 3 gal.					
15:35	17.2	6.98	869						
15:36	17.0	6.99	879						STRONG GASOLINE ODOR

SAMPLE ID NUMBER AND TIME: _____

COLORIMETRIC DO: _____

NUMBER AND TYPE OF SAMPLE CONTAINER(S) USED: _____

SAMPLE WITHDRAWAL METHOD: _____

DECON METHOD: SEE WORK PLAN

PURGE WATER DISPOSED OF IN DRUM NUMBER: _____

SAMPLES DELIVERED TO: _____ TRANSPORTER: _____

DATE: _____ TIME: _____

Acceptance Criteria for Three Consecutive Readings:

Temp.: +/-3% pH: +/-0.1 unit, Turb.: +/-10% above 1NTU Cond: +/-3% ORP: +/-10mV D.O.: +/-10%

SAMPLING

Page 5 of 7

GROUNDWATER SAMPLING LOG

amec

PROJECT NUMBER: 25190002 LOCATION: EDDYDGE RANCH DATE: 03.3.02

WELL NO. MW-12 (A) CLIMATIC CONDITIONS: CLEAR, COLD, LT. to MODER. NE WIND TIME: 12:58

REMARKS: USED DEDICATED BAILER (POLLY) SAMPLER: MARK "S"

WELL PURGING: STATIC WATER LEVEL: _____ ft. WELL DEPTH: _____ ft.

LENGTH OF SATURATED ZONE: _____ linear ft. VOLUME OF WATER TO BE EVACUATED: _____ gals.

VOLUME OF WATER TO BE EVACUATED X 3 CASING VOLUMES = _____ gals.

REMOVAL METHOD: DEDICATED BAILER PUMPING RATE: _____ ml/min.

WELL PURGE DATA: COND.

TIME	TEMP (C) +/-3%	pH +/-0.1	TURB. (NTU) +/-10%	COND. (uS/cm) +/-3%	ORP (mV) +/-10mV	DO (ppm) +/-10%	flow rate (ml/min)	draw down (ft)	COMMENTS
12:30		4.8	gal.						MW-12 (A).
12:38		5.0	gal.						
12:40	17.4	7.04	562						
12:45	17.6	6.99	1096		5 gal.				
12:50	18.01	6.99	1043						
12:55	18.01	6.97	1066						
12:58	SAMPLE								

SAMPLE ID NUMBER AND TIME: _____

COLORIMETRIC DO: _____

NUMBER AND TYPE OF SAMPLE CONTAINER(s) USED: _____

SAMPLE WITHDRAWAL METHOD: _____

DECON METHOD: SEE WORK PLAN

PURGE WATER DISPOSED OF IN DRUM NUMBER: _____

SAMPLES DELIVERED TO: _____ TRANSPORTER: _____

DATE: _____ TIME: _____

Acceptance Criteria for Three Consecutive Readings:

Temp.: +/-3%, pH: +/-0.1 unit, Turb.: +/-10% above 1NTU Cond: +/-3% ORP: +/-10mV, D.O.: +/-10%

SAMPLING

Page 6 of 7

GROUNDWATER SAMPLING LOG

amec

PROJECT NUMBER: 25170000 2 LOCATION: ELDRIDGE RANCH DATE: 3-3-02

WELL NO. MW-13 (R) CLIMATIC CONDITIONS: _____ TIME: 17:40

REMARKS: _____ SAMPLER: M.S

WELL PURGING: STATIC WATER LEVEL: _____ ft. WELL DEPTH: _____ ft.

LENGTH OF SATURATED ZONE: _____ linear ft. VOLUME OF WATER TO BE EVACUATED: _____ gals.

VOLUME OF WATER TO BE EVACUATED X 3 CASING VOLUMES = _____ gals.

REMOVAL METHOD: _____ PUMPING RATE: _____ ml/min.

WELL PURGE DATA:

TIME	TEMP (C) +/-3%	pH +/-0.1	TURB. (NTU) +/-10%	COND. (uS/cm) +/-3%	ORP (mV) +/-10mV	DO (ppm) +/-10%	flow rate (ml/min)	draw down (ft)	COMMENTS
			COND						
16:55 → 17:00			~2½ gal / DRY						
17:17			5 gal (20 min)		SLOW RECOVERY				
17:20	17.2	7.10	697						
17:25	16.4	7.17	622		2.5 gal.				
17:30	16.3	7.25	654						
17:35	16.1	7.22	665						
17:40	SAMPLE				STRONG CRUDE OIL				ODOR

SAMPLE ID NUMBER AND TIME: _____

COLORIMETRIC DO: _____

NUMBER AND TYPE OF SAMPLE CONTAINER(s) USED: _____

_____

SAMPLE WITHDRAWAL METHOD: _____

DECON METHOD: SEE WORK PLAN

PURGE WATER DISPOSED OF IN DRUM NUMBER: _____

SAMPLES DELIVERED TO: _____ TRANSPORTER: _____

DATE: _____ TIME: _____

Acceptance Criteria for Three Consecutive Readings:

Temp.: +/-3%; pH: +/-0.1 unit, Turb.: +/-10% above 1NTU Cond: +/-3 ORP: +/-10mV, D.O.: +/-10%

SAMPLING

Page 1 of 1

GROUNDWATER SAMPLING LOG

amec

PROJECT NUMBER: _____ LOCATION: ELDRIDGE RANCH DATE: 3.13.02

WELL NO. MW-14 (1) CLIMATIC CONDITIONS: _____ TIME: 18:30

REMARKS: _____ SAMPLER: _____

WELL PURGING: STATIC WATER LEVEL: _____ ft. WELL DEPTH: _____ ft.

LENGTH OF SATURATED ZONE: _____ linear ft. VOLUME OF WATER TO BE EVACUATED: _____ gals.

VOLUME OF WATER TO BE EVACUATED X 3 CASING VOLUMES = _____ gals.

REMOVAL METHOD: _____ PUMPING RATE: _____ ml/min.

WELL PURGE DATA: CONDUCT.

TIME	TEMP (C) +/-3%	pH +/-0.1	TURB. (NTU) +/-10%	COND. (uS/cm) +/-3%	ORP (mV) +/-10mV	DO (ppm) +/-10%	flow rate (ml/min)	draw down (ft)	COMMENTS
17:55 => 18:05			2.5 gal	(slow)					MW 14 (1)
18:05 => 18:15			2.5 gal				= 5 gal / 20 min		
18:15	15.4	7.14	688						
18:20	16.8	7.19	713						
18:25	17.2	7.14	7.02						
18:30	SAMPLE			FAINT CRUDE OIL ODOR					
	17.2	7.16	7.01						

SAMPLE ID NUMBER AND TIME: _____

COLORIMETRIC DO: _____

NUMBER AND TYPE OF SAMPLE CONTAINER(s) USED: _____

SAMPLE WITHDRAWAL METHOD: _____

DECON METHOD: SEE WORK PLAN

PURGE WATER DISPOSED OF IN DRUM NUMBER: _____

SAMPLES DELIVERED TO: _____ TRANSPORTER: _____

DATE: _____ TIME: _____

Acceptance Criteria for Three Consecutive Readings:

Temp.: +/-3%, pH: +/-0.1 unit, Turb.: +/-10% above 1NTU Cond: +/-3% ORP +/-10mV D.O.: +/-10%

APPENDIX D

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN
HYDROGEOLOGICAL EVALUATION - PHASE II
OIL CONSERVATION DIVISION
ELDRIDGE RANCH PROJECT
MONUMENT, NEW MEXICO

AMEC Project No. 2-517-000002

25 January 2002

Prepared By:

Bob Wilcox
Project Manager

Reviewed By:

Fred Schelby
Manager of Engineering

SITE HEALTH & SAFETY PLAN
HYDROGEOLOGICAL EVALUATIONI

OIL CONSERVATION DIVISION
ELDRIDGE RANCH PROJECT
MONUMENT, NEW MEXICO
AMEC Project No. 2-517-000002

I have read the Site Health and Safety Plan developed for use during environmental evaluations 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: 02-26-01

Print Name	Signature	
B.M. Strzelczyk	B.M. Strzelczyk	02.26.01
Jerry Neuman	Jerry Neuman	02-26-01
Leonardo Tena	Leonardo Tena	02-26-02
Bill Olson	Bill Olson	02/28
Randy Bayliss	Randy Bayliss	02/28

Emergency Phone Numbers

Fire	911
First Aid	911
Ambulance	911
Police	911
Lea Regional Medical Center	(505) 492-5000
AMEC - Albuquerque	(800) 821-1801
AMEC - Farmington	(888) 840-2472
AMEC Project Manager - Bob Wilcox - Mobile	(505) 250-1942
Oil Conservation Division Project Manager - Bill Olson - Mobile	(505) 660-1067
Oil Conservation Division - Project Manager - Bill Olson - Office	(505) 476-3491
Oil Conservation Division - Larry Johnson - Hobbs Office	(505) 393-6161, x111

Nearest Medical Facility

Lea Regional Medical Center
5419 N. Lovington Hwy/Highway 18.
Hobbs, New Mexico
(505) 492-5000

A map showing the route is presented on the following page. Directions from the site to the Lea Regional Medical Center are as follows:

Turn Right onto Hwy 8, Proceed 4 miles to Highway 180
Turn Right on Highway 160, Proceed 8 miles to South Dal Paso/State Highway 18
Turn Left on South Dal Paso/Hwy 18/Lovington Highway, Proceed 2 miles to Hwy 18
Turn Left on Hwy 18/Lovington Highway, Proceed 4.1 miles to Hospital on the right at 5419 N. Lovington Hwy/Highway 18.

TABLE OF CONTENTS

SITE HEALTH & SAFETY PLAN
HYDROGEOLOGICAL EVALUATION
OIL CONSERVATION DIVISION
ELDRIDGE RANCH PROJECT
MONUMENT, 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 AMEC Earth & Environmental, Inc. (AMEC) employees and personnel of AMEC subcontractors involved in the Phase II Hydrogeologic Evaluation for the Oil Conservation Division Eldridge Ranch Project. It supplements, but does not supersede the standard AMEC health and safety plan. All general health and safety guidelines contained in the standard AMEC health and safety plan will also apply to this evaluation.

This document also does not supersede the standard health and safety plans and/or normal operating health and safety guidelines established by AMEC 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 AMEC's project files.

1.2 Project Description

Project efforts will consist of drilling 7 groundwater monitor wells to approximate depths of 40 feet bgs and collecting soil and ground water samples.

1.3 Responsibilities

1.3.1 Site Health & Safety Officer

Mark Strzelczyk has been designated as the site 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 AMEC project personnel.
- All AMEC 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 evaluation 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 AMEC for the exclusive use of AMEC personnel and AMEC subcontractor's personnel only. It has been developed specifically for their use during AMEC project related activities at the referenced site only.

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

AMEC will assume no responsibility for any injury or damages to any other persons or their property, except those caused by the gross negligence of AMEC 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 AMEC and non AMEC 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
• Lead	x		

Attachment A is a listing of the available information for benzene, ethlye benzene, toluene, zylenes and lead 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 January and February in open, unshaded areas. There is a low potential for heat related problems.

2.5 Cold Stress

Because this work is being performed during the January and February, there is a potential for workers to experience cold stress.

2.5 Snake Bites

The project area is known for the presence of rattlesnakes. However, since the project is being conducted during the winter months, there is a low potential for encounters with rattlesnakes and snakebites.

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.

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 evaluations 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.

AMEC project personnel will be responsible for adherence to all general health and safety guidelines contained in the standard AMEC 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 AMEC 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 site 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.

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.

3.7 Snake Bites

There is a potential for snake bites at the job site location. Be aware at all times in the area in which you are working or walking for the presence of snakes in the ground cover and on the ground around and under equipment. If a snake bite occurs, identify the type of snake, call the hospital and communicate the emergency details, take the bite victim immediately to the hospital.

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 or 505 492-5000) to the Lea Regional Medical Center.

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.

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.

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.

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.

MAPS & DRIVING DIRECTIONS

MORE INFO

Lea Regional Medical Center
5419 Lovington Hwy, Hobbs, NM 88240
(505) 492-5000
(505) 392-2487 (fax)
(877) 492-8001 (toll-free)
learegional@triadhospitals.com
http://gtesupersite.com/leamedical

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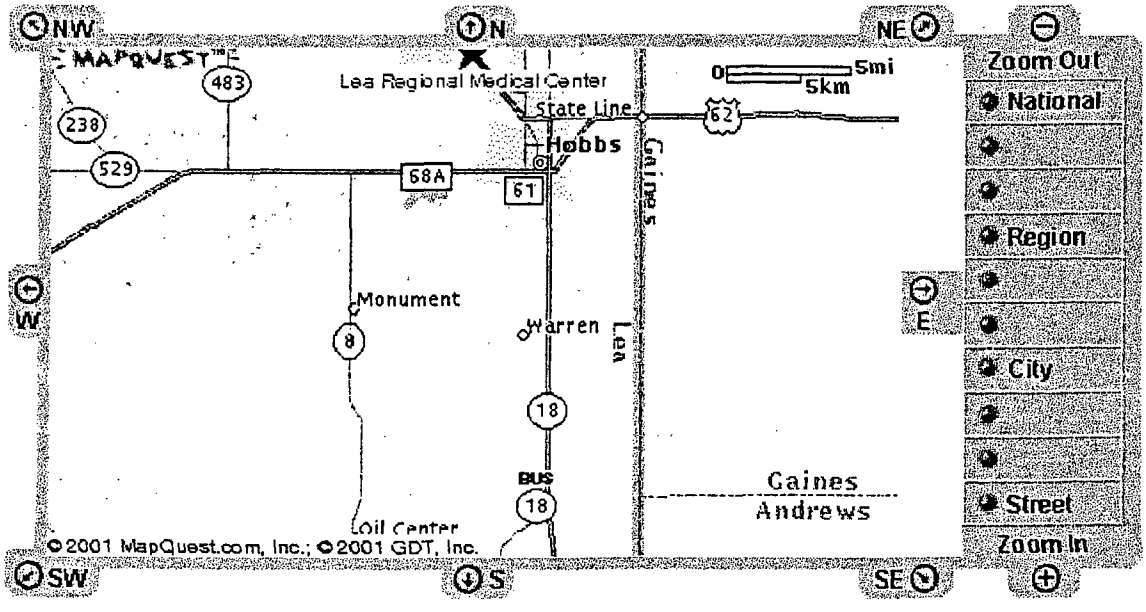
Appears in the Categories:

Clinics & Medical Centers , Hospitals ,
Physicians & Surgeons MD & DO Surgery
Orthoscopic , Therapists Physical Rehabilitation



Driving Directions Options

Driving Directions Results

HELP ?

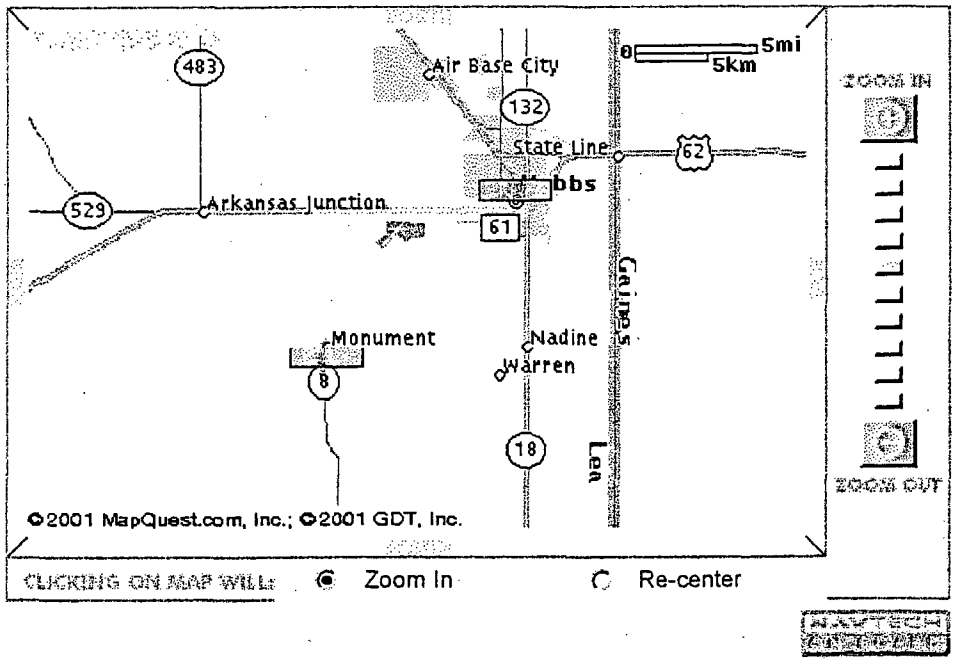
FROM:
HOBBS, NM US

TO:
MONUMENT, NM US

Total Distance: 12.6 miles (20.3 km) **Total Estimated Time:** 35 minutes

FASTEST ROUTE | SHORTEST ROUTE | AVOID HIGHWAYS

DIRECTIONS	DISTANCE
There are 0.2 miles (0.2km) between the start of the directions and your origin. Use the map below to get to US-180 W/US-62 S.	
1: Start out going South on US-180 W/US-62 S.	7.5 miles (12.1 km)
2: Turn LEFT onto NM-8.	5.0 miles (8.1 km)
TOTAL ESTIMATED TIME: **35 minutes**	**TOTAL DISTANCE:** **12.6 miles** (20.3km)



TO:
MONUMENT, NM US

ROAD TO HOSPITAL
"LEA REGIONAL MEDICAL CTR"

AGRA Earth and Environmental
Daily Safety Meeting

Project Name	ELDRIDGE RANCH	Project #	2517000002
Site Supervisor	MARK STRZELCZYK	Time	08:30
Location	ELDRIDGE RANCH HOUSE	Date	02.26.02

Planned Activities SOIL BORINGS + MONITORING WELL INSTALLATION

Safety Topics Presented PROPER PPE, LIFTING LIMITS, FALLS, NO SMOKING RULE, ROUTE TO HOSPITAL, EATING + DRINKING (H2O) AT WORK SITE (EXCLUSION ZONE), FIRE PREVENTION, DUST CONTROL, SITE RESTORATION. ETC.

PRINT NAME	SIGNATURE
B. M. STRZELCZYK	B. M. Strzelczyk
Jerry Neaman	Jerry Neaman
Leonardo Tena	Leonardo Tena

AGRA Earth and Environmental
Daily Safety Meeting

Project Name: ELDRIDGE RANCH
Project #: 2517000002
Site Supervisor: MARK STREETMYER
Time: 8:00
Location: MW-4 LOCATION
Date: 02-28-02

Planned Activities: SOIL BORINGS, WELL INSTALLATION

Safety Topics Presented: PROPER PPE, DUST CONTROL, LOW IMPACT DRIVING (USE SAME TRAILS OR EXISTING TRAILS, DO NOT RUN OVER TREES OR NATIVE PLANTS) EXTRA CAREFULL CROSSING PIPE LINES WITH DRILL RIG + SUPPORT TRUCK.

PRINT NAME	SIGNATURE
Jerry Neaman	
Leonard Tena	
MARK STREETMYER	

AGRA Earth and Environmental
Daily Safety Meeting

Project Name	ELDRIDGE RANCH	Project #	2517000002
Site Supervisor	MARK SIRZELOWYK	Time	08:00
Location	BY MW-5	Date	02.27.02

Planned Activities: SOIL BORINGS + MONITORING WELL INSTALLATION & WELL GROUTING

Safety Topics Presented: PROPER PPE, DUST CONTROL, TRIPS, FALLS, HEAVY LIFTING

PRINT NAME	SIGNATURE
B. M. Sirzelowyk	B. M. Sirzelowyk
Jerry Neaman	Jerry Neaman
Leonardo Tena	Leonardo Tena

AGRA Earth and Environmental

Daily Safety Meeting

Project Name	ELDRIDGE RANCH	Project #	2517000002
Site Supervisor	MARK STRZELCZYK	Time	08:00
Location	MW-5	Date	~~02.28.02~~ 03.1.02

Planned Activities SOIL BORING + GROUTING

Safety Topics Presented Proper PPE, heavy lifting, Dust control

PRINT NAME	SIGNATURE
B.M. Strzelczyk	B.M. [signature]
Jerry Nieman	[signature]
Isaac Asa Henthorn	[signature]

APPENDIX E

MONITOR WELL COMPLETION DIAGRAMS

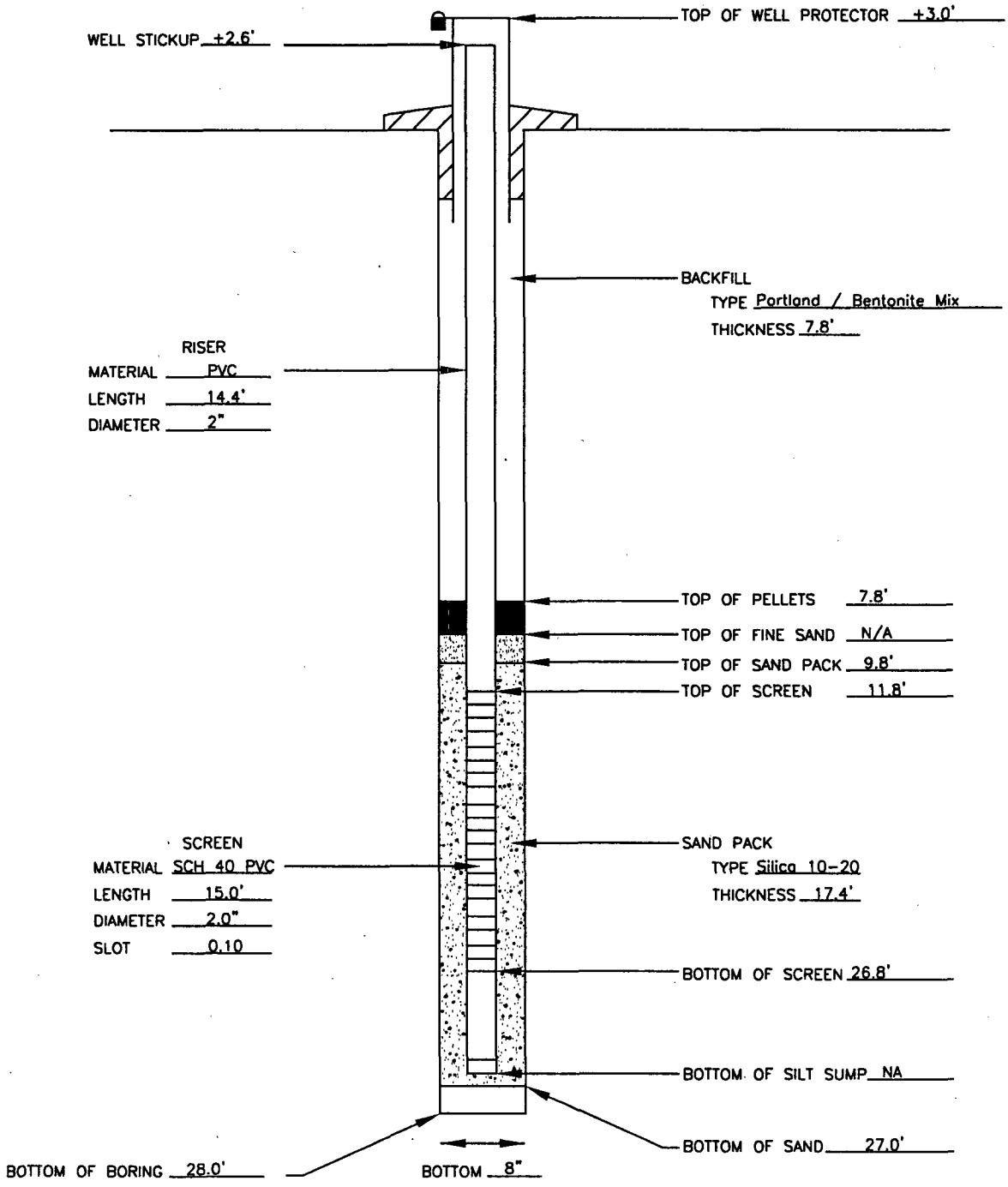
amec
8519 Jefferson NE
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: AUGUST 6, 2001 WELL NUMBER: MW-1

PROJECT NUMBER: 1-517-000035 DRILLING COMPANY: ENVIRO WORKS METHOD: HOLLOW STEM AUGER

REMARKS: SAND - 6 CHIPS 1 PORTLAND 2, DRUM WATER - 4, SOIL ½ MW-4 & 5 = 1 DRUM TOTAL) INSPECTOR: M.S



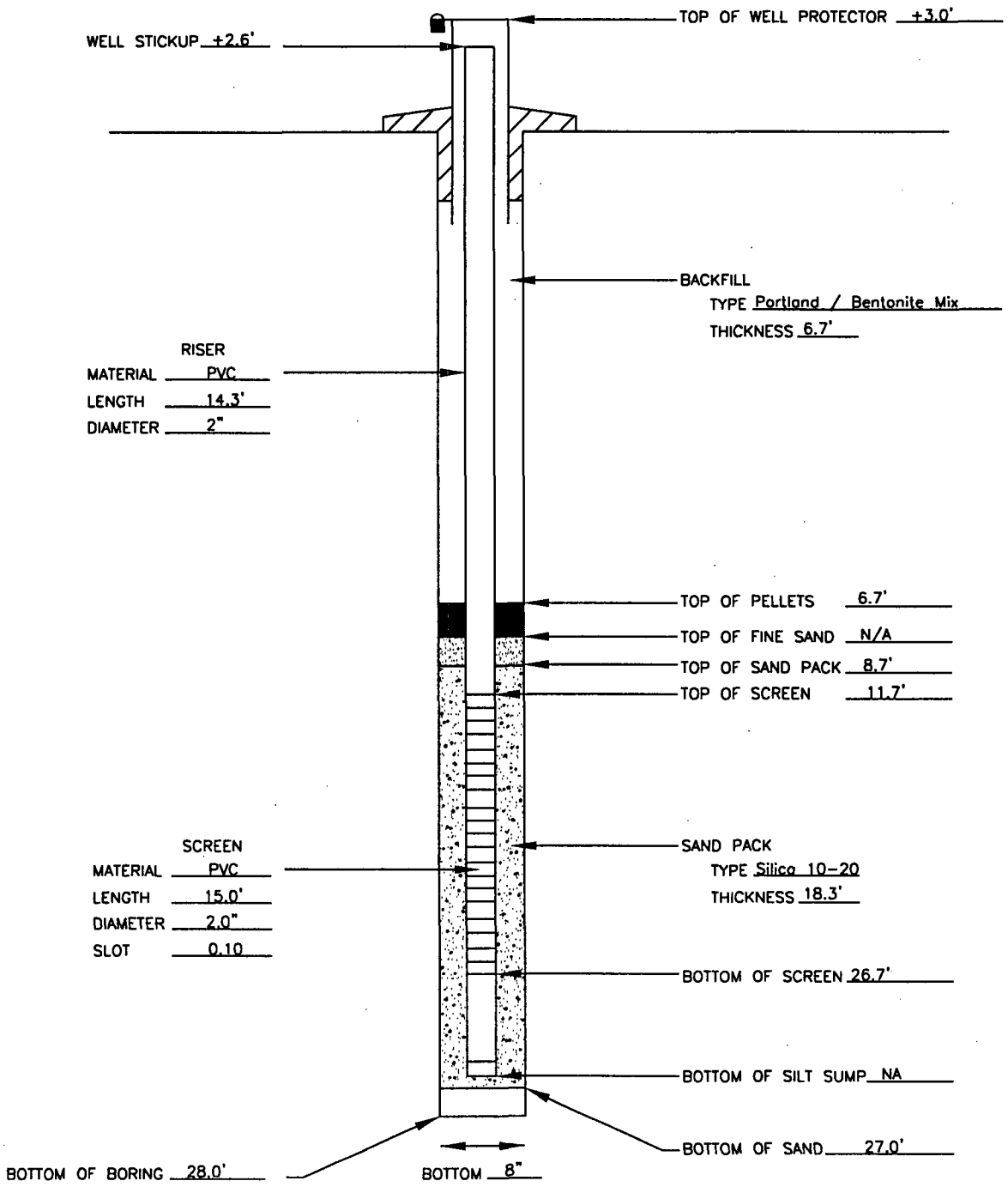
amec
8519 Jefferson NE
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: AUGUST 7, 2001 WELL NUMBER: MW-2

PROJECT NUMBER: 1-517-000035 DRILLING COMPANY: ENVIRO WORKS METHOD: HOLLOW STEM AUGER

REMARKS: SAND - 6 CHIPS 1
PORTLAND 2, DRUM WATER - 1 INSPECTOR: M.S



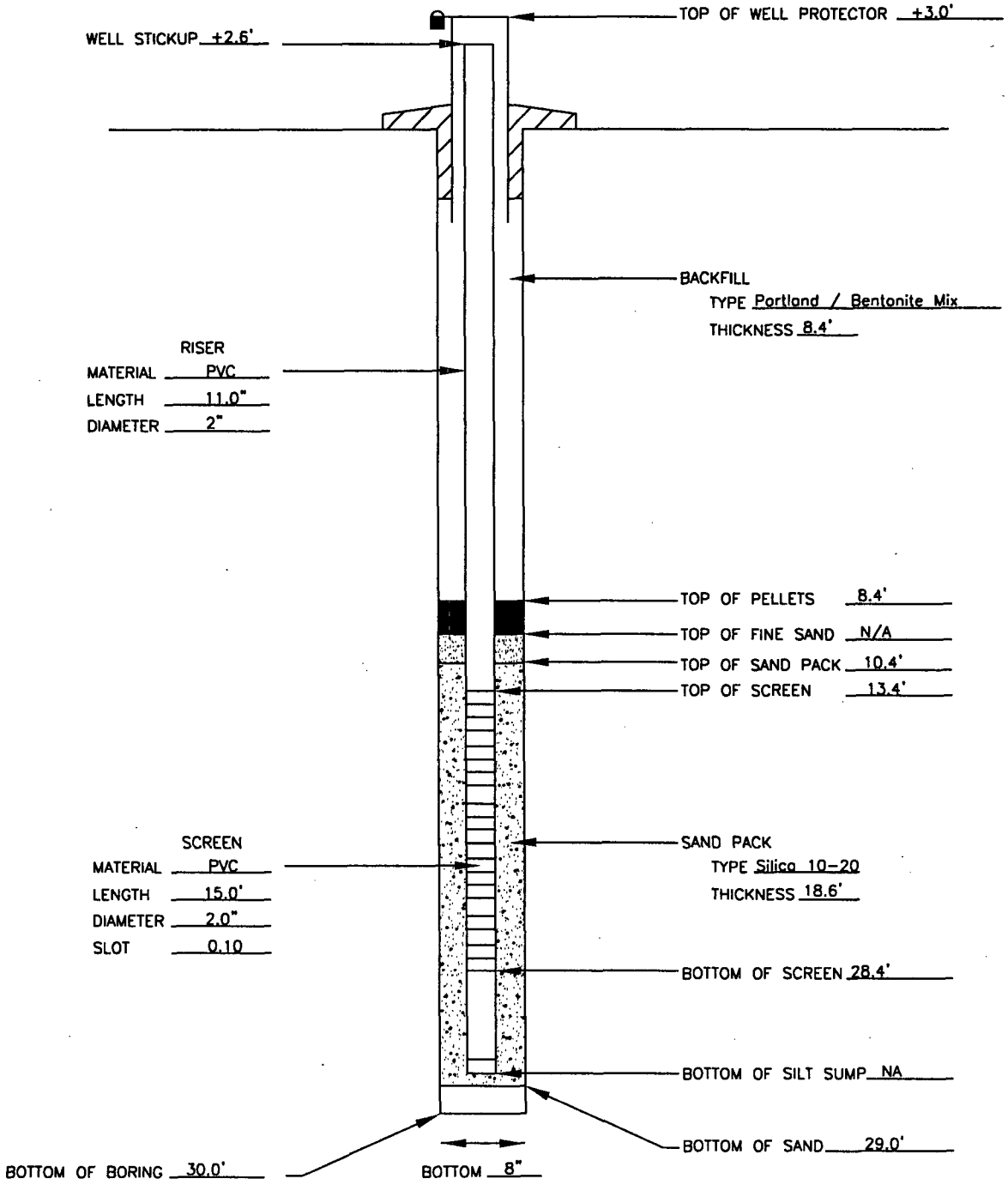
amec
8519 Jefferson NE
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: AUGUST 7, 2001 WELL NUMBER: MW-3

PROJECT NUMBER: 1-517-000035 DRILLING COMPANY: ENVIRO WORKS METHOD: HOLLOW STEM AUGER

REMARKS: SAND - 6 CHIPS 1
PORTLAND 1, DRUM WATER - 4 INSPECTOR: M.S



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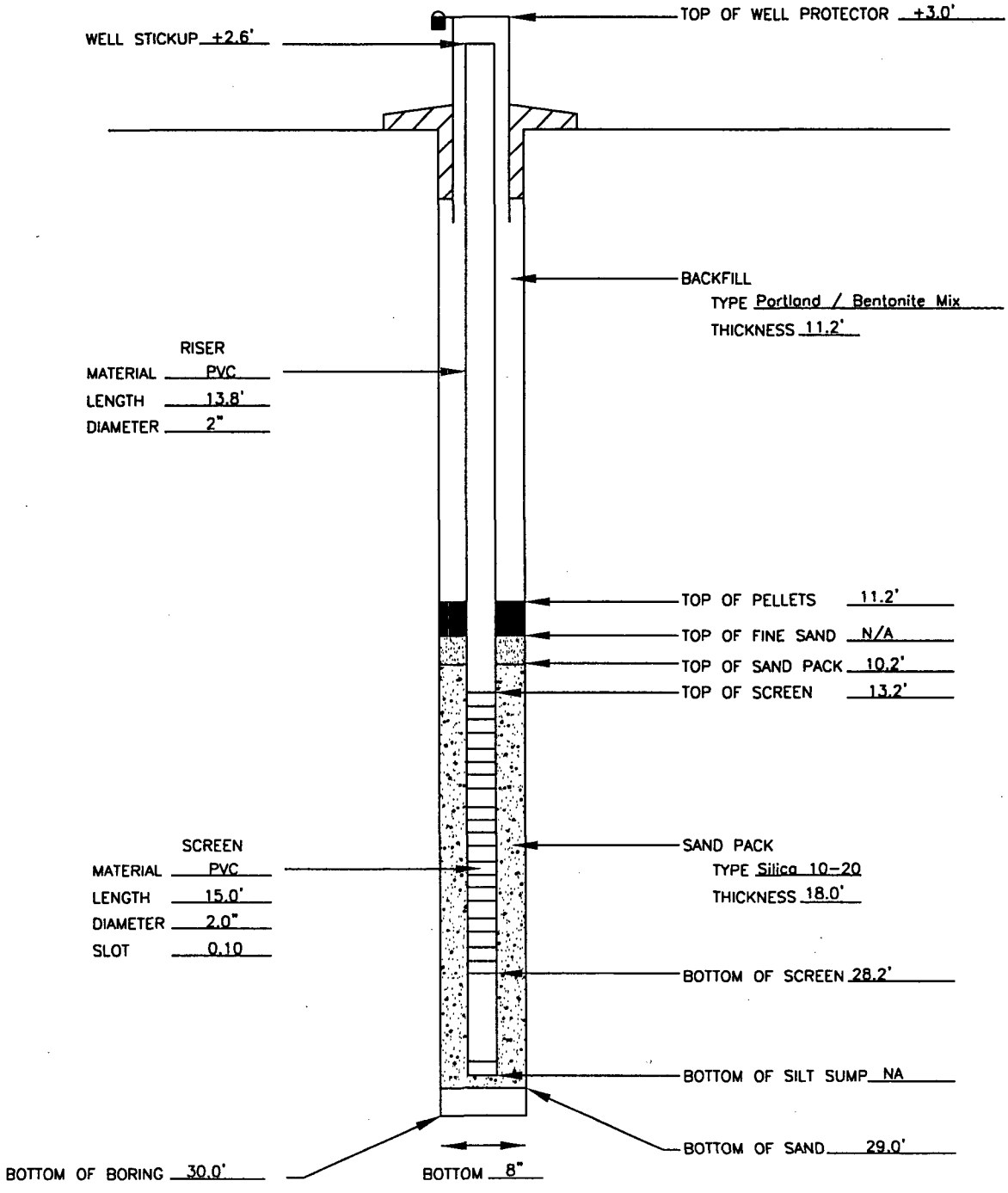
8519 Jefferson NE
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: AUGUST 8, 2001 WELL NUMBER: MW-4

PROJECT NUMBER: 1-517-000035 DRILLING COMPANY: ENVIRO WORKS METHOD: HOLLOW STEM AUGER

REMARKS: SAND - 5 CHIPS 1
PORTLAND 2, DRUM WATER - 1 INSPECTOR: M.S



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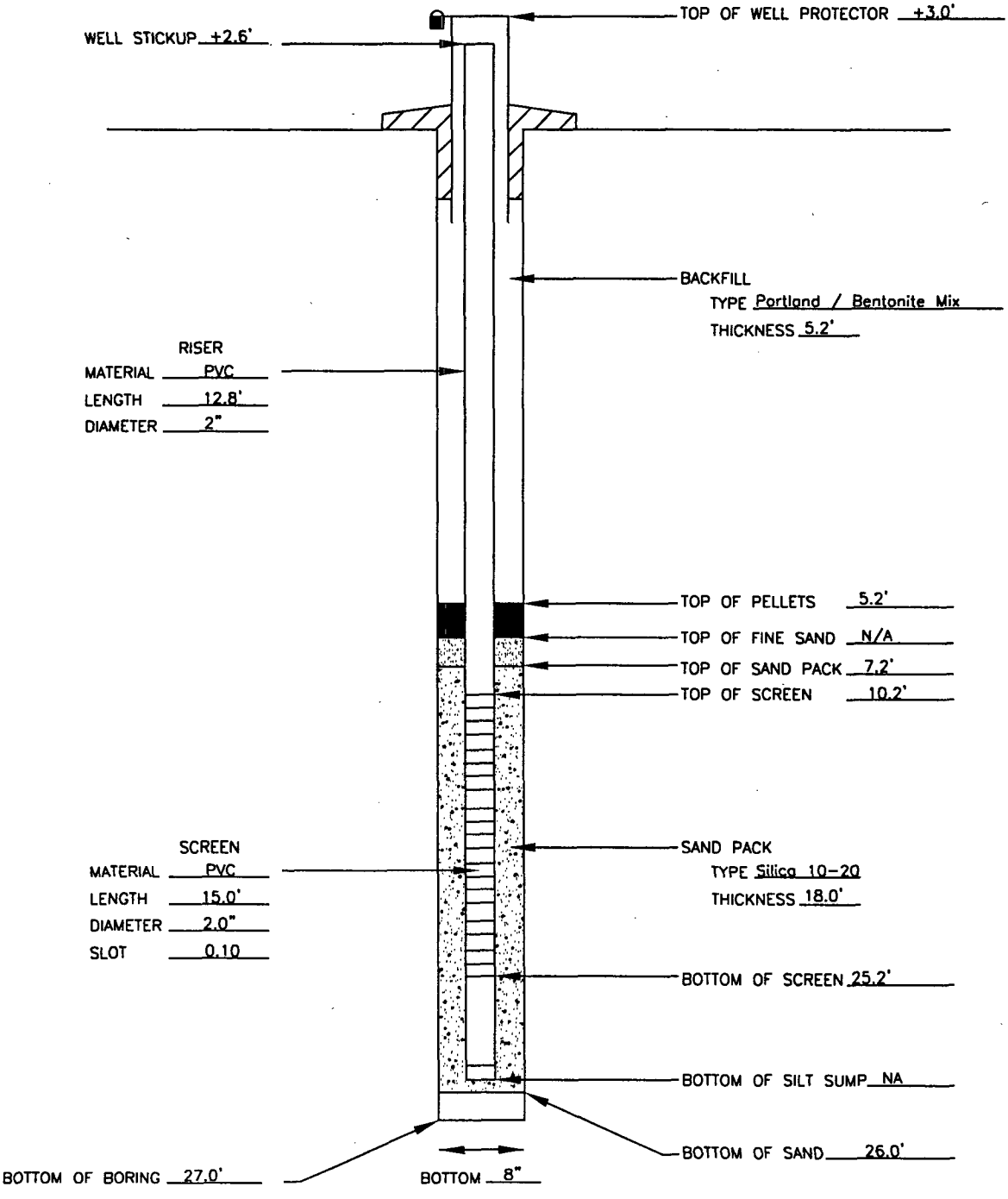
8519 Jefferson NE
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: AUGUST 8, 2001 WELL NUMBER: MW-5

PROJECT NUMBER: 1-517-000035 DRILLING COMPANY: ENVIRO WORKS METHOD: HOLLOW STEM AUGER

REMARKS: SAND - 6 CHIPS 1
PORTLAND 2 DRUMS (WATER @ ½ SOIL) INSPECTOR: M.S



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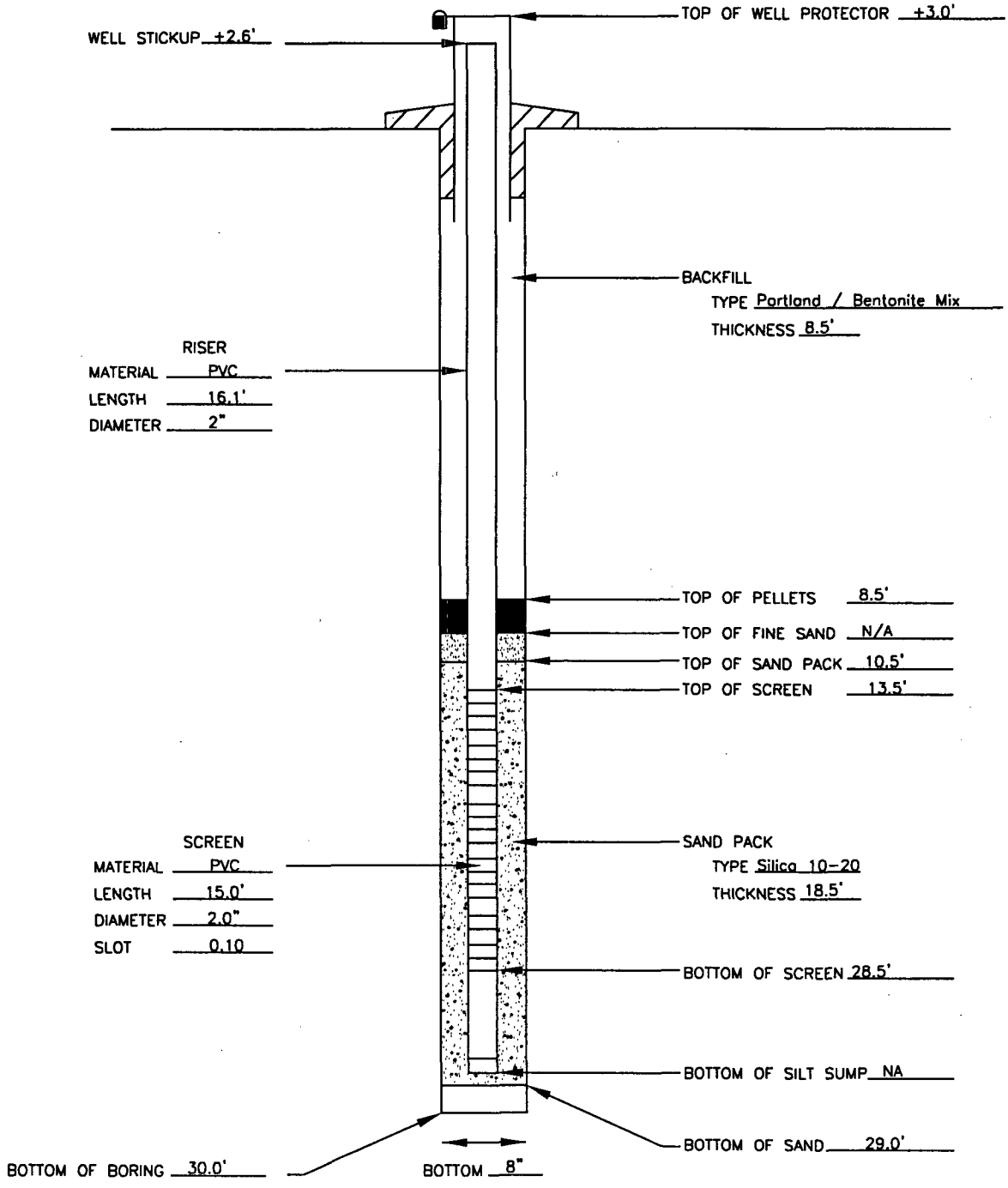
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: AUGUST 8, 2001 WELL NUMBER: MW-6

PROJECT NUMBER: 1-517-000035 DRILLING COMPANY: ENVIRO WORKS METHOD: HOLLOW STEM AUGER

REMARKS: SAND - 6 CHIPS 1
PORTLAND 2 DRUMS - 1 WATER INSPECTOR: M.S



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Albuquerque, New Mexico 87113

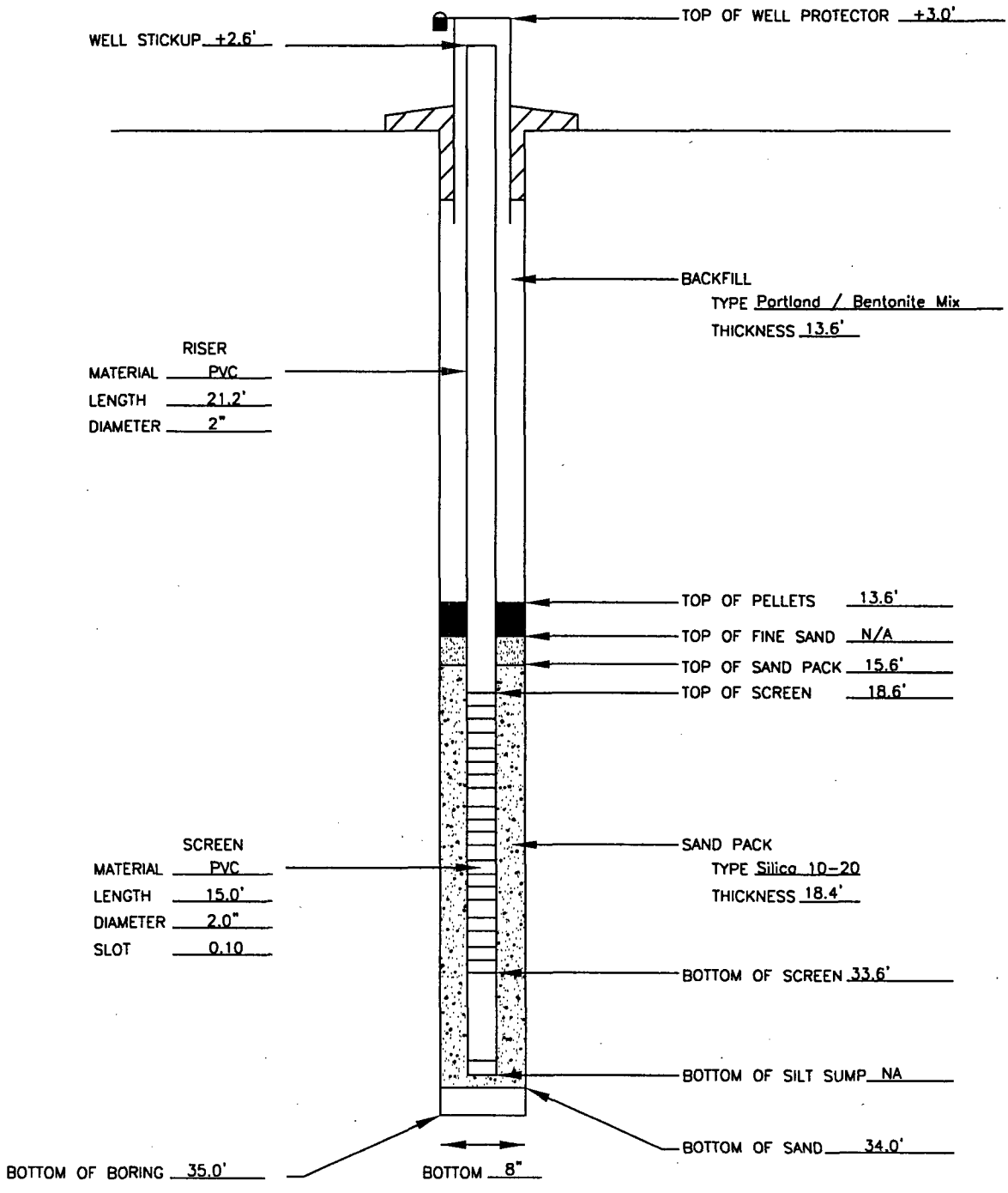
WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: AUGUST 9, 2001 WELL NUMBER: MW-7

PROJECT NUMBER: 1-517-000035 DRILLING COMPANY: ENVIRO WORKS METHOD: HOLLOW STEM AUGER

REMARKS: SAND - 6 CHIPS 1
PORTLAND 2 DRUMS - 1 WATER

INSPECTOR: M.S



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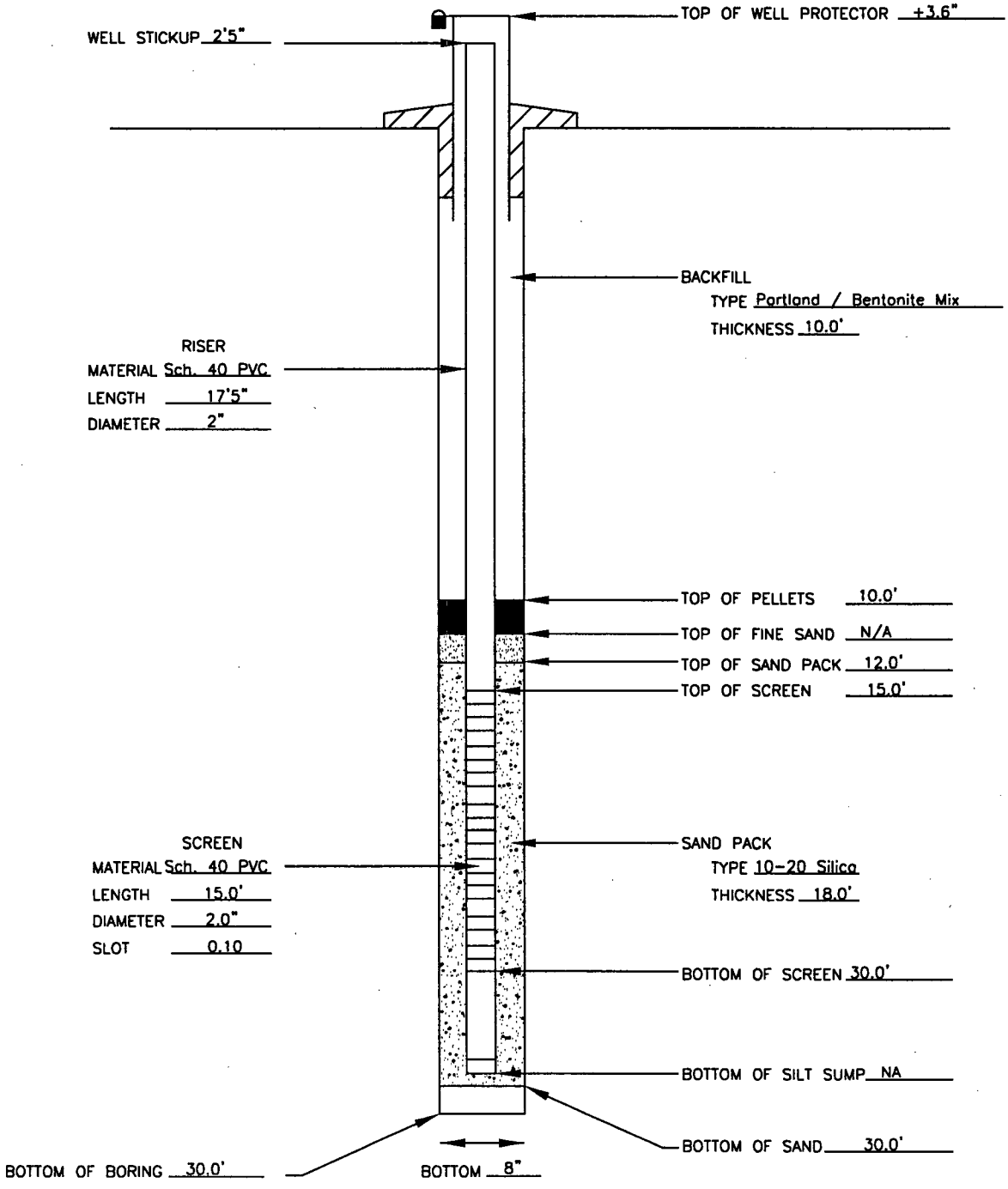
8519 Jefferson NE
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: February 28, 2002 WELL NUMBER: MW-8

PROJECT NUMBER: 2-517-000002 DRILLING COMPANY: GSI METHOD: HOLLOW STEM AUGER

REMARKS: INSPECTOR: M.S



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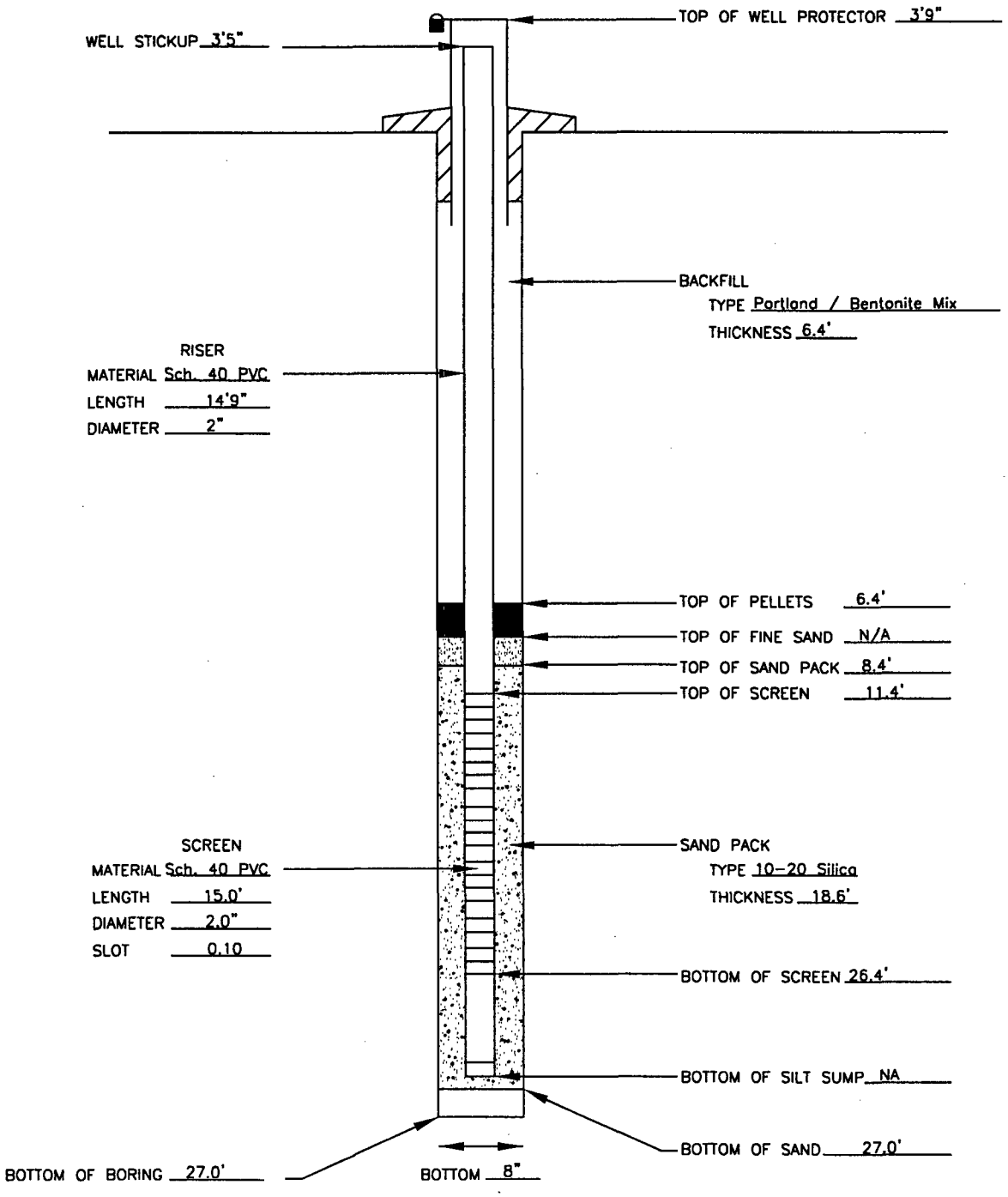
8519 Jefferson NE
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: March 2, 2002 WELL NUMBER: MW-9

PROJECT NUMBER: 2-517-000002 DRILLING COMPANY: GSI METHOD: HOLLOW STEM AUGER

REMARKS: INSPECTOR: M.S



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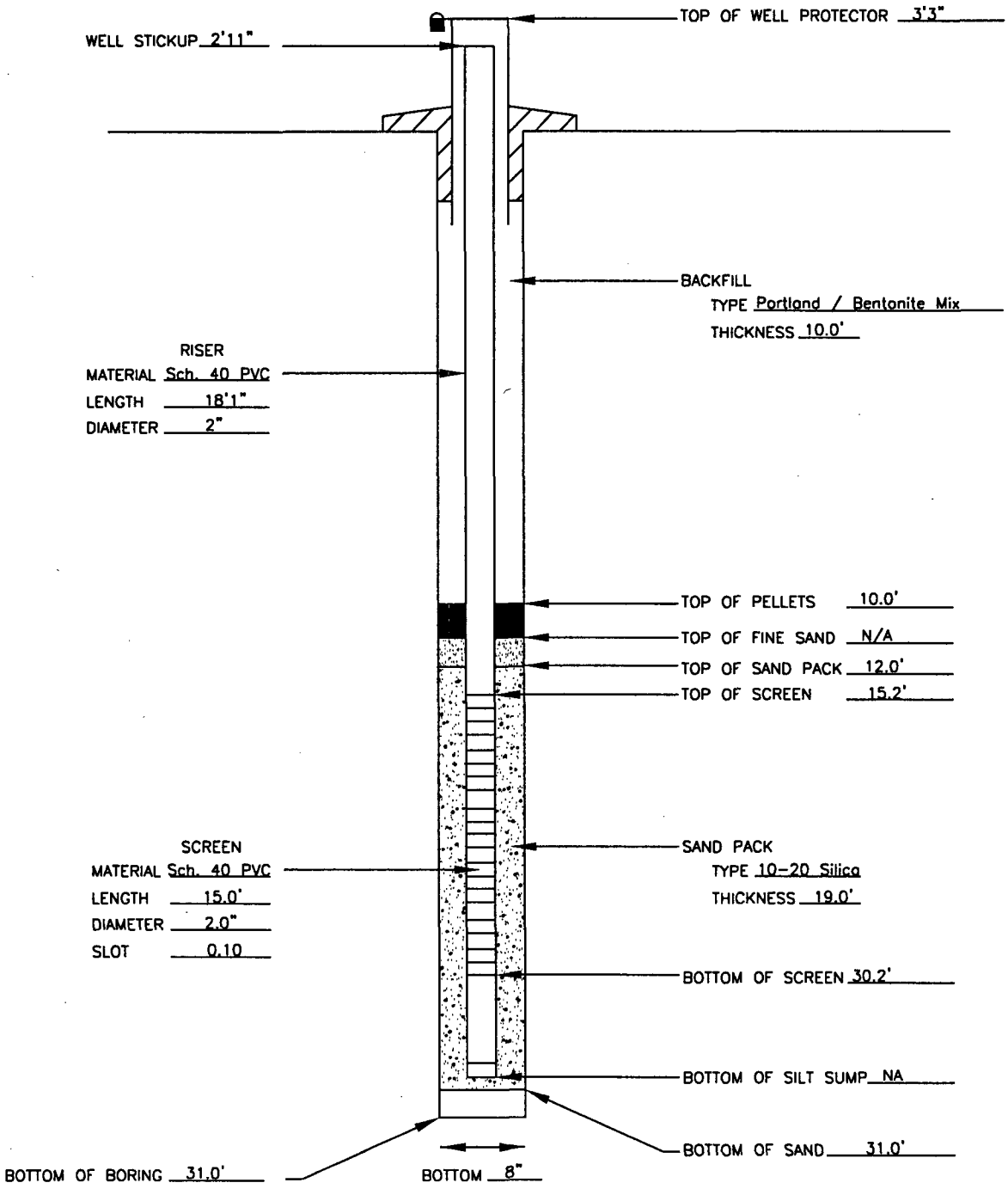
8519 Jefferson NE
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: February 28, 2002 WELL NUMBER: MW-10

PROJECT NUMBER: 2-517-000002 DRILLING COMPANY: GSI METHOD: HOLLOW STEM AUGER

REMARKS: INSPECTOR: M.S



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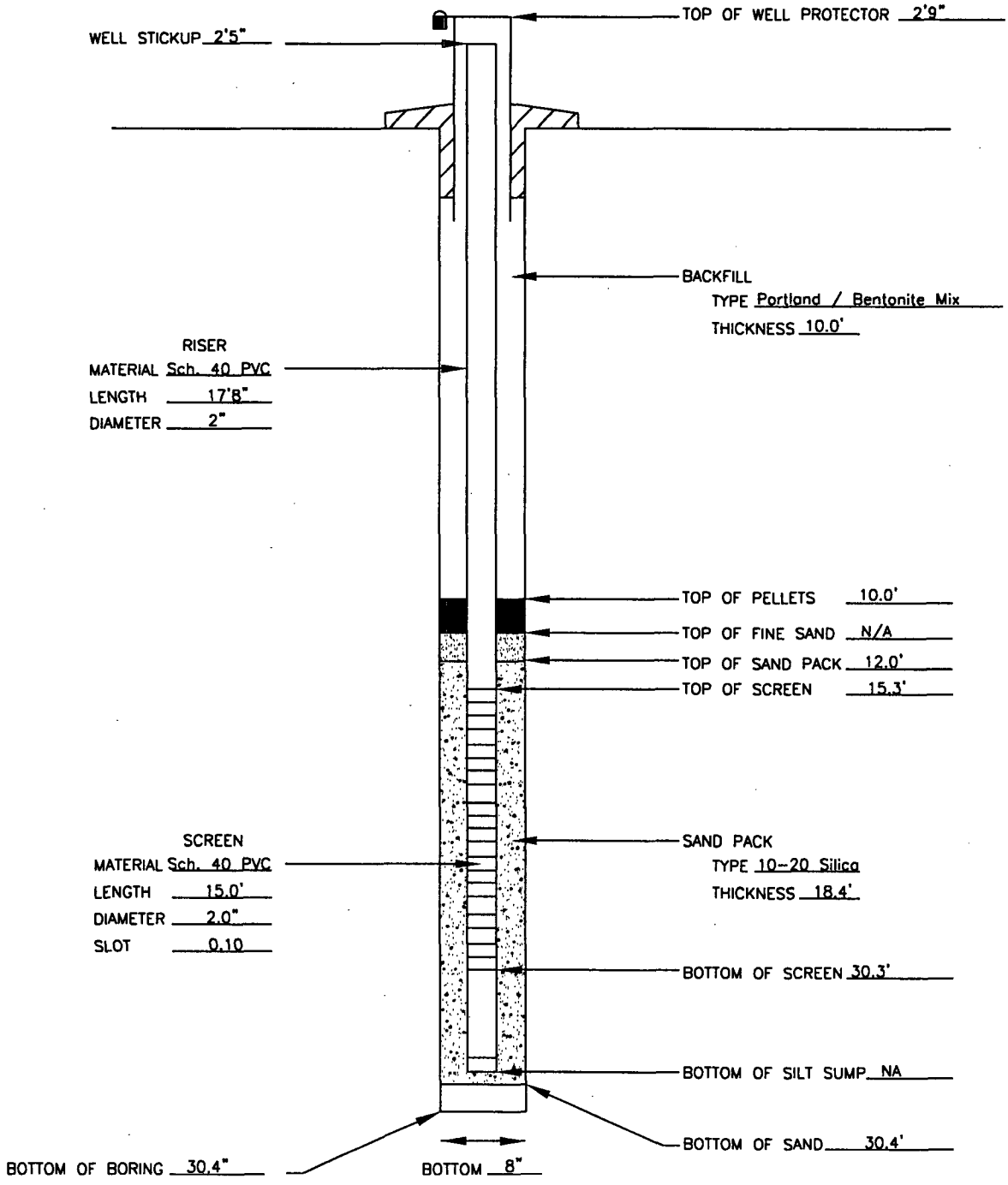
8519 Jefferson NE
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: February 28, 2002 WELL NUMBER: MW-11

PROJECT NUMBER: 2-517-000002 DRILLING COMPANY: GSI METHOD: HOLLOW STEM AUGER

REMARKS: INSPECTOR: M.S



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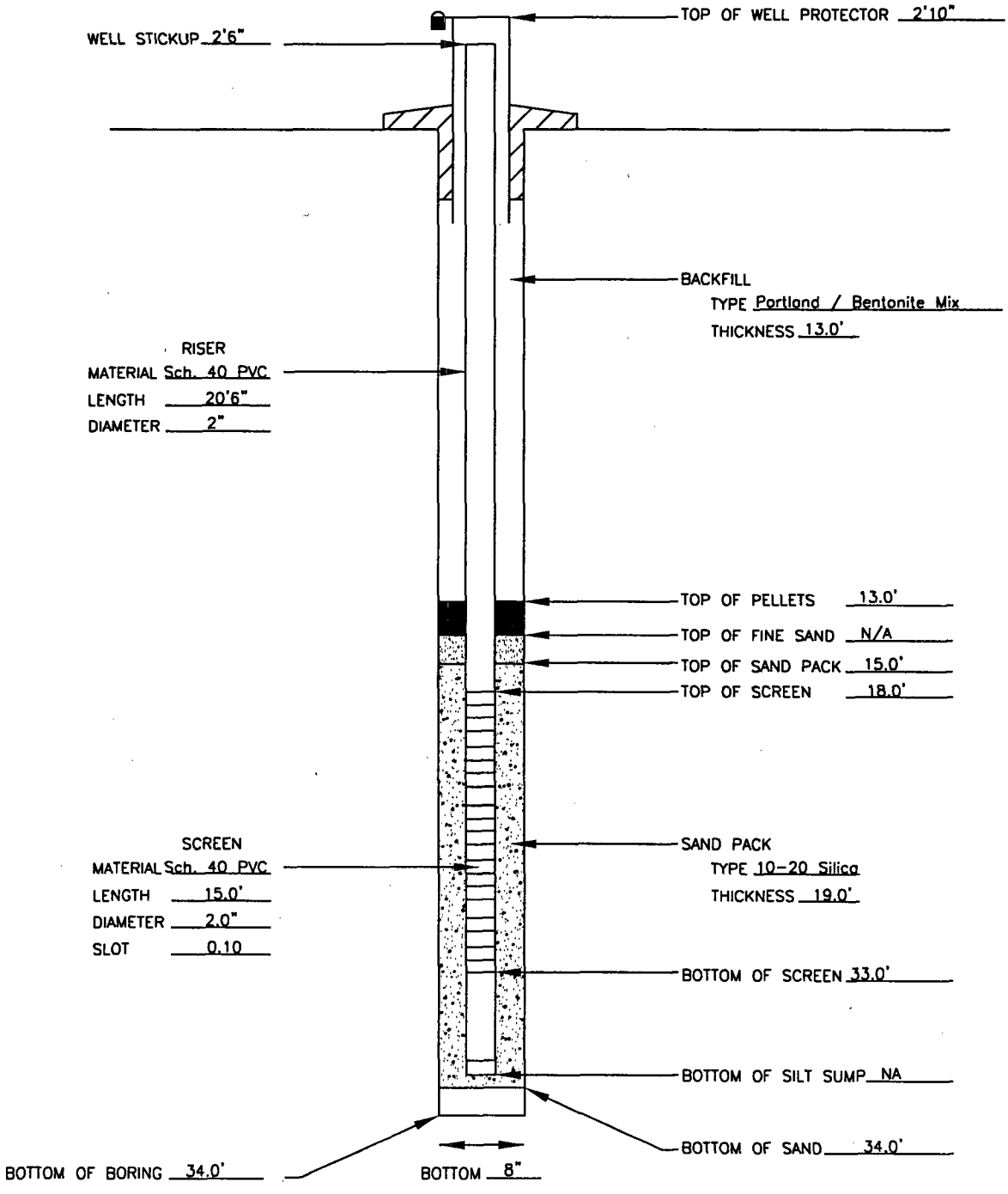
8519 Jefferson NE
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: February 26, 2002 WELL NUMBER: MW-12

PROJECT NUMBER: 2-517-000002 DRILLING COMPANY: GSI METHOD: HOLLOW STEM AUGER

REMARKS: INSPECTOR: M.S



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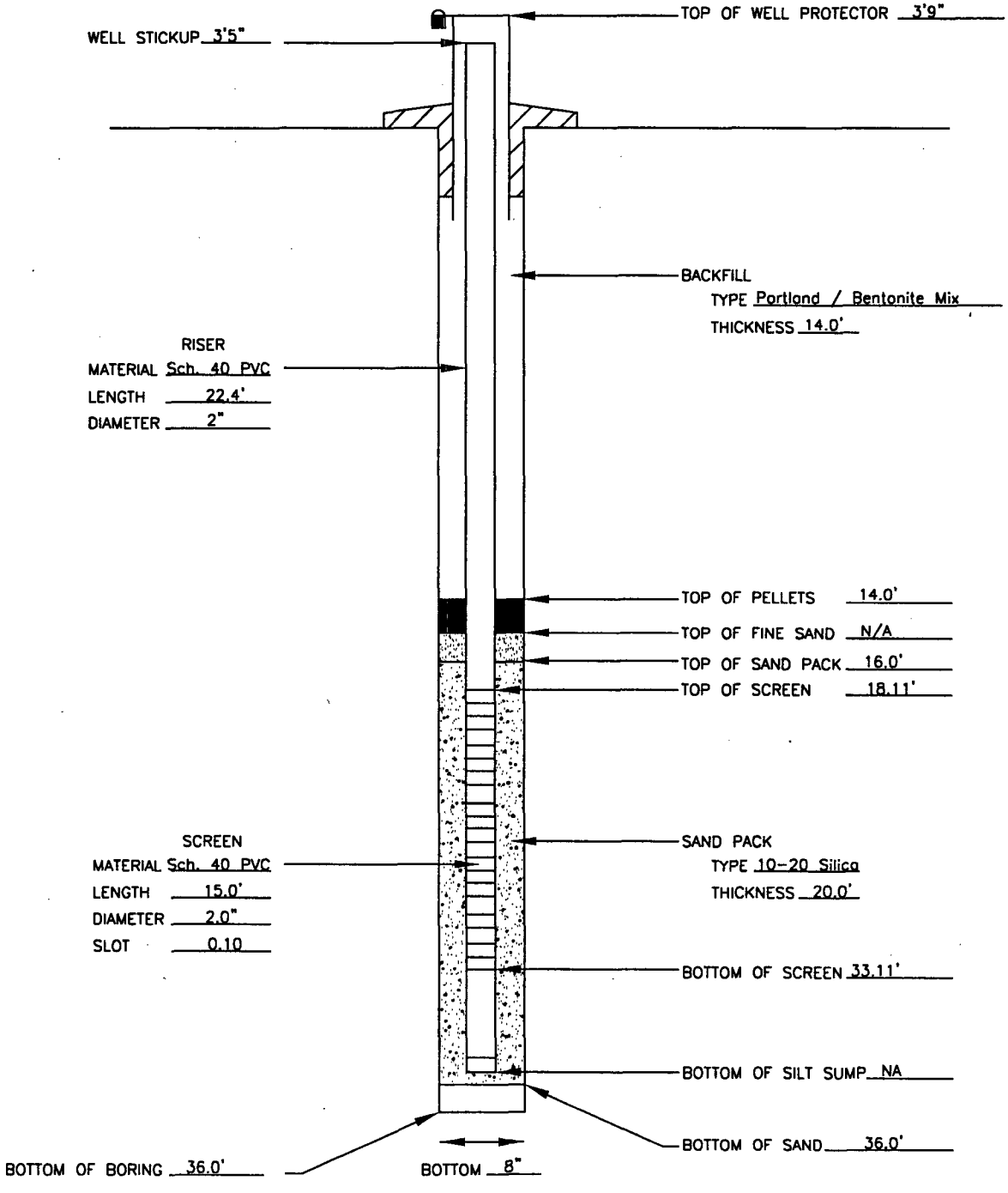
8519 Jefferson NE
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: February 26, 2002 WELL NUMBER: MW-13

PROJECT NUMBER: 2-517-000002 DRILLING COMPANY: GSI METHOD: HOLLOW STEM AUGER

REMARKS: INSPECTOR: M.S



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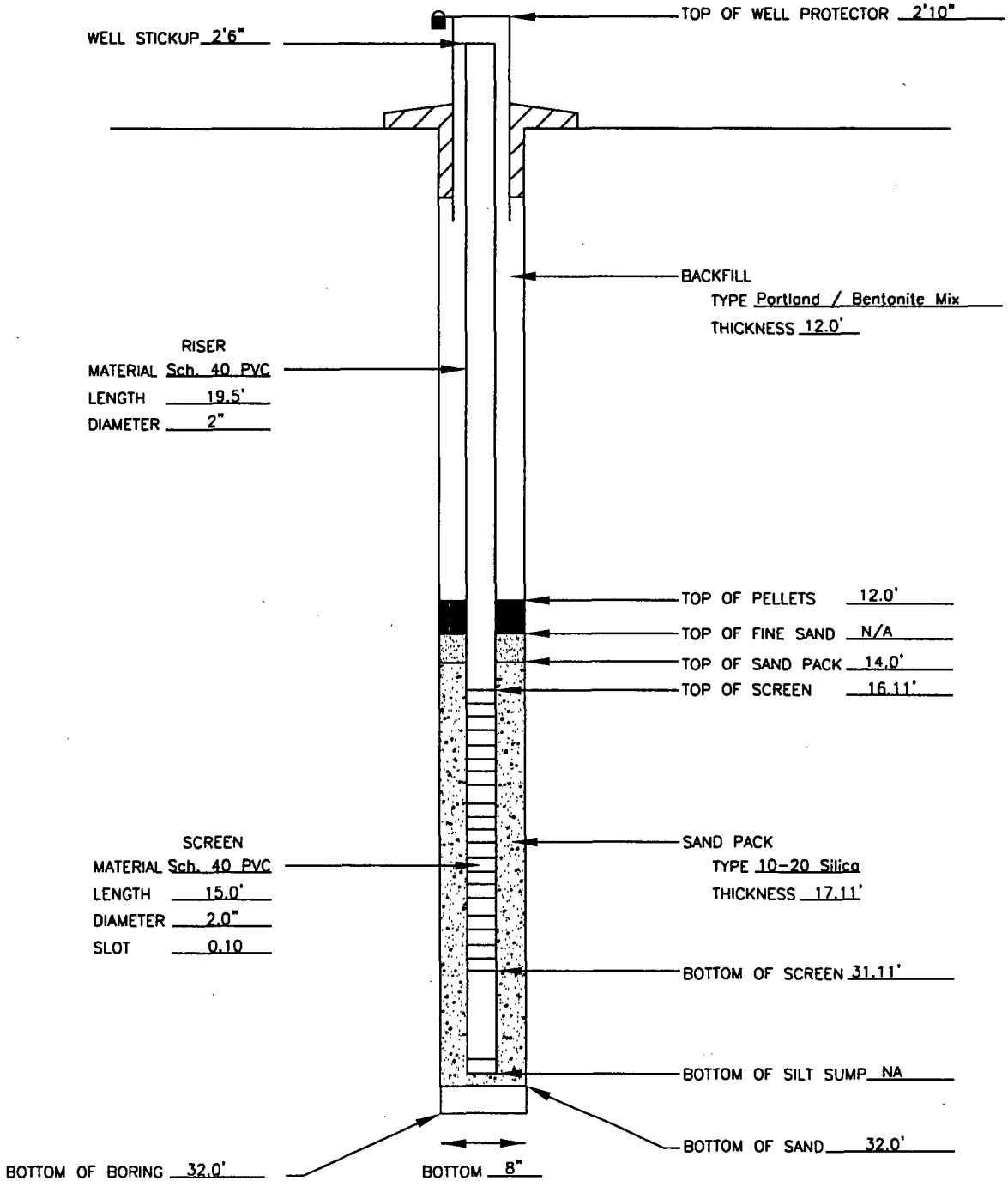
8519 Jefferson NE
Albuquerque, New Mexico 87113

WELL CONSTRUCTION DIAGRAM

PROJECT NAME: ELDRIDGE RANCH DATE INSTALLED: March 1, 2002 WELL NUMBER: MW-14

PROJECT NUMBER: 2-517-000002 DRILLING COMPANY: GSI METHOD: HOLLOW STEM AUGER

REMARKS: INSPECTOR: M.S



APPENDIX F

LABORATORY REPORTS

Summary Report

Bob Wilcox
AMEC Inc.
1712-A W Hadley Ave.
Las Cruces, NM 88005

Report Date: March 27, 2002

Order ID Number: A02030516

Project Number: 2517000002
Project Name: Eldridge Ranch
Project Location: Monument-Rt 8.5

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
192183	MW-12	Water	3/3/02	:	3/5/02
192184	MW-9	Water	3/3/02	:	3/5/02
192185	MW-8	Water	3/3/02	:	3/5/02
192186	MW-11	Water	3/3/02	:	3/5/02
192187	MW-10	Water	3/3/02	:	3/5/02
192188	MW-13	Water	3/3/02	:	3/5/02
192189	MW-14	Water	3/3/02	:	3/5/02
192190	Trip Blank	Water	3/3/02	:	3/5/02

0 This report consists of a total of 7 page(s) and is intended only as a summary of results for the sample(s) listed above.

	BTEX					TPH DRO	TPH GRO
Sample - Field Code	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	M,P,O-Xylene (ppm)	Total BTEX (ppm)	DRO (ppm)	GRO (ppm)
192183 - MW-12	9.68	0.281	<0.100	<0.100	9.96	<5.00	22.2
192184 - MW-9	<0.005	<0.005	<0.005	<0.005	<0.005	<5.00	<0.5
192185 - MW-8	8.60	0.462	<0.100	0.197	9.26	<5.00	20.6
192186 - MW-11	27.8	2.49	<0.200	0.376	30.7	<5.00	68.3
192187 - MW-10	10.6	<0.100	<0.100	<0.100	10.6	<5.00	19.7
192188 - MW-13	19.8	5.95	0.205	0.432	26.4	<5.00	58
192189 - MW-14	1.04	0.0059	<0.005	0.0085	1.05	<5.00	2.13
192190 - Trip Blank	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.5

Sample: 192183 - MW-12

Param	Flag	Result	Units
Hydroxide Alkalinity		<1.0	mg/L as CaCo3
Carbonate Alkalinity		<1.0	mg/L as CaCo3
Bicarbonate Alkalinity		276	mg/L as CaCo3
Total Alkalinity		276	mg/L as CaCo3
Specific Conductance		1490	μMHOS/cm
Total Mercury		<0.0002	mg/L
Chloride		234	mg/L
Fluoride	[1]	2.52	mg/L

Continued on next page ...

[1]Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

Sample 192183 continued ...

Param	Flag	Result	Units
Nitrate-N		<1.00	mg/L
Sulfate		32.8	mg/L
Dissolved Calcium		99	mg/L
Dissolved Magnesium		35.1	mg/L
Dissolved Potassium		6.88	mg/L
Dissolved Sodium		125	mg/L
Total Dissolved Solids		850	mg/L
Total Aluminum		59.5	mg/L
Total Arsenic		0.0658	mg/L
Total Barium		9.41	mg/L
Total Boron		.264	mg/L
Total Cadmium		<0.005	mg/L
Total Chromium		0.196	mg/L
Total Cobalt		<0.025	mg/L
Total Copper		0.0307	mg/L
Total Iron		39.8	mg/L
Total Lead		0.0232	mg/L
Total Manganese		0.554	mg/L
Total Molybdenum		<0.050	mg/L
Total Nickel		0.0253	mg/L
Total Selenium		<0.050	mg/L
Total Silica		7.30	mg/L
Total Silver		<0.0125	mg/L
Total Zinc		0.0749	mg/L
pH	[2]	7.4	s.u.

Sample: 192184 - MW-9

Param	Flag	Result	Units
Hydroxide Alkalinity		<1.0	mg/L as CaCo3
Carbonate Alkalinity		<1.0	mg/L as CaCo3
Bicarbonate Alkalinity		222	mg/L as CaCo3
Total Alkalinity		222	mg/L as CaCo3
Specific Conductance		734	µMHOS/cm
Total Mercury		<0.0002	mg/L
Chloride		34.8	mg/L
Fluoride	[3]	1.93	mg/L
Nitrate-N		1.31	mg/L
Sulfate		45.3	mg/L
Dissolved Calcium		78.5	mg/L
Dissolved Magnesium		14.1	mg/L
Dissolved Potassium		5.66	mg/L
Dissolved Sodium		47.1	mg/L
Total Dissolved Solids		484	mg/L
Total Aluminum		94.6	mg/L
Total Arsenic		<0.050	mg/L
Total Barium		2.84	mg/L
Total Boron		.259	mg/L
Total Cadmium		<0.005	mg/L

Continued on next page ...

[2]Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.

[3]Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

Sample 192184 continued ...

Param	Flag	Result	Units
Total Chromium		0.191	mg/L
Total Cobalt		<0.025	mg/L
Total Copper		0.0352	mg/L
Total Iron		66.1	mg/L
Total Lead		0.0212	mg/L
Total Manganese		1.29	mg/L
Total Molybdenum		<0.050	mg/L
Total Nickel		0.0632	mg/L
Total Selenium		<0.050	mg/L
Total Silica		10.5	mg/L
Total Silver		<0.0125	mg/L
Total Zinc		0.140	mg/L
pH	[4]	7.5	s.u.

Sample: 192185 - MW-8

Param	Flag	Result	Units
Hydroxide Alkalinity		<1.0	mg/L as CaCo3
Carbonate Alkalinity		<1.0	mg/L as CaCo3
Bicarbonate Alkalinity		322	mg/L as CaCo3
Total Alkalinity		322	mg/L as CaCo3
Specific Conductance		961	μMHOS/cm
Total Mercury		<0.0002	mg/L
Chloride		69.4	mg/L
Fluoride	[5]	1.93	mg/L
Nitrate-N		<1.00	mg/L
Sulfate		11.9	mg/L
Dissolved Calcium		129	mg/L
Dissolved Magnesium		23.1	mg/L
Dissolved Potassium		< 5	mg/L
Dissolved Sodium		48.5	mg/L
Total Dissolved Solids		607	mg/L
Total Aluminum		3.39	mg/L
Total Arsenic		<0.050	mg/L
Total Barium		2.03	mg/L
Total Boron		0.130	mg/L
Total Cadmium		<0.005	mg/L
Total Chromium		0.0145	mg/L
Total Cobalt		<0.025	mg/L
Total Copper		<0.0125	mg/L
Total Iron		3.21	mg/L
Total Lead		0.0105	mg/L
Total Manganese		0.128	mg/L
Total Molybdenum		<0.050	mg/L
Total Nickel		<0.025	mg/L
Total Selenium		<0.050	mg/L
Total Silica		38.6	mg/L
Total Silver		<0.0125	mg/L
Total Zinc		0.0439	mg/L

Continued on next page ...

[4]Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.

[5]Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

Sample 192185 continued ...

Param	Flag	Result	Units
pH	[6]	7.4	s.u.

Sample: 192186 - MW-11

Param	Flag	Result	Units
Hydroxide Alkalinity		<1.0	mg/L as CaCo3
Carbonate Alkalinity		<1.0	mg/L as CaCo3
Bicarbonate Alkalinity		316	mg/L as CaCo3
Total Alkalinity		316	mg/L as CaCo3
Specific Conductance		1070	µMHOS/cm
Total Mercury		<0.0002	mg/L
Chloride		87.3	mg/L
Fluoride	[7]	1.92	mg/L
Nitrate-N		<1.00	mg/L
Sulfate		12.2	mg/L
Dissolved Calcium		142	mg/L
Dissolved Magnesium		22.9	mg/L
Dissolved Potassium		5.48	mg/L
Dissolved Sodium		50.1	mg/L
Total Dissolved Solids		639	mg/L
Total Aluminum		4.66	mg/L
Total Arsenic		<0.050	mg/L
Total Barium		2.94	mg/L
Total Boron		0.139	mg/L
Total Cadmium		0.00898	mg/L
Total Chromium		0.0324	mg/L
Total Cobalt		<0.025	mg/L
Total Copper		<0.0125	mg/L
Total Iron		3.42	mg/L
Total Lead		<0.010	mg/L
Total Manganese		0.204	mg/L
Total Molybdenum		<0.050	mg/L
Total Nickel		<0.025	mg/L
Total Selenium		<0.050	mg/L
Total Silica		25.8	mg/L
Total Silver		<0.0125	mg/L
Total Zinc		<0.025	mg/L
pH	[8]	7.3	s.u.

Sample: 192187 - MW-10

Param	Flag	Result	Units
Hydroxide Alkalinity		<1.0	mg/L as CaCo3
Carbonate Alkalinity		<1.0	mg/L as CaCo3
Bicarbonate Alkalinity		278	mg/L as CaCo3
Total Alkalinity		278	mg/L as CaCo3

Continued on next page ...

[6]Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.
[7]Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.
[8]Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.

Sample 192187 continued ...

Param	Flag	Result	Units
Specific Conductance		911	µMHOS/cm
Total Mercury		<0.0002	mg/L
Chloride		56.0	mg/L
Fluoride	[9]	2.22	mg/L
Nitrate-N		<1.00	mg/L
Sulfate		19.0	mg/L
Dissolved Calcium		89.9	mg/L
Dissolved Magnesium		20.3	mg/L
Dissolved Potassium		5.29	mg/L
Dissolved Sodium		52.1	mg/L
Total Dissolved Solids		581	mg/L
Total Aluminum		60	mg/L
Total Arsenic		<0.050	mg/L
Total Barium		3.34	mg/L
Total Boron		0.194	mg/L
Total Cadmium		<0.005	mg/L
Total Chromium		0.316	mg/L
Total Cobalt		<0.025	mg/L
Total Copper		0.0273	mg/L
Total Iron		47.6	mg/L
Total Lead		0.0197	mg/L
Total Manganese		0.376	mg/L
Total Molybdenum		<0.050	mg/L
Total Nickel		0.0339	mg/L
Total Selenium		<0.050	mg/L
Total Silica		7.16	mg/L
Total Silver		<0.0125	mg/L
Total Zinc		0.0884	mg/L
pH	[10]	7.3	s.u.

Sample: 192188 - MW-13

Param	Flag	Result	Units
Hydroxide Alkalinity		<1.0	mg/L as CaCo3
Carbonate Alkalinity		<1.0	mg/L as CaCo3
Bicarbonate Alkalinity		308	mg/L as CaCo3
Total Alkalinity		308	mg/L as CaCo3
Specific Conductance		888	µMHOS/cm
Total Mercury		<0.0002	mg/L
Chloride		72.4	mg/L
Fluoride	[11]	2.39	mg/L
Nitrate-N		<1.00	mg/L
Sulfate		11.0	mg/L
Dissolved Calcium		103	mg/L
Dissolved Magnesium		21.8	mg/L
Dissolved Potassium		7.28	mg/L
Dissolved Sodium		49.9	mg/L

Continued on next page ...

[9] Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

[10] Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.

[11] Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

Sample 192188 continued ...

Param	Flag	Result	Units
Total Dissolved Solids		547	mg/L
Total Aluminum		7.28	mg/L
Total Arsenic		<0.050	mg/L
Total Barium		4.61	mg/L
Total Boron		0.120	mg/L
Total Cadmium		<0.005	mg/L
Total Chromium		0.0118	mg/L
Total Cobalt		<0.025	mg/L
Total Copper		<0.0125	mg/L
Total Iron		5.01	mg/L
Total Lead		<0.010	mg/L
Total Manganese		0.0948	mg/L
Total Molybdenum		<0.050	mg/L
Total Nickel		<0.025	mg/L
Total Selenium		<0.050	mg/L
Total Silica		36.4	mg/L
Total Silver		<0.0125	mg/L
Total Zinc		0.0437	mg/L
pH	[12]	7.4	s.u.

Sample: 192189 - MW-14

Param	Flag	Result	Units
Hydroxide Alkalinity		<1.0	mg/L as CaCo3
Carbonate Alkalinity		<1.0	mg/L as CaCo3
Bicarbonate Alkalinity		322	mg/L as CaCo3
Total Alkalinity		322	mg/L as CaCo3
Specific Conductance		863	μMHOS/cm
Total Mercury		<0.0002	mg/L
Chloride		41.0	mg/L
Fluoride	[13]	1.73	mg/L
Nitrate-N		<1.00	mg/L
Sulfate		10.8	mg/L
Dissolved Calcium		94.6	mg/L
Dissolved Magnesium		20.4	mg/L
Dissolved Potassium		5.62	mg/L
Dissolved Sodium		45.4	mg/L
Total Dissolved Solids		521	mg/L
Total Aluminum		20.3	mg/L
Total Arsenic		<0.050	mg/L
Total Barium		1.66	mg/L
Total Boron		0.145	mg/L
Total Cadmium		<0.005	mg/L
Total Chromium		0.034	mg/L
Total Cobalt		<0.025	mg/L
Total Copper		<0.0125	mg/L
Total Iron		13.9	mg/L
Total Lead		0.0112	mg/L
Total Manganese		0.353	mg/L

Continued on next page ...

[12] Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.

[13] Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

Sample 192189 continued . . .

Param	Flag	Result	Units
Total Molybdenum		<0.050	mg/L
Total Nickel		<0.025	mg/L
Total Selenium		<0.050	mg/L
Total Silica		40.0	mg/L
Total Silver		<0.0125	mg/L
Total Zinc		0.0465	mg/L
pH	[14]	7.5	s.u.

[14] Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.

Analytical and Quality Control Report

Bob Wilcox
AMEC Inc.
1712-A W Hadley Ave.
Las Cruces, NM 88005

Report Date: March 27, 2002

Order ID Number: A02030516

Project Number: 2517000002
Project Name: Eldridge Ranch
Project Location: Monument-Rt 8.5

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to Trace-Analysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
192183	MW-12	Water	3/3/02	:	3/5/02
192184	MW-9	Water	3/3/02	:	3/5/02
192185	MW-8	Water	3/3/02	:	3/5/02
192186	MW-11	Water	3/3/02	:	3/5/02
192187	MW-10	Water	3/3/02	:	3/5/02
192188	MW-13	Water	3/3/02	:	3/5/02
192189	MW-14	Water	3/3/02	:	3/5/02
192190	Trip Blank	Water	3/3/02	:	3/5/02

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed. Note: the RDL is equal to MQL for all organic analytes including TPH.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 192183 - MW-12

Analysis: Alkalinity | Analytical Method: E 310.1 | QC Batch: QC18845 | Date Analyzed: 3/12/02
Analyst: RS | Preparation Method: N/A | Prep Batch: PB18252 | Date Prepared: 3/12/02

Param	Flag	Result	Units	Dilution	RDL
Hydroxide Alkalinity		<1.0	mg/L as CaCo3	1	1
Carbonate Alkalinity		<1.0	mg/L as CaCo3	1	1
Bicarbonate Alkalinity		276	mg/L as CaCo3	1	1
Total Alkalinity		276	mg/L as CaCo3	1	1

Sample: 192183 - MW-12

Analysis: BTEX | Analytical Method: S 8021B | QC Batch: QC18654 | Date Analyzed: 3/6/02
Analyst: CG | Preparation Method: S 5030B | Prep Batch: PB18095 | Date Prepared: 3/6/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		9.68	mg/L	100	0.001
Toluene		0.281	mg/L	100	0.001
Ethylbenzene		<0.100	mg/L	100	0.001
M,P,O-Xylene		<0.100	mg/L	100	0.001
Total BTEX		9.96	mg/L	100	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.096	mg/L	100	0.10	96	70 - 130
4-BFB		0.071	mg/L	100	0.10	71	70 - 130

Sample: 192183 - MW-12

Analysis: Conductivity | Analytical Method: SM 2510B | QC Batch: QC18675 | Date Analyzed: 3/7/02
Analyst: JSW | Preparation Method: N/A | Prep Batch: PB18119 | Date Prepared: 3/7/02

Param	Flag	Result	Units	Dilution	RDL
Specific Conductance		1490	μMHOS/cm	1	

Sample: 192183 - MW-12

Analysis: Hg, Total | Analytical Method: S 7470A | QC Batch: QC18633 | Date Analyzed: 3/6/02
Analyst: BC | Preparation Method: N/A | Prep Batch: PB18076 | Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Mercury		<0.0002	mg/L	1	0.0002

Sample: 192183 - MW-12

Analysis: Ion Chromatography (IC) | Analytical Method: E 300.0 | QC Batch: QC18706 | Date Analyzed: 3/5/02
Analyst: JS | Preparation Method: N/A | Prep Batch: PB18061 | Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		234	mg/L	10	0.50
Fluoride	[1]	2.52	mg/L	5	0.20
Nitrate-N		<1.00	mg/L	5	0.20
Sulfate		32.8	mg/L	5	0.50

Sample: 192183 - MW-12

Analysis:	Salts	Analytical Method:	E 200.7	QC Batch:	QC18989	Date Analyzed:	3/19/02
Analyst:	BC	Preparation Method:	S 3005A	Prep Batch:	PB18309	Date Prepared:	3/19/02

Param	Flag	Result	Units	Dilution	RDL
Dissolved Calcium		99	mg/L	100	0.50
Dissolved Magnesium		35.1	mg/L	10	0.50
Dissolved Potassium		6.88	mg/L	10	0.50
Dissolved Sodium		125	mg/L	10	0.50

Sample: 192183 - MW-12

Analysis:	TDS	Analytical Method:	E 160.1	QC Batch:	QC18679	Date Analyzed:	3/6/02
Analyst:	JS	Preparation Method:	N/A	Prep Batch:	PB18121	Date Prepared:	3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		850	mg/L	2	10

Sample: 192183 - MW-12

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC18664	Date Analyzed:	3/6/02
Analyst:	MM	Preparation Method:	3510C - Mod.	Prep Batch:	PB18105	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
DRO		<5.00	mg/L	0.10	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		13.1	mg/L	0.10	150	87	70 - 130

Sample: 192183 - MW-12

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC18646	Date Analyzed:	3/6/02
Analyst:	CG	Preparation Method:	5030	Prep Batch:	PB18095	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
GRO		22.2	mg/L	100	0.10

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.102	mg/L	100	0.10	102	70 - 130

Continued ...

[1]Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-BFB		0.073	mg/L	100	0.10	73	70 - 130

Sample: 192183 - MW-12

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC18682 Date Analyzed: 3/7/02
Analyst: RR Preparation Method: S 3010A Prep Batch: PB18085 Date Prepared: 3/6/02

Param	Flag	Result	Units	Dilution	RDL
Total Aluminum		59.5	mg/L	100	0.10
Total Arsenic		0.0658	mg/L	1	0.05
Total Barium		9.41	mg/L	10	0.10
Total Boron		.264	mg/L	10	0.005
Total Cadmium		<0.005	mg/L	1	0.005
Total Chromium		0.196	mg/L	1	0.01
Total Cobalt		<0.025	mg/L	1	0.02
Total Copper		0.0307	mg/L	1	0.01
Total Iron		39.8	mg/L	100	0.05
Total Lead		0.0232	mg/L	1	0.01
Total Manganese		0.554	mg/L	1	0.02
Total Molybdenum		<0.050	mg/L	1	0.05
Total Nickel		0.0253	mg/L	1	0.02
Total Selenium		<0.050	mg/L	1	0.05
Total Silica		7.30	mg/L	10	0.05
Total Silver		<0.0125	mg/L	1	0.01
Total Zinc		0.0749	mg/L	1	0.02

Sample: 192183 - MW-12

Analysis: pH Analytical Method: E 150.1 QC Batch: QC18639 Date Analyzed: 3/5/02
Analyst: JSW Preparation Method: N/A Prep Batch: PB18081 Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
pH	[2]	7.4	s.u.	1	1

Sample: 192184 - MW-9

Analysis: Alkalinity Analytical Method: E 310.1 QC Batch: QC18845 Date Analyzed: 3/12/02
Analyst: RS Preparation Method: N/A Prep Batch: PB18252 Date Prepared: 3/12/02

Param	Flag	Result	Units	Dilution	RDL
Hydroxide Alkalinity		<1.0	mg/L as CaCo3	1	1
Carbonate Alkalinity		<1.0	mg/L as CaCo3	1	1
Bicarbonate Alkalinity		222	mg/L as CaCo3	1	1
Total Alkalinity		222	mg/L as CaCo3	1	1

Sample: 192184 - MW-9

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC18654 Date Analyzed: 3/6/02
Analyst: CG Preparation Method: S 5030B Prep Batch: PB18095 Date Prepared: 3/6/02

[2]Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.005	mg/L	5	0.001
Toluene		<0.005	mg/L	5	0.001
Ethylbenzene		<0.005	mg/L	5	0.001
M,P,O-Xylene		<0.005	mg/L	5	0.001
Total BTEX		<0.005	mg/L	5	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.095	mg/L	5	0.10	95	70 - 130
4-BFB		0.068	mg/L	5	0.10	68	70 - 130

Sample: 192184 - MW-9

Analysis: Conductivity Analytical Method: SM 2510B QC Batch: QC18675 Date Analyzed: 3/7/02
Analyst: JSW Preparation Method: N/A Prep Batch: PB18119 Date Prepared: 3/7/02

Param	Flag	Result	Units	Dilution	RDL
Specific Conductance		734	μMHOS/cm	1	

Sample: 192184 - MW-9

Analysis: Hg, Total Analytical Method: S 7470A QC Batch: QC18633 Date Analyzed: 3/6/02
Analyst: BC Preparation Method: N/A Prep Batch: PB18076 Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Mercury		<0.0002	mg/L	1	0.0002

Sample: 192184 - MW-9

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC18706 Date Analyzed: 3/5/02
Analyst: JS Preparation Method: N/A Prep Batch: PB18061 Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		34.8	mg/L	5	0.50
Fluoride	[3]	1.93	mg/L	5	0.20
Nitrate-N		1.31	mg/L	5	0.20
Sulfate		45.3	mg/L	5	0.50

Sample: 192184 - MW-9

Analysis: Salts Analytical Method: E 200.7 QC Batch: QC18989 Date Analyzed: 3/19/02
Analyst: BC Preparation Method: S 3005A Prep Batch: PB18309 Date Prepared: 3/19/02

Param	Flag	Result	Units	Dilution	RDL
Dissolved Calcium		78.5	mg/L	100	0.50
Dissolved Magnesium		14.1	mg/L	10	0.50
Dissolved Potassium		5.66	mg/L	10	0.50
Dissolved Sodium		47.1	mg/L	10	0.50

[3]Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

Sample: 192184 - MW-9

Analysis:	TDS	Analytical Method:	E 160.1	QC Batch:	QC18679	Date Analyzed:	3/6/02
Analyst:	JS	Preparation Method:	N/A	Prep Batch:	PB18121	Date Prepared:	3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		484	mg/L	1	10

Sample: 192184 - MW-9

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC18664	Date Analyzed:	3/6/02
Analyst:	MM	Preparation Method:	3510C - Mod.	Prep Batch:	PB18105	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
DRO		<5.00	mg/L	0.10	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		12.9	mg/L	0.10	150	86	70 - 130

Sample: 192184 - MW-9

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC18646	Date Analyzed:	3/6/02
Analyst:	CG	Preparation Method:	5030	Prep Batch:	PB18095	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
GRO		<0.5	mg/L	5	0.10

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.1	mg/L	5	0.10	100	70 - 130
4-BFB		0.07	mg/L	5	0.10	70	70 - 130

Sample: 192184 - MW-9

Analysis:	Total Metals	Analytical Method:	S 6010B	QC Batch:	QC18682	Date Analyzed:	3/7/02
Analyst:	RR	Preparation Method:	S 3010A	Prep Batch:	PB18085	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
Total Aluminum		94.6	mg/L	100	0.10
Total Arsenic		<0.050	mg/L	1	0.05
Total Barium		2.84	mg/L	1	0.10
Total Boron		.259	mg/L	10	0.005
Total Cadmium		<0.005	mg/L	1	0.005
Total Chromium		0.191	mg/L	1	0.01
Total Cobalt		<0.025	mg/L	1	0.02
Total Copper		0.0352	mg/L	1	0.01
Total Iron		66.1	mg/L	100	0.05
Total Lead		0.0212	mg/L	1	0.01
Total Manganese		1.29	mg/L	10	0.02
Total Molybdenum		<0.050	mg/L	1	0.05
Total Nickel		0.0632	mg/L	1	0.02

Continued ...

... *Continued* Sample: 192184 Analysis: Total Metals

Param	Flag	Result	Units	Dilution	RDL
Total Selenium		<0.050	mg/L	1	0.05
Total Silica		10.5	mg/L	10	0.05
Total Silver		<0.0125	mg/L	1	0.01
Total Zinc		0.140	mg/L	1	0.02

Sample: 192184 - MW-9

Analysis:	pH	Analytical Method:	E 150.1	QC Batch:	QC18639	Date Analyzed:	3/5/02
Analyst:	JSW	Preparation Method:	N/A	Prep Batch:	PB18081	Date Prepared:	3/5/02

Param	Flag	Result	Units	Dilution	RDL
pH	[4]	7.5	s.u.	1	1

Sample: 192185 - MW-8

Analysis:	Alkalinity	Analytical Method:	E 310.1	QC Batch:	QC18845	Date Analyzed:	3/12/02
Analyst:	RS	Preparation Method:	N/A	Prep Batch:	PB18252	Date Prepared:	3/12/02

Param	Flag	Result	Units	Dilution	RDL
Hydroxide Alkalinity		<1.0	mg/L as CaCo3	1	1
Carbonate Alkalinity		<1.0	mg/L as CaCo3	1	1
Bicarbonate Alkalinity		322	mg/L as CaCo3	1	1
Total Alkalinity		322	mg/L as CaCo3	1	1

Sample: 192185 - MW-8

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18654	Date Analyzed:	3/6/02
Analyst:	CG	Preparation Method:	S 5030B	Prep Batch:	PB18095	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		8.60	mg/L	100	0.001
Toluene		0.462	mg/L	100	0.001
Ethylbenzene		<0.100	mg/L	100	0.001
M,P,O-Xylene		0.197	mg/L	100	0.001
Total BTEX		9.26	mg/L	100	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.094	mg/L	100	0.10	94	70 - 130
4-BFB	[5]	0.069	mg/L	100	0.10	68	70 - 130

Sample: 192185 - MW-8

Analysis:	Conductivity	Analytical Method:	SM 2510B	QC Batch:	QC18675	Date Analyzed:	3/7/02
Analyst:	JSW	Preparation Method:	N/A	Prep Batch:	PB18119	Date Prepared:	3/7/02

[4]Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.
[5]Low BFB recovery due to matrix interference. TFT surrogate recovery shows the method to be in control.

Param	Flag	Result	Units	Dilution	RDL
Specific Conductance		961	µMHOS/cm	1	

Sample: 192185 - MW-8

Analysis: Hg, Total | Analytical Method: S 7470A | QC Batch: QC18633 | Date Analyzed: 3/6/02
Analyst: BC | Preparation Method: N/A | Prep Batch: PB18076 | Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Mercury		<0.0002	mg/L	1	0.0002

Sample: 192185 - MW-8

Analysis: Ion Chromatography (IC) | Analytical Method: E 300.0 | QC Batch: QC18706 | Date Analyzed: 3/5/02
Analyst: JS | Preparation Method: N/A | Prep Batch: PB18061 | Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		69.4	mg/L	5	0.50
Fluoride	[6]	1.93	mg/L	5	0.20
Nitrate-N		<1.00	mg/L	5	0.20
Sulfate		11.9	mg/L	5	0.50

Sample: 192185 - MW-8

Analysis: Salts | Analytical Method: E 200.7 | QC Batch: QC18989 | Date Analyzed: 3/19/02
Analyst: BC | Preparation Method: S 3005A | Prep Batch: PB18309 | Date Prepared: 3/19/02

Param	Flag	Result	Units	Dilution	RDL
Dissolved Calcium		129	mg/L	10	0.50
Dissolved Magnesium		23.1	mg/L	10	0.50
Dissolved Potassium		< 5	mg/L	10	0.50
Dissolved Sodium		48.5	mg/L	10	0.50

Sample: 192185 - MW-8

Analysis: TDS | Analytical Method: E 160.1 | QC Batch: QC18679 | Date Analyzed: 3/6/02
Analyst: JS | Preparation Method: N/A | Prep Batch: PB18121 | Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		607	mg/L	1	10

Sample: 192185 - MW-8

Analysis: TPH DRO | Analytical Method: Mod. 8015B | QC Batch: QC18664 | Date Analyzed: 3/6/02
Analyst: MM | Preparation Method: 3510C - Mod. | Prep Batch: PB18105 | Date Prepared: 3/6/02

Param	Flag	Result	Units	Dilution	RDL
DRO		<5.00	mg/L	0.10	50

[6]Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		13.0	mg/L	0.10	150	87	70 - 130

Sample: 192185 - MW-8

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC18646	Date Analyzed:	3/6/02
Analyst:	CG	Preparation Method:	5030	Prep Batch:	PB18095	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
GRO		20.6	mg/L	100	0.10

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.094	mg/L	100	0.10	94	70 - 130
4-BFB		0.07	mg/L	100	0.10	70	70 - 130

Sample: 192185 - MW-8

Analysis:	Total Metals	Analytical Method:	S 6010B	QC Batch:	QC18682	Date Analyzed:	3/7/02
Analyst:	RR	Preparation Method:	S 3010A	Prep Batch:	PB18085	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
Total Aluminum		3.39	mg/L	1	0.10
Total Arsenic		<0.050	mg/L	1	0.05
Total Barium		2.03	mg/L	1	0.10
Total Boron		0.130	mg/L	1	0.005
Total Cadmium		<0.005	mg/L	1	0.005
Total Chromium		0.0145	mg/L	1	0.01
Total Cobalt		<0.025	mg/L	1	0.02
Total Copper		<0.0125	mg/L	1	0.01
Total Iron		3.21	mg/L	10	0.05
Total Lead		0.0105	mg/L	1	0.01
Total Manganese		0.128	mg/L	1	0.02
Total Molybdenum		<0.050	mg/L	1	0.05
Total Nickel		<0.025	mg/L	1	0.02
Total Selenium		<0.050	mg/L	1	0.05
Total Silica		38.6	mg/L	100	0.05
Total Silver		<0.0125	mg/L	1	0.01
Total Zinc		0.0439	mg/L	1	0.02

Sample: 192185 - MW-8

Analysis:	pH	Analytical Method:	E 150.1	QC Batch:	QC18639	Date Analyzed:	3/5/02
Analyst:	JSW	Preparation Method:	N/A	Prep Batch:	PB18081	Date Prepared:	3/5/02

Param	Flag	Result	Units	Dilution	RDL
pH	[7]	7.4	s.u.	1	1

[7]Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.

Sample: 192186 - MW-11

Analysis: Alkalinity | Analytical Method: E 310.1 | QC Batch: QC18845 | Date Analyzed: 3/12/02
Analyst: RS | Preparation Method: N/A | Prep Batch: PB18252 | Date Prepared: 3/12/02

Param	Flag	Result	Units	Dilution	RDL
Hydroxide Alkalinity		<1.0	mg/L as CaCo3	1	1
Carbonate Alkalinity		<1.0	mg/L as CaCo3	1	1
Bicarbonate Alkalinity		316	mg/L as CaCo3	1	1
Total Alkalinity		316	mg/L as CaCo3	1	1

Sample: 192186 - MW-11

Analysis: BTEX | Analytical Method: S 8021B | QC Batch: QC18654 | Date Analyzed: 3/6/02
Analyst: CG | Preparation Method: S 5030B | Prep Batch: PB18095 | Date Prepared: 3/6/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		27.8	mg/L	200	0.001
Toluene		2.49	mg/L	200	0.001
Ethylbenzene		<0.200	mg/L	200	0.001
M,P,O-Xylene		0.376	mg/L	200	0.001
Total BTEX		30.7	mg/L	200	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.099	mg/L	200	0.10	99	70 - 130
4-BFB		0.072	mg/L	200	0.10	72	70 - 130

Sample: 192186 - MW-11

Analysis: Conductivity | Analytical Method: SM 2510B | QC Batch: QC18675 | Date Analyzed: 3/7/02
Analyst: JSW | Preparation Method: N/A | Prep Batch: PB18119 | Date Prepared: 3/7/02

Param	Flag	Result	Units	Dilution	RDL
Specific Conductance		1070	μMHOS/cm	1	

Sample: 192186 - MW-11

Analysis: Hg, Total | Analytical Method: S 7470A | QC Batch: QC18634 | Date Analyzed: 3/6/02
Analyst: BC | Preparation Method: N/A | Prep Batch: PB18076 | Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Mercury		<0.0002	mg/L	1	0.0002

Sample: 192186 - MW-11

Analysis: Ion Chromatography (IC) | Analytical Method: E 300.0 | QC Batch: QC18706 | Date Analyzed: 3/5/02
Analyst: JS | Preparation Method: N/A | Prep Batch: PB18061 | Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		87.3	mg/L	5	0.50

Continued ...

... *Continued* Sample: 192186 Analysis: Ion Chromatography (IC)

Param	Flag	Result	Units	Dilution	RDL
Fluoride	[8]	1.92	mg/L	5	0.20
Nitrate-N		<1.00	mg/L	5	0.20
Sulfate		12.2	mg/L	5	0.50

Sample: 192186 - MW-11

Analysis:	Salts	Analytical Method:	E 200.7	QC Batch:	QC18989	Date Analyzed:	3/19/02
Analyst:	BC	Preparation Method:	S 3005A	Prep Batch:	PB18309	Date Prepared:	3/19/02

Param	Flag	Result	Units	Dilution	RDL
Dissolved Calcium		142	mg/L	10	0.50
Dissolved Magnesium		22.9	mg/L	10	0.50
Dissolved Potassium		5.48	mg/L	10	0.50
Dissolved Sodium		50.1	mg/L	10	0.50

Sample: 192186 - MW-11

Analysis:	TDS	Analytical Method:	E 160.1	QC Batch:	QC18679	Date Analyzed:	3/6/02
Analyst:	JS	Preparation Method:	N/A	Prep Batch:	PB18121	Date Prepared:	3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		639	mg/L	1	10

Sample: 192186 - MW-11

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC18664	Date Analyzed:	3/6/02
Analyst:	MM	Preparation Method:	3510C - Mod.	Prep Batch:	PB18105	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
DRO		<5.00	mg/L	0.10	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		12.2	mg/L	0.10	150	81	70 - 130

Sample: 192186 - MW-11

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC18646	Date Analyzed:	3/6/02
Analyst:	CG	Preparation Method:	5030	Prep Batch:	PB18095	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
GRO		68.3	mg/L	200	0.10

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.107	mg/L	200	0.10	107	70 - 130

Continued ...

[8]Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-BFB		0.074	mg/L	200	0.10	74	70 - 130

Sample: 192186 - MW-11

Analysis: Total Metals | Analytical Method: S 6010B | QC Batch: QC18682 | Date Analyzed: 3/7/02
Analyst: RR | Preparation Method: S 3010A | Prep Batch: PB18085 | Date Prepared: 3/6/02

Param	Flag	Result	Units	Dilution	RDL
Total Aluminum		4.66	mg/L	1	0.10
Total Arsenic		<0.050	mg/L	1	0.05
Total Barium		2.94	mg/L	1	0.10
Total Boron		0.139	mg/L	1	0.005
Total Cadmium		0.00898	mg/L	1	0.005
Total Chromium		0.0324	mg/L	1	0.01
Total Cobalt		<0.025	mg/L	1	0.02
Total Copper		<0.0125	mg/L	1	0.01
Total Iron		3.42	mg/L	1	0.05
Total Lead		<0.010	mg/L	1	0.01
Total Manganese		0.204	mg/L	1	0.02
Total Molybdenum		<0.050	mg/L	1	0.05
Total Nickel		<0.025	mg/L	1	0.02
Total Selenium		<0.050	mg/L	1	0.05
Total Silica		25.8	mg/L	10	0.05
Total Silver		<0.0125	mg/L	1	0.01
Total Zinc		<0.025	mg/L	1	0.02

Sample: 192186 - MW-11

Analysis: pH | Analytical Method: E 150.1 | QC Batch: QC18639 | Date Analyzed: 3/5/02
Analyst: JSW | Preparation Method: N/A | Prep Batch: PB18081 | Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
pH	[9]	7.3	s.u.	1	1

Sample: 192187 - MW-10

Analysis: Alkalinity | Analytical Method: E 310.1 | QC Batch: QC18845 | Date Analyzed: 3/12/02
Analyst: RS | Preparation Method: N/A | Prep Batch: PB18252 | Date Prepared: 3/12/02

Param	Flag	Result	Units	Dilution	RDL
Hydroxide Alkalinity		<1.0	mg/L as CaCo3	1	1
Carbonate Alkalinity		<1.0	mg/L as CaCo3	1	1
Bicarbonate Alkalinity		278	mg/L as CaCo3	1	1
Total Alkalinity		278	mg/L as CaCo3	1	1

Sample: 192187 - MW-10

Analysis: BTEX | Analytical Method: S 8021B | QC Batch: QC18654 | Date Analyzed: 3/6/02
Analyst: CG | Preparation Method: S 5030B | Prep Batch: PB18095 | Date Prepared: 3/6/02

[9]Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.

Param	Flag	Result	Units	Dilution	RDL
Benzene		10.6	mg/L	100	0.001
Toluene		<0.100	mg/L	100	0.001
Ethylbenzene		<0.100	mg/L	100	0.001
M,P,O-Xylene		<0.100	mg/L	100	0.001
Total BTEX		10.6	mg/L	100	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.097	mg/L	100	0.10	97	70 - 130
4-BFB	[10]	0.069	mg/L	100	0.10	69	70 - 130

Sample: 192187 - MW-10

Analysis: Conductivity Analytical Method: SM 2510B QC Batch: QC18675 Date Analyzed: 3/7/02
Analyst: JSW Preparation Method: N/A Prep Batch: PB18119 Date Prepared: 3/7/02

Param	Flag	Result	Units	Dilution	RDL
Specific Conductance		911	μMHOS/cm	1	

Sample: 192187 - MW-10

Analysis: Hg, Total Analytical Method: S 7470A QC Batch: QC18634 Date Analyzed: 3/6/02
Analyst: BC Preparation Method: N/A Prep Batch: PB18076 Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Mercury		<0.0002	mg/L	1	0.0002

Sample: 192187 - MW-10

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC18706 Date Analyzed: 3/5/02
Analyst: JS Preparation Method: N/A Prep Batch: PB18061 Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		56.0	mg/L	5	0.50
Fluoride	[11]	2.22	mg/L	5	0.20
Nitrate-N		<1.00	mg/L	5	0.20
Sulfate		19.0	mg/L	5	0.50

Sample: 192187 - MW-10

Analysis: Salts Analytical Method: E 200.7 QC Batch: QC18989 Date Analyzed: 3/19/02
Analyst: BC Preparation Method: S 3005A Prep Batch: PB18309 Date Prepared: 3/19/02

Param	Flag	Result	Units	Dilution	RDL
Dissolved Calcium		89.9	mg/L	100	0.50
Dissolved Magnesium		20.3	mg/L	10	0.50
Dissolved Potassium		5.29	mg/L	10	0.50

Continued ...

[10] Low BFB recovery due to matrix interference. TFT surrogate recovery shows the method to be in control.

[11] Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

... *Continued* Sample: 192187 Analysis: Salts

Param	Flag	Result	Units	Dilution	RDL
Dissolved Sodium		52.1	mg/L	10	0.50

Sample: 192187 - MW-10

Analysis:	TDS	Analytical Method:	E 160.1	QC Batch:	QC18679	Date Analyzed:	3/6/02
Analyst:	JS	Preparation Method:	N/A	Prep Batch:	PB18121	Date Prepared:	3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		581	mg/L	1	10

Sample: 192187 - MW-10

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC18664	Date Analyzed:	3/6/02
Analyst:	MM	Preparation Method:	3510C - Mod.	Prep Batch:	PB18105	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
DRO		<5.00	mg/L	0.10	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		14.1	mg/L	0.10	150	94	70 - 130

Sample: 192187 - MW-10

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC18646	Date Analyzed:	3/6/02
Analyst:	CG	Preparation Method:	5030	Prep Batch:	PB18095	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
GRO		19.7	mg/L	100	0.10

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.098	mg/L	100	0.10	98	70 - 130
4-BFB		0.071	mg/L	100	0.10	71	70 - 130

Sample: 192187 - MW-10

Analysis:	Total Metals	Analytical Method:	S 6010B	QC Batch:	QC18682	Date Analyzed:	3/7/02
Analyst:	RR	Preparation Method:	S 3010A	Prep Batch:	PB18085	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
Total Aluminum		60	mg/L	100	0.10
Total Arsenic		<0.050	mg/L	1	0.05
Total Barium		3.34	mg/L	1	0.10
Total Boron		0.194	mg/L	1	0.005
Total Cadmium		<0.005	mg/L	1	0.005
Total Chromium		0.316	mg/L	1	0.01
Total Cobalt		<0.025	mg/L	1	0.02

Continued ...

... *Continued* Sample: 192187 Analysis: Total Metals

Param	Flag	Result	Units	Dilution	RDL
Total Copper		0.0273	mg/L	1	0.01
Total Iron		47.6	mg/L	100	0.05
Total Lead		0.0197	mg/L	1	0.01
Total Manganese		0.376	mg/L	1	0.02
Total Molybdenum		<0.050	mg/L	1	0.05
Total Nickel		0.0339	mg/L	1	0.02
Total Selenium		<0.050	mg/L	1	0.05
Total Silica		7.16	mg/L	10	0.05
Total Silver		<0.0125	mg/L	1	0.01
Total Zinc		0.0884	mg/L	1	0.02

Sample: 192187 - MW-10

Analysis:	pH	Analytical Method:	E 150.1	QC Batch:	QC18639	Date Analyzed:	3/5/02
Analyst:	JSW	Preparation Method:	N/A	Prep Batch:	PB18081	Date Prepared:	3/5/02

Param	Flag	Result	Units	Dilution	RDL
pH	[12]	7.3	s.u.	1	1

Sample: 192188 - MW-13

Analysis:	Alkalinity	Analytical Method:	E 310.1	QC Batch:	QC18845	Date Analyzed:	3/12/02
Analyst:	RS	Preparation Method:	N/A	Prep Batch:	PB18252	Date Prepared:	3/12/02

Param	Flag	Result	Units	Dilution	RDL
Hydroxide Alkalinity		<1.0	mg/L as CaCo3	1	1
Carbonate Alkalinity		<1.0	mg/L as CaCo3	1	1
Bicarbonate Alkalinity		308	mg/L as CaCo3	1	1
Total Alkalinity		308	mg/L as CaCo3	1	1

Sample: 192188 - MW-13

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18654	Date Analyzed:	3/6/02
Analyst:	CG	Preparation Method:	S 5030B	Prep Batch:	PB18095	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		19.8	mg/L	200	0.001
Toluene		5.95	mg/L	200	0.001
Ethylbenzene		0.205	mg/L	200	0.001
M,P,O-Xylene		0.432	mg/L	200	0.001
Total BTEX		26.4	mg/L	200	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.097	mg/L	200	0.10	97	70 - 130
4-BFB	[13]	0.069	mg/L	200	0.10	69	70 - 130

[12] Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.
[13] Low BFB recovery due to matrix interference. TFT surrogate recovery shows the method to be in control.

Sample: 192188 - MW-13

Analysis:	Conductivity	Analytical Method:	SM 2510B	QC Batch:	QC18675	Date Analyzed:	3/7/02
Analyst:	JSW	Preparation Method:	N/A	Prep Batch:	PB18119	Date Prepared:	3/7/02

Param	Flag	Result	Units	Dilution	RDL
Specific Conductance		888	μMHOS/cm	1	

Sample: 192188 - MW-13

Analysis:	Hg, Total	Analytical Method:	S 7470A	QC Batch:	QC18634	Date Analyzed:	3/6/02
Analyst:	BC	Preparation Method:	N/A	Prep Batch:	PB18076	Date Prepared:	3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Mercury		<0.0002	mg/L	1	0.0002

Sample: 192188 - MW-13

Analysis:	Ion Chromatography (IC)	Analytical Method:	E 300.0	QC Batch:	QC18706	Date Analyzed:	3/5/02
Analyst:	JS	Preparation Method:	N/A	Prep Batch:	PB18061	Date Prepared:	3/5/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		72.4	mg/L	5	0.50
Fluoride	[14]	2.39	mg/L	5	0.20
Nitrate-N		<1.00	mg/L	5	0.20
Sulfate		11.0	mg/L	5	0.50

Sample: 192188 - MW-13

Analysis:	Salts	Analytical Method:	E 200.7	QC Batch:	QC18989	Date Analyzed:	3/19/02
Analyst:	BC	Preparation Method:	S 3005A	Prep Batch:	PB18309	Date Prepared:	3/19/02

Param	Flag	Result	Units	Dilution	RDL
Dissolved Calcium		103	mg/L	10	0.50
Dissolved Magnesium		21.8	mg/L	10	0.50
Dissolved Potassium		7.28	mg/L	10	0.50
Dissolved Sodium		49.9	mg/L	10	0.50

Sample: 192188 - MW-13

Analysis:	TDS	Analytical Method:	E 160.1	QC Batch:	QC18679	Date Analyzed:	3/6/02
Analyst:	JS	Preparation Method:	N/A	Prep Batch:	PB18121	Date Prepared:	3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		547	mg/L	1	10

Sample: 192188 - MW-13

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC18664	Date Analyzed:	3/6/02
Analyst:	MM	Preparation Method:	3510C - Mod.	Prep Batch:	PB18105	Date Prepared:	3/6/02

[14]Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

Param	Flag	Result	Units	Dilution	RDL
DRO		<5.00	mg/L	0.10	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		12.2	mg/L	0.10	150	81	70 - 130

Sample: 192188 - MW-13

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC18646	Date Analyzed:	3/6/02
Analyst:	CG	Preparation Method:	5030	Prep Batch:	PB18095	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
GRO		58	mg/L	200	0.10

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.103	mg/L	200	0.10	103	70 - 130
4-BFB		0.071	mg/L	200	0.10	71	70 - 130

Sample: 192188 - MW-13

Analysis:	Total Metals	Analytical Method:	S 6010B	QC Batch:	QC18682	Date Analyzed:	3/7/02
Analyst:	RR	Preparation Method:	S 3010A	Prep Batch:	PB18085	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
Total Aluminum		7.28	mg/L	10	0.10
Total Arsenic		<0.050	mg/L	1	0.05
Total Barium		4.61	mg/L	10	0.10
Total Boron		0.120	mg/L	1	0.005
Total Cadmium		<0.005	mg/L	1	0.005
Total Chromium		0.0118	mg/L	1	0.01
Total Cobalt		<0.025	mg/L	1	0.02
Total Copper		<0.0125	mg/L	1	0.01
Total Iron		5.01	mg/L	10	0.05
Total Lead		<0.010	mg/L	1	0.01
Total Manganese		0.0948	mg/L	1	0.02
Total Molybdenum		<0.050	mg/L	1	0.05
Total Nickel		<0.025	mg/L	1	0.02
Total Selenium		<0.050	mg/L	1	0.05
Total Silica		36.4	mg/L	100	0.05
Total Silver		<0.0125	mg/L	1	0.01
Total Zinc		0.0437	mg/L	1	0.02

Sample: 192188 - MW-13

Analysis:	pH	Analytical Method:	E 150.1	QC Batch:	QC18639	Date Analyzed:	3/5/02
Analyst:	JSW	Preparation Method:	N/A	Prep Batch:	PB18081	Date Prepared:	3/5/02

Continued ...

... *Continued* Sample: 192188 Analysis: pH

Param	Flag	Result	Units	Dilution	RDL
pH	[15]	7.4	s.u.	1	1

Sample: 192189 - MW-14

Analysis: Alkalinity | Analytical Method: E 310.1 | QC Batch: QC18845 | Date Analyzed: 3/12/02
Analyst: RS | Preparation Method: N/A | Prep Batch: PB18252 | Date Prepared: 3/12/02

Param	Flag	Result	Units	Dilution	RDL
Hydroxide Alkalinity		<1.0	mg/L as CaCo3	1	1
Carbonate Alkalinity		<1.0	mg/L as CaCo3	1	1
Bicarbonate Alkalinity		322	mg/L as CaCo3	1	1
Total Alkalinity		322	mg/L as CaCo3	1	1

Sample: 192189 - MW-14

Analysis: BTEX | Analytical Method: S 8021B | QC Batch: QC18654 | Date Analyzed: 3/6/02
Analyst: CG | Preparation Method: S 5030B | Prep Batch: PB18095 | Date Prepared: 3/6/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		1.04	mg/L	5	0.001
Toluene		0.0059	mg/L	5	0.001
Ethylbenzene		<0.005	mg/L	5	0.001
M,P,O-Xylene		0.0085	mg/L	5	0.001
Total BTEX		1.05	mg/L	5	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.094	mg/L	5	0.10	94	70 - 130
4-BFB		0.07	mg/L	5	0.10	70	70 - 130

Sample: 192189 - MW-14

Analysis: Conductivity | Analytical Method: SM 2510B | QC Batch: QC18675 | Date Analyzed: 3/7/02
Analyst: JSW | Preparation Method: N/A | Prep Batch: PB18119 | Date Prepared: 3/7/02

Param	Flag	Result	Units	Dilution	RDL
Specific Conductance		863	μMHOS/cm	1	

Sample: 192189 - MW-14

Analysis: Hg, Total | Analytical Method: S 7470A | QC Batch: QC18634 | Date Analyzed: 3/6/02
Analyst: BC | Preparation Method: N/A | Prep Batch: PB18076 | Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Mercury		<0.0002	mg/L	1	0.0002

[15] Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.

Sample: 192189 - MW-14

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC18706 Date Analyzed: 3/5/02
Analyst: JS Preparation Method: N/A Prep Batch: PB18061 Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		41.0	mg/L	5	0.50
Fluoride	[16]	1.73	mg/L	5	0.20
Nitrate-N		<1.00	mg/L	5	0.20
Sulfate		10.8	mg/L	5	0.50

Sample: 192189 - MW-14

Analysis: Salts Analytical Method: E 200.7 QC Batch: QC19022 Date Analyzed: 3/22/02
Analyst: BC Preparation Method: S 3005A Prep Batch: PB18381 Date Prepared: 3/21/02

Param	Flag	Result	Units	Dilution	RDL
Dissolved Calcium		94.6	mg/L	10	0.50
Dissolved Magnesium		20.4	mg/L	10	0.50
Dissolved Potassium		5.62	mg/L	10	0.50
Dissolved Sodium		45.4	mg/L	10	0.50

Sample: 192189 - MW-14

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC18679 Date Analyzed: 3/6/02
Analyst: JS Preparation Method: N/A Prep Batch: PB18121 Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		521	mg/L	1	10

Sample: 192189 - MW-14

Analysis: TPH DRO Analytical Method: Mod. 8015B QC Batch: QC18664 Date Analyzed: 3/6/02
Analyst: MM Preparation Method: 3510C - Mod. Prep Batch: PB18105 Date Prepared: 3/6/02

Param	Flag	Result	Units	Dilution	RDL
DRO		<5.00	mg/L	0.10	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		11.7	mg/L	0.10	150	78	70 - 130

Sample: 192189 - MW-14

Analysis: TPH GRO Analytical Method: 8015B QC Batch: QC18646 Date Analyzed: 3/6/02
Analyst: CG Preparation Method: 5030 Prep Batch: PB18095 Date Prepared: 3/6/02

Param	Flag	Result	Units	Dilution	RDL
GRO		2.13	mg/L	5	0.10

[16] Fluoride re-ran on IC030702-1.sch (PB18139; QC18710). ICV %IA = 92; CCV %IA = 91; matrix spikes RPD = 3, %EA = 88; LCS spikes RPD = 3, %EA = 91.

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.093	mg/L	5	0.10	93	70 - 130
4-BFB		0.073	mg/L	5	0.10	73	70 - 130

Sample: 192189 - MW-14

Analysis: Total Metals | Analytical Method: S 6010B | QC Batch: QC18682 | Date Analyzed: 3/7/02
Analyst: RR | Preparation Method: S 3010A | Prep Batch: PB18085 | Date Prepared: 3/6/02

Param	Flag	Result	Units	Dilution	RDL
Total Aluminum		20.3	mg/L	100	0.10
Total Arsenic		<0.050	mg/L	1	0.05
Total Barium		1.66	mg/L	1	0.10
Total Boron		0.145	mg/L	1	0.005
Total Cadmium		<0.005	mg/L	1	0.005
Total Chromium		0.034	mg/L	1	0.01
Total Cobalt		<0.025	mg/L	1	0.02
Total Copper		<0.0125	mg/L	1	0.01
Total Iron		13.9	mg/L	10	0.05
Total Lead		0.0112	mg/L	1	0.01
Total Manganese		0.353	mg/L	1	0.02
Total Molybdenum		<0.050	mg/L	1	0.05
Total Nickel		<0.025	mg/L	1	0.02
Total Selenium		<0.050	mg/L	1	0.05
Total Silica		40.0	mg/L	100	0.05
Total Silver		<0.0125	mg/L	1	0.01
Total Zinc		0.0465	mg/L	1	0.02

Sample: 192189 - MW-14

Analysis: pH | Analytical Method: E 150.1 | QC Batch: QC18639 | Date Analyzed: 3/5/02
Analyst: JSW | Preparation Method: N/A | Prep Batch: PB18081 | Date Prepared: 3/5/02

Param	Flag	Result	Units	Dilution	RDL
pH	[17]	7.5	s.u.	1	1

Sample: 192190 - Trip Blank

Analysis: BTEX | Analytical Method: S 8021B | QC Batch: QC18654 | Date Analyzed: 3/6/02
Analyst: CG | Preparation Method: S 5030B | Prep Batch: PB18095 | Date Prepared: 3/6/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.005	mg/L	5	0.001
Toluene		<0.005	mg/L	5	0.001
Ethylbenzene		<0.005	mg/L	5	0.001
M,P,O-Xylene		<0.005	mg/L	5	0.001
Total BTEX		<0.005	mg/L	5	0.001

[17] Sample was received out of holding time. Test should be ran in the field. Sample was tested as soon as it came in.

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.097	mg/L	5	0.10	97	70 - 130
4-BFB	[18]	0.07	mg/L	5	0.10	70	70 - 130

Sample: 192190 - Trip Blank

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC18646	Date Analyzed:	3/6/02
Analyst:	CG	Preparation Method:	5030	Prep Batch:	PB18095	Date Prepared:	3/6/02

Param	Flag	Result	Units	Dilution	RDL
GRO		<0.5	mg/L	5	0.10

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.103	mg/L	5	0.10	103	70 - 130
4-BFB		0.07	mg/L	5	0.10	70	70 - 130

[18]Low BFB surrogate recovery due to matrix interference. TFT surrogate recovery shows the method to be in control.

Quality Control Report
Method Blank

Method Blank

QCBatch: QC18633

Param	Flag	Results	Units	Reporting Limit
Total Mercury		<0.0002	mg/L	0.0002

Method Blank

QCBatch: QC18634

Param	Flag	Results	Units	Reporting Limit
Total Mercury		<0.0002	mg/L	0.0002

Method Blank

QCBatch: QC18646

Param	Flag	Results	Units	Reporting Limit
GRO		<0.1	mg/L	0.10

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.102	mg/L	1	0.10	102	70 - 130
4-BFB		0.0704	mg/L	1	0.10	70	70 - 130

Method Blank

QCBatch: QC18654

Param	Flag	Results	Units	Reporting Limit
Benzene		<0.001	mg/L	0.001
Toluene		<0.001	mg/L	0.001
Ethylbenzene		<0.001	mg/L	0.001
M,P,O-Xylene		<0.001	mg/L	0.001
Total BTEX		<0.001	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.0977	mg/L	1	0.10	98	70 - 130
4-BFB	[19]	0.0687	mg/L	1	0.10	68	70 - 130

Method Blank

QCBatch: QC18664

[19]Low BFB surrogate recovery due to prep. TFT surrogate recovery shows the method to be in control.

Param	Flag	Results	Units	Reporting Limit
DRO		<5.00	mg/L	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		13.6	mg/L	0.10	150	90	70 - 130

Method Blank

QCBatch: QC18675

Param	Flag	Results	Units	Reporting Limit
Specific Conductance		4.98	μMHOS/cm	

Method Blank

QCBatch: QC18679

Param	Flag	Results	Units	Reporting Limit
Total Dissolved Solids		<10	mg/L	10

Method Blank

QCBatch: QC18682

Param	Flag	Results	Units	Reporting Limit
Total Aluminum		<0.100	mg/L	0.10
Total Arsenic		<0.050	mg/L	0.05
Total Barium		<0.100	mg/L	0.10
Total Boron		0.007	mg/L	0.005
Total Cadmium		<0.005	mg/L	0.005
Total Chromium		<0.010	mg/L	0.01
Total Cobalt		<0.025	mg/L	0.02
Total Copper		<0.0125	mg/L	0.01
Total Iron		<0.050	mg/L	0.05
Total Lead		<0.010	mg/L	0.01
Total Manganese		<0.025	mg/L	0.02
Total Molybdenum		<0.050	mg/L	0.05
Total Nickel		<0.025	mg/L	0.02
Total Selenium		<0.050	mg/L	0.05
Total Silica		<0.050	mg/L	0.05
Total Silver		<0.0125	mg/L	0.01
Total Zinc		<0.025	mg/L	0.02

Method Blank

QCBatch: QC18706

Param	Flag	Results	Units	Reporting Limit
Chloride		<2.0	mg/L	0.50

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Param	Flag	Results	Units	Reporting Limit
Nitrate-N		<0.2	mg/L	0.20
Sulfate		<0.2	mg/L	0.50

Method Blank QCBatch: QC18845

Param	Flag	Results	Units	Reporting Limit
Hydroxide Alkalinity		<1.0	mg/L as CaCo3	1
Carbonate Alkalinity		<1.0	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.0	mg/L as CaCo3	1
Total Alkalinity		<4.0	mg/L as CaCo3	1

Method Blank QCBatch: QC18989

Param	Flag	Results	Units	Reporting Limit
Dissolved Calcium		<0.5	mg/L	0.50
Dissolved Magnesium		<0.5	mg/L	0.50
Dissolved Potassium		<0.5	mg/L	0.50
Dissolved Sodium		<0.5	mg/L	0.50

Method Blank QCBatch: QC19022

Param	Flag	Results	Units	Reporting Limit
Dissolved Calcium		<0.5	mg/L	0.50
Dissolved Magnesium		<0.5	mg/L	0.50
Dissolved Potassium		<0.5	mg/L	0.50
Dissolved Sodium		<0.5	mg/L	0.50

Quality Control Report
Duplicate Samples

Duplicate QCBatch: QC18639

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH		7.5	7.5	s.u.	1	0	0

Duplicate QCBatch: QC18675

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Conductance		1065	1070	μMHOS/cm	1	0	3.5

Duplicate

QCBatch: QC18679

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids		1842	1810	mg/L	1	1	9.7

Duplicate

QCBatch: QC18845

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity		<1.0	<1.0	mg/L as CaCo3	1	0	6.6
Carbonate Alkalinity		<1.0	<1.0	mg/L as CaCo3	1	0	6.6
Bicarbonate Alkalinity		328	316	mg/L as CaCo3	1	3	6.6
Total Alkalinity		328	316	mg/L as CaCo3	1	3	6.6

Quality Control Report
Lab Control Spikes and Duplicate Spikes

Laboratory Control Spikes

QCBatch: QC18633

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Mercury	0.00102	0.00108	mg/L	1	0.001	<0.0002	102	5	87 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC18634

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Mercury	0.00102	0.00108	mg/L	1	0.001	<0.0002	102	5	87 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC18646

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
GRO	0.957	0.947	mg/L	1	1	<0.1	95	1	78 - 113	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dilution	Spike Amount	LCS % Rec	LCSD % Rec	Recovery Limits
TFT	0.09	0.0915	mg/L	1	0.10	90	91	70 - 130
4-BFB	0.0917	0.0929	mg/L	1	0.10	91	92	70 - 130

Laboratory Control Spikes

QCBatch: QC18654

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.101	0.100	mg/L	1	0.10	<0.001	101	1	82 - 111	7
Benzene	0.103	0.103	mg/L	1	0.10	<0.001	103	0	86 - 106	5
Toluene	0.103	0.104	mg/L	1	0.10	<0.001	103	1	82 - 108	4
Ethylbenzene	0.104	0.104	mg/L	1	0.10	<0.001	104	0	86 - 115	6
M,P,O-Xylene	0.315	0.318	mg/L	1	0.30	<0.001	105	1	79 - 122	29

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dilution	Spike Amount	LCS % Rec	LCSD % Rec	Recovery Limits
TFT	0.101	0.100	mg/L	1	0.10	101	100	70 - 130
4-BFB	0.0964	0.0962	mg/L	1	0.10	96	96	70 - 130

Laboratory Control Spikes

QCBatch: QC18664

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
DRO	23.1	24.0	mg/L	0.10	250	<5.00	92	4	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dilution	Spike Amount	LCS % Rec	LCSD % Rec	Recovery Limits
n-Triacontane	13.0	13.4	mg/L	0.10	150	87	89	70 - 130

Laboratory Control Spikes

QCBatch: QC18682

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Aluminum	0.946	0.935	mg/L	1	1	<0.100	95	1	75 - 125	20
Total Arsenic	0.463	0.468	mg/L	1	0.50	<0.050	93	1	75 - 125	20
Total Barium	1.06	1.05	mg/L	1	1	<0.100	106	1	75 - 125	20
Total Boron	0.0499	0.049	mg/L	1	0.05	0.007	86	2	75 - 125	20
Total Cadmium	0.240	0.240	mg/L	1	0.25	<0.005	96	0	75 - 125	20
Total Chromium	0.108	0.105	mg/L	1	0.10	<0.010	108	3	75 - 125	20
Total Cobalt	0.260	0.260	mg/L	1	0.25	<0.025	104	0	75 - 125	20
Total Copper	0.121	0.121	mg/L	1	0.12	<0.0125	97	0	75 - 125	20
Total Iron	0.533	0.543	mg/L	1	0.50	<0.050	107	2	75 - 125	20
Total Lead	0.484	0.479	mg/L	1	0.50	<0.010	97	1	75 - 125	20
Total Manganese	0.264	0.263	mg/L	1	0.25	<0.025	106	0	75 - 125	20
Total Molybdenum	0.538	0.536	mg/L	1	0.50	<0.050	108	0	75 - 125	20
Total Nickel	0.260	0.259	mg/L	1	0.25	<0.025	104	0	75 - 125	20

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Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Selenium	0.429	0.407	mg/L	1	0.50	<0.050	86	5	75 - 125	20
Total Silica	0.484	0.480	mg/L	1	0.50	<0.050	97	1	75 - 125	20
Total Silver	0.123	0.123	mg/L	1	0.12	<0.0125	98	0	75 - 125	20
Total Zinc	0.249	0.253	mg/L	1	0.25	<0.025	100	2	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC18706

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	11.47	11.43	mg/L	1	12.50	<2.0	91	0	90 - 110	20
Nitrate-N	2.31	2.30	mg/L	1	2.50	<0.2	92	0	90 - 110	20
Sulfate	11.50	11.46	mg/L	1	12.50	<0.2	92	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC18989

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Dissolved Calcium	104	107	mg/L	1	100	<0.5	104	2	75 - 125	20
Dissolved Magnesium	103	106	mg/L	1	100	<0.5	103	2	75 - 125	20
Dissolved Potassium	102	107	mg/L	1	100	<0.5	102	4	75 - 125	20
Dissolved Sodium	106	107	mg/L	1	100	<0.5	106	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC19022

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Dissolved Calcium	105	102	mg/L	1	100	<0.5	105	2	75 - 125	20
Dissolved Magnesium	102	102	mg/L	1	100	<0.5	102	0	75 - 125	20
Dissolved Potassium	103	99	mg/L	1	100	<0.5	103	3	75 - 125	20
Dissolved Sodium	101	98.6	mg/L	1	100	<0.5	101	2	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Quality Control Report
Matrix Spikes and Duplicate Spikes

Matrix Spikes

QCBatch: QC18633

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Mercury	0.00124	0.00123	mg/L	1	0.001	<0.0002	124	0	40 - 177	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

QCBatch: QC18634

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Mercury	[20] 0.00044	[21] 0.00045	mg/L	1	0.001	<0.0002	44	2	40 - 177	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

QCBatch: QC18682

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Aluminum	4.42	4.55	mg/L	1	1	3.39	103	11	75 - 125	20
Total Arsenic	0.487	0.481	mg/L	1	0.50	<0.050	97	1	75 - 125	20
Total Barium	2.95	2.95	mg/L	1	1	2.03	91	0	75 - 125	20
Total Boron	0.183	0.181	mg/L	1	0.05	0.130	105	3	75 - 125	20
Total Cadmium	0.216	0.213	mg/L	1	0.25	<0.005	86	1	75 - 125	20
Total Chromium	0.108	0.107	mg/L	1	0.10	0.0145	93	1	75 - 125	20
Total Cobalt	0.228	0.226	mg/L	1	0.25	<0.025	91	0	75 - 125	20
Total Copper	0.116	0.116	mg/L	1	0.12	<0.0125	92	0	75 - 125	20
Total Iron	3.58	3.52	mg/L	1	0.50	3.21	74	17	75 - 125	20
Total Lead	0.419	0.415	mg/L	1	0.50	0.0105	81	0	75 - 125	20
Total Manganese	0.360	0.358	mg/L	1	0.25	0.128	92	0	75 - 125	20
Total Molybdenum	0.490	0.485	mg/L	1	0.50	<0.050	98	1	75 - 125	20
Total Nickel	0.225	0.223	mg/L	1	0.25	<0.025	90	0	75 - 125	20
Total Selenium	0.402	0.396	mg/L	1	0.50	<0.050	80	1	75 - 125	20
Total Silica	[22] 40.1	[23] 38.7	mg/L	100	0.50	38.6	303	171	75 - 125	20
Total Silver	0.116	0.115	mg/L	1	0.12	<0.0125	92	0	75 - 125	20
Total Zinc	0.267	0.264	mg/L	1	0.25	0.0439	89	1	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

QCBatch: QC18706

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	98.27	97.97	mg/L	1	62.50	41.0	91	0	52 - 131	20
Nitrate-N	12.17	12.11	mg/L	1	12.50	<1.00	97	0	84 - 105	20
Sulfate	67.69	67.28	mg/L	1	62.50	10.8	91	1	79 - 104	20

[20] MS RESULTS INVALID DUE TO SPIKING ERROR. USE LCS/LCSD TO DEMONSTRATE THE RUN IS UNDER CONTROL.
[21] MS RESULTS INVALID DUE TO SPIKING ERROR. USE LCS/LCSD TO DEMONSTRATE THE RUN IS UNDER CONTROL.
[22] Matrix spike recovery invalid due to required dilution. LCS demonstrates process under control.
[23] Matrix spike recovery invalid due to required dilution. LCS demonstrates process under control.

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

QCBatch: QC18989

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Dissolved Calcium	[24] 265	128	mg/L	1	100	129	136	16	75 - 125	20
Dissolved Magnesium	147	105	mg/L	1	100	23.1	123	15	75 - 125	20
Dissolved Potassium	122	148	mg/L	1	100	4.24	117	20	75 - 125	20
Dissolved Sodium	171		mg/L	1	100	48.5	122		75 - 125	

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

QCBatch: QC19022

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Dissolved Calcium	243	232	mg/L	1	100	120	123	9	75 - 125	20
Dissolved Magnesium	[25] 305	286	mg/L	1	100	173	132	15	75 - 125	20
Dissolved Potassium	138	128	mg/L	1	100	31.2	106	9	75 - 125	20
Dissolved Sodium	201	184	mg/L	1	100	86.6	114	16	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Quality Control Report
Continuing Calibration Verification Standards

CCV (1)

QCBatch: QC18633

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.001	0.00111	111	80 - 120	3/6/02

ICV (1)

QCBatch: QC18633

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.001	0.00107	107	80 - 120	3/6/02

CCV (1)

QCBatch: QC18634

[24] MS RECOVERY INVALID DUE TO DILUTION FACTOR, USE LCS/LCSD TO DEMONSTRATE THE RUN IS UNDER CONTROL.
[25] ms recovery invalid due to matrix effect, use lcs/lcsd to demonstrate the run is under control.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.001	0.00110	110	80 - 120	3/6/02

ICV (1) QCBatch: QC18634

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.001	0.00107	107	80 - 120	3/6/02

CCV (1) QCBatch: QC18639

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7	7.1	101	-0.1 s.u. - +0.1 s.u.	3/5/02

ICV (1) QCBatch: QC18639

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7	7.1	101	-0.1 s.u. - +0.1 s.u.	3/5/02

CCV (1) QCBatch: QC18646

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1	0.99	99	85 - 115	3/6/02

ICV (1) QCBatch: QC18646

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1	0.877	87	85 - 115	3/6/02

CCV (1) QCBatch: QC18654

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.113	113	85 - 115	3/6/02
Benzene		mg/L	0.10	0.101	101	85 - 115	3/6/02
Toluene		mg/L	0.10	0.102	102	85 - 115	3/6/02
Ethylbenzene		mg/L	0.10	0.101	101	85 - 115	3/6/02
M,P,O-Xylene		mg/L	0.30	0.310	103	85 - 115	3/6/02

CCV (2) QCBatch: QC18654

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.091	91	85 - 115	3/6/02
Benzene		mg/L	0.10	0.0988	98	85 - 115	3/6/02
Toluene		mg/L	0.10	0.099	99	85 - 115	3/6/02
Ethylbenzene		mg/L	0.10	0.098	98	85 - 115	3/6/02
M,P,O-Xylene		mg/L	0.30	0.301	100	85 - 115	3/6/02

ICV (1) QCBatch: QC18654

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.101	101	85 - 115	3/6/02
Benzene		mg/L	0.10	0.103	103	85 - 115	3/6/02
Toluene		mg/L	0.10	0.104	104	85 - 115	3/6/02
Ethylbenzene		mg/L	0.10	0.104	104	85 - 115	3/6/02
M,P,O-Xylene		mg/L	0.30	0.318	106	85 - 115	3/6/02

CCV (1) QCBatch: QC18664

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	230	92	75 - 125	3/6/02

CCV (2) QCBatch: QC18664

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	238	95	75 - 125	3/6/02

ICV (1) QCBatch: QC18664

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	232	93	75 - 125	3/6/02

CCV (1) QCBatch: QC18675

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		µMHOS/cm	1412	1411	99	90 - 110	3/7/02

ICV (1) QCBatch: QC18675

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		µMHOS/cm	1409	1437	101	90 - 110	3/7/02

CCV (1) QCBatch: QC18679

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	1006	100	90 - 110	3/6/02

ICV (1) QCBatch: QC18679

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	986	98	90 - 110	3/6/02

CCV (1) QCBatch: QC18682

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Aluminum		mg/L	2	1.96	98	90 - 110	3/7/02
Total Arsenic		mg/L	1	1.00	100	90 - 110	3/7/02
Total Barium		mg/L	2	2.07	104	90 - 110	3/7/02
Total Boron		mg/L	0.10	0.103	96	90 - 110	3/7/02
Total Cadmium		mg/L	0.50	0.518	104	90 - 110	3/7/02
Total Chromium		mg/L	0.20	0.206	103	90 - 110	3/7/02
Total Cobalt		mg/L	0.50	0.512	102	90 - 110	3/7/02
Total Copper		mg/L	0.25	0.247	99	90 - 110	3/7/02

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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1	1.01	101	90 - 110	3/7/02
Total Lead		mg/L	1	1.03	103	90 - 110	3/7/02
Total Manganese		mg/L	0.50	0.512	102	90 - 110	3/7/02
Total Molybdenum		mg/L	1	1.02	102	90 - 110	3/7/02
Total Nickel		mg/L	0.50	0.513	103	90 - 110	3/7/02
Total Selenium		mg/L	1	1.01	101	90 - 110	3/7/02
Total Silica		mg/L	1	0.993	99	90 - 110	3/7/02
Total Silver		mg/L	0.25	0.256	102	90 - 110	3/7/02
Total Zinc		mg/L	0.50	0.517	103	90 - 110	3/7/02

ICV (1) QCBatch: QC18682

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Aluminum		mg/L	2	1.93	96	90 - 110	3/7/02
Total Arsenic		mg/L	1	0.981	98	90 - 110	3/7/02
Total Barium		mg/L	2	1.99	100	90 - 110	3/7/02
Total Boron		mg/L	0.10	0.102	95	90 - 110	3/7/02
Total Cadmium		mg/L	0.50	0.497	99	90 - 110	3/7/02
Total Chromium		mg/L	0.20	0.200	100	90 - 110	3/7/02
Total Cobalt		mg/L	0.50	0.497	99	90 - 110	3/7/02
Total Copper		mg/L	0.25	0.245	98	90 - 110	3/7/02
Total Iron		mg/L	1	0.986	99	90 - 110	3/7/02
Total Lead		mg/L	1	1.00	100	90 - 110	3/7/02
Total Manganese		mg/L	0.50	0.496	99	90 - 110	3/7/02
Total Molybdenum		mg/L	1	0.989	99	90 - 110	3/7/02
Total Nickel		mg/L	0.50	0.496	99	90 - 110	3/7/02
Total Selenium		mg/L	1	0.997	100	90 - 110	3/7/02
Total Silica		mg/L	1	0.981	98	90 - 110	3/7/02
Total Silver		mg/L	0.25	0.247	99	90 - 110	3/7/02
Total Zinc		mg/L	0.50	0.497	99	90 - 110	3/7/02

CCV (1) QCBatch: QC18706

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.50	11.37	90	90 - 110	3/5/02
Nitrate-N		mg/L	2.50	2.30	92	90 - 110	3/5/02
Sulfate		mg/L	12.50	11.48	91	90 - 110	3/5/02

ICV (1) QCBatch: QC18706

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.50	11.79	94	90 - 110	3/5/02
Nitrate-N		mg/L	2.50	2.30	92	90 - 110	3/5/02
Sulfate		mg/L	12.50	11.81	94	90 - 110	3/5/02

CCV (1) QCBatch: QC18845

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0	<1.0	0	90 - 110	3/12/02
Carbonate Alkalinity		mg/L as CaCo3	0	232	0	90 - 110	3/12/02
Bicarbonate Alkalinity		mg/L as CaCo3	0	10	0	90 - 110	3/12/02
Total Alkalinity		mg/L as CaCo3	250	242	96	90 - 110	3/12/02

ICV (1) QCBatch: QC18845

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0	<1.0	0	90 - 110	3/12/02
Carbonate Alkalinity		mg/L as CaCo3	0	228	0	90 - 110	3/12/02
Bicarbonate Alkalinity		mg/L as CaCo3	0	10	0	90 - 110	3/12/02
Total Alkalinity		mg/L as CaCo3	250	238	95	90 - 110	3/12/02

CCV (1) QCBatch: QC18989

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25	25.2	100	90 - 110	3/19/02
Dissolved Magnesium		mg/L	25	24.9	99	90 - 110	3/19/02
Dissolved Potassium		mg/L	25	25.0	100	90 - 110	3/19/02
Dissolved Sodium		mg/L	25	24.8	99	90 - 110	3/19/02

ICV (1) QCBatch: QC18989

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25	24.8	99	95 - 105	3/19/02
Dissolved Magnesium		mg/L	25	24.5	98	95 - 105	3/19/02
Dissolved Potassium		mg/L	25	23.7	94	95 - 105	3/19/02
Dissolved Sodium		mg/L	25	24.5	98	95 - 105	3/19/02

CCV (1) QCBatch: QC19022

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25	25.2	100	90 - 110	3/22/02
Dissolved Magnesium		mg/L	25	24.7	98	90 - 110	3/22/02
Dissolved Potassium		mg/L	25	24	96	90 - 110	3/22/02
Dissolved Sodium		mg/L	25	24.1	96	90 - 110	3/22/02

ICV (1) QCBatch: QC19022

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25	25	100	95 - 105	3/22/02
Dissolved Magnesium		mg/L	25	24.7	98	95 - 105	3/22/02
Dissolved Potassium		mg/L	25	24.8	99	95 - 105	3/22/02
Dissolved Sodium		mg/L	25	24.7	98	95 - 105	3/22/02

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1 (888) 588-3443

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # A0203051L

Company Name: AMEC Phone #: 505/821-1801

Address: (Street, City, Zip) 8519 JEFFERSON NE/ALBUQUERQUE Fax #: 505/821-7371

Contact Person: BOB WILCOX 505/821-1801 OR 505/327-7928

Invoice to: (If different from above) WILLIAM OLSEN 505/476-3491

Project #: 2517000002 Project Name: ELDRIDGE RANCH

Project Location: MONUMENT - RT 8.5" Sampler Signature: [signature]

LAB # (LAB USE ONLY)	FIELD CODE		# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
192183	MW-12	A	1	1000	X								X		3.3.02	12:58
		B	1	500	X					X					"	"
		C	2	40	X				X						"	"
84	MW-9	A	1	1000	X								X		3.3.02	14:01
		B	1	500	X					X					"	"
		C	2	40	X				X						"	"
85	MW-8	A	1	1000	X								X		3.3.02	14:58
		B	1	500	X					X					"	"
		C	2	40	X				X						"	"
86	MW-11	A	1	1000	X								X		3.3.02	15:36
		B	1	500	X					X						

ANALYSIS REQUEST (Circle or Specify Method No.)

FIELD CODE		MTBE 8021B/602	BTEX 8021B/602	~~TPH 418.1/TX1005~~ TPH (GRO+DRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	MAJOR CATIONS/ANIONS	NMWQCC (DO) metals per Bob Wilcox	TDS	Cl NO_3 SO_4 alk F Ca K Na Mg	pH	Turn Around Time if different from standard	Hold
MW-12	A																X		X				
	B																	X					
	C		X	X																			
MW-9	A																X		X				
	B																	X					
	C		X	X																			
MW-8	A																X		X				
	B																	X					
	C		X	X																			
MW-11	A																X		X				
	B																	X					

Relinquished by: MARK STRZELCZYK [signature] Date: 03-4-02 Time: 09:25 Received by: Date: Time:

Relinquished by: Date: Time: Received by: Date: Time:

Relinquished by: Date: Time: Received at Laboratory by: [signature] Date: 3-5-02 Time: 10:00

LAB USE ONLY
Intact (Y) / N
Headspace Y / N
Temp 5°
Log-in Review [initials]

REMARKS: 1) BILLING - PLEASE CALL WILLIAM OLSEN (OCD) - SANTA FE/NM) 505/476-3491
2) SEND COPY OF LAB RESULTS TO AMEC - BOB WILCOX
☐ Check If Special Reporting Limits Are Needed

P+F 3/27/02

Carrier # Trivant D 902-806-655-3

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # A0203051 6

Company Name: AMEC Phone #: 505 821-1801
Address: (Street, City, Zip) 8519 JEFFERSON NE / ALBUQUERQUE Fax #: 505 821-7371
Contact Person: BOB WILCOX 505 821-1801 OR 505 327-7928
Invoice to: (If different from above) WILLIAM OLSON NM-OCD 505 476-3491
Project #: 2517000002 Project Name: ELDRIDGE RANCH
Project Location: MONUMENT - RT. 8.5 Sampler Signature: [signature]

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
	MW-11 (CONTIN.) C	2	40	X				X						3-3-02	15:36
87	MW-10 A	1	1000	X								X		3-3-02	16:25
	B	1	500	X					X					"	"
	C	2	40	X				X						"	"
88	MW-13 A	1	1000	X								X		3-3-02	18:30
	B	~~2~~ 1	500	X					X					"	"
	C	2	40	X				X						"	"
89	MW-14 A	1	1000	X								X		3-3-02	19:10
	B	1	500	X					X					"	"
	C	2	40	X				X						"	"
90	~~TRIP BLANK~~	2	40	X				X						3-3-02	16:45

ANALYSIS REQUEST (Circle or Specify Method No.)

FIELD CODE	MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 (TPH)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	MAJOR CATIONS/ANIONS	NM WQCC	TDS	Turn Around Time if different from standard	Hold
MW-11 (CONTIN.) C		X	X																	
MW-10 A																X		X		
B																	X			
C		X	X																	
MW-13 A																X		X		
B																	X			
C		X	X																	
MW-14 A																X		X		
B																	X			
C		X	X																	
TRIP BLANK		X																		

Relinquished by: MARK STRZELCZYK [signature] Date: 03-4-02 Time: 09:25
Received by: Date: Time:

Relinquished by: [signature] Date: Time:
Received by: Date: Time:

Relinquished by: Date: Time:
Received at Laboratory by: [signature] 3502 10:00 Date: Time:

LAB USE ONLY
Intact Y / N (Y circled)
Headspace Y / N
Temp 5°
Log-in Review [initials]

REMARKS:

☐ Check If Special Reporting Limits Are Needed

Carrier # TINNTO 902-806-655-3

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