3R - 48

GENERAL CORRESPONDENCE

YEAR(S):
1993-1992

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

RECEIVED
NOV 17 1993
OIL CONSERVATION DIV.
SANTA FE

November 12, 1993

Mr. Buddy Shaw
Environmental Coordinator
Amoco Production Company
200 Amoco Court
Farmington, New Mexico 87401

RE: 3rd Quarterly Monitoring Report, 1993 Project: 92140

Dear Mr. Shaw:

Attached please find a copy of the Quarterly Monitoring Report (QMR) for the San Juan Gravel A-1E site which summarizes the sampling activities for the 3rd quarter.

This QMR followed the field testing and sampling dictated or agreed upon by the New Mexico Oil Conservation Division (NMOCD) and Amoco Production Company.

If you have any questions regarding the summary report or this project, please contact us. Thank you for your cooperation and assistance with this project.

Respectfully submitted,
ENVIROTECH, INC.

Nelson Velez
Staff Geologist

Attachments: 3rd Quarterly Monitoring Report, 1993

cc: Denny Foust - N.M. Oil Conservation Division, Aztec, N.M.
Bill Olsen - N.M. Oil Conservation Division, Santa Fe, N.M.

NV/nv SJG3QM93.CVL

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

November 11, 1993

Mr. Bill Olsen
State of New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, NM 87504

RE: San Juan Gravel A-1E Well Site
Laboratory Report - Injection Side

Project: 92140/
C4012

Dear Mr. Olsen:

Attached please find a copy of the laboratory report for the sampling of the injection side of the air stripper groundwater collection system conducted by Envirotech Inc. for the San Juan Gravel A-1E well site on October 25, 1993.

The concentration of the BTEX analysis is considerably lower than what we had anticipated. One possibility for the low concentration may be that the system has completed retrieval of the volatile components to the best of its capabilities. Therefore, in order to expedite the remediation of the site, Envirotech proposes to drill a recovery well adjacent to monitor well #6 (located near the center of the hydrocarbon contaminated groundwater plume).

General detail on the design and installation have been included. The pump and treat system will still be on-line after the modification has been completed. In addition, we anticipate that the pump rate for the recovery well will be approximately 1 to 2 gallons per minute for the initial phase of this alteration to the system.

If you have any questions regarding this change or project, please contact us. Thank you for your cooperation and assistance with this project.

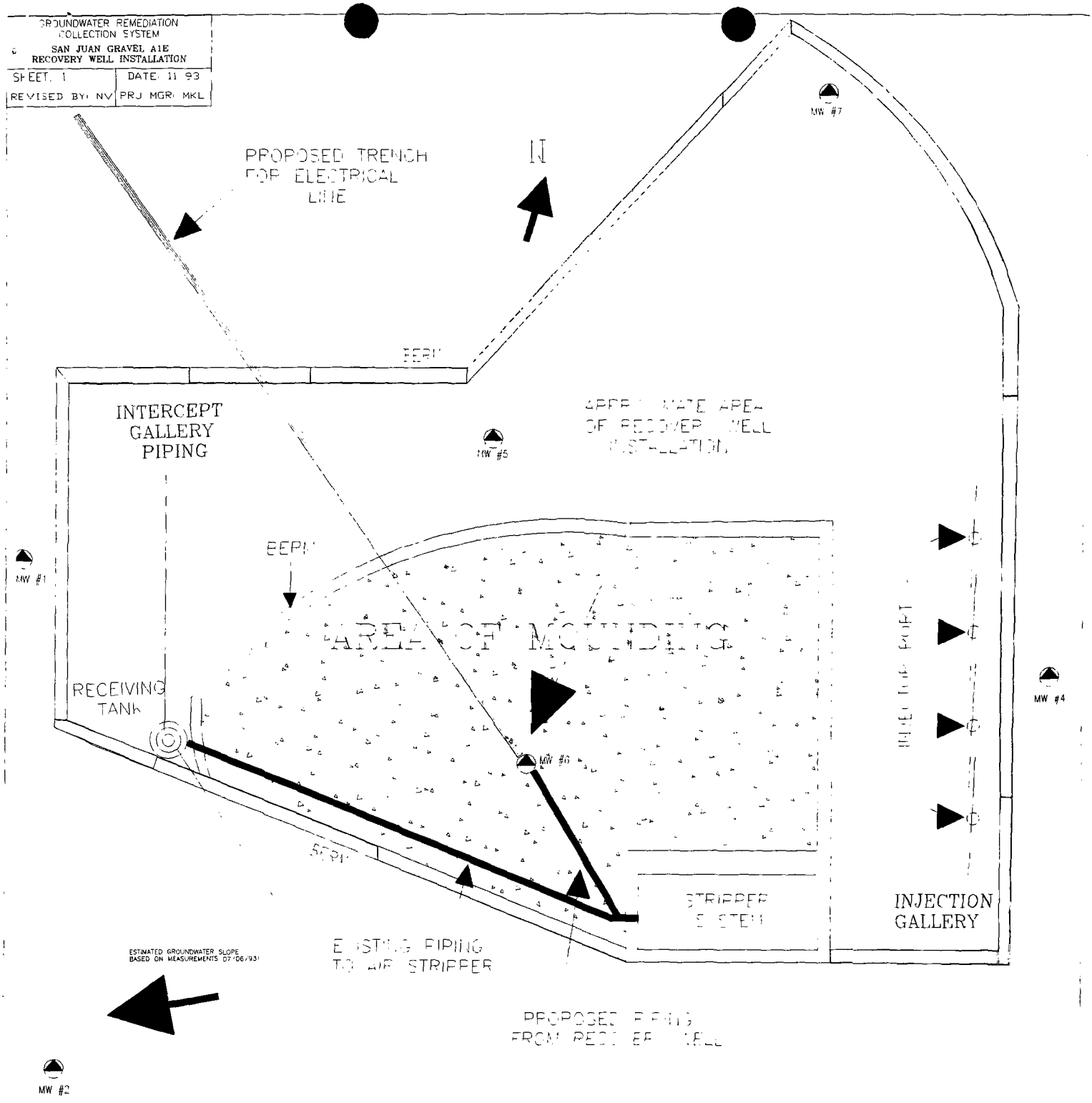
Respectfully submitted,
ENVIROTECH, INC.

Nelson Velez
Staff Geologist

Attachments: Laboratory Report and QA/QC Documentation
Site Diagram
Recovery Well Schematic

cc: Buddy Shaw - AMOCO Production Company, Farmington, NM
Denny Foust - NMOCD, Aztec, NM

NV/nv: C4012RC.OCD



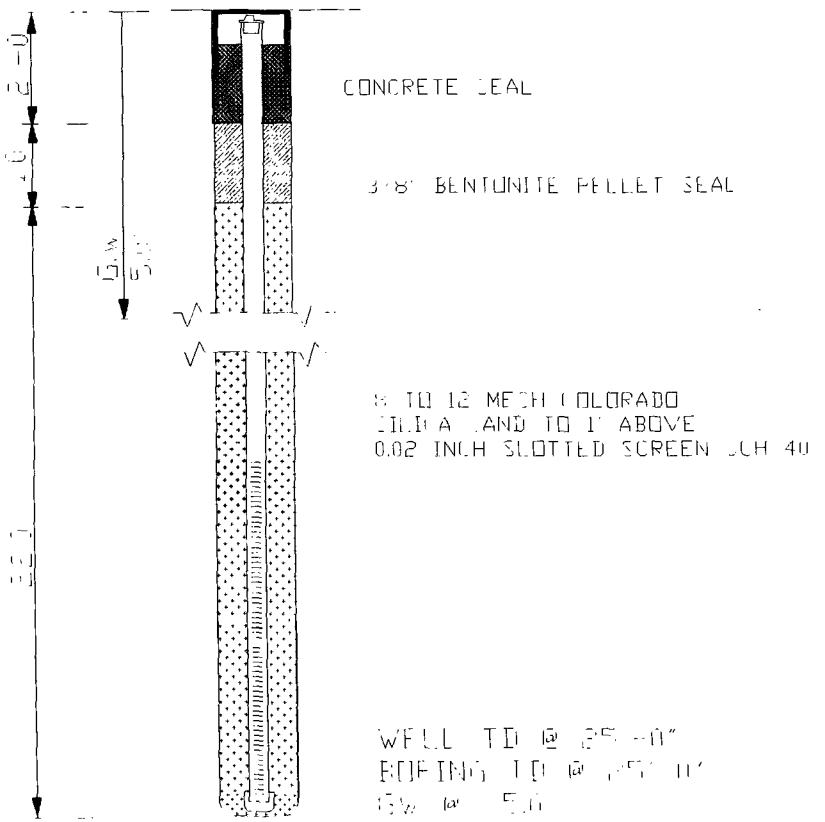
AMOCO PRODUCTION COMPANY
SAN JUAN GRAVEL A-1E
SEC 21, TWP 29N, RNG 13W
SAN JUAN COUNTY, NEW MEXICO
PRODUCTION TANK PIT AREA
GROUNDWATER CONTOUR LINES/PROJECT NO: 92140/C401

ENVIROTECH INC
ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 US HIGHWAY 64-3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

RECOVERY WELL

WELL SPECIFICATIONS

TOTAL DEPTH	25'-0"
DEPTH TO WATER	5'-0"
SCREEN TYPE	4" DIAMETER PVC SLOTTED PVC
SCREEN INTERVAL	4' TO 25' bgs
SOLID TYPE	4" DIAMETER PVC
SOLID INTERVAL	0' TO 4' bgs
CASING TYPE	4" DIAMETER STEEL
STEEL CASING INTERVAL - BLIND	0' TO 2' bgs
STEEL CASING INTERVAL - SLOTTED	2' TO 5' bgs
CONCRETE INTERVAL 5% BENTONITE/PORTLAND CEMENT GROUT INTERVAL	0' TO 2' bgs
3/8" PELLET SEAL INTERVAL	2' TO 4' bgs
SAND TYPE	8 TO 12 MESH COLORADO SILICA SAND
SAND INTERVAL	4' TO 25' bgs



AMOCO PRODUCTION COMPANY SJ GVL A-1E PROD. TANK AREA PROJ. NO. 93140 C4012	ENVIROTECH INC ENVIRONMENTAL SCIENTISTS 5796 U.S. HIGHWAY 64-3014 FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615	RECOVERY WELL DETAIL SHEET: 1	ENGINEER: M. LANE DRAFTER: N. VELEZ DATE: 11-93 DWG: C4012RW.SKD

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	Injection Side	Date Reported:	10-26-93
Laboratory Number:	6386	Date Sampled:	10-25-93
Sample Matrix:	Water	Date Received:	10-25-93
Preservative:	HgCl and Cool	Date Analyzed:	10-26-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	1.4	0.2
Toluene	ND	0.5
Ethylbenzene	2.9	0.2
p,m-Xylene	4.8	0.3
o-Xylene	ND	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	99 %
Bromofluorobenzene	98 %

Method: Method 5030A, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: SJ GVL A 1E Production Pit C4012

Analyst

Review

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	10-26-93
Laboratory Number:	1026AM.BLK	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	10-26-93
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	ND	0.5
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.3
o-Xylene	ND	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	101 %
Bromofluorobenzene	99 %

Method: Method 5030A, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992

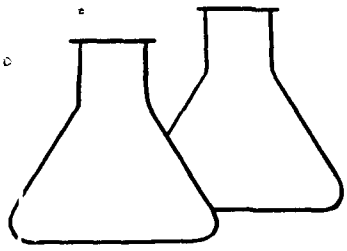
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review



ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

** QUALITY ASSURANCE EPA METHOD 8020
MATRIX SPIKE - AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Sample Spike	Date Reported:	10-26-93
Laboratory Number:	6386-S-BTEX.	Date Sampled:	10-25-93
Sample Matrix:	Water	Date Received:	10-25-93
Analysis Requested:	BTEX	Date Analyzed:	10-26-93
Condition:	NA		

Parameter	Sample Result (ug/L)	Spike Added (ug/L)	Spiked Sample Result (ug/L)	Det. Limit (ug/L)	Percent Recovery	SW-846 % Rec. Accept. Range
Benzene	1.4	20.0	22.1	0.2	103	39-150
Toluene	ND	20.0	20.8	0.5	102	46-148
Ethylbenzene	2.9	20.0	23.2	0.2	101	32-160
p,m-Xylene	4.8	20.0	24.7	0.3	100	46-148
o-Xylene	ND	20.0	20.8	0.3	103	46-148

Method: Method 5030A, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review

3135

C4012

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
Amoco 92140	PROD. PIT SJ GUL A IE	

Sampler: (Signature) Nelson Velez

Chain of Custody Tape No.

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8020)						Remarks
INJECTION SIDE	10/25/93	1440	6386	WATER	2	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	10/25/93	1537	Cu Chuhanlung	10-25-93	1540
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.
5796 U.S. Highway 64-3014
Farmington, New Mexico 87401
(505) 632-0615

san juan repro Form 578-81

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

RECEIVED
AUG 05 1993
OIL CONSERVATION DIV.
SANTA FE

July 30, 1993

Mr. Buddy Shaw
Environmental Coordinator
Amoco Production Company
200 Amoco Court
Farmington, New Mexico 87401

RE: 2nd Quarterly Monitoring Report, 1993 Project: 92140

Dear Mr. Shaw:

Attached please find a copy of the Quarterly Monitoring Report (QMR) for the San Juan Gravel A-1E site which summarizes the sampling activities for the 2nd quarter.

This QMR followed the field testing and sampling dictated or agreed upon by the New Mexico Oil Conservation Division (NMOCD) and Amoco Production Company.

If you have any questions regarding the summary report or this project, please contact us. Thank you for your cooperation and assistance with this project.

Respectfully submitted,
ENVIROTECH, INC.

Nelson Velez

Nelson Velez
Staff Geologist

Attachments: 2nd Quarterly Monitoring Report, 1993

cc: Denny Foust - N.M. Oil Conservation Division, Aztec, N.M.
Bill Olsen - N.M. Oil Conservation Division, Santa Fe, N.M.

NV/nv SJG2QM93.CVL

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

June 21, 1993

Mr. Bill Olsen
State of New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

RE: San Juan Gravel A-1E Well Site
Groundwater Plan Site Diagram Edits

Project: 92140/
C4012

Dear Mr. Olsen:

Attached please find copies of the San Juan Gravel A-1E Well Site Groundwater Plan Site Diagram edits. An error was made in labeling monitor wells #5 and #6. They have been correctly identified on the attached diagrams. Although the monitor wells have been mislabeled on the diagrams within the Groundwater Plan, the laboratory analyses are correct for the revised site diagrams.

We apologize for the unintentional error. Please insert the edited Site Diagrams in place of the mistaken ones.

If you have any questions regarding these changes, please contact us. Thank you for your cooperation and understanding.

Respectfully submitted,
ENVIROTECH, INC.

Nelson Velez
Geologist

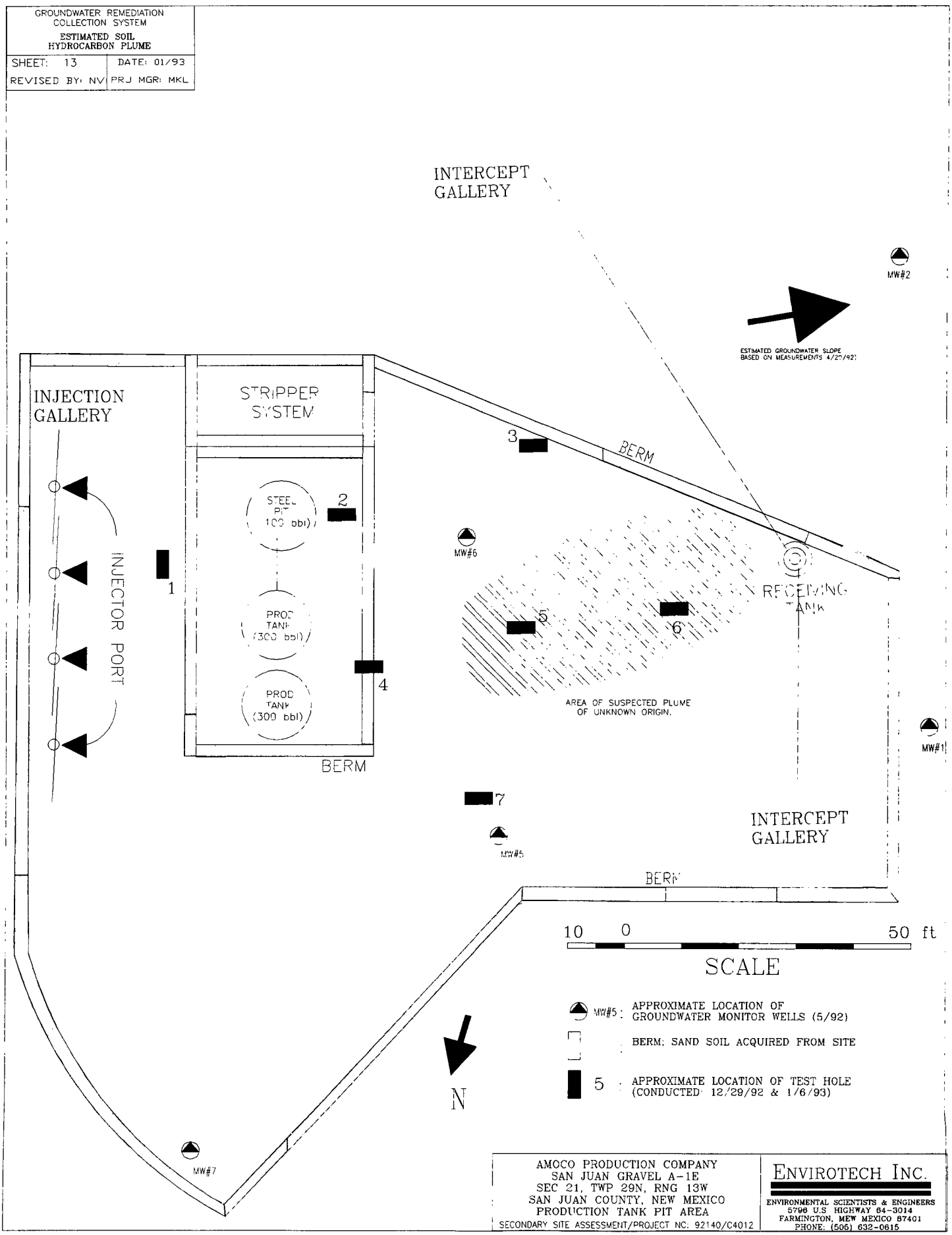
Attachments: Sheet 13 & 14 of the Groundwater Plan

NV/nv

4012SDEA.LTR

GROUNDWATER REMEDIATION
COLLECTION SYSTEM
ESTIMATED SOIL
HYDROCARBON PLUME

SHEET: 13	DATE: 01/93
REVISED BY: NV	PRJ MGR: MKL

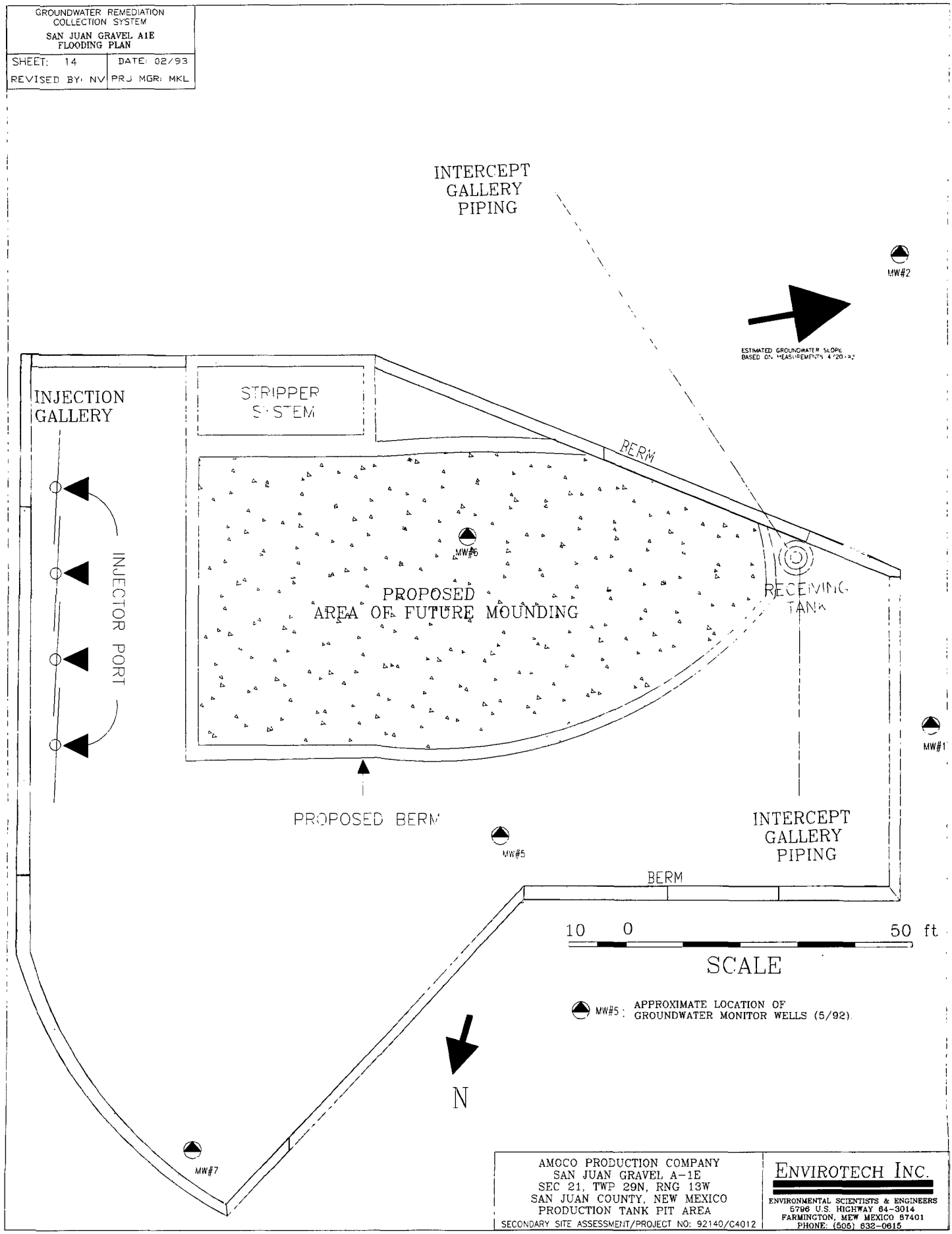


AMOCO PRODUCTION COMPANY
SAN JUAN GRAVEL A-1E
SEC 21, TWP 29N, RNG 13W
SAN JUAN COUNTY, NEW MEXICO
PRODUCTION TANK PIT AREA
SECONDARY SITE ASSESSMENT/PROJECT NO: 92140/C4012

ENVIROTECH INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S HIGHWAY 64-3014
FARMINGTON, MEW MEXICO 87401
PHONE: (505) 632-0615

GROUNDWATER REMEDIATION
COLLECTION SYSTEM
SAN JUAN GRAVEL A1E
FLOODING PLAN

SHEET: 14	DATE: 02/93
REVISED BY: NV	PRJ MGR: MKL



AMOCO PRODUCTION COMPANY
SAN JUAN GRAVEL A-1E
SEC 21, TWP 29N, RNG 13W
SAN JUAN COUNTY, NEW MEXICO
PRODUCTION TANK PIT AREA
SECONDARY SITE ASSESSMENT/PROJECT NO: 92140/C4012

ENVIROTECH INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64-3014
FARMINGTON, MEW MEXICO 87401
PHONE: (505) 632-0615

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

April 5, 1993

Mr. Bill Olsen
State of New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

RE: San Juan Gravel A-1E Well Site
Groundwater Monitoring Plan

Project: 92140/
C4012

Dear Mr. Olsen:

Attached please find a copy of the Groundwater Monitoring Plan (GMP) which summarizes the remediation activities and follow-up site assessment conducted by Envirotech Inc. for the San Juan Gravel A-1E well site.

As noted in the GMP, the monitoring activities focused on the air stripper effluent and the monitor wells in place at the site. The follow-up site assessment was performed concurrently to monitor the abatement. This GMP followed the field testing and sampling agreed upon by the New Mexico Oil Conservation Division (NMOCD) and Amoco Production Company in the RAP.

All conclusions and recommendations given in the GMP are derived directly from the field and laboratory results conducted from the commencement of the remediation to the present available information.

If you have any questions regarding the summary report or this project, please contact us. Thank you for your cooperation and assistance with this project.

Respectfully submitted,
ENVIROTECH, INC.

Nelson Velez
Geologist

Attachments: Groundwater Monitoring Plan

NV/nv

C4012A.CVL

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

June 18, 1992

Mr. Roger Anderson
Environmental Engineer
New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

RE: Proposed Remedial Action Plan Project/Pit No: 92140/C4012
Amoco Production Company
San Juan Gravel A-1E
Production Tank Pit
SE/4, NE/4 (H) Section 21, T29N, R13W, NMPM
San Juan County, New Mexico

Dear Mr. Anderson:

Attached please find a copy of the Proposed Remedial Action Plan for the referenced pit site. The plan is being submitted for your review and approval per Mr. Buddy Shaw's (Environmental Coordinator, Amoco Production Co.) request.

This plan is being telefaxed to you (hard copy to be mailed), as Mr. Shaw would like to discuss the plan with you on Friday June 19, 1992.

Presently the injection and intercept galleries have been installed. Piping for the stripper and pumps is being installed. This is to prevent an additional hydrocarbon movement on the water table.

Thank you for your assistance with this project. Please contact us if you have any further questions.

Respectfully submitted,
Envirotech, Inc.

Michael K. Lane, P.E.
Project Manager/Geological Engineer

MKL:mkl/sr C40120CD.LTR

3R - 48

REPORTS

DATE:
MAR. 1993

ENVIROTECH INC.

GROUNDWATER PLAN

AMOCO PRODUCTION COMPANY

SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, NEW MEXICO

PREPARED FOR:
MR. BUDDY SHAW
ENVIRONMENTAL COORDINATOR
AMOCO PRODUCTION COMPANY

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OIL CONSERVATION DIV.
SANTA FE

MARCH 1993

PROJECT NO: 92140

5796 U.S. HIGHWAY 64 - 3014 • FARMINGTON, NEW MEXICO 87401 • PHONE: (505) 632-0615

GROUNDWATER MONITORING PLAN
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

PREPARED FOR:
MR. BUDDY SHAW
ENVIRONMENTAL COORDINATOR
AMOCO PRODUCTION COMPANY

PROJECT/PIT NO.: 92140/C4012

MARCH 1993

ENVIROTECH, INC.
Environmental Scientist & Engineers
5796 U.S. Highway 64-3014
Farmington, New Mexico

(505) 632-0615

TABLE OF CONTENTS

GROUNDWATER MONITORING PLAN
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

SECTION 1

SECTION 2

SECTION 3

SECTION 4

APPENDIX

GROUNDWATER MONITORING PLAN
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

LIST OF SHEETS AND TABLES

MARCH 1993 **PROJECT/PIT NO: 92140/C4012**

GROUNDWATER MONITORING PLAN
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

INTRODUCTION

Amoco Production Company has installed a pump and treat system as part of a Remedial Action Plan (RAP) to abate the groundwater contamination from the production equipment and storage system associated with the subject well located south of Farmington, in the Southeast 1/4 of the Northeast 1/4 of Section 21, Township 29N, Range 13W, NMPM, San Juan County, New Mexico.

This Groundwater Monitoring Plan (GMP) was developed by Amoco Production Company and Envirotech, Inc. based on the initial data collection during implementation of RAP submitted to the New Mexico Oil Conservation Division (NMOCD). Per NMOCD's direction, the groundwater reclamation has been monitored by sampling of the monitor wells and the effluent from the air stripper.

Included are groundwater analyses from the air stripper effluent consisting of volatile aromatic hydrocarbons, polynuclear aromatic hydrocarbons, and major cations and anions using appropriate EPA analytical methods.

To establish the progress of the reclamation, a follow-up site assessment was completed in late December, 1992/early January, 1993. This assessment encompasses additional Test holes and sampling of both the soil and groundwater.

The GMP also outlines a sampling schedule along with recommendations on future sampling of the remediation on the site.

The NMOCD's approved letter (refer to Appendix B) of the PROPOSED REMEDIAL ACTION PLAN indicates that this GMP was to be submitted within 60 days of receipt of that letter. The RAP was submitted to NMOCD in June, 1992 during the installation of the pump and treat system. Due to delays, the system did not become fully operational until October, 1992. In order to firmly establish validity of the sampling of the air stripper effluent, it was decided to follow the specifications of the letter to gather four months of completed analyses.

PURPOSE AND SCOPE OF WORK

The purpose of this Groundwater Monitoring Plan (GMP) is to support the accepted Remedial Action Plan (RAP) submitted and approved by the NMOCD by providing data on the effectiveness of the installed groundwater pump and treat system. The GMP also addresses the additional conditions to be followed as specified in the approval letter of the RAP.

The scope of work consisted of the following:

A. Notification of the NMOCD of the intent to monitor and periodically report the status of the remediation of the groundwater.

B. Sampling of the monitor wells and the effluent of the air stripper to verify the status of the groundwater and treated water during the remediation.

C. Documentation of the analytical results from the sampling.

D. Conducting a follow-up site assessment of the suspected plume area in order to compare with the original site assessment and to evaluate if the contamination within the soil is being successfully treated.

E. Submittal of a Groundwater Monitoring Plan and provide recommendations based upon the up-to-date analyses and other data as it becomes available.

BRIEF HISTORY

The San Juan Gravel A-1E well site is located in the south central portion of Farmington, New Mexico off Poulson Drive. (refer to Appendix A - Sheet 1).

The site was originally constructed and the well drilled by Tenneco Oil. The date of completion was in February, 1980.

The site is an inactive crude oil well producing from the Dakota Formation. Surface equipment at the site consists of a sucker rod pumping unit, two (2) above ground production storage tanks (approximately 300 bbl) and a steel production overflow pit (approximately 100 bbl). The storage tanks and pit are contained by an earthen berm.

Assessment of the production pit area in April 1992, indicated that significant hydrocarbon contamination of soil and groundwater was present. The plume encompassed the entire area of the storage complex, extending east of the berm approximately 10 feet (up gradient) and west 60 feet (down gradient). Free product was observed on the groundwater (refer to Appendix A - Sheet 2).

Assessment of the separator pit later in May 1992, indicated that significant hydrocarbon contamination of soil and groundwater was present. The soil contamination appeared to be limited to the previous pit area. The highly contaminated soils were excavated for treatment and the excavation backfilled with clean imported soils.

The proposed Remedial Action Plan (RAP) was submitted in June, 1992. The NMOCD approved the RAP with several other conditions on June 29, 1992.

The installation of a groundwater collection and treatment system was completed as of late June, 1992. Monitor wells were installed during the construction of the groundwater treatment system.

Due to a drop in the groundwater table and weather conditions following the installation, the efficiency of the system decreased and delays were experienced. Modifications were undertaken to increase the effectiveness of the system (i.e. - mounding surface water to raise the static groundwater level of the site, winterizing collection system's piping).

PUMP AND TREAT SYSTEM DESCRIPTION

The pump and treat system consists of an intercept trench (down gradient) constructed with crushed washed gravel, perforated PVC pipe and a recovery collection tank. The collected hydrocarbon contaminated groundwater is skimmed of free product by flowing through a 100 bbl tank , and then routed to an air stripper to treat the effluent to New Mexico Groundwater Standards. The treated effluent is pumped to an injection gallery (up-gradient) of the contamination plume (Appendix A - Sheet 2). Monitor wells have been placed at locations identified on the Site Diagram to assist in the monitoring of the cleanup effort. To compensate for seasonal low groundwater and to increase the flushing of soil contamination in the vadose zone, surface mounding has been implemented starting from the up-gradient areas.

FOLLOW-UP SITE ASSESSMENT

Field Exploration

A follow up site assessment was conducted on December 22, 1992 and January 6, 1993. The purpose of the assessment was to determine if the recycling of the groundwater from the air stripper effluent combined with raising the static groundwater level was effectively abating the contamination from the water table and the highly contaminated soils at the site. Seven (7) Test holes using an extenda-hoe were excavated at various locations within the suspected plume area (refer to Appendix A - Sheet 2).

Soil and Groundwater Sampling

Grab soil samples were collected from the excavation sidewalls at a minimum of every two (2) feet from the relative ground surface to the groundwater interface. Recovered soil and groundwater samples were split;

1. A portion of the sample was placed in a 475 ml glass container and sealed with aluminum foil for field screening of hydrocarbon vapors by the Headspace Field Method as per NMOCD Unlined Surface Impoundment Closure Guidelines

2. A portion of the sample was placed in laboratory supplied clean 250 ml clear glass sample container with Teflon closures, placed in ice and delivered to Envirotech's laboratory for analysis. From each test hole, only the soil samples with the highest field reading was submitted for laboratory analysis.

3. The groundwater BTEX samples were taken in duplicate and placed in new 40 ml VOC vials with teflon septa, supplied by the laboratory. The samples were preserved with mercuric chloride.

4. The groundwater TPH samples were placed in a one (1) liter amber glass container with a teflon closure.

The grab soil samples from the Test hole advancements were classified in accordance with the Unified Soil Classification System (ASTM: D-2487). Logs of the Test holes are included in Appendix A. While the noted stratification lines represent approximate boundaries between soil types, the transition may be gradual.

Upon completion, all test holes were abandoned by backfill with the excavated soil.

Groundwater sample were collected in all of the Test holes following USEPA SW-846 protocol. A clean teflon bailer was utilized to collect the water sample.

All samples were placed on ice until delivery later that same day to the laboratory.

The Chain-of-Custody Record is presented with the laboratory results, Appendix B.

Soil Conditions

Evaluation of the subsurface conditions to the depths explored, indicate the soils at the site are alluvial consisting of coarse sand and poorly sorted gravel, brown to yellowish color, slightly moist to saturated, and loose. Grayish black to black soils were encountered at Test holes #2, #3, #4, and #5 immediately above the groundwater interface. Grayish sand and gravel with strong hydrocarbon odor was encountered at Test holes #5 and #6 at an increased interval than encountered in the other Test holes conducted (see Appendix A, Cross-sections - Sheets 3-5).

Groundwater was encountered in all of the Test holes excavated at depths ranging from 3.5 to 7.5 feet.

ANALYTICAL RESULTS

The follow-up site assessment soil and groundwater samples were field screened for volatile hydrocarbons following the Field Headspace Method (NMOCD Surface Impoundment Closure Guidelines, February, 1993). Results of the field testing are summarized in Table 1.

Following the USEPA and NMOCD guidelines, samples collected as part of the monitoring and assessment were analyzed by laboratory confirmation for total recoverable petroleum hydrocarbons (TPH) per USEPA Method 418.1 & 8015, and for aromatic volatile organics using USEPA Method 8020 (BTEX). The laboratory results are summarized as follows:

1. Table 2 summarizes the TPH's and BTEX analyses for the follow-up site assessment.

2. Table 3 summarizes the TPH, BTEX, and Polynuclear Aromatic Hydrocarbons analyses for the air stripper effluent.

3. Table 4 summarizes the BTEX analyses for the monitor wells on the site.

4. Table 5 summarizes the field data of the monitor wells prior to sample collection.

All analytical results for the laboratory analyses, laboratory QC/QA, and Chain-of-Custody are presented in Appendix B.

TABLE 1

FIELD HEADSPACE TESTING RESULTS
GROUNDWATER MONITORING PLAN
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

Test hole	Depth bgs	Matrix	OVM(ppm)
1	2'0"	sand/gravel	0.0
1	3'6"	groundwater	0.0
2	2'0"	sand/gravel	0.0
2	4'0"	sand/gravel	1417
2	5'6"	groundwater	1421
3	2'0"	sand/gravel	0.0
3	3'6"	sand/gravel	7.0
3	4'0"	sand/gravel	0.0
3	6'0"	sand/gravel	247
3	7'0"	sand/gravel	1118
3	7'0"	groundwater	167
4	2'0"	sand/gravel	0.0
4	4'0"	sand/gravel	0.0
4	5'6"	sand/gravel	857
4	6'0"	groundwater	291
5	2'0"	sand/gravel	314
5	4'0"	sand/gravel	862
5	6'0"	sand/gravel	828
5	6'6"	groundwater	924
6	2'0"	sand/gravel	3.8
6	4'0"	sand/gravel	8.1
6	6'6"	sand/gravel	564
6	7'0"	groundwater	948
7	2'0"	sand/gravel	9.7
7	4'0"	sand/gravel	8.1
7	5'6"	groundwater	3.8

Notes: 1) **bgs** - **Below Ground Surface.**
2) **ppm** - **parts per million.**

TABLE 2

RESULTS OF LABORATORY ANALYSIS
GROUNDWATER MONITORING PLAN
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

SAMPLE ID	MATRIX	EPA METHOD	BENZENE (µg/kg)	TOLUENE (µg/kg)	ETHYL-BENZENE (µg/kg)	TOTAL XYLENE (µg/kg)	TPH (mg/kg)
T1@2'	SOIL	418.1	-	-	-	-	15.5
T1@3.5'	WATER	418.1	-	-	-	-	ND
T2@5.5'	WATER	418.1	-	-	-	-	56
T3@7'	SOIL	418.1	-	-	-	-	11.0
T3@7'	WATER	418.1	-	-	-	-	31.6
T4@5.5'	SOIL	418.1	-	-	-	-	11.6
T4@5.5'	WATER	418.1	-	-	-	-	78
T5@4'	SOIL	418.1	-	-	-	-	17.2
T5@6.5'	WATER	418.1	-	-	-	-	409
T6@7'	WATER	418.1	-	-	-	-	390
T7@5.5'	WATER	418.1	-	-	-	-	ND
T2@5.5'	WATER	8020	64	32.1	77	692	-
T3@7'	WATER	8020	0.7	1.3	4.1	26.6	-
T4@5.5'	WATER	8020	1.0	2.3	16.2	95.7	-
T5@6.5'	WATER	8020	84	132	1470	4282	-

SAMPLE ID	MATRIX	EPA METHOD	GASOLINE C5-C10 (mg/kg)	DIESEL C10-C28 (mg/kg)	HEAVY CRUDE C28-C36 (mg/kg)	TPH (mg/kg)
T2@7'	SOIL	8015	102	353	ND	455
T3@7'	SOIL	8015	102	353	ND	455
T3@7'	WATER	8015	1.5	12.9	-	14.4
T4@5.5'	SOIL	8015	103	206	ND	310
T4@5.5'	WATER	8015	12.6	74	-	87
T5@4'	SOIL	8015	194	418	ND	610
T5@6.5'	WATER	8015	132	252	-	384
T6@7'	WATER	8015	117	449	-	570
T7@5.5'	WATER	8015	2.8	24.8	-	27.5

Notes: 1) ND - Parameter not detected at method detection limit.
2) Total Xylene - summation of m,p-Xylene and o-Xylene.
3) µg/kg - equivalent to parts per billion.
4) mg/kg - equivalent to parts per million.

Refer to Appendix A -Sheet 2 for approximate Test hole locations.

TABLE 3
(Part 1 of 3)

RESULTS OF THE AIR STRIPPER EFFLUENT LABORATORY ANALYSIS
GROUNDWATER MONITORING PLAN
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

LABORATORY ANALYSES	08/31/92	10/05/92	11/13/92	01/06/92
Benzene, (μg/L)	ND	0.2	1.3	ND
Toluene, (μg/L)	1.0	1.0	10.2	ND
Ethylbenzene, (μg/L)	ND	ND	2.4	ND
Total Xylene, (μg/L)	2.1	2.2	51.0	0.4
Polynuclear Aromatic Hydrocarbons, (μg/L)	NA	NA	ND	ND
TPH, (mg/L)	ND	ND	NA	NA

NOTE: NA - NO DATA AVAILABLE.
ND - NON DETECTABLE AT THE STATED DETECTION LIMIT (SEE LABORATORY ANALYSES).

TABLE 3
CONTINUED
(PART 2 OF 3)

RESULTS OF LABORATORY ANALYSIS
GROUNDWATER MONITORING PLAN
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

LABORATORY ANALYSES	08/31/92	10/05/92	11/13/92	01/06/92
Lab pH (s.u.)	7.90	7.92	8.00	8.20
Lab Conductivity, µmhos/cm @ 25°C	569	752	883	903
Lab Resistivity, ohm-m	17.6	13.3	11.3	NA
Total Dissolved Solids (180°C), mg/L	436	488	576	586
Total Dissolved Solids (calc), mg/L	372	470	552	554
Total Alkalinity as $CaCO_3$, mg/L	159	188	199	236
Total Hardness as $CaCO_3$, mg/L	219	303	349	371
Sodium Adsorption Ratio	1.31	1.11	1.17	1.17

NOTE: NA - NO DATA AVAILABLE.

TABLE 3
CONTINUED
(PART 3 OF 3)

RESULTS OF LABORATORY ANALYSIS
GROUNDWATER MONITORING PLAN
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

LABORATORY ANALYSES	08/31/92		10/05/92		11/13/92		01/06/92	
	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Bicarbonate as HCO_3	195	3.19	230	3.77	243	3.98	290	3.98
Carbonate as CO_3	< .1	<.01	< .1	<.01	< .1	< .01	0	0.00
Chloride	14.9	.42	29.1	.82	47.2	1.33	30	0.84
Sulfate	142	2.96	165	3.44	201	4.2	200	4.08
Calcium	38.7	1.93	103	5.15	113	5.65	110	5.26
Magnesium	29.7	2.44	11.1	.91	16.3	1.34	26	2.16
Potassium	6.65	.17	3.5	.09	3.55	.09	3.2	.08
Sodium	44.4	1.93	44.5	1.94	50.4	2.19	52	2.25
Major Cations	NA	6.47	NA	8.09	NA	9.27	NA	9.75
Major Anions	NA	6.57	NA	8.03	NA	9.51	NA	9.64
Cation/Anion Difference	NA	.74%	NA	.42%	NA	1.27%	NA	0.58%

NOTE: NA - NOT DATA AVAILABLE.

TABLE 4

RESULTS OF MONITOR WELLS LABORATORY ANALYSIS
GROUNDWATER MONITORING PLAN
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

LABORATORY ANALYSES JUNE 1 & 2, 1992	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Benzene, (μg/L)	ND	ND	ND	ND	ND	540	0.2
Toluene, (μg/L)	ND	1.1	1.3	ND	54	235	2.9
Ethylbenzene, (μg/L)	ND	0.4	ND	ND	ND	294	ND
Total Xylene, (μg/L)	ND	1.1	0.9	ND	64.4	3060	1.2

NOTE: ND - NON DETECTABLE AT THE STATED DETECTION LIMIT (SEE LABORATORY ANALYSES).

TABLE 4
CONTINUED
(PART 2 OF 3)

RESULTS OF MONITOR WELLS LABORATORY ANALYSIS
GROUNDWATER MONITORING PLAN
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

LABORATORY ANALYSES OCTOBER 8, 1992	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Benzene, (μg/L)	0.5	NA	ND	NA	0.3	NA	1.6
Toluene, (μg/L)	0.7	NA	ND	NA	1.2	NA	3.4
Ethylbenzene, (μg/L)	ND	NA	ND	NA	ND	NA	ND
Total Xylene, (μg/L)	0.6	NA	ND	NA	1.4	NA	4.0

NOTE: ND - NON DETECTABLE AT THE STATED DETECTION LIMIT (SEE LABORATORY ANALYSES).
NOTE: NA - NO DATA AVAILABLE.

TABLE 4
CONTINUED
(PART 3 OF 3)

RESULTS OF MONITOR WELLS LABORATORY ANALYSIS
GROUNDWATER MONITORING PLAN
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

LABORATORY ANALYSES NOVEMBER 16, 1992	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Benzene, (μg/L)	ND	ND	ND	ND	ND	6.2	0.7
Toluene, (μg/L)	ND	ND	ND	ND	ND	58	3.4
Ethylbenzene, (μg/L)	ND	ND	ND	ND	ND	159	2.1
Total Xylene, (μg/L)	0.4	0.8	0.9	1.3	ND	783	7.0

NOTE: ND - NON DETECTABLE AT THE STATED DETECTION LIMIT (SEE LABORATORY ANALYSES).

TABLE 5

SUMMARY OF THE MONITOR WELLS
SAMPLING & GROUNDWATER CONDITIONS
AMOCO PRODUCTION COMPANY
SAN JUAN GRAVEL A -1E
PRODUCTION TANK PIT AREA
(H), SEC. 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

	DATE	TOTAL DEPTH (ft.)	STATIC WATER LEVEL (ft.)	WELL BORE VOLUME (bails)	WATER CONDITIONS TEMP. (°C)	CONDUCT (μS)	pH	COMMENTS
MW-1	10/08/92	11.1	5.72	3 (16)	22	600	7.02	slightly murky
MW-2	10/08/92	8.2	3.76	5 (20)	22	600	7.14	very murky
MW-3	10/08/92	7.9	2.46	3 (16)	21	700	6.95	slightly murky
MW-4	-	-	-	-	-	-	-	did not analyze
MW-5	10/08/92	10.55	4.39	4 (24)	21	600	7.43	-
MW-6	-	-	-	-	-	-	-	did not analyze
MW-7	10/08/92	8.0	3.70	4 (15)	20	600	7.27	-

NOTE: COLLECTED BTEX SAMPLES ON ALL MONITOR WELLS EXCEPT MW-2, MW-4, & MW-6.

TABLE 5
CONTINUED
(PART 2 OF 2)

SUMMARY OF MONITOR WELL(S)
SAMPLING & GROUNDWATER CONDITIONS
AMOCO PRODUCTION COMPANY
SAN JUAN GRAVEL A -1E
PRODUCTION TANK PIT AREA
(H), SEC. 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

	DATE	TOTAL DEPTH (ft.)	STATIC WATER LEVEL (ft.)	WELL BORE VOLUME (bails)	WATER CONDITIONS TEMP. (°C)	CONDUCT (μS)	pH	COMMENTS
MW-1	11/16/92	11.10	6.53	20	18	800	7.08	slightly murky
MW-2	11/16/92	8.15	4.32	20	16	700	6.86	slightly murky
MW-3	11/16/92	7.90	2.33	24	14	800	6.88	slightly murky
MW-4	11/16/92	6.95	1.14	25	11	700	7.12	slightly murky
MW-5	11/16/92	10.55	5.22	20	13	700	7.16	product, strong odor
MW-6	11/16/92	10.10	5.34	21	15	600	6.82	very murky
MW-7	11/16/92	8.0	3.82	21	14	700	6.81	slightly murky

NOTE: COLLECTED BTEX SAMPLES ON ALL MONITOR WELLS.

Clean Up Standards:

The maximum allowable concentration for hydrocarbon contamination of soils as outlined in the New Mexico Oil Conservation Division, Guidelines for Surface Impoundment Closures (February, 1993) are summarized in Table 6.

The current maximum allowable concentrations for groundwater contamination as outlined by the State of New Mexico Water Quality Control Commission (August 18, 1991) are summarized and reported in Table 6.

TABLE 6

HYDROCARBON SOIL & GROUNDWATER CONTAMINATION STANDARDS
STATE OF NEW MEXICO
RANKING FOR THE SITE > 19

Parameter	Maximum Allowable Limits soil (µg/kg)	groundwater (µg/l)
Benzene	10,000	10
Toluene	-	750
Ethylbenzene	-	750
Total Xylene	-	620
Total Aromatics	50,000	-
Polynuclear aromatic Hydrocarbons	30	-
	soil (mg/kg)	
Total Petroleum Hydrocarbons	100	-

Notes: 1) **µg/kg or µg/l - equivalent to parts per billion.**

2) **mg/kg - equivalent to parts per million.**

3) **Standards based on a ranking of > 19.**

CONCLUSION

Based on the findings of the follow-up site assessment, sampling of the effluent and monitor wells, the following conclusions were established;

1. OVM levels and lab results indicate that pump and treat system is abating the soil and groundwater contamination.

2. Effluent meets or exceeds the water standards as outlined in the Water Quality Control Commission regulations.

3. The analyses for hydrocarbon contamination of the soil in the area at the San Juan Gravel A -1E site shows the soil and groundwater did exceed the current regulated limits at Test holes #2, #3, #4, #5 & #6 for the TPH analysis. Further remediation is required to abate the soil and groundwater.

4. Results of water sampling from the monitor wells indicates,
   a. the intercept trench is successfully containing down gradient movement of contamination, and
   b. the level of groundwater contamination within the plume is decreasing.

5. Surface mounding up gradient is successfully aiding in the abatement and appears to be increasing the effectiveness of the system as a whole.

6. What appeared to be an isolated area of contamination was encountered west of the original source displaying a dissimilar source of origin.

7. Lab results (TPH USEPA Method 8015) of the follow-up site assessment, indicates that the contamination appears to be a medium crude which coincides with the production of the well on the location.

Recommendations

Given the evaluation of the pump and treat system, OCD requirements and findings of the follow-up assessment, we recommend the following to supplement the Remedial Action Plan to complete reclamation of the San Juan Gravel A-1E site.

1. Eliminate the sampling of the Air Stripper Effluent for Anion/Cation and Polynuclear Aromatic Hydrocarbons (PAH).

2. Expand the surface mounting to within the Tank and Plume area (see Appendix B - Sheet 14).

3. Revise sampling to a quarterly basis for BTEX, USEPA Method 8020, with the following schedule:

MW - 1	JAN.-MARCH, 93	JUL.-SEPT., 93
MW - 3	"	"
MW - 5	"	"
MW - 7	"	"
EFFLUENT	"	"

MW - 2	APR.-JUN., 93	OCT.-DEC., 93
MW - 4	"	"
MW - 5	"	"
MW - 6	"	"
EFFLUENT	"	"

4. Conducting another follow-up site assessment no sooner than July, 93 within the plume area to verify successful soil and groundwater remediation for closure the site.

LIMITATIONS AND CLOSURE

The conclusions and recommendation given in this Groundwater Monitoring Plan (GMP) are based on the laboratory results, the follow-up site assessment, and information provided by Amoco Production Company, and the current NMOCD Guidelines and Regulations.

All work was performed in accordance with the generally accepted professional practices in construction/excavation and geotechnical/environmental/petroleum engineering.

The GMP has been prepared for the exclusive use of Amoco Production Company as it pertains to their San Juan Gravel A -1E facility located on the SE/4 of the NE/4 of Section 21, Township 29N, Range 13W, NMPM, San Juan County, New Mexico.

I certify that I am personally familiar with the investigation work at the site, the site conditions, and the reported information as described and this report.

Respectfully Submitted,
ENVIROTECH, INC.

Nelson Velez
Geologist

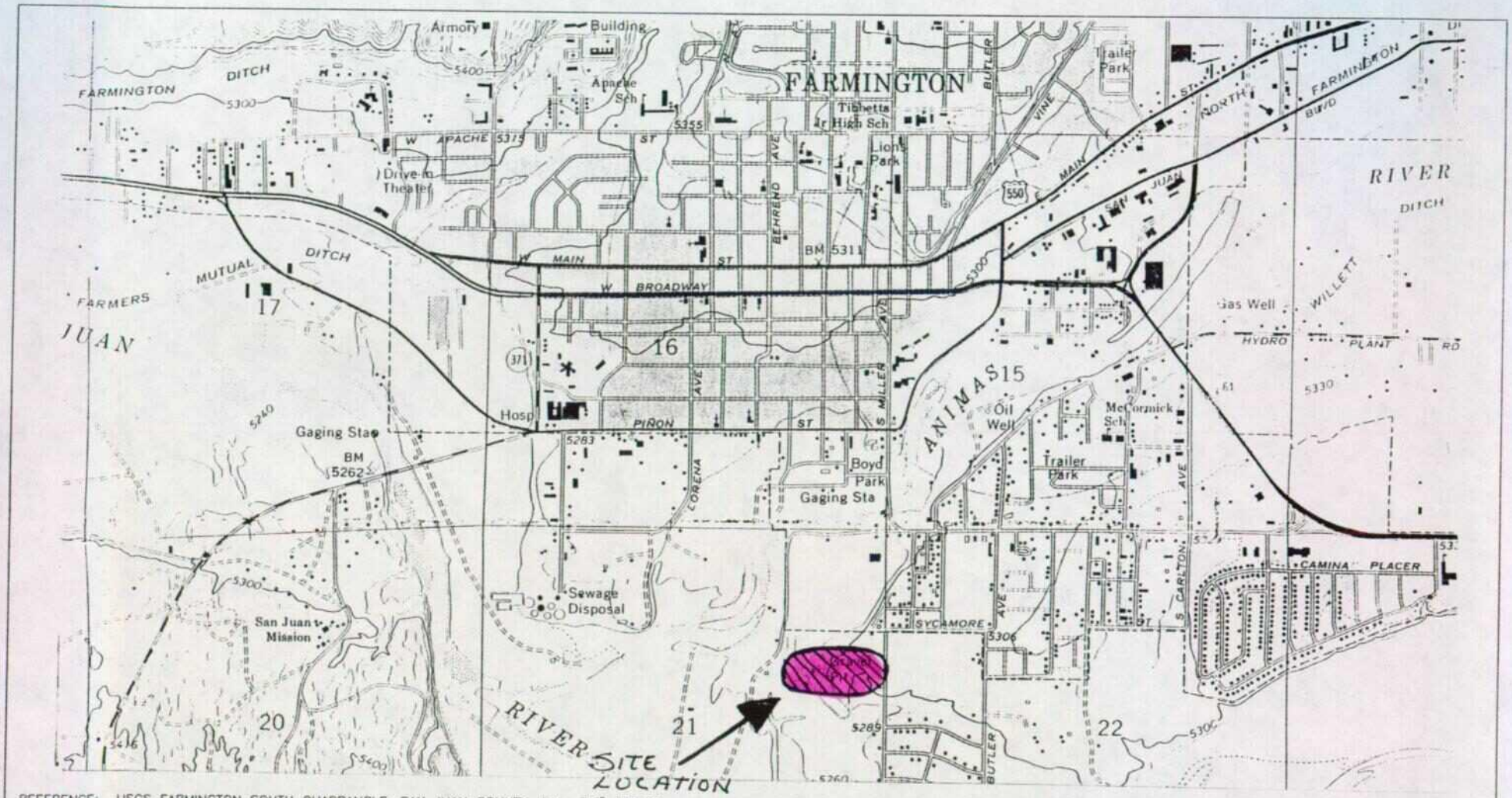
Reviewed By:

Michael K. Lane, P.E.
Principal Engineer

Appendices

NV/NV

4012GWM.PLN



REFERENCE: USGS FARMINGTON SOUTH QUADRANGLE, SAN JUAN COUNTY, NM 7.5' SERIES

AMOCO PRODUCTION COMPANY
SAN JUAN GRAVEL A-1E
SEC 21, TWP 29N, RNG 13W
SAN JUAN COUNTY, NEW MEXICO
PRODUCTION TANK PIT AREA

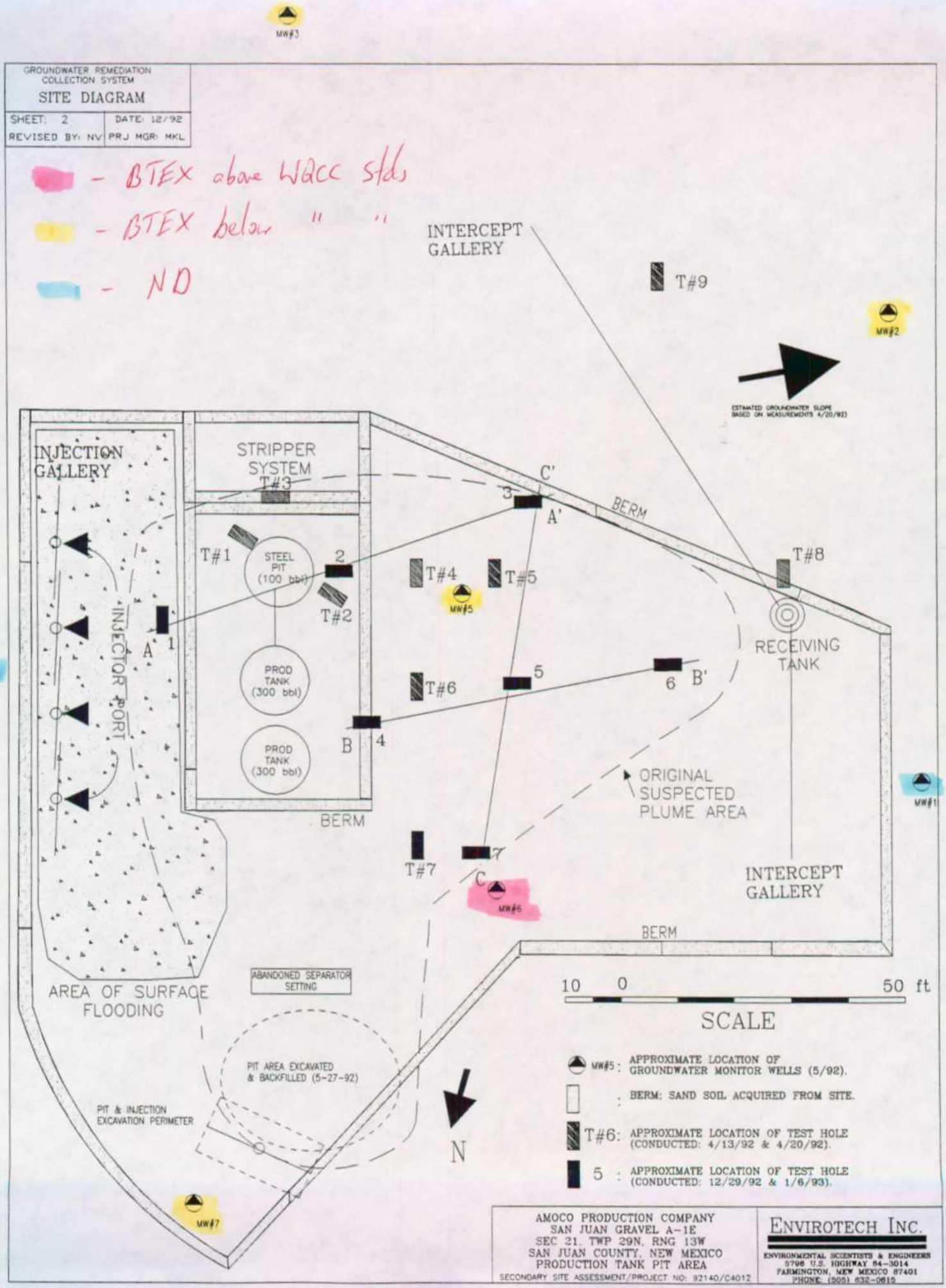
REMEDIATION PLAN PROJECT NO: 92140/94012

ENVIROTECH INC.

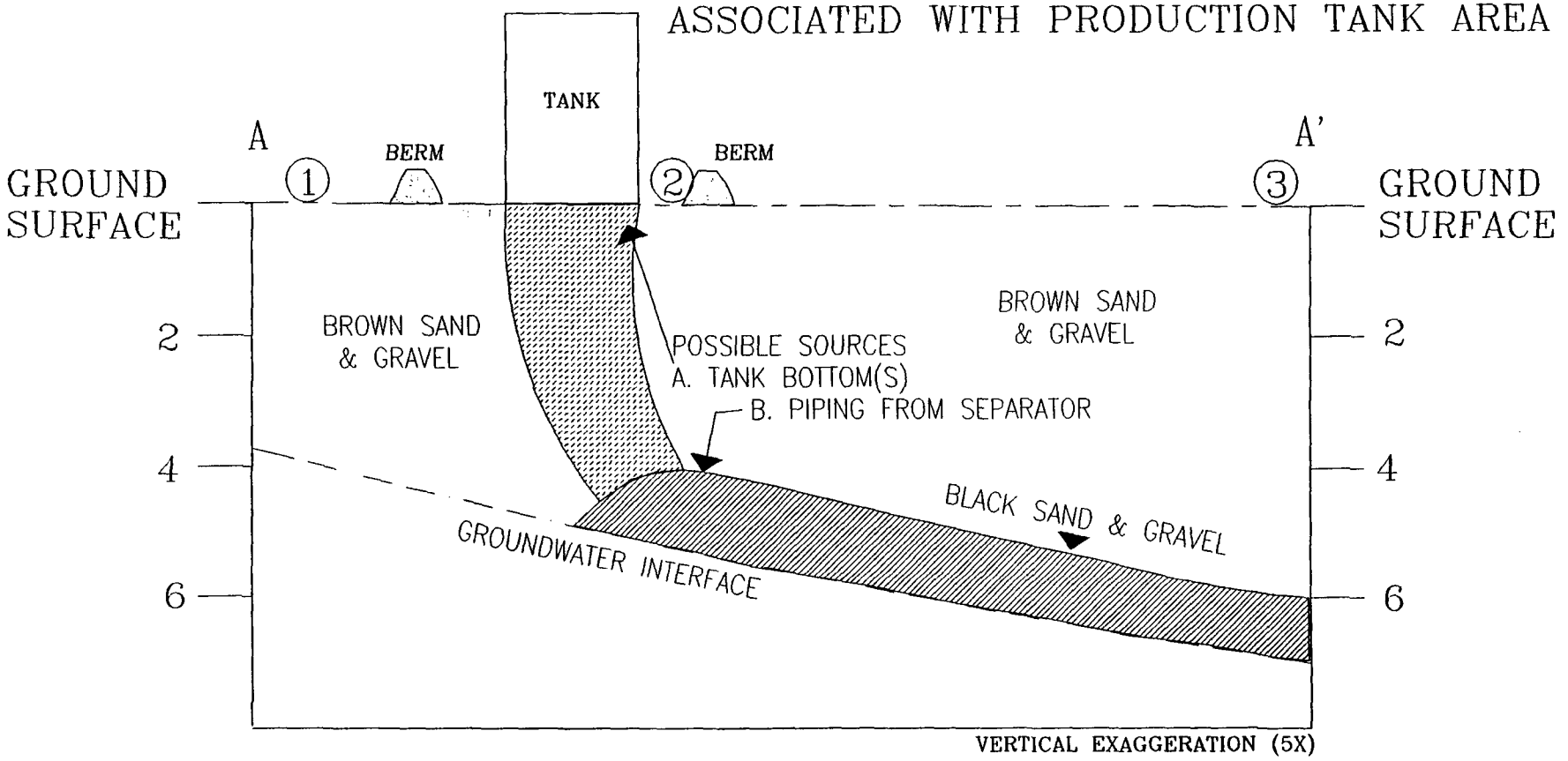
ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64-3014
FARMINGTON, MEW MEXICO 87401
PHONE: (505) 632-0615

GROUNDWATER REMEDIATION
COLLECTION SYSTEM
VICINITY MAP

SHEET: 1	DRAWN: 5/92
DRWN BY: MKL	PRJ MGR: MKL


MW#3
GROUNDWATER REMEDIATION COLLECTION SYSTEM
SITE DIAGRAM
SHEET: 2
DATE: 12/92
REVISED BY: NV
PRJ MGR: MKL
- BTEX above WQCC stds
- BTEX below " "
- ND
INTERCEPT GALLERY
T#9
MW#2
ESTIMATED GROUNDWATER SLOPE BASED ON MEASUREMENTS 4/20/92
INJECTION GALLERY
STRIPPER SYSTEM
T#3
C'
3
A'
BERM
T#1
STEEL PIT (100 bbl)
2
T#2
T#4
T#5
MW#5
T#8
RECEIVING TANK
A
1
INJECTOR PORT
MW#4
T#6
5
6
B'
PROD TANK (300 bbl)
B
4
PROD TANK (300 bbl)
ORIGINAL SUSPECTED PLUME AREA
MW#1
BERM
T#7
7
C
MW#6
INTERCEPT GALLERY
BERM
ABANDONED SEPARATOR SETTING
AREA OF SURFACE FLOODING
10 0 50 ft
SCALE
PIT AREA EXCAVATED & BACKFILLED (5-27-92)
PIT & INJECTION EXCAVATION PERIMETER
N
MW#7
MW#5: APPROXIMATE LOCATION OF GROUNDWATER MONITOR WELLS (5/92).
BERM: SAND SOIL ACQUIRED FROM SITE.
T#6: APPROXIMATE LOCATION OF TEST HOLE (CONDUCTED: 4/13/92 & 4/20/92).
5 : APPROXIMATE LOCATION OF TEST HOLE (CONDUCTED: 12/29/92 & 1/6/93).
AMOCO PRODUCTION COMPANY
SAN JUAN GRAVEL A-1E
SEC 21, TWP 29N, RNG 13W
SAN JUAN COUNTY, NEW MEXICO
PRODUCTION TANK PIT AREA
SECONDARY SITE ASSESSMENT/PROJECT NO: 92140/C4012
ENVIROTECH INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64-3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

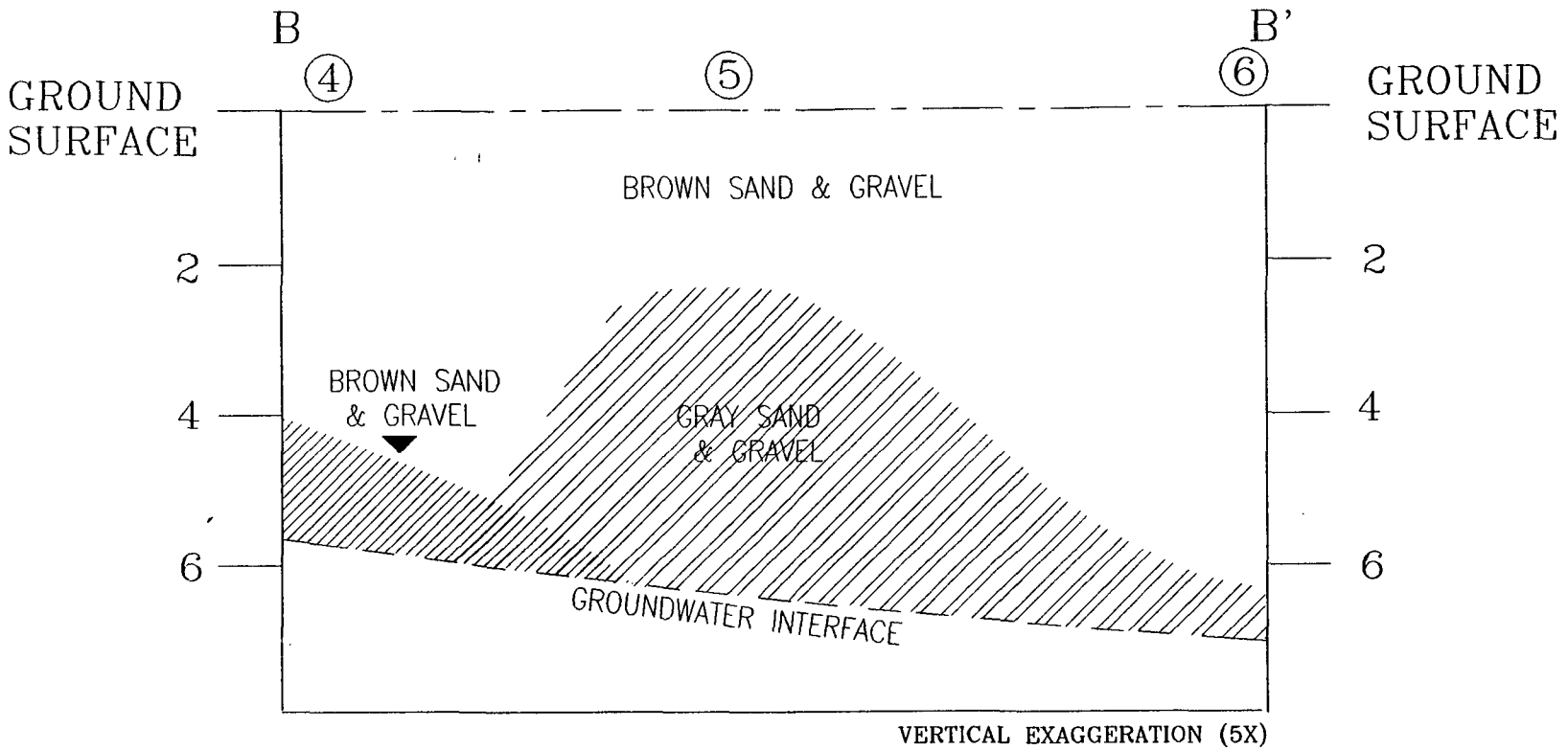
CROSS SECTION OF THE SUSPECTED PLUME ASSOCIATED WITH PRODUCTION TANK AREA



(5) - APPROXIMATE SURFACE LOCATION OF TEST HOLE CONDUCTED THROUGH THE CROSS SECTIONAL VIEW.

GROUNDWATER REMEDIATION COLLECTION SYSTEM CROSS SECTION SHEET: 3 REVISED BY: NV | DATE: 1/93 PRJ MGR: MKL	AMOCO PRODUCTION COMPANY SAN JUAN GRAVEL A-1E SEC 21, TWP 29N, RNG 13W SAN JUAN COUNTY, NEW MEXICO PRODUCTION TANK PIT AREA SECONDARY SITE ASSESSMENT/PROJECT NO: 92140/C4012	ENVIROTECH, INC. ENVIRONMENTAL SCIENTISTS & ENGINEERS 5796 U. S. HIGHWAY 64-3014 FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615

CROSS SECTION OF THE SUSPECTED PLUME AREAS

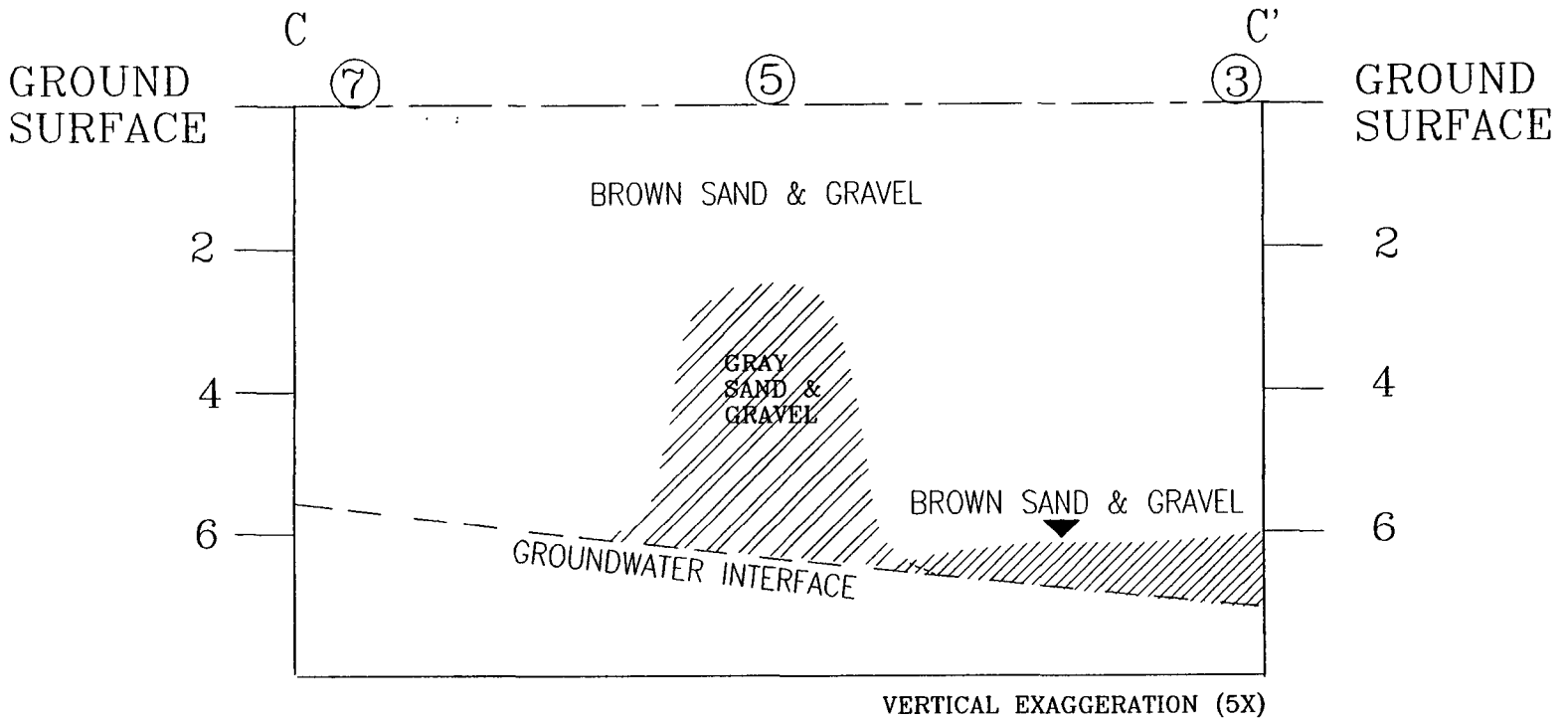


⑤ - APPROXIMATE SURFACE LOCATION OF TEST HOLE CONDUCTED THROUGH THE CROSS SECTIONAL VIEW.

0 20

GROUNDWATER REMEDIATION COLLECTION SYSTEM CROSS SECTION SHEET: 4 REVISED BY: NV | DATE: 1/93 PRJ MGR: MKL	AMOCO PRODUCTION COMPANY SAN JUAN GRAVEL A-1E SEC 21, TWP 29N, RNG 13W SAN JUAN COUNTY, NEW MEXICO PRODUCTION TANK PIT AREA SECONDARY SITE ASSESSMENT/PROJECT NO: 92140/C4012	ENVIROTECH, INC. ENVIROMENTAL SCIENTISTS & ENGINEERS 5796 U. S. HIGHWAY 64-3014 FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615

CROSS SECTION OF THE SUSPECTED PLUME AREAS



(5) - APPROXIMATE SURFACE LOCATION OF TEST HOLE CONDUCTED THROUGH THE CROSS SECTIONAL VIEW.

GROUNDWATER REMEDIATION COLLECTION SYSTEM CROSS SECTION SHEET: 5 REVISED BY: NV | DATE: 1/93 PRJ MGR: MKL	AMOCO PRODUCTION COMPANY SAN JUAN GRAVEL A-1E SEC 21, TWP 29N, RNG 13W SAN JUAN COUNTY, NEW MEXICO PRODUCTION TANK PIT AREA SECONDARY SITE ASSESSMENT/PROJECT NO: 92140/C4012	ENVIROTECH, INC. ENVIROMENTAL SCIENTISTS & ENGINEERS 5796 U. S. HIGHWAY 64-3014 FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615

ENVIROTECH Inc.

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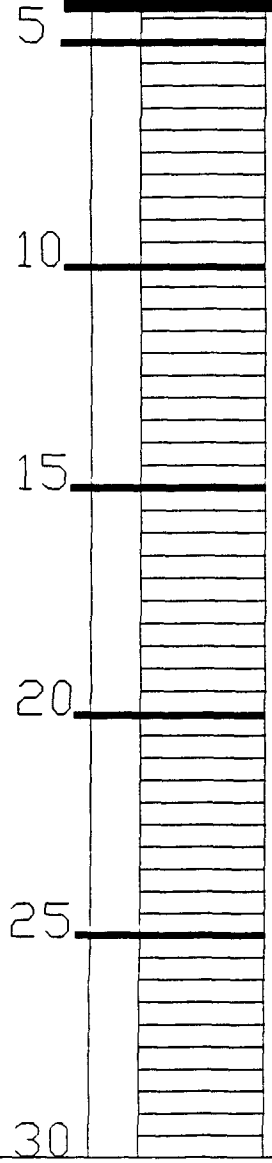
(505) 632-0615

TEST HOLE REPORT

TEST HOLE #: 1
JOB No: 92140
SHEET NO: 6
LOCATION: REF TO SHT: 2
DATE START: 12-22-92
DATE FINISH: 12-22-92
OPERATOR: BW
PREPARED BY: NV

PROJECT: SAN JUAN GRAVEL A1E GROUNDWATER MONITOR PLAN
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: ENVIROTECH INC.
EQUIPMENT USED: EXTEND-A-HOE w/ 24" BUCKET

DEPTH FEET	USCS	OVM PPM	SAMPLE TYPE	BLOW/FOOT	FIELD CLASSIFICATION AND REMARKS
	SG				DARK BROWN SAND AND GRAVEL, LOOSE, MOIST.
		0.5	CUT'G	NA	
					S.A.A.- SATURATED
		ND	WTR	NA	GROUNDWATER-NO VISIBLE CONTAMINATION.



TOTAL DEPTH: 4.0 FEET
GROUNDWATER DEPTH: 3.5 FEET

COMPLETION: BACKFILLED EXCAVATION WITH EXCAVATED MATERIALS.

NOTES: SAA -SAME SOIL TYPE AS DESCRIBED ABOVE, EXCEPT AS NOTED.
WTR -GROUNDWATER SAMPLE
CUT'G -GRAB SOIL SAMPLE.
ND -NONE DETECTED.
OVM -SOIL SAMPLE COLLECTED DURING EXPLORATION, ANALYZED FOR HYDROCARBON VAPORS PER NMED HEADSPACE FIELD METHOD USING THERMO ENVIRONMENTAL INSTRUMENTS MODEL 580-B ORGANIC VAPOR METER (PID).

DRAWING: C4012T1
DATE: 3-03-93
DWN BY: RMY

ENVIROTECH Inc.

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TEST HOLE REPORT

TEST HOLE #: 2
JOB No: 92140
SHEET No: 7
LOCATION: REF TO SHT: 2
DATE START: 12-22-92
DATE FINISH: 12-22-92
OPERATOR: BW
PREPARED BY: NV

PROJECT: SAN JUAN GRAVEL A1E GROUNDWATER MONITOR PLAN
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: ENVIROTECH INC.
EQUIPMENT USED: EXTEND-A-HOE w/ 24" BUCKET

DEPTH FEET	USCS	OVM PPM	SAMPLE TYPE	BLOW/FOOT	FIELD CLASSIFICATION AND REMARKS
	SG				DARK BROWN SAND AND GRAVEL, LOOSE, MOIST.
		ND	CUT'G	NA	
					S.A.A.- SATURATED
	SG	1421	CUT'G	NA	S.A.A.- DARK GRAY TO BLACK
5					
		1421	WTR	NA	GROUNDWATER-NO VISIBLE CONTAMINATION.

TOTAL DEPTH: 6.0 FEET
GROUNDWATER DEPTH: 5.5 FEET

COMPLETION: BACKFILLED EXCAVATION WITH EXCAVATED MATERIALS.

NOTES: SAA -SAME SOIL TYPE AS DESCRIBED ABOVE, EXCEPT AS NOTED.
WTR -GROUNDWATER SAMPLE
CUT'G -GRAB SOIL SAMPLE.
ND -NONE DETECTED.
OVM -SOIL SAMPLE COLLECTED DURING EXPLORATION, ANALYZED FOR HYDROCARBON VAPORS PER NMED HEADSPACE FIELD METHOD USING THERMO ENVIRONMENTAL INSTRUMENTS MODEL 580-B ORGANIC VAPOR METER (PID).

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DRAWING: C4012T2
DATE: 3-03-93
DWN BY: RMY

ENVIROTECH Inc.

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TEST HOLE REPORT

TEST HOLE #: 3
JOB No: 92140
SHEET No: 8
LOCATION: REF TO SHT: 2
DATE START: 1-06-93
DATE FINISH: 1-06-93
OPERATOR: BW
PREPARED BY: NV

PROJECT: SAN JUAN GRAVEL A1E GROUNDWATER MONITOR PLAN
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: ENVIROTECH INC.
EQUIPMENT USED: EXTEND-A-HOE w/ 24" BUCKET

DEPTH FEET	USCS	OVM PPM	SAMPLE TYPE	BLOW/FOOT	FIELD CLASSIFICATION AND REMARKS
	SG				DARK BROWN SAND AND GRAVEL, LOOSE, MOIST.M MINOR LOW PLASTICITY SILTY CLAYS.
		ND	CUT'G	NA	
		7.0	CUT'G	NA	S.A.A.- BLACK
	SG	ND	CUT'G	NA	S.A.A.- BROWN
5					
		246.6	CUT'G	NA	
		1118	CUT'G	NA	S.A.A.- BLACK WITH STRONG PETROLEUM ODOR
		167.1	WTR	NA	GROUNDWATER-NO VISIBLE CONTAMINATION.
10					
15					
20					
25					
30					

TOTAL DEPTH: 8.0 FEET
GROUNDWATER DEPTH: 7.0 FEET

COMPLETION: BACKFILLED EXCAVATION WITH EXCAVATED MATERIALS.

NOTES: SAA -SAME SOIL TYPE AS DESCRIBED ABOVE, EXCEPT AS NOTED.
WTR -GROUNDWATER SAMPLE
CUT'G -GRAB SOIL SAMPLE.
ND -NONE DETECTED.
OVM -SOIL SAMPLE COLLECTED DURING EXPLORATION, ANALYZED FOR HYDROCARBON VAPORS PER NMED HEADSPACE FIELD METHOD USING THERMO ENVIRONMENTAL INSTRUMENTS MODEL 580-B ORGANIC VAPOR METER (PID).

DRAWING: C4012T3
DATE: 3-03-93
DWN BY: RMY

ENVIROTECH Inc.

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TEST HOLE REPORT

PROJECT: SAN JUAN GRAVEL A1E GROUNDWATER MONITOR PLAN
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: ENVIROTECH INC.
EQUIPMENT USED: EXTEND-A-HOE w/ 24" BUCKET

TEST HOLE #: 4
JOB No: 92140
SHEET No: 9
LOCATION: REF TO SHT: 2
DATE START: 1-06-93
DATE FINISH: 1-06-93
OPERATOR: BW
PREPARED BY: NV

DEPTH FEET	USCS	OVM PPM	SAMPLE TYPE	BLOW/FOOT	FIELD CLASSIFICATION AND REMARKS
	SG				DARK BROWN SAND AND GRAVEL, LOOSE, MOIST.
		ND	CUT'G	NA	
		ND	CUT'G	NA	
5		857	CUT'G	NA	S.A.A.- BLACK WITH STRONG PETROLEUM ODOR
		291	WTR	NA	GROUNDWATER-NO VISIBLE CONTAMINATION.
10					
15					
20					
25					
30					

TOTAL DEPTH: 6.0 FEET
GROUNDWATER DEPTH: 5.5 FEET

COMPLETION: BACKFILLED EXCAVATION WITH EXCAVATED MATERIALS.

NOTES: SAA -SAME SOIL TYPE AS DESCRIBED ABOVE, EXCEPT AS NOTED.
WTR -GROUNDWATER SAMPLE
CUT'G -GRAB SOIL SAMPLE.
ND -NONE DETECTED.
OVM -SOIL SAMPLE COLLECTED DURING EXPLORATION, ANALYZED FOR HYDROCARBON VAPORS PER NMED HEADSPACE FIELD METHOD USING THERMO ENVIRONMENTAL INSTRUMENTS MODEL 580-B ORGANIC VAPOR METER (PID).

DRAWING: C4012T4
DATE: 3-03-93
DWN BY: RMY

ENVIROTECH Inc.

5796 US HWY. 64, FARMINGTON, NM 87401
(505) 632-0615

TEST HOLE REPORT

PROJECT: SAN JUAN GRAVEL A1E GROUNDWATER MONITOR PLAN
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: ENVIROTECH INC.
EQUIPMENT USED: EXTEND-A-HOE w/ 24" BUCKET

TEST HOLE #: 5
JOB No: 92140
SHEET No: 10
LOCATION: REF TO SHT: 2
DATE START: 1-06-93
DATE FINISH: 1-06-93
OPERATOR: BW
PREPARED BY: NV

DEPTH FEET	USCS	OVM PPM	SAMPLE TYPE	BLOW/FOOT	FIELD CLASSIFICATION AND REMARKS
	SG				DARK BROWN SAND AND GRAVEL, LOOSE, MOIST.
		314	CUT'G	NA	
		862	CUT'G	NA	S.A.A.- GRAY WITH VERY STRONG PETROLEUM ODOR
5		828	CUT'G	NA	
		924	WTR	NA	GROUNDWATER-NO VISIBLE CONTAMINATION.

TOTAL DEPTH: 7.0 FEET
GROUNDWATER DEPTH: 6.5 FEET

COMPLETION: BACKFILLED EXCAVATION WITH EXCAVATED MATERIALS.

NOTES: SAA -SAME SOIL TYPE AS DESCRIBED ABOVE, EXCEPT AS NOTED.
WTR -GROUNDWATER SAMPLE
CUT'G -GRAB SOIL SAMPLE.
ND -NONE DETECTED.
OVM -SOIL SAMPLE COLLECTED DURING EXPLORATION, ANALYZED FOR HYDROCARBON VAPORS PER NMED HEADSPACE FIELD METHOD USING THERMO ENVIRONMENTAL INSTRUMENTS MODEL 580-B ORGANIC VAPOR METER (PID).

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DRAWING: C4012T5
DATE: 3-03-93
DWN BY: RMY

ENVIROTECH Inc.

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(505) 632-0615

TEST HOLE REPORT

PROJECT: SAN JUAN GRAVEL A1E GROUNDWATER MONITOR PLAN
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: ENVIROTECH INC.
EQUIPMENT USED: EXTEND-A-HOE w/ 24" BUCKET

TEST HOLE #: 6
JOB No: 92140
SHEET No: 11
LOCATION: REF TO SHT: 2
DATE START: 1-06-93
DATE FINISH: 1-06-93
OPERATOR: BW
PREPARED BY: NV

DEPTH FEET	USCS	OVM PPM	SAMPLE TYPE	BLOW/FOOT	FIELD CLASSIFICATION AND REMARKS
	SG				DARK BROWN SAND AND GRAVEL, LOOSE, MOIST. PLUS MINOR LOW PLASTICITY SILTY CLAY.
		3.8	CUT'G	NA	
		8.1	CUT'G	NA	
5					S.A.A.- NO CLAYS.
		564	CUT'G	NA	S.A.A.- GRAY WITH STRONG PETROLEUM ODOR
		948	WTR	NA	GROUNDWATER=NO VISIBLE CONTAMINATION.
10					TOTAL DEPTH: 7.5 FEET GROUNDWATER DEPTH: 7.0 FEET COMPLETION: BACKFILLED EXCAVATION WITH EXCAVATED MATERIALS.
15					NOTES: SAA -SAME SOIL TYPE AS DESCRIBED ABOVE, EXCEPT AS NOTED. WTR -GROUNDWATER SAMPLE CUT'G -GRAB SOIL SAMPLE. ND -NONE DETECTED. OVM -SOIL SAMPLE COLLECTED DURING EXPLORATION, ANALYZED FOR HYDROCARBON VAPORS PER NMED HEADSPACE FIELD METHOD USING THERMO ENVIRONMENTAL INSTRUMENTS MODEL 580-B ORGANIC VAPOR METER (PID).
20					
25					
30					

DRAWING: C4012T6
DATE: 3-03-93
DWN BY: RMY

ENVIROTECH Inc.

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(505) 632-0615

TEST HOLE REPORT

TEST HOLE #: 7
JOB No: 92140
SHEET No: 12
LOCATION: REF TO SHT: 2
DATE START: 1-06-93
DATE FINISH: 1-06-93
OPERATOR: BW
PREPARED BY: NV

PROJECT: SAN JUAN GRAVEL A1E GROUNDWATER MONITOR PLAN
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: ENVIROTECH INC.
EQUIPMENT USED: EXTEND-A-HOE w/ 24" BUCKET

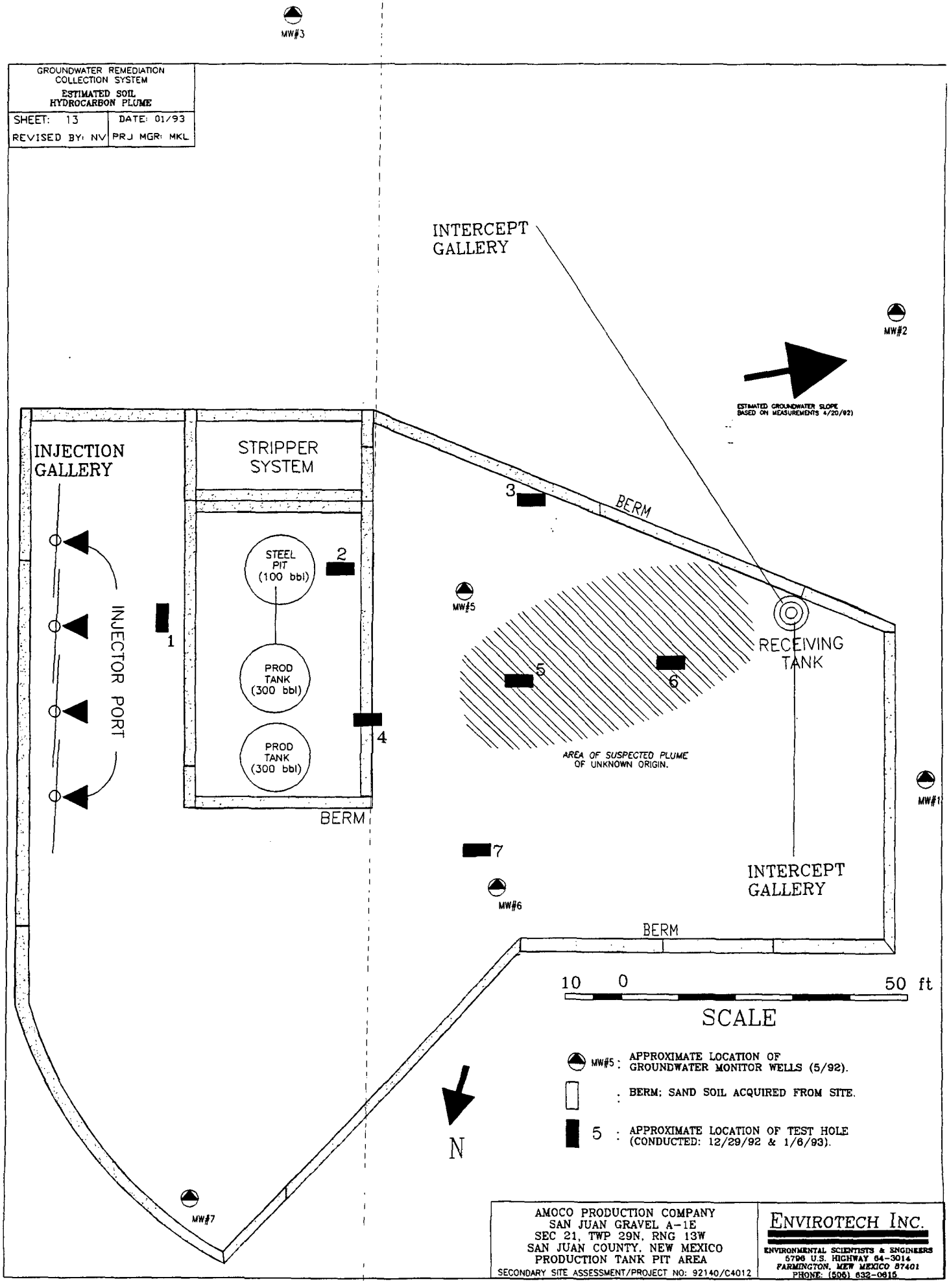
DEPTH FEET	USCS	OVM PPM	SAMPLE TYPE	BLOW/FOOT	FIELD CLASSIFICATION AND REMARKS
	SG				DARK BROWN SAND AND GRAVEL, LOOSE, MOIST.
		9.7	CUT'G	NA	
		8.1	CUT'G	NA	
5					
		3.8	WTR	NA	GROUNDWATER-NO VISIBLE CONTAMINATION.
10					
15					
20					
25					
30					

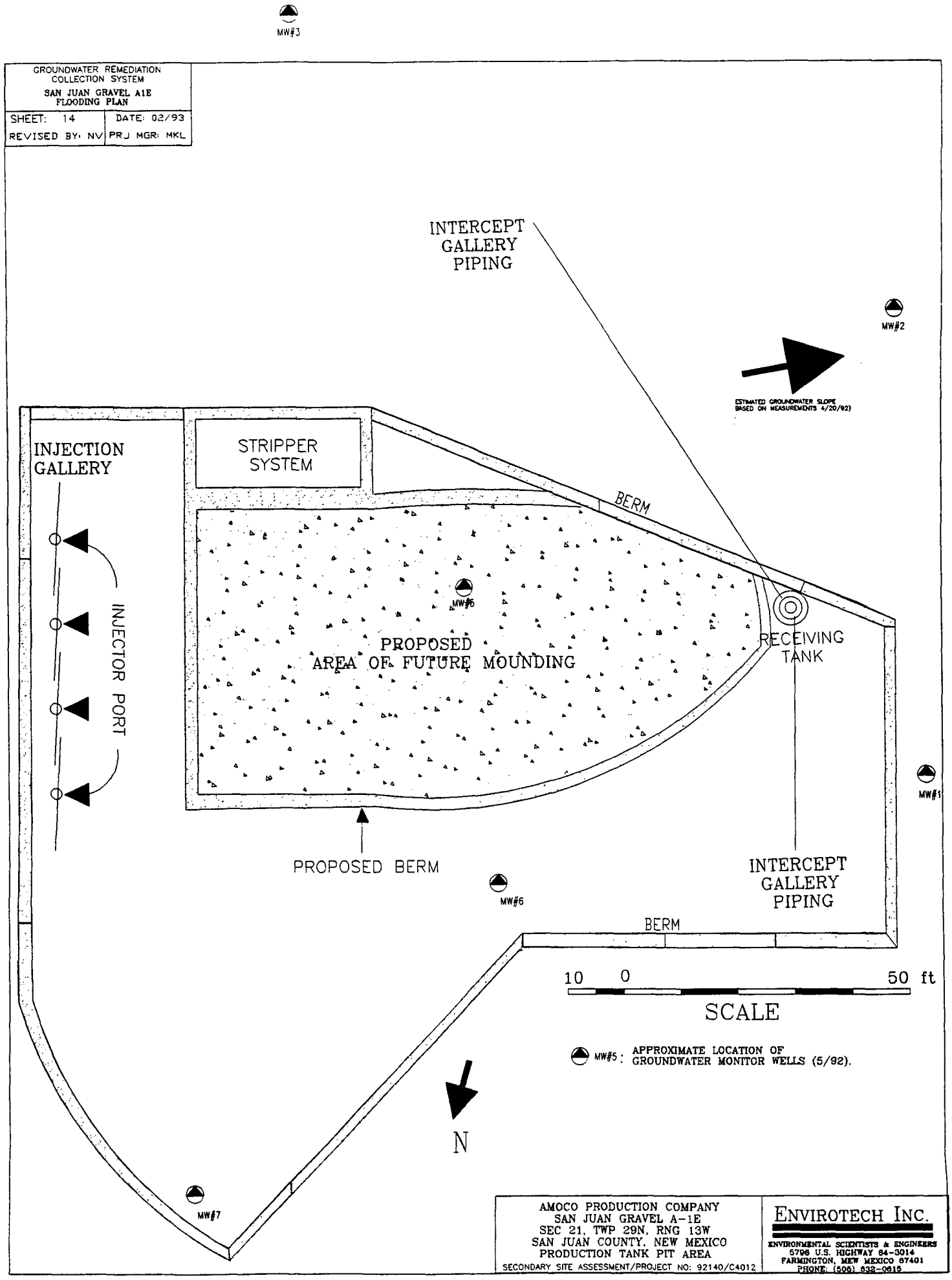
TOTAL DEPTH: 6.0 FEET
GROUNDWATER DEPTH: 5.5 FEET

COMPLETION: BACKFILLED EXCAVATION WITH EXCAVATED MATERIALS.

NOTES: SAA -SAME SOIL TYPE AS DESCRIBED ABOVE, EXCEPT AS NOTED.
WTR -GROUNDWATER SAMPLE
CUT'G -GRAB SOIL SAMPLE.
ND -NONE DETECTED.
OVM -SOIL SAMPLE COLLECTED DURING EXPLORATION, ANALYZED FOR HYDROCARBON VAPORS PER NMED HEADSPACE FIELD METHOD USING THERMO ENVIRONMENTAL INSTRUMENTS MODEL 580-B ORGANIC VAPOR METER (PID).

DRAWING: C4012T7
DATE: 3-03-93
DWN BY: RMY


GROUNDWATER REMEDIATION COLLECTION SYSTEM
ESTIMATED SOIL HYDROCARBON PLUME
SHEET: 13
DATE: 01/93
REVISED BY: NV
PRJ MGR: MKL
MW#3
INTERCEPT GALLERY
MW#2
ESTIMATED GROUNDWATER SLOPE BASED ON MEASUREMENTS 4/20/92)
INJECTION GALLERY
STRIPPER SYSTEM
3
BERM
STEEL PIT (100 bbl)
2
MW#5
1
INJECTOR PORT
MW#4
PROD TANK (300 bbl)
PROD TANK (300 bbl)
4
RECEIVING TANK
5
6
AREA OF SUSPECTED PLUME OF UNKNOWN ORIGIN.
MW#1
BERM
7
INTERCEPT GALLERY
MW#6
BERM
10 0 50 ft
SCALE
MW#5: APPROXIMATE LOCATION OF GROUNDWATER MONITOR WELLS (5/92).
: BERM; SAND SOIL ACQUIRED FROM SITE.
5 : APPROXIMATE LOCATION OF TEST HOLE (CONDUCTED: 12/29/92 & 1/6/93).
N
MW#7
AMOCO PRODUCTION COMPANY
SAN JUAN GRAVEL A-1E
SEC 21, TWP 29N, RNG 13W
SAN JUAN COUNTY, NEW MEXICO
PRODUCTION TANK PIT AREA
SECONDARY SITE ASSESSMENT/PROJECT NO: 92140/C4012
ENVIROTECH INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64-3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615


GROUNDWATER REMEDIATION COLLECTION SYSTEM
SAN JUAN GRAVEL A1E FLOODING PLAN
SHEET: 14
DATE: 02/93
REVISED BY: NV
PRJ MGR: MKL
MW#3
INTERCEPT GALLERY PIPING
MW#2
ESTIMATED GROUNDWATER SLOPE BASED ON MEASUREMENTS 4/20/92)
INJECTION GALLERY
STRIPPER SYSTEM
BERM
MW#5
PROPOSED AREA OF FUTURE MOUNDING
RECEIVING TANK
MW#4
INJECTOR PORT
MW#1
PROPOSED BERM
MW#6
INTERCEPT GALLERY PIPING
BERM
10 0 50 ft
SCALE
MW#5: APPROXIMATE LOCATION OF GROUNDWATER MONITOR WELLS (5/92).
N
MW#7
AMOCO PRODUCTION COMPANY
SAN JUAN GRAVEL A-1E
SEC 21, TWP 29N, RNG 13W
SAN JUAN COUNTY, NEW MEXICO
PRODUCTION TANK PIT AREA
SECONDARY SITE ASSESSMENT/PROJECT NO: 92140/C4012
ENVIROTECH INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64-3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	M.W. #1	Date Reported:	08-17-92
Laboratory Number:	0963	Date Sampled:	06-01-92
Sample Matrix:	Water	Date Received:	06-01-92
Preservative:	HgCl & Cool	Date Analyzed:	07-15-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	370
Toluene	ND	390
Ethylbenzene	ND	330
p,m-Xylene	ND	670
o-Xylene	ND	340

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	96.9 %
Bromfluorobenzene	97.3 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A-1E---Production Pit---94012

Tony Trustano
Analyst

David Young
Review

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	M.W. #2	Date Reported:	08-17-92
Laboratory Number:	0964	Date Sampled:	06-01-92
Sample Matrix:	Water	Date Received:	06-01-92
Preservative:	HgCl & Cool	Date Analyzed:	07-13-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	1.1	0.8
Ethylbenzene	0.4	0.3
p,m-Xylene	1.1	0.6
o-Xylene	ND	0.4

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	111.8 %
Bromfluorobenzene	124.5 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A-1E---Production Pit---94012

Robert M Young
Analyst

Review

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	M.W. #3	Date Reported:	08-17-92
Laboratory Number:	0965	Date Sampled:	06-01-92
Sample Matrix:	Water	Date Received:	06-01-92
Preservative:	HgCl & Cool	Date Analyzed:	07-13-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	1.3	0.8
Ethylbenzene	ND	0.3
p,m-Xylene	0.9	0.6
o-Xylene	ND	0.4

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	112.8 %
Bromfluorobenzene	119.6 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A-1E---Production Pit---94012

Analyst

Review

ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	M.W. #4	Date Reported:	08-17-92
Laboratory Number:	0966	Date Sampled:	06-01-92
Sample Matrix:	Water	Date Received:	06-01-92
Preservative:	HgCl & Cool	Date Analyzed:	07-13-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	10.0
Toluene	ND	40.0
Ethylbenzene	ND	15.0
p,m-Xylene	ND	30.0
o-Xylene	ND	20.0

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Bromfluorobenzene	90.9 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A-1E---Production Pit---94012

Analyst

Review

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	M.W. #5	Date Reported:	08-17-92
Laboratory Number:	0967	Date Sampled:	06-01-92
Sample Matrix:	Water	Date Received:	06-01-92
Preservative:	HgCl & Cool	Date Analyzed:	07-13-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	10.0
Toluene	54	40.0
Ethylbenzene	ND	10.0
p,m-Xylene	44.0	30.0
o-Xylene	20.4	20.0

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	100.6 %
Bromfluorobenzene	100.6 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A-1E---Production Pit---94012

Analyst

Review

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	M.W. #6	Date Reported:	08-17-92
Laboratory Number:	0968	Date Sampled:	06-01-92
Sample Matrix:	Water	Date Received:	06-01-92
Preservative:	HgCl & Cool	Date Analyzed:	07-13-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	540	40.0
Toluene	235	160
Ethylbenzene	294	60
p,m-Xylene	1,800	120
o-Xylene	1,260	80

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	95.6 %
Bromfluorobenzene	111.1 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A-1E---Production Pit---94012

Analyst

Review

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW#7	Date Reported:	08-13-92
Laboratory Number:	1011	Date Sampled:	06-02-92
Sample Matrix:	Water	Date Received:	06-02-92
Preservative:	HgCl & Cool	Date Analyzed:	06-02-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	0.2	0.2
Toluene	2.9	0.8
Ethylbenzene	ND	0.3
p,m-Xylene	1.2	1.0
o-Xylene	ND	0.4

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	92.4 %
Bromfluorobenzene	93.9 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A-1E--94012--Samples pulled on the tenth bale sample.

Robert M Young
Analyst

David Young
Review

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	Effluent	Date Reported:	09-21-92
Laboratory Number:	2475	Date Sampled:	08-31-92
Sample Matrix:	Water	Date Received:	08-31-92
Preservative:	NA	Date Analyzed:	09-04-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	ND	10.0

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel AlE. C4012

Analyst

Review

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	Effluent	Date Reported:	10-07-92
Laboratory Number:	2476	Date Sampled:	08-31-92
Sample Matrix:	Water	Date Received:	08-31-92
Preservative:	HgCl & Cool	Date Analyzed:	10-07-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.3
Toluene	1.0	0.4
Ethylbenzene	ND	0.3
p,m-Xylene	1.6	0.3
o-Xylene	0.5	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	84.6 %
Bromfluorobenzene	96.0 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A1E---Production Pit---C4012.

Robert M Young
Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

CLIENT:	Envirotech	DATE REPORTED:	09/29/92
ID:	Effluent		
SITE:	1421	DATE RECEIVED:	08/31/92
LAB NO:	9566	DATE COLLECTED:	08/31/92

Lab pH (s.u.)	7.90	
Lab Conductivity, umhos/cm @ 25C	569	
Lab Resistivity, ohm-m	17.6	
Total Dissolved Solids (180C), mg/L	436	
Total Dissolved Solids (calc), mg/L	372	
Total Alkalinity as CaC03, mg/L	159	
Total Hardness as CaC03, mg/L	219	
Sodium Adsorption Ratio	1.31	
	mg/L	meq/L
Bicarbonate as HC03	195	3.19
Carbonate as C03	<0.10	<0.01
Chloride	14.9	0.42
Sulfate	142	2.96
Calcium	38.7	1.93
Magnesium	29.7	2.44
Potassium	6.65	0.17
Sodium	44.4	1.93
Major Cations		6.47
Major Anions		6.57
Cation/Anion Difference		0.74 %

Wanda Orso
Water Lab Supervisor

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	Effluent	Date Reported:	11-02-92
Laboratory Number:	3243	Date Sampled:	10-05-92
Sample Matrix:	Water	Date Received:	10-05-92
Preservative:	Cool	Date Analyzed:	10-29-92
Condition:	Cool	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	ND	10.0

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan GUL A1E---Production Pit---C4012

Analyst

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	Effluent	Date Reported:	11-04-92
Laboratory Number:	3244	Date Sampled:	10-05-92
Sample Matrix:	Water	Date Received:	10-05-92
Preservative:	Cool	Date Analyzed:	10-30-92
Condition:	Cool and intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	0.2	0.2
Toluene	1.0	0.5
Ethylbenzene	ND	0.3
p,m-Xylene	1.8	0.6
o-Xylene	0.4	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	104 %
Bromfluorobenzene	100 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E Production Pit C4012

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

CLIENT: Amoco
ID: San Juan Gravel A1E
SITE: Effluent
LAB NO: 9989

DATE REPORTED: 10/13/92
DATE RECEIVED: 10/05/92
DATE COLLECTED: 10/05/92

Lab pH (s.u.)	7.92
Lab Conductivity, umhos/cm @ 25C	752
Lab Resistivity, ohm-m	13.3
Total Dissolved Solids (180C), mg/L	488
Total Dissolved Solids (calc), mg/L	470
Total Alkalinity as CaC03, mg/L	188
Total Hardness as CaC03, mg/L	303
Sodium Adsorption Ratio	1.11

	mg/L	meq/L
Bicarbonate as HC03	230	3.77
Carbonate as C03	<0.10	<0.01
Chloride	29.1	0.82
Sulfate	165	3.44
Calcium	103	5.15
Magnesium	11.1	0.91
Potassium	3.5	0.09
Sodium	44.5	1.94
Major Cations		8.09
Major Anions		8.03
Cation/Anion Difference		0.42 %

Wanda Orso
Water Lab Supervisor

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW #3	Date Reported:	11-04-92
Laboratory Number:	3304	Date Sampled:	10-08-92
Sample Matrix:	Water	Date Received:	10-08-92
Preservative:	Cool	Date Analyzed:	10-30-92
Condition:	Cool and intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.4
Toluene	ND	0.8
Ethylbenzene	ND	0.4
p,m-Xylene	ND	0.8
o-Xylene	ND	0.8

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	107 %
Bromfluorobenzene	109 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E Production Pit C4012

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW #1	Date Reported:	11-04-92
Laboratory Number:	3305	Date Sampled:	10-08-92
Sample Matrix:	Water	Date Received:	10-08-92
Preservative:	Cool	Date Analyzed:	10-30-92
Condition:	Cool and intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	0.5	0.4
Toluene	0.7	0.6
Ethylbenzene	ND	0.4
p,m-Xylene	0.6	0.5
o-Xylene	ND	0.7

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	109 %
Bromfluorobenzene	109 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E Production Pit C4012

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 5	Date Reported:	11-04-92
Laboratory Number:	3306	Date Sampled:	10-08-92
Sample Matrix:	Water	Date Received:	10-08-92
Preservative:	Cool	Date Analyzed:	10-30-92
Condition:	Cool and intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	0.3	0.2
Toluene	1.2	0.5
Ethylbenzene	ND	0.3
p,m-Xylene	1.0	0.6
o-Xylene	0.4	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	94 %
Bromfluorobenzene	93 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E Production Pit C4012

Analyst

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 7	Date Reported:	11-04-92
Laboratory Number:	3307	Date Sampled:	10-08-92
Sample Matrix:	Water	Date Received:	10-08-92
Preservative:	Cool	Date Analyzed:	10-30-92
Condition:	Cool and intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	1.6	0.2
Toluene	3.4	0.5
Ethylbenzene	ND	0.3
p,m-Xylene	3.3	0.6
o-Xylene	0.7	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	88 %
Bromfluorobenzene	93 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E Production Pit C4012

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

CLIENT: Envirotech
ID: 3854
SITE: 1010
LAB NO: F1305

DATE REPORTED: 11/24/92
DATE RECEIVED: 11/13/92
DATE COLLECTED: 11/13/92

Lab pH (s.u.)	8.00
Lab Conductivity, umhos/cm @ 25C	883
Lab Resistivity, ohm-m	11.3
Total Dissolved Solids (180C), mg/L.	576
Total Dissolved Solids (calc), mg/L.	552
Total Alkalinity as CaC03, mg/L	199
Total Hardness as CaC03, mg/L	349
Sodium Adsorption Ratio	1.17

	mg/L	meq/L	
Bicarbonate as HC03	243	3.98	
Carbonate as C03	<0.10	<0.01	
Chloride	47.2	1.33	
Sulfate	201	4.2	
Calcium	113	5.65	
Magnesium	16.3	1.34	
Potassium	3.55	0.09	
Sodium	50.4	2.19	
Major Cations		9.27	
Major Anions		9.51	
Cation/Anion Difference		1.27	%

Wanda Orso
Water Lab Supervisor

ENVIROTECH LABS

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EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	Effluent	Date Reported:	01-08-93
Laboratory Number:	3855	Date Sampled:	11-13-92
Sample Matrix:	Water	Date Received:	11-13-92
Preservative:	Cool	Date Analyzed:	01-07-93
Condition:	Cool & Intact	Analysis Requested:	8100

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Naphthalene	ND	0.2
Acenaphthylene	ND	0.2
Acenaphthene	ND	0.2
Fluorene	ND	0.8
Phenanthrene	ND	0.2
Anthracene	ND	0.2
Fluoranthene	ND	0.2
Pyrene	ND	1.3
Benzo(a)anthracene	ND	0.2
Chrysene	ND	0.2
Benzo(b) & Benzo(k) fluoranthene	ND	0.2
Benzo(a)pyrene	ND	0.2
Indeno(1,2,3-cd) pyrene & Dibenzo(a,h)anthracene	ND	0.2
Benzo(g,h,i)perylene	ND	2.5

Methods: Method 8100, Polynuclear Aromatic Hydrocarbons, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E C4012

Analyst

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	Effluent	Date Reported:	11-19-92
Laboratory Number:	3856	Date Sampled:	11-13-92
Sample Matrix:	Water	Date Received:	11-13-92
Preservative:	HgCl and Cool	Date Analyzed:	11-18-92
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	1.3	0.4
Toluene	10.2	0.9
Ethylbenzene	2.4	0.3
p,m-Xylene	36.3	0.7
o-Xylene	14.7	0.5

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	101 %
Bromfluorobenzene	119 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E, C4012

Analyst

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 1	Date Reported:	11-23-92
Laboratory Number:	3888	Date Sampled:	11-16-92
Sample Matrix:	Water	Date Received:	11-16-92
Preservative:	HgCl and Cool	Date Analyzed:	11-18-92
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.4
Toluene	ND	0.6
Ethylbenzene	ND	0.3
p,m-Xylene	0.4	0.2
o-Xylene	ND	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	77 %
Bromfluorobenzene	101 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

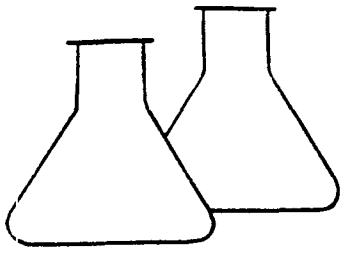
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E, Production Pit, C4012

Analyst

Review



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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 2	Date Reported:	11-20-92
Laboratory Number:	3889	Date Sampled:	11-16-92
Sample Matrix:	Water	Date Received:	11-16-92
Preservative:	HgCl and Cool	Date Analyzed:	11-18-92
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.5
Toluene	ND	0.8
Ethylbenzene	ND	0.3
p,m-Xylene	ND	0.6
o-Xylene	0.8	0.4

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	81 %
Bromfluorobenzene	100 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel, A 1E, Production Pit, C4012

Analyst

Review

ENVIROTECH LABS

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 3	Date Reported:	11-23-92
Laboratory Number:	3890	Date Sampled:	11-16-92
Sample Matrix:	Water	Date Received:	11-16-92
Preservative:	HgCl and Cool	Date Analyzed:	11-18-92
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.4
Toluene	ND	0.6
Ethylbenzene	ND	0.3
p,m-Xylene	0.5	0.2
o-Xylene	0.4	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	80 %
Bromfluorobenzene	102 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E, Production Pit, C4012

Analyst

Review

ENVIROTECH LABS

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 4	Date Reported:	11-23-92
Laboratory Number:	3891	Date Sampled:	11-16-92
Sample Matrix:	Water	Date Received:	11-16-92
Preservative:	HgCl and Cool	Date Analyzed:	11-18-92
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.4
Toluene	ND	0.6
Ethylbenzene	ND	0.3
p,m-Xylene	0.8	0.2
o-Xylene	0.5	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	81 %
Bromfluorobenzene	105 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E, Production Pit, C4012

Analyst

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ENVIROTECH LABS

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 5	Date Reported:	11-20-92
Laboratory Number:	3892	Date Sampled:	11-16-92
Sample Matrix:	Water	Date Received:	11-16-92
Preservative:	HgCl and Cool	Date Analyzed:	11-18-92
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.5
Toluene	ND	0.8
Ethylbenzene	ND	0.3
p,m-Xylene	ND	0.6
o-Xylene	ND	0.4

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	83 %
Bromfluorobenzene	101 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel, A 1E, Production Pit, C4012

Analyst

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 6	Date Reported:	11-23-92
Laboratory Number:	3893	Date Sampled:	11-16-92
Sample Matrix:	Water	Date Received:	11-16-92
Preservative:	HgCl and Cool	Date Analyzed:	11-18-92
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	6.2	0.5
Toluene	58	0.8
Ethylbenzene	159	0.3
p,m-Xylene	455	0.6
o-Xylene	328	0.4

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Bromfluorobenzene	84 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E, Production Pit, C4012

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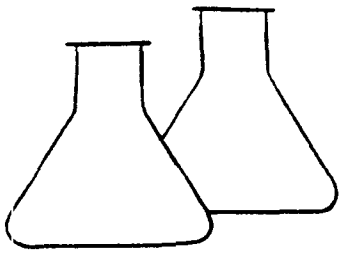

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	Mw # 7	Date Reported:	11-23-92
Laboratory Number:	3894	Date Sampled:	11-16-92
Sample Matrix:	Water	Date Received:	11-16-92
Preservative:	HgCl and Cool	Date Analyzed:	11-18-92
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	0.7	0.5
Toluene	3.4	0.8
Ethylbenzene	2.1	0.3
p,m-Xylene	3.9	0.6
o-Xylene	3.1	0.4

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	87 %
Bromfluorobenzene	104 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E, Production Pit, C4012

Analyst

Review

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	T1@2'	Date Reported:	12-30-92
Laboratory Number:	4295	Date Sampled:	12-29-92
Sample Matrix:	Soil	Date Received:	12-29-92
Preservative:	Cool	Date Analyzed:	12-30-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	15.5	5.0

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel AlE---Production Pit---C4012

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	T1@GW	Date Reported:	12-30-92
Laboratory Number:	4296	Date Sampled:	12-29-92
Sample Matrix:	Water	Date Received:	12-29-92
Preservative:	Cool	Date Analyzed:	12-30-92
Condition:	Cool	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	ND	10.0

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel AlE---Production Pit---C4012

CA Fernandez
Analyst

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T2 @ GW	Date Reported:	12-30-92
Laboratory Number:	4297	Date Sampled:	12-29-92
Sample Matrix:	Water	Date Received:	12-29-92
Preservative:	HgCl & Cool	Date Analyzed:	12-30-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	64	0.3
Toluene	32.1	0.8
Ethylbenzene	77	0.4
p,m-Xylene	456	0.6
o-Xylene	236	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Bromfluorobenzene	81 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A1E, Production Pit, C4012.

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	T2@GW	Date Reported:	12-30-92
Laboratory Number:	4298	Date Sampled:	12-29-92
Sample Matrix:	Water	Date Received:	12-29-92
Preservative:	Cool	Date Analyzed:	12-30-92
Condition:	Cool	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	56	10.0

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel AlE---Production Pit---C4012

Analyst

Review

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	Effluent	Date Reported:	01-07-93
Laboratory Number:	4356	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	HgCl & Cool	Date Analyzed:	01-07-93
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.3
Toluene	ND	0.5
Ethylbenzene	ND	0.2
p,m-Xylene	0.4	0.3
o-Xylene	ND	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	'85 %
Bromfluorobenzene	96 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A1E, Production Pit, C4012.

Analyst

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EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	Effluent	Date Reported:	01-08-93
Laboratory Number:	4357	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	Cool	Date Analyzed:	01-07-93
Condition:	Cool & Intact	Analysis Requested:	8100

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Naphthalene	ND	0.2
Acenaphthylene	ND	0.2
Acenaphthene	ND	0.2
Fluorene	ND	0.8
Phenanthrene	ND	0.2
Anthracene	ND	0.2
Fluoranthene	ND	0.2
Pyrene	ND	1.3
Benzo(a)anthracene	ND	0.2
Chrysene	ND	0.2
Benzo(b) & Benzo(k) fluoranthene	ND	0.2
Benzo(a)pyrene	ND	0.2
Indeno(1,2,3-cd) pyrene & Dibenzo(a,h)anthracene	ND	0.2
Benzo(g,h,i)perylene	ND	2.5

Methods: Method 8100, Polynuclear Aromatic Hydrocarbons, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E Production Pit C4012

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	T3 @ 7'	Date Reported:	01-08-93
Laboratory Number:	4358	Date Sampled:	01-06-93
Sample Matrix:	Soil	Date Received:	01-06-93
Preservative:	Cool	Date Analyzed:	01-08-93
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	1,950	5.0

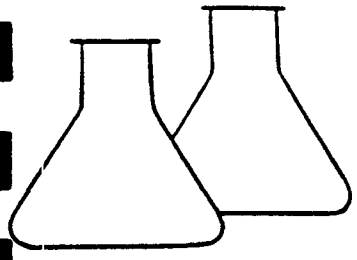
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A1E production pit C4012

Leila Lee Hamm
Analyst

Marvin D. Young
Review



ENVIROTECH LABS

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MODIFIED EPA METHOD 8015
NONHALOGENATED VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T 3 @ 7'	Date Reported:	01-11-93
Laboratory Number:	4358	Date Sampled:	01-06-93
Sample Matrix:	Soil	Date Received:	01-06-93
Preservative:	Cool	Date Analyzed:	01-09-93
Condition:	Cool and Intact	Analysis Requested:	TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	102	0.4
Diesel Range (C10 - C28)	353	1.1
C28 - C36 Range	ND	0.1
Total Petroleum Hydrocarbons	455	1.1

Method: Method 8015, Nonhalogenated Volatile Organics
Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E Production Pit C4012

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	T4 @ 5.5'	Date Reported:	01-08-93
Laboratory Number:	4359	Date Sampled:	01-06-93
Sample Matrix:	Soil	Date Received:	01-06-93
Preservative:	Cool	Date Analyzed:	01-08-93
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	1,600	5.0

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A1E production pit C4012

Sheila Pelfrey
Analyst

Review

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MODIFIED EPA METHOD 8015
NONHALOGENATED VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T 4 @ 5.5'	Date Reported:	01-11-93
Laboratory Number:	4359	Date Sampled:	01-06-93
Sample Matrix:	Soil	Date Received:	01-06-93
Preservative:	Cool	Date Analyzed:	01-09-93
Condition:	Cool and Intact	Analysis Requested:	TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	103	0.4
Diesel Range (C10 - C28)	206	1.1
C28 - C36 Range	ND	0.1
Total Petroleum Hydrocarbons	310	1.1

Method: Method 8015, Nonhalogenated Volatile Organics
Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E Production Pit C4012

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MODIFIED EPA METHOD 8015
NONHALOGENATED VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T 5 @ 4'	Date Reported:	01-11-93
Laboratory Number:	4360	Date Sampled:	01-06-93
Sample Matrix:	Soil	Date Received:	01-06-93
Preservative:	Cool	Date Analyzed:	01-09-93
Condition:	Cool and Intact	Analysis Requested:	TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	194	0.4
Diesel Range (C10 - C28)	418	1.1
C28 - C36 Range	ND	0.1
Total Petroleum Hydrocarbons	610	1.1

Method: Method 8015, Nonhalogenated Volatile Organics
Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E Production Pit C4012

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	T5 @ 4'	Date Reported:	01-08-93
Laboratory Number:	4360	Date Sampled:	01-06-93
Sample Matrix:	Soil	Date Received:	01-06-93
Preservative:	Cool	Date Analyzed:	01-08-93
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	4,420	50.0

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel AlE production pit C4012

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T3 @ GW	Date Reported:	01-07-93
Laboratory Number:	4361	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	HgCl & Cool	Date Analyzed:	01-07-93
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	0.7	0.3
Toluene	1.3	0.5
Ethylbenzene	4.1	0.2
p,m-Xylene	14.9	0.3
o-Xylene	11.7	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	76 %
Bromfluorobenzene	106 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A1E, Production Pit, C4012.

Analyst

Review

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T4 @ GW	Date Reported:	01-07-93
Laboratory Number:	4362	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	HgCl & Cool	Date Analyzed:	01-07-93
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	1.0	0.3
Toluene	2.3	0.5
Ethylbenzene	16.2	0.2
p,m-Xylene	69	0.3
o-Xylene	26.7	0.3

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Bromfluorobenzene	90 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A1E, Production Pit, C4012.

Analyst

Review

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T5 @ GW	Date Reported:	01-07-93
Laboratory Number:	4363	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	HgCl & Cool	Date Analyzed:	01-07-93
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	84	1.5
Toluene	132	2.5
Ethylbenzene	1,470	1.0
p,m-Xylene	3,820	1.5
o-Xylene	462	1.5

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	90 %
Bromfluorobenzene	75 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A1E, Production Pit, C4012.

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	T3 @ GW	Date Reported:	01-08-93
Laboratory Number:	4364	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	NA	Date Analyzed:	01-07-93
Condition:	cool	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	31.6	0.5

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel AlE - prod. pit
C4012

Sheila Tetsame
Analyst

Review

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MODIFIED EPA METHOD 8015
NONHALOGENATED VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T3 @ GW	Date Reported:	01-11-93
Laboratory Number:	4364	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	Cool	Date Analyzed:	01-08-93
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Gasoline Range (C5 - C10)	1.5	0.2
Diesel Range (C10 - C28)	12.9	0.8
Total Petroleum Hydrocarbons	14.4	0.8

Method: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E C4012

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	T4 @ GW	Date Reported:	01-08-93
Laboratory Number:	4365	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	NA	Date Analyzed:	01-07-93
Condition:	cool	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	78	0.5

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel AlE - prod. pit
C4012

Sheila Lehman
Analyst

Review

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MODIFIED EPA METHOD 8015
NONHALOGENATED VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T4 @ GW	Date Reported:	01-11-93
Laboratory Number:	4365	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	Cool	Date Analyzed:	01-08-93
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Gasoline Range (C5 - C10)	12.6	0.2
Diesel Range (C10 - C28)	74	0.8
Total Petroleum Hydrocarbons	87	0.8

Method: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E C4012

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	T5 @ GW	Date Reported:	01-08-93
Laboratory Number:	4366	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	NA	Date Analyzed:	01-07-93
Condition:	cool	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	409	0.5

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel AlE - prod. pit
C4012

Sheila Feltman
Analyst

Review

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MODIFIED EPA METHOD 8015
NONHALOGENATED VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T5 @ GW	Date Reported:	01-11-93
Laboratory Number:	4366	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	Cool	Date Analyzed:	01-08-93
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Gasoline Range (C5 - C10)	132	0.2
Diesel Range (C10 - C28)	252	0.8
Total Petroleum Hydrocarbons	384	0.8

Method: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E C4012

Analyst

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	T6 @ GW	Date Reported:	01-08-93
Laboratory Number:	4367	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	NA	Date Analyzed:	01-07-93
Condition:	cool	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	390	0.5

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel AlE - prod. pit
C4012

Sheila Hellman
Analyst

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MODIFIED EPA METHOD 8015
NONHALOGENATED VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T6 @ GW	Date Reported:	01-11-93
Laboratory Number:	4367	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	Cool	Date Analyzed:	01-08-93
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Gasoline Range (C5 - C10)	117	0.2
Diesel Range (C10 - C28)	449	0.8
Total Petroleum Hydrocarbons	570	0.8

Method: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E C4012

Analyst

Review

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	T7 @ GW	Date Reported:	01-08-93
Laboratory Number:	4368	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	NA	Date Analyzed:	01-07-93
Condition:	cool	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	ND	0.5

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel AlE - prod. pit
C4012

Analyst

Review

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

MODIFIED EPA METHOD 8015
NONHALOGENATED VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T7 @ GW	Date Reported:	01-11-93
Laboratory Number:	4368	Date Sampled:	01-06-93
Sample Matrix:	Water	Date Received:	01-06-93
Preservative:	Cool	Date Analyzed:	01-09-93
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Gasoline Range (C5 - C10)	2.8	0.2
Diesel Range (C10 - C28)	24.8	0.8
Total Petroleum Hydrocarbons	27.5	0.8

Method: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: San Juan Gravel A 1E C4012

Analyst

Review

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client:	**Envirotech**		
Sample ID:	4461	Date Reported:	02/03/93
Laboratory ID:	1612	Date Sampled:	01/13/93
Sample Matrix:	Water	Time Sampled:	N.A.
Condition:	Cool/Intact	Date Received:	01/15/93

Parameter	Analytical Result	Units		Units
Lab pH	8.2	s.u.		
Lab Conductivity @ 25° C	903	umhos/cm		
Total Dissolved Solids @ 180°C	586	mg/L		
Total Dissolved Solids (Calc)	554	mg/L		
Sodium Absorption Ratio	1.17			
Total Alkalinity as CaCO3	236	mg/L		
Total Hardness as CaCO3	371	mg/L		
Bicarbonate as HCO3	290	mg/L	4.72	meq/L
Carbonate as CO3	0	mg/L	0.00	meq/L
Hydroxide as OH	0	mg/L	0.00	meq/L
Chloride	30	mg/L	0.84	meq/L
Sulfate	200	mg/L	4.08	meq/L
Calcium	110	mg/L	5.26	meq/L
Magnesium	26	mg/L	2.16	meq/L
Potassium	3.2	mg/L	0.08	meq/L
Sodium	52	mg/L	2.25	meq/L
Cations			9.75	meq/L
Anions			9.64	meq/L
Cation/Anion Difference			0.58	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 17th ed., 1989.

Reviewed by 

ENVIROTECH LABORATORIES

5796 U.S. HIGHWAY 64-3014
FARMINGTON, NEW MEXICO 87401
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QUALITY ASSURANCE/QUALITY CONTROL

DOCUMENTATION

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	08-12-92
Laboratory Number:	BTLB0602	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	06-02-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	ND	0.8
Ethylbenzene	ND	0.3
p,m-Xylene	ND	1.0
o-Xylene	ND	0.4

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	94.8 %
Bromfluorobenzene	96.4 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Robert M. Young
Analyst

Review

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	08-17-92
Laboratory Number:	BTLB0713	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	07-13-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	ND	0.8
Ethylbenzene	ND	0.3
p,m-Xylene	ND	0.6
o-Xylene	ND	0.4

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Bromfluorobenzene	89.2 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Robert M Young
Analyst

Review

ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	08-17-92
Laboratory Number:	BTLB0715	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	07-15-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	7.4
Toluene	ND	7.8
Ethylbenzene	ND	6.6
p,m-Xylene	ND	13.4
o-Xylene	ND	6.8

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	93.1 %
Bromfluorobenzene	106.3 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review

ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	09-21-92
Laboratory Number:	TPLB0904	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	09-04-92
Condition:		Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	ND	10.0

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review

ENVIROTECH LABS

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EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-02-92
Laboratory Number:	TPLB1029	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	10-29-92
Condition:	NA	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	ND	10.0

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review

ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS
HEADSPACE EXTRACTION

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-03-92
Laboratory Number:	HSLB1030	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	10-30-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	ND	0.6
Ethylbenzene	ND	0.4
p,m-Xylene	ND	0.6
o-Xylene	ND	0.4

Method: Method 3810, Headspace, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

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ENVIROTECH LABS

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-19-92
Laboratory Number:	BTLB1117pm	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-17-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.4
Toluene	ND	0.9
Ethylbenzene	ND	0.3
p,m-Xylene	ND	0.7
o-Xylene	ND	0.5

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Bromfluorobenzene	106 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

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Review

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	11-20-92
Laboratory Number:	BTLB1118am	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	11-18-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.5
Toluene	ND	0.8
Ethylbenzene	ND	0.3
p,m-Xylene	ND	0.6
o-Xylene	ND	0.4

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Bromfluorobenzene	98 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	12-30-92
Laboratory Number:	BTLB1230am	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	12-30-92
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.3
Toluene	ND	0.8
Ethylbenzene	ND	0.4
p,m-Xylene	ND	0.6
o-Xylene	ND	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	108 %
Bromfluorobenzene	112 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

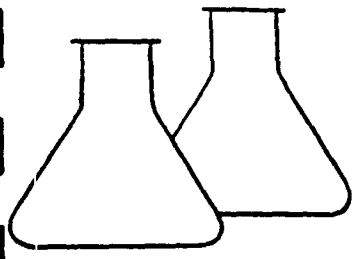
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review



ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	12-30-92
Laboratory Number:	TPLB1230	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	12-30-92
Condition:	NA	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	ND	10.0

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review

ENVIROTECH LABS

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	01-07-93
Laboratory Number:	0107AM.BLK	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	01-07-93
Condition:	NA	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.3
Toluene	ND	0.5
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.3
o-Xylene	ND	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	96 %
Bromfluorobenzene	104 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	01-07-93
Laboratory Number:	0107PAH.BLK	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	01-07-93
Condition:	NA	Analysis Requested:	8100

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Naphthalene	ND	0.2
Acenaphthylene	ND	0.2
Acenaphthene	ND	0.2
Fluorene	ND	0.8
Phenanthrene	ND	0.2
Anthracene	ND	0.2
Fluoranthene	ND	0.2
Pyrene	ND	1.3
Benzo(a)anthracene	ND	0.2
Chrysene	ND	0.2
Benzo(b) & Benzo(k) fluoranthene	ND	0.2
Benzo(a)pyrene	ND	0.2
Indeno(1,2,3-cd) pyrene & Dibenzo(a,h)anthracene	ND	0.2
Benzo(g,h,i)perylene	ND	2.5

Methods: Method 8100, Polynuclear Aromatic Hydrocarbons, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review

ENVIROTECH LABS

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	01-07-93
Laboratory Number:	TPLB0107	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	01-07-93
Condition:	NA	Analysis Needed:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
TPH	ND	0.5

Method: Method 418.1, Total Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review

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PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	01-08-93
Laboratory Number:	NA	Date Sampled:	NA
Sample Matrix:	Soil	Date Received:	NA
Preservative:	NA	Date Analyzed:	01-08-93
Condition:	NA	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	ND	5

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments:

Leila Lehman
Analyst

Review

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

MODIFIED EPA METHOD 8015
NONHALOGENATED VOLATILE ORGANICS
TOTAL PETROLEUM HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	01-11-93
Laboratory Number:	0109TPH.BLK	Date Sampled:	NA
Sample Matrix:	Methanol	Date Received:	NA
Preservative:	NA	Date Analyzed:	01-09-93
Condition:	NA	Analysis Requested:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Gasoline Range C5 - C10	ND	0.4
Diesel Range C10 - C28	ND	1.1
C28 - C36 Range	ND	0.1
Total Petroleum Hydrocarbons	ND	1.1

Method: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
Amoco Pit Closure / 92140	Prod. Pit. 14012 San Juan Gravel A-1E	
Sampler: (Signature) Kelly Johnson	**Chain of Custody Tape No.**	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX						Remarks
~~[illegible]~~ M.W. #1	6-1	1532	09103	Water	2	✓						
M.W. # 2	6-1	1552	09104	Water	2	✓						
M.W. # 3	6-1	1608	09105	Water	2	✓						
M.W. # 4	6-1	1621	09106	Water	2	✓						
M.W. # 5	6-1	1633	09107	Water	2	✓						
M.W. # 6	6-1	1645	09108	Water	2	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Kelly Johnson	6-1-92	1715	Nicki Trujillo	6/1/92	[illegible]
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.
5796 U.S. Highway 64-3014
Farmington, New Mexico 87401
(505) 632-0615

1534

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Amoco 92140/94012	San Juan Gravel A-1E
Sampler: (Signature)	Chain of Custody Tape No.
[signature]	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX						Remarks
M.W. #7 #1	6-2	1413		WATER	3	✓						Samples pulled on Second Bale Sample
M.W. #7 #2	6-2	1413		WATER	3	✓			not Mi.			
M.W #7 #3	6-2	1420	1011	WATER	3	✓						Samples pulled on the 10th Bale Sample
M.W. #7 #4	6-2	1420		WATER	3	✓						

ANALYSIS/PARAMETERS

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Kelly Johnson	6-2-92	1455	Micki Trujillo	6/2/92	1455
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.
5796 U.S. Highway 64-3014
Farmington, New Mexico 87401
(505) 632-0615

1801

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
AMOCO 92140	SAN JUAN GUL Pump Pit AIC	
Sampler: (Signature) Nelson Velez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TAH	BTEX					Remarks
EFFLUENT	8/31/92	1415	2175	WATER	1	1						
EFFLUENT	8/31/92	1420	2176	WATER	2		1					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	8/31/92	1509	Linda Pender	8-31-92	1509
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.
5796 U.S. Highway 64-3014
Farmington, New Mexico 87401
(505) 632-0615

Inter-Mountain Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSES / PARAMETERS
AMOCO (ENVIROTECH INC.)	SAN JUAN GUL A-1E	
Sampler: (Signature) Nelson Velez	**Chain of Custody Tape No.**	**Remarks**

Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers	Anion/Cation
EFFLUENT	8/31/92	1421 1440	9211	WATER	1	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	8/31/92	1440	[signature]	8-31-92	1440
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**
Relinquished by: (Signature)	**Date**	**Time**	**Received by laboratory: (Signature)**	**Date**	**Time**

Inter-Mountain Laboratories, Inc.

☐ 1633 Terra Avenue, Sheridan, Wyoming 82801, Telephone (307) 672-8945

☐ 1714 Phillips Circle, Gillette, Wyoming 82716, Telephone (307) 682 89-15

☐ 2506 West Main Street, Farmington, NM 87401, Telephone (505) 326-4737

☐ 910 Technology Blvd. Suite B, Bozeman, Montana 59715, Telephone (406) 586-8450

☐ Route 3, Box 256, College Station, TX 77845, Telephone (409) 776 8945

☐ 3304 Longmire Drive, College Station, TX 77845, Telephone (409) 774-4999

05255

1951

CHAIN OF CUSTODY RECORD

C4012

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
AMOCO 92140	PROD. PIT SAN JUAN GUL A1E	

Sampler: (Signature): Nelson Velez

Chain of Custody Tape No.:

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH 418.1	BTEX 8020	PAH 8100				Remarks
EFFLUENT	10/5/92	1445	3243	WATER	1	1						
EFFLUENT	10/5/92	1455	3244	WATER	2		1	1	Insufficient Sample for 8100 TT		11/18/92	PAH - POLYNUCLEAR AROMATIC HYDROCARBONS

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	10/5/92	1555	Linda Pender	10-5-92	1555
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.
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Farmington, New Mexico 87401
(505) 632-0615

Inter- Mountain Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSES / PARAMETERS
AMOCO 7140	[illegible]	
Sampler: (Signature)	**Chain of Custody Tape No.**	**Remarks**

Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers	[illegible]
[illegible]	10/12	1500		WATER	1	✓

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[illegible]	10/12	1414			
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**
Relinquished by: (Signature)	**Date**	**Time**	**Received by laboratory: (Signature)**	**Date**	**Time**

Inter-Mountain Laboratories, Inc.

☐ 1633 Terra Avenue, Sheridan, Wyoming 82801, Telephone (307) 672-8945

☐ 1714 Phillips Circle, Gillette, Wyoming 82716, Telephone (307) 682-8945

☐ 2506 West Main Street, Farmington, NM 87401, Telephone (505) 326-4737

☐ 910 Technology Blvd. Suite B, Bozeman, Montana 59715, Telephone (406) 586-8450

☐ Route 3, Box 256, College Station, TX 77845, Telephone (409) 776-8945

☐ 3304 Longmire Drive, College Station, TX 77845, Telephone (409) 774-4999

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1970

CHAIN OF CUSTODY RECORD

C4012

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
AMOCO 92140	PROD. PIT SAN JUAN GUL AIE	
Sampler: (Signature) Nelson Velez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX						Remarks
MW #3	10/8/92	1100	3304	WATER	2	✓						
MW #1	10/8/92	1420	3305	WATER	2	✓						
MW #5	10/8/92	1440	3306	WATER	2	✓						
MW #7	10/8/92	1500	3307	WATER	2	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	10/8/92	1540	Linda Pender	10-8-92	1540
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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CHAIN OF CUSTODY RECORD

C4012

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
Amoco 92140	~~EFF~~ NW 11/13/92 SAN JUAN GUL AIE	
Sampler: (Signature) Nelson Velez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8020)	PAH (8100)	A/C				Remarks
EFFLUENT	11/13/92	1010	3854	WATER	1			✓				A/C = ANION/CATION
EFFLUENT	11/13/92	1005	3855	WATER	1		✓					PAH = POLYNUCLEAR AROMATIC HYDROCARBONS
EFFLUENT	11/13/92	1000	3856	WATER	2	✓						TO INTER-MOUNTAIN LAB.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	11/13/92	1045	Linda Pender	11-13-92	1045
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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2156

CHAIN OF CUSTODY RECORD

C4012

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
Amoco 92140	PROD. PIT SAN JUAN GUL AIE,	
Sampler: (Signature) Nelson Velez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8020)	TPH (418.1)					Remarks
INJECTION SIDE	11/16/92	1435	3886	WATER	1		✓					
INJECTION SIDE	11/16/92	1430	3887	WATER	2	✓						
MW #1	11/16/92	1545	3888	WATER	2	✓						
MW # 2	11/16/92	1520	3889	WATER	2	✓						
MW # 3	11/16/92	1520	3890	WATER	2	✓						
MW # 4	11/16/92	1645	3891	WATER	2	✓						
MW # 5	11/16/92	1615	3892	WATER	2	✓						
MW # 6	11/16/92	1555	3893	WATER	2	✓						
MW #7	11/16/92	1630	3894	WATER	2	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	11/16/92	1515	Linda Pender	11-16-92	1515
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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CHAIN OF CUSTODY RECORD

C4012

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
Amoco 92140	PROD. PIT. SAN JUAN GUL A1E	
Sampler: (Signature) Phillip Velasquez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH (418.1)	BTEX (8020)					Remarks
T1 @ 2'	12/29/92	1420	1295	SOIL	1	✓						
T1 @ GW	12/29/92	1420	1296	WATER	1	✓						
T2 @ GW	12/29/92	1430	1297	WATER	2		✓					
T2 @ GW	12/29/92	1430	1298	WATER	1	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Phillip Velasquez	12/29/92	1635	[signature]	12-29-92	16:35
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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san juan repro Form 578-81

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CHAIN OF CUSTODY RECORD

C401 2

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
AMOCO 92140	PROD. PIT SAN JUAN GVL A1E	
Sampler: (Signature) Nelson Velez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8020)	TPH (418.1)	TPH (8015)	PAH (8100)			Remarks
EFFLUENT	1-6-93	1320	41356	WATER	2	✓						
EFFLUENT	1-6-93	1345	41357	WATER	1				✓			
T3 @ 7'	1-6-93	1120	41355	SOIL	1	✓	✓	✓				
T4 @ 5.5'	1-6-93	1200	41359	SOIL	1		✓	✓				
T5 @ 4'	1-6-93	1230	41360	SOIL	1		✓	✓				
T3 @ GW	1-6-93	1125	41361	WATER	2	✓						
T4 @ GW	1-6-93	1210	41362	WATER	2	✓						
T5 @ GW	1-6-93	1245	41363	WATER	2	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	1-6-93	1435		1.6.93	1435
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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CHAIN OF CUSTODY RECORD

C401Z

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
AMOCO 92140	SAN JUAN GUL AHE	
Sampler: (Signature) Nelson Velez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH (8015)	TPH (418.1)					Remarks
T3 @ GW	1-6-93	1120	4364	WATER	1	✓	✓					
T4 @ GW	1-6-93	1205	4365	WATER	1	✓	✓					
T5 @ GW	1-6-93	1240	4366	WATER	1	✓	✓					
T6 @ GW	1-6-93	1320	4367	WATER	1	✓	✓					
T7 @ GW	1-6-93	1335	4368	WATER	1	✓	✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	1-6-93	1942		1.6.93	1942
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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CHAIN OF CUSTODY RECORD

C4012

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
Amoco 92140	SJ GUL AIE	
Sampler: (Signature) Nelson Velez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	MAJOR ANIONS/CATIONS						Remarks
EFFLUENT	1/13/93	1320	4461	WATER	1	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	1/13/93	1350	Holly Sturgeon	1-13-93	1350
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

June 29, 1992

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SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P-690-155-070

Mr. B.D. Shaw
Amoco Production Company
200 Amoco Court
Farmington, New Mexico 87401

RE: REMEDIATION PLAN
SAN JUAN GRAVEL A-1E LEASE SITE

Dear Mr. Shaw:

The New Mexico Oil Conservation Division (OCD) has completed a review of Amoco's June 1992 " PROPOSED REMEDIAL ACTION PLAN, AMOCO PRODUCTION CORPORATION, SAN JUAN GRAVEL A-1E PRODUCTION TANK PIT AREA, SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM, FARMINGTON, SAN JUAN COUNTY, NEW MEXICO". The plan details Amoco's proposal for remediating petroleum contaminated ground water at Amoco's San Juan Gravel A-1E lease site.

The OCD approves of the above referenced remediation plan with the following conditions:

1. Amoco will sample the effluent from the air stripper on a monthly basis and analyze the effluent for volatile aromatic hydrocarbons, polynuclear aromatic hydrocarbons and major cations and anions using appropriate EPA analytical methods. Amoco will submit the analytical results to OCD on a quarterly basis.

2. Amoco will submit the analytical results of all ground water sampling from the monitor wells to date and a ground water monitoring plan within 60 days of receipt of this letter.

The OCD commends Amoco for their initiative in addressing remediation of contaminated ground water and soils that resulted

from past disposal practices at the Amoco San Juan Gravel A-1E lease site.

Please be advised that OCD approval will not limit Amoco to the proposed work plan should the remediation system fail to adequately contain and remediate petroleum contaminated ground water related to Amoco activities. In addition, OCD approval does not relieve Amoco of liability for compliance with any other federal, state, city and county laws and/or regulations.

If you have any questions, please contact me at (505) 827-5885.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

xc: Denny Foust, OCD Aztec Office