

3R - 19

REPORTS

DATE:

Feb 15, 1994

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

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

RECEIVED

February 15, 1994

FEB 18 1994

Mr. William C. Olson
Hydrogeologist
Environmental Bureau
New Mexico Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87504

OIL CONSERVATION DIV.
SANTA FE

RE: Soil and Groundwater Sampling
Amoco GCU-181 Well Site
San Juan County, New Mexico

Project No: 92140/C4456

Dear Mr. Olson:

On behalf of Mr. Buddy Shaw, Amoco Production Company, this report is in response to your correspondence to Mr. Shaw dated January 18, 1994 requesting sampling information and monitor well work plans. One of your stipulations for approval of the Remedial Action Plan at the site was to provide additional groundwater investigation information as detailed in your earlier September 16, 1993 NMOCD letter to Mr. Shaw.

Items #2 and #3 (September 16, 1994 letter)

This letter requested a proposal to install additional monitor wells north and east of down-gradient monitor wells MW-10 and MW-7, and a plan to replace strategically located wells destroyed during the trenching process. Figure 1 in the Appendix of this report shows monitor well locations destroyed during the trenching process and the location of well points installed for additional groundwater sampling points. Please note that no work could be done north of the access road due to access not being allowed by the property owner.

Item #4

This letter also requested groundwater monitoring from selected wells in addition to sampling results analyzed during the trenching process. Table 1 of this report contains all sampling results for samples obtained during the trenching process in September and October of 1993. All soil samples were obtained from the most highly contaminated zone immediately above the water table. Water samples were obtained from the exposed trenches. All trench locations and trench sampling locations are indicated on Figure 2

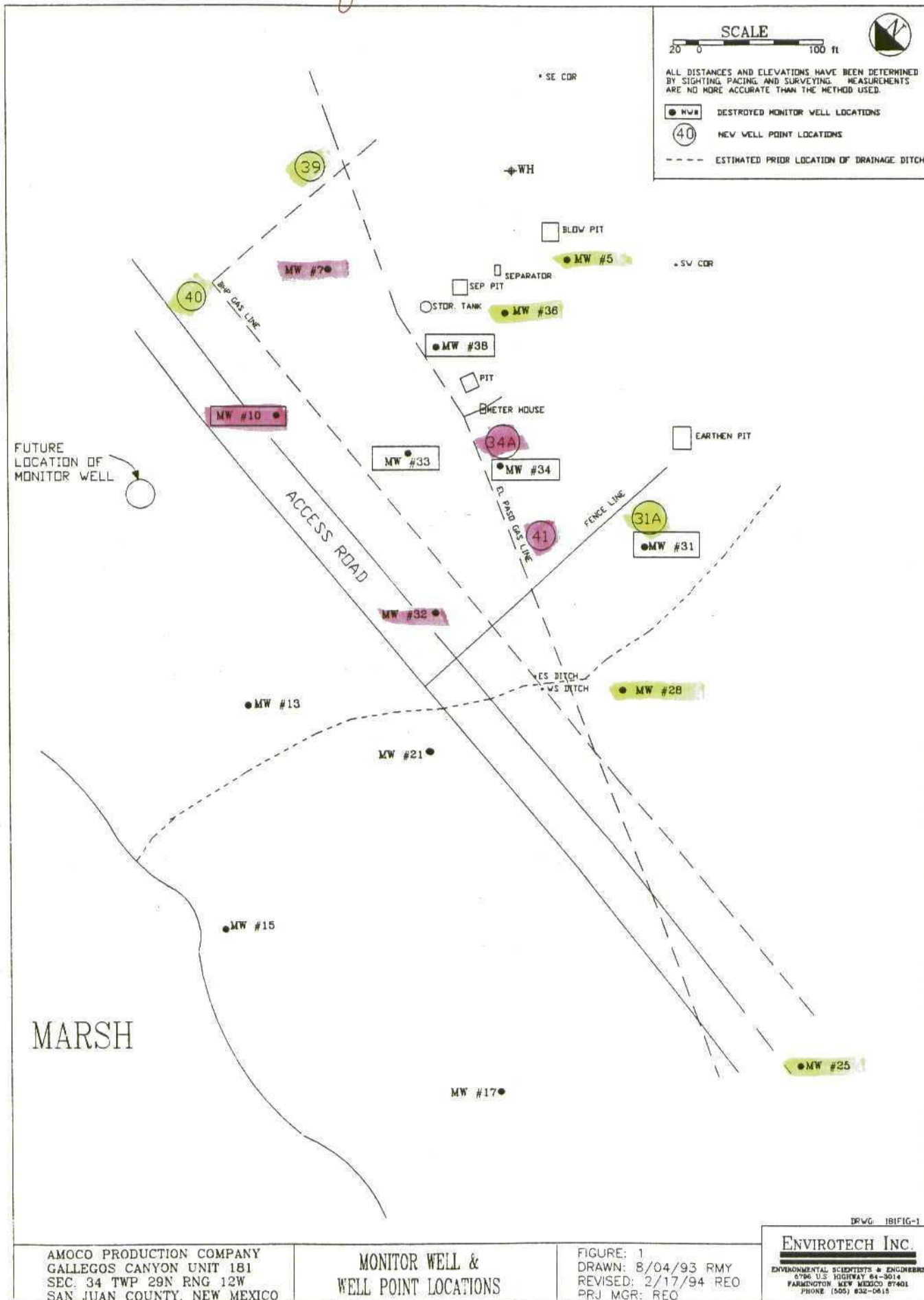
in the Appendix of this report.

Item #2 (January 18, 1994 letter)

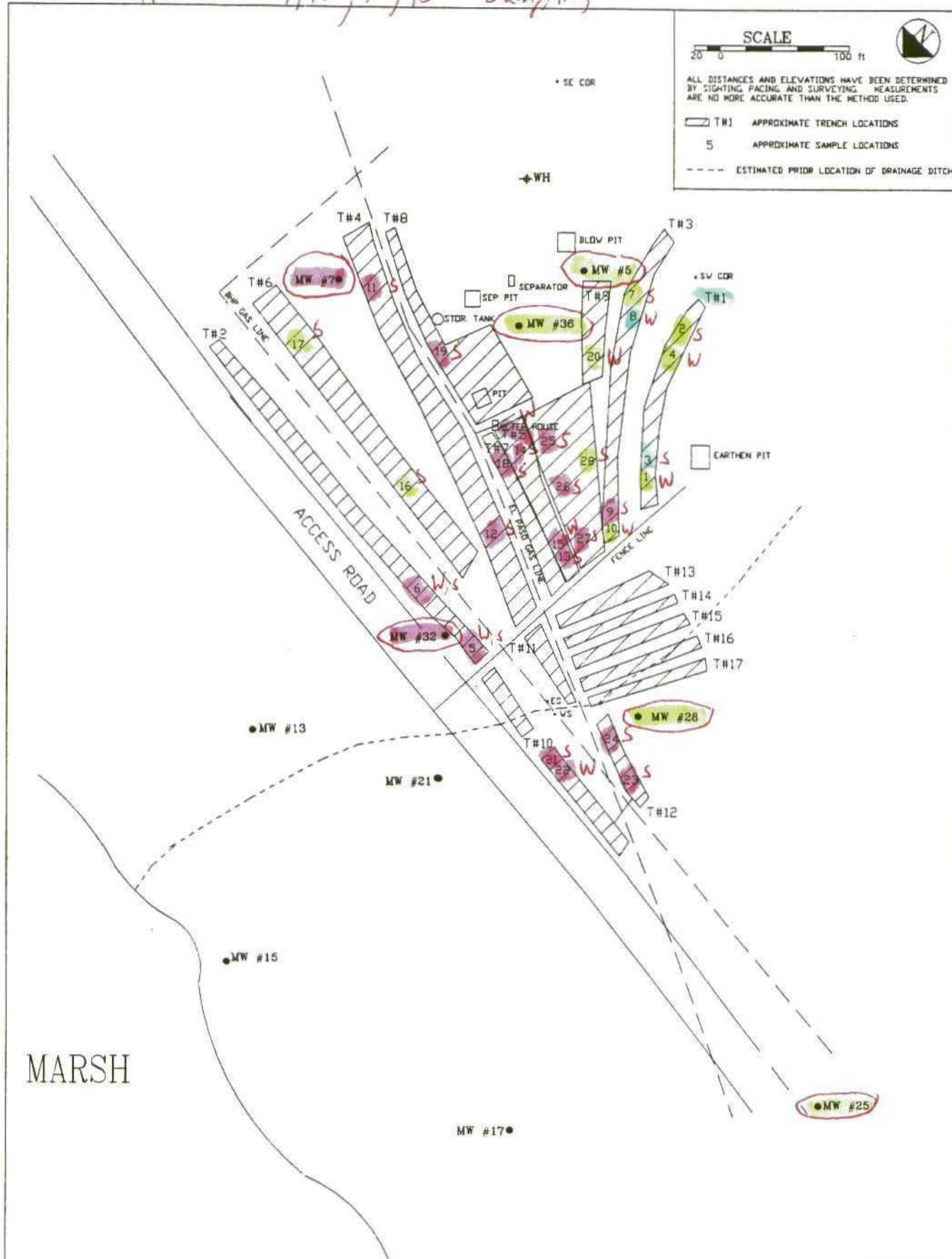
This letter requested analytical results for nitrate and fecal coliform in selected wells in addition to analyses for pH, specific conductivity, benzene, toluene, ethylbenzene and xylenes. Table 2 of this report contains all laboratory results for water samples obtained from all wells south of the access road in February of 1994. Please note that the sample designated as "T @ 10A" is a water sample obtained from the east end of Trench #2 in the prior location of MW #10. Trench #2 and Trench #10 are the only trenches remaining open at this time. All other trenches have been backfilled with clean soils. Figure 3 in the Appendix indicates all groundwater monitoring points as presently installed on the site with February 1994 groundwater elevations noted.

A background soil nitrogen sample was also collected in the area of well point #39 at a soil depth of one foot below the surface. Sample results indicated nitrogen at 2.3 mg/kg.

1st quarter 1994



Trenches 9/93, 10/93 sampling



AMOCO PRODUCTION COMPANY
GALLEGOS CANYON UNIT 181
SEC. 34 TWP 29N RNG 12W
SAN JUAN COUNTY, NEW MEXICO

TRENCH LOCATIONS AND SAMPLE LOCATIONS

FIGURE: 2
DRAWN: 8/04/93 RMY
REVISED: 2/17/94 REO
PRJ MGR: REO

ENVIROTECH INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS
8706 U.S. HIGHWAY 84-S014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 832-0815

DPWG: 181FIG-2

Table 1
Amoco Production Company
GCU 181 - Project 92140/C4456
Site Remediation
Field and Laboratory Results

DATE 1993	LOC. #	SAMPLE ID SOIL (S) WATER(W)	OVM ppm	TPH ppm	BENZENE ppb	TOLUENE ppb	E-BENZENE ppb	T-XYLENES ppb
9-27	1	T1-W, W			ND	ND	0.8	0.9
9-27	2	T1-E, S	3.5	10.7	ND	66	ND	ND
9-27	3	T1-W, S	N/D					
9-27	4	T1-E, W			ND	ND	0.8	0.9
9-24	5	T2-5'W, S		2340	2630	77700	24400	229600
9-24	6	T2-75'W, S		87	62	328	288	5580
9-27	7	T3-E, S	6.2	6.8	ND	69	ND	ND
9-27	8	T3-E, W			ND	ND	ND	ND
9-27	9	T3-W, S	494	431	23.4	640	1870	12600
9-27	10	T3-W, W			ND	ND	ND	1.5
9-27	11	T4-E, S	422	870	840	31400	14100	79000
9-27	12	T4-W, S	372	19.5	21.4	129	34.5	521
9-29	13	T5-W, S	867	3860	4750	57900	21100	153800
9-29	14	T5-E, S	1340	1260	3600	76100	13900	184900
9-29	15	T5-W, W *		7550	412	15400	900	23010
9-30	16	T6-W, S	27	5.2				
9-30	17	T6-E, S	1155	38.3				
10-1	18	T7-E@6', S	987	620				
10-5	19	T8-C, S	973	2480				
10-11	20	T9-EC, W			1.5	14.9	8.6	147.3
10-12	21	T10-C, S	825	N/D				
10-14	22	T10-C, W			1630	2450	370	2330
10-14	23	T12-W, S	958	408	102	850	1210	11390
10-14	24	T12-C, S	944	1930				

Table 1 continued
Amoco Production company
GCU 181 - Project 92140/C4456
Site Remediation
Field and Laboratory Results

DATE 1993	LOC. #	SAMPLE ID SOIL (S) WATER (W)	OVN ppm	TPH ppm	BENZENE ppb	TOLUENE ppb	E-BENZENE ppb	T-XYLENES ppb
10-15	25	1EB @5',S	769	1330	2640	12345	12345	123456
10-15	26	2CB @5',S	767	570				
10-15	27	3WB @5',S	1059	167				
10-15	28	4SS @4',S	1368	24.5				

Notes:

LOC. # = Sample location number as indicated on Figure 2

TPH = Total Petroleum Hydrocarbons per EPA Method 418.1

BENZENE = Benzene per EPA Method 8020

TOLUENE = Toluene per EPA Method 8020

E-BENZENE = Ethyl Benzene per EPA Method 8020

T-XYLENES = Total Xylenes per EPA Method 8020

T1-W,W = Trench #1, west end, Water sample

T2-5'W, S = Trench #2, 5' from west end, Soil sample

E = East

C = Center

T5-W, W * = TPH per EPA Method 8015

Full EPA 8020 analysis

All soil samples taken at a depth near the water table at point of maximum observable contamination.

Table 2
Amoco Production Company
GCU 181 - Project 92140/C4456
Groundwater Sampling
February 9, 1994

SAMPLE I.D.	pH	COND. umhos/cm	BENZENE PPB	TOLUENE PPB	E-BENZ. PPB	T-XYL. PPB	NITRATE N. mg/L	FCB/ 100 mls
MW #5	7.2	6,300	ND	0.5	ND	3.1		
MW #7	7.2	10,100	12.9	16.7	580	1300.3		
T @ 10A	7.3	3,200	41.0	37.7	0.4	325	0.08	0
MW #25	7.4	5,500	ND	ND	0.3	1.8		
MW #28	7.2	3,800	0.4	1.8	ND	8.8	0.07	0
WP #31A	7.4	4,800	ND	ND	ND	0.4		
MW #32	7.4	3,900	149	13.3	ND	408.2	0.04	0
WP #34A	7.2	5,000	21.4	17.2	1.9	143	0.22	0
MW #36	7.2	5,100	ND	ND	0.6	3.6		
WP #39	7.3	3,400	ND	ND	ND	0.2	0.05	0
WP #40	7.3	3,700	ND	ND	ND	3.8		
WP #41	7.2	6,900	171	7400	810	12060	0.88	0

Notes: MW = Monitor well FCB = Fecal Coliform Bacteria. EPA Method 600/4-79-020
 WP = Well point /100 mls = Colonies per 100 mls
 T = Trench N. = Nitrogen
 Benzene, Toluene, Ethyl-benzene, Total xylenes, per EPA Method 8020

We trust this information will be of assistance in evaluating the experimental remediation system at this site.

If you have any further questions regarding this report or we can be of assistance in any other matters, please contact Envirotech at 632-0615.

Respectfully Submitted,
ENVIROTECH, INC.

Robert E. O'Neill

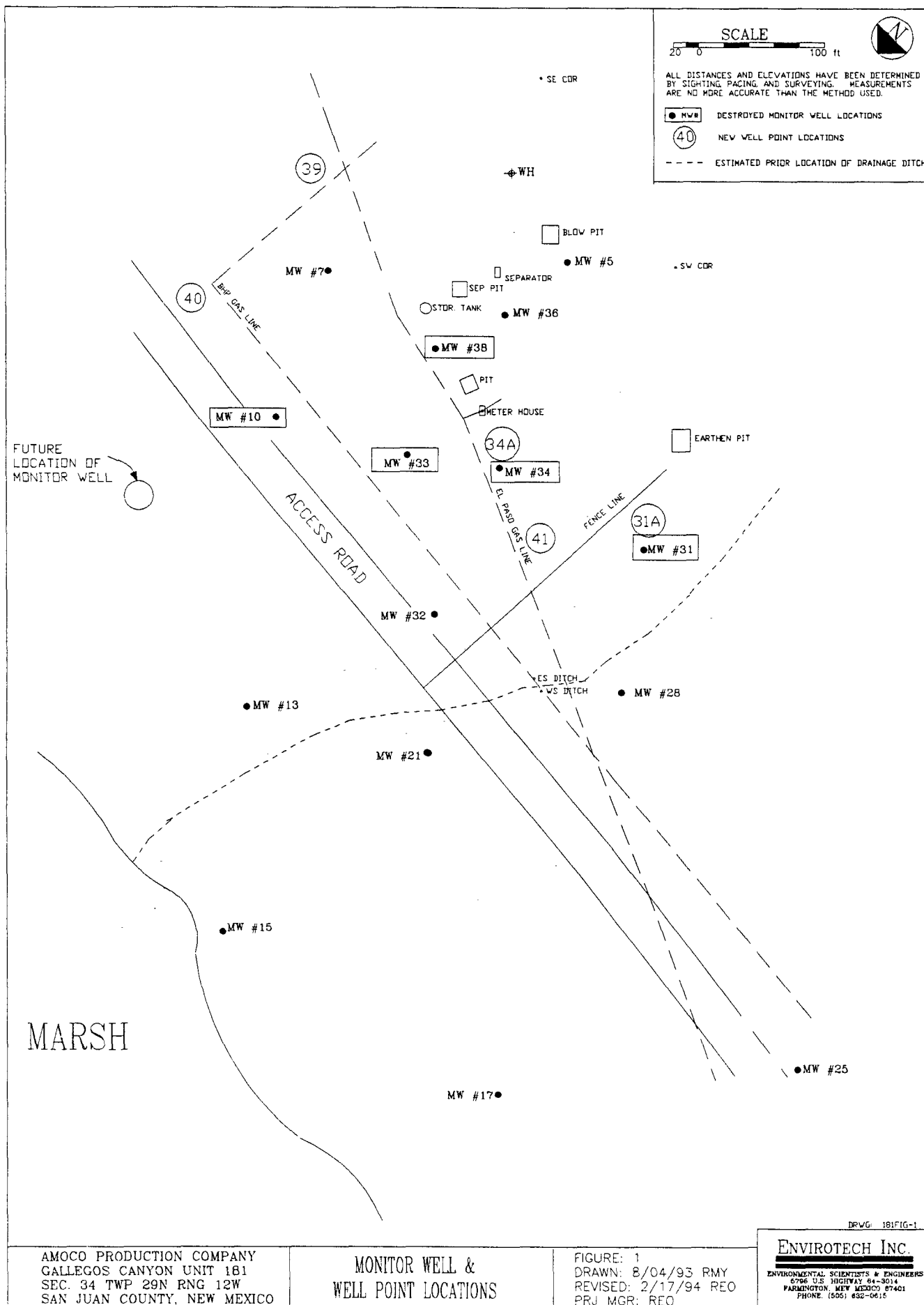
Robert E. O'Neill
Environmental Engineer

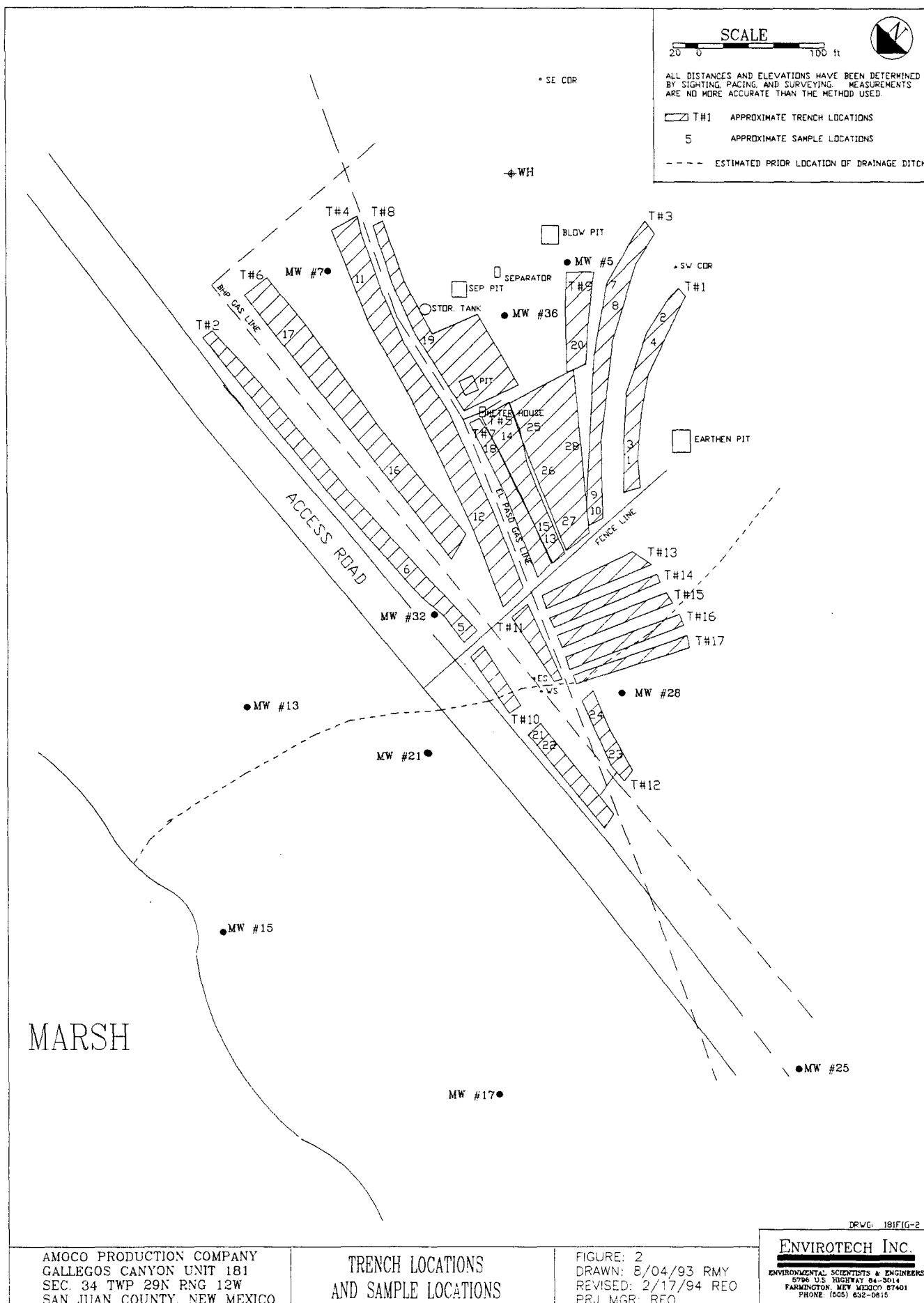
Attachments: Figures 1-3
 Laboratory Reports
 QA/QC

xc: Buddy Shaw, Amoco
 Denny Foust, NMOCD Aztec Office

REO/reo

C4456-WO.RPT





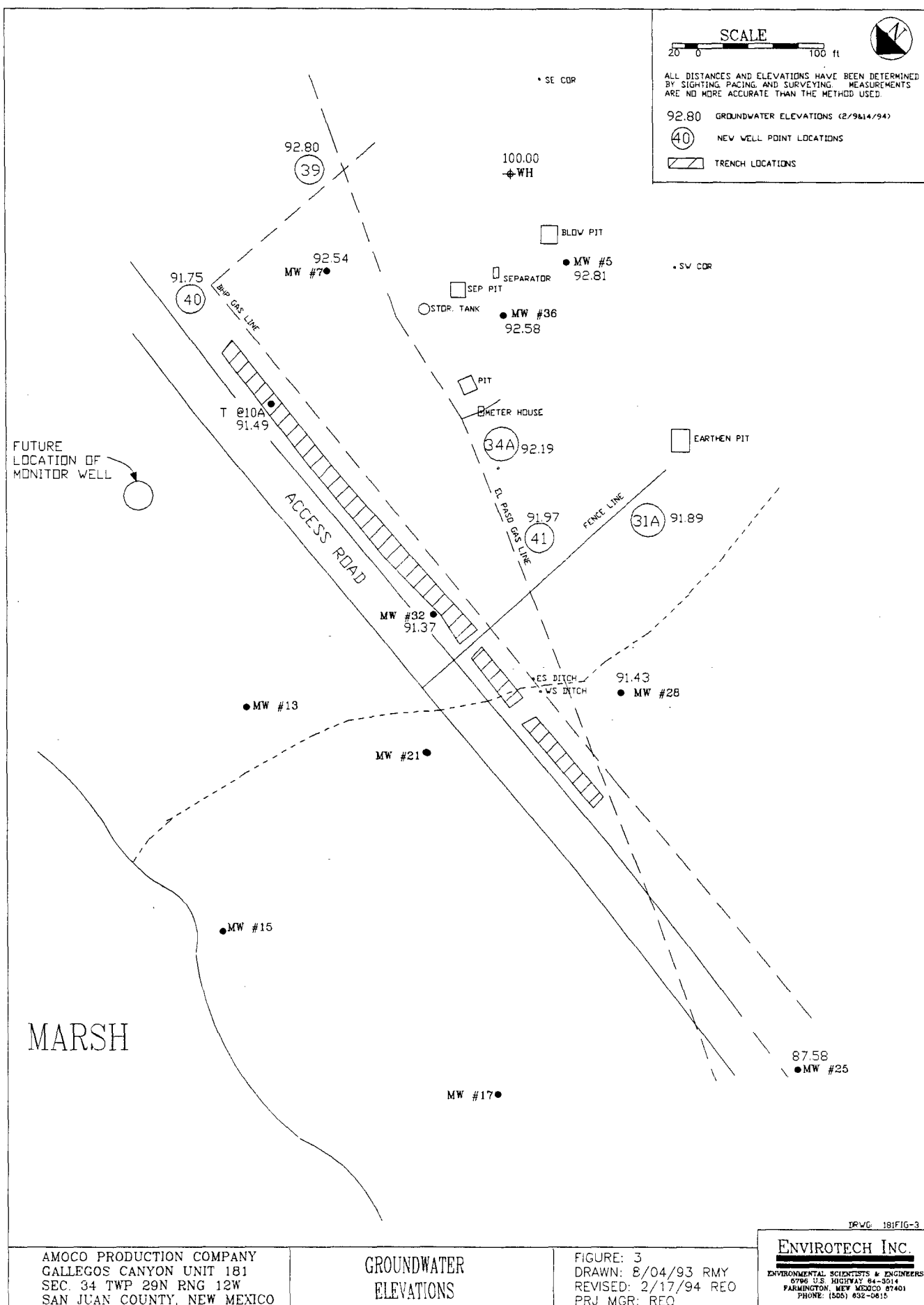
AMOCO PRODUCTION COMPANY
GALLEGOS CANYON UNIT 181
SEC. 34 TWP 29N RNG 12W
SAN JUAN COUNTY, NEW MEXICO

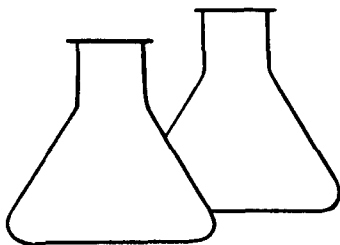
TRENCH LOCATIONS AND SAMPLE LOCATIONS

FIGURE: 2
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REVISED: 2/17/94 REO
PRJ MGR: REO

DRWG: 181FIG-2

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW #5	Date Reported:	02-11-94
Laboratory Number:	6830	Date Sampled:	02-09-94
Sample Matrix:	Water	Date Received:	02-09-94
Preservative:	HgCl and Cool	Date Analyzed:	02-10-94
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	0.5	0.4
Ethylbenzene	ND	0.2
p,m-Xylene	2.4	0.3
o-Xylene	0.7	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	102 %

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

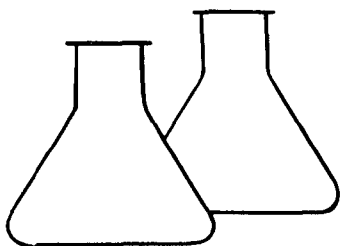
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: GCU 181 C4456

Devin L. Jensen
Analyst

Maris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW #7	Date Reported:	02-11-94
Laboratory Number:	6831	Date Sampled:	02-09-94
Sample Matrix:	Water	Date Received:	02-09-94
Preservative:	HgCl and Cool	Date Analyzed:	02-10-94
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	12.9	0.2
Toluene	16.7	0.4
Ethylbenzene	580	0.2
p,m-Xylene	1,280	0.3
o-Xylene	20.3	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	101 %
	Bromofluorobenzene	104 %

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

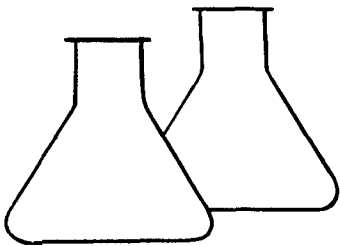
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: GCU 181 C4456

Kevin L. Gerner
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T @ 10A	Date Reported:	02-11-94
Laboratory Number:	6823	Date Sampled:	02-09-94
Sample Matrix:	Water	Date Received:	02-09-94
Preservative:	HgCl & Cool	Date Analyzed:	02-10-94
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	41.0	0.2
Toluene	37.7	0.4
Ethylbenzene	0.4	0.2
p,m-Xylene	129	0.2
o-Xylene	196	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromofluorobenzene	99 %

Method: Method 5030, 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: GCU 181 C4456

Dawn L. Gerner
Analyst

Morris D. Young
Review

WATER ANALYSIS

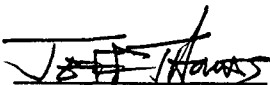
Client: ENVIROTECH
Project: GCU 181
Sample ID: T @ 10A
Laboratory ID: 4732
Sample Matrix: Water
Condition: Cool/Intact

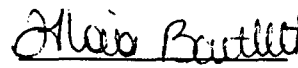
Date Reported: 02/14/94
Date Sampled: 02/09/94
Date Received: 02/09/94
Date Analyzed: 02/09/94

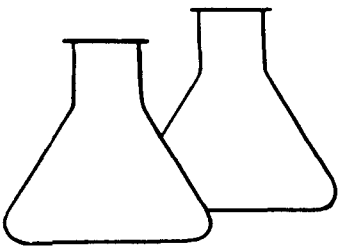
Parameter	Analytical Result	Units
Nitrate Nitrogen	0.08	mg/L
Fecal Coliform Bacteria	0	Colonies/100 mls

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.

Comments:


Reported By:


Reviewed By:



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

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW #25	Date Reported:	02-11-94
Laboratory Number:	6832	Date Sampled:	02-09-94
Sample Matrix:	Water	Date Received:	02-09-94
Preservative:	HgCl and Cool	Date Analyzed:	02-10-94
Condition:	Cool and Intact	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	101 %
	Bromofluorobenzene	103 %

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

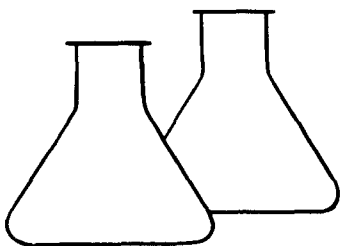
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: GCU 181 C4456

Kevin L. Gienow
Analyst

Mavis D. Young
Review



ENVIROTECH LABS

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW #28	Date Reported:	02-11-94
Laboratory Number:	6824	Date Sampled:	02-09-94
Sample Matrix:	Water	Date Received:	02-09-94
Preservative:	HgCl & Cool	Date Analyzed:	02-10-94
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	0.4	0.2
Toluene	1.8	0.4
Ethylbenzene	ND	0.2
p,m-Xylene	7.0	0.2
o-Xylene	1.8	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromofluorobenzene	95 %

Method: Method 5030, 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: GCU 181 C4456

Dennis L. O'Leary
Analyst

Maris D. Young
Review

WATER ANALYSIS**Client:** ENVIROTECH

Project: GCU 181

Sample ID: MW #28

Laboratory ID: 4733

Sample Matrix: Water

Condition: Cool/Intact

Date Reported: 02/14/94

Date Sampled: 02/09/94

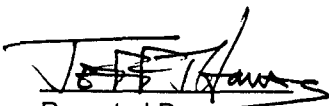
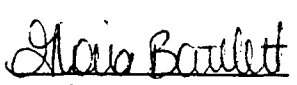
Date Received: 02/09/94

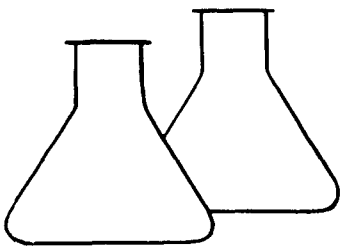
Date Analyzed: 02/09/94

Parameter	Analytical Result	Units
Nitrate Nitrogen	0.07	mg/L
Fecal Coliform Bacteria	0	Colonies/100 mls

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.

Comments:


Reported By:
Reviewed By:



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

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	WP #31A	Date Reported:	02-11-94
Laboratory Number:	6833	Date Sampled:	02-09-94
Sample Matrix:	Water	Date Received:	02-09-94
Preservative:	HgCl and Cool	Date Analyzed:	02-10-94
Condition:	Cool and Intact	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromofluorobenzene	100 %

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

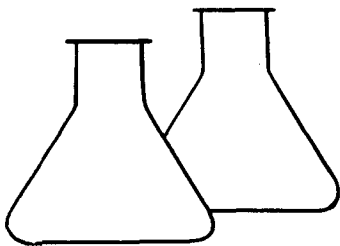
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: GCU 181 C4456

Kevin L. Pearson
Analyst

Morris D. Young
Review



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

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW #32	Date Reported:	02-11-94
Laboratory Number:	6825	Date Sampled:	02-09-94
Sample Matrix:	Water	Date Received:	02-09-94
Preservative:	HgCl & Cool	Date Analyzed:	02-10-94
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	149	0.2
Toluene	13.3	0.4
Ethylbenzene	ND	0.2
p,m-Xylene	401	0.2
o-Xylene	7.2	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromofluorobenzene	99 %

Method: Method 5030, 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: GCU 181 C4456

Shirley L. Cramer
Analyst

Morris D. Young
Review

WATER ANALYSIS**Client:** ENVIROTECH

Project: GCU 181

Sample ID: MW #32

Laboratory ID: 4734

Sample Matrix: Water

Condition: Cool/Intact

Date Reported: 02/14/94

Date Sampled: 02/09/94

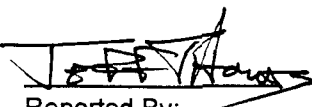
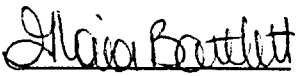
Date Received: 02/09/94

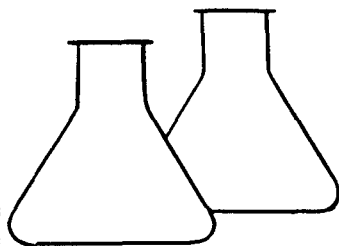
Date Analyzed: 02/09/94

Parameter	Analytical Result	Units
Nitrate Nitrogen	0.04	mg/L
Fecal Coliform Bacteria	0	Colonies/100 mls

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.

Comments: Contained unidentified bacteria colonies.


Reported By:
Reviewed By:



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:	WP #34A	Date Reported:	02-11-94
Laboratory Number:	6826	Date Sampled:	02-09-94
Sample Matrix:	Water	Date Received:	02-09-94
Preservative:	HgCl & Cool	Date Analyzed:	02-10-94
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	21.4	1.0
Toluene	17.2	2.0
Ethylbenzene	1.9	1.0
p,m-Xylene	143	1.0
o-Xylene	ND	1.0

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromofluorobenzene	98 %

Method: Method 5030, 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: GCU 181 C4456

Steven L. Cieniewicz
Analyst

Morris D. Young
Review

WATER ANALYSIS

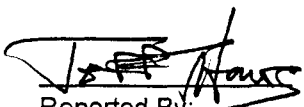
Client: ENVIROTECH
Project: GCU 181
Sample ID: WP #34A
Laboratory ID: 4735
Sample Matrix: Water
Condition: Cool/Intact

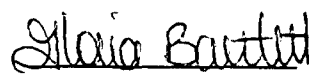
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Date Sampled: 02/09/94
Date Received: 02/09/94
Date Analyzed: 02/09/94

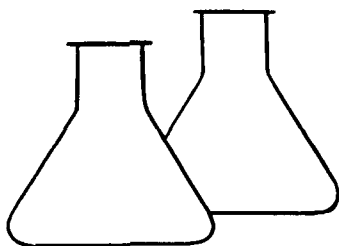
Parameter	Analytical Result	Units
Nitrate Nitrogen	0.22	mg/L
Fecal Coliform Bacteria	0	Colonies/100 mls

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.

Comments: Contained unidentified bacteria colonies.


Reported By:


Reviewed By:



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:	MW #36	Date Reported:	02-11-94
Laboratory Number:	6834	Date Sampled:	02-09-94
Sample Matrix:	Water	Date Received:	02-09-94
Preservative:	HgCl and Cool	Date Analyzed:	02-10-94
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	ND	0.4
Ethylbenzene	0.6	0.2
p,m-Xylene	2.9	0.3
o-Xylene	0.7	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	103 %
	Bromofluorobenzene	101 %

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

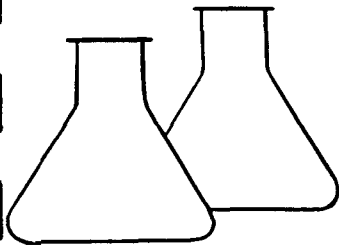
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: GCU 181 C4456

Shirley L. O'Leary
Analyst

Morris D. Young
Review



ENVIROTECH LABS

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	WP #39	Date Reported:	02-11-94
Laboratory Number:	6827	Date Sampled:	02-09-94
Sample Matrix:	Water	Date Received:	02-09-94
Preservative:	HgCl and Cool	Date Analyzed:	02-10-94
Condition:	Cool and Intact	Analysis Requested:	BTEX

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

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: GCU 181 C4456

Kevin L. Jensen
Analyst

Morgan S. Young
Review

WATER ANALYSIS

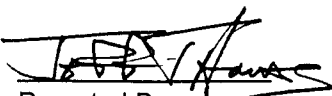
Client: ENVIROTECH
Project: GCU 181
Sample ID: WP #39
Laboratory ID: 4736
Sample Matrix: Water
Condition: Cool/Intact

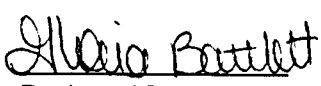
Date Reported: 02/14/94
Date Sampled: 02/09/94
Date Received: 02/09/94
Date Analyzed: 02/09/94

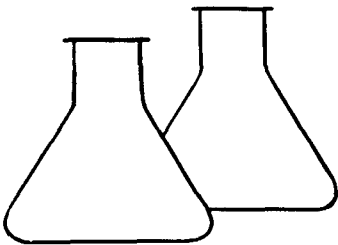
Parameter	Analytical Result	Units
Nitrate Nitrogen	0.05	mg/L
Fecal Coliform Bacteria	0	Colonies/100 mls

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.

Comments:


Reported By:


Reviewed By:



ENVIROTECH LABS

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	WP #40	Date Reported:	02-11-94
Laboratory Number:	6835	Date Sampled:	02-09-94
Sample Matrix:	Water	Date Received:	02-09-94
Preservative:	HgCl and Cool	Date Analyzed:	02-10-94
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	ND	0.4
Ethylbenzene	ND	0.2
p,m-Xylene	3.8	0.3
o-Xylene	ND	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	102 %

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

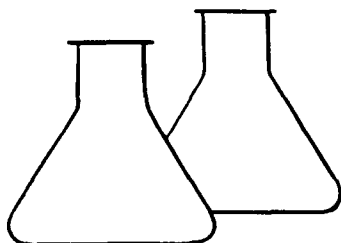
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: GCU 181 C4456

Devin L. Spencer
Analyst

Mavis D. Young
Review



ENVIROTECH LABS

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	WP #41	Date Reported:	02-11-94
Laboratory Number:	6828	Date Sampled:	02-09-94
Sample Matrix:	Water	Date Received:	02-09-94
Preservative:	HgCl and Cool	Date Analyzed:	02-10-94
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	171	1.0
Toluene	7,400	2.0
Ethylbenzene	810	1.0
p,m-Xylene	8,600	1.5
o-Xylene	3,460	1.0

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	102 %
	Bromofluorobenzene	103 %

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: GCU 181 C4456

Dennis L. Aymer
Analyst

Morris D. Young
Review

WATER ANALYSIS**Client:** ENVIROTECH

Project: GCU 181

Sample ID: WP #41

Laboratory ID: 4737

Sample Matrix: Water

Condition: Cool/Intact

Date Reported: 02/14/94

Date Sampled: 02/09/94

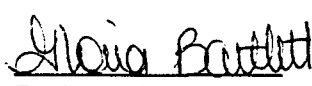
Date Received: 02/09/94

Date Analyzed: 02/09/94

Parameter	Analytical Result	Units
Nitrate Nitrogen	0.88	mg/L
Fecal Coliform Bacteria	0	Colonies/100 mls

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.

Comments: Contained unidentified bacteria colonies.


Reported By:
Reviewed By:

SOIL NUTRIENT ANALYSIS

CLIENT: ENVIROTECH
PROJECT: GCU 181**Location:** WP # 39
Sample Matrix: Soil
Preservative: Cool
Condition: Intact**Date of Report:** 02/15/94
Date Sampled: 02/09/94
Date Received: 02/09/94
Date Analyzed: 02/11/94

Sample ID	Laboratory ID	Nitrogen (mg/kg)
WP # 39 @1'	33031	2.3

REFERENCES

Methods of Soil Analysis, Monograph #9, American Society of Agronomy, 1965.
- Method 84 - 5: Nitrate by Colorimetric Methods

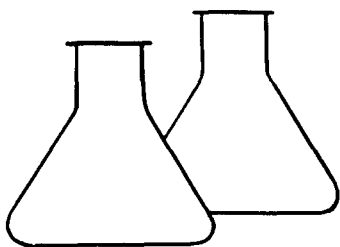
COMMENTS
Reviewed

ENVIROTECH LABORATORIES

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

DOCUMENTATION



ENVIROTECH LABS

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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	02-11-94
Laboratory Number:	0210am.blk	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	02-10-94
Condition:	NA	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	94 %
	Bromofluorobenzene	98 %

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

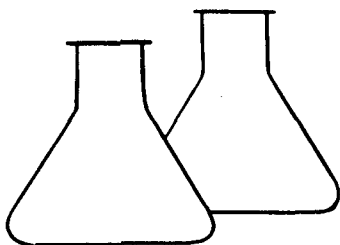
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Devin L. Cleaver
Analyst

Morris D. Young
Review



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EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	02-11-94
Laboratory Number:	0210PM.BLK	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	02-10-94
Condition:	NA	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

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

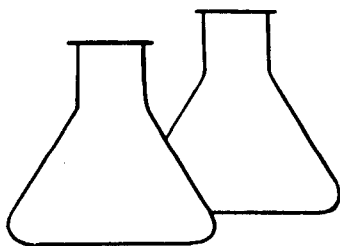
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Kevin L. Cienow
Analyst

Marion S. Young
Review



ENVIROTECH LABS

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

Client:	NA	Project #:	NA
Sample ID:	Sample Spike	Date Reported:	02-11-94
Laboratory Number:	6821-S-BTEX	Date Sampled:	02-08-94
Sample Matrix:	Water	Date Received:	02-09-94
Analysis Requested:	BTEX	Date Analyzed:	02-10-94
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	131	20.0	148	1.0	98	39-150
Toluene	444	20.0	463	2.0	100	46-148
Ethylbenzene	4.5	20.0	24.8	1.0	101	32-160
p,m-Xylene	320	20.0	327	1.0	96	46-148
o-Xylene	964	20.0	981	1.0	100	46-148

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

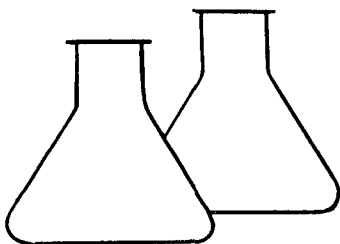
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments:

Kevin L. Clemen
Analyst

Morris D. Young
Review



ENVIROTECH LABS

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

Client: NA
Sample ID: Sample Spike
Laboratory Number: 6827-S-BTEX
Sample Matrix: Water
Analysis Requested: BTEX
Condition: NA

Project #: NA
Date Reported: 02-11-94
Date Sampled: 02-09-94
Date Received: 02-09-94
Date Analyzed: 02-10-94

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	ND	20.0	18.8	0.2	94	39-150
Toluene	ND	20.0	20.0	0.4	99	46-148
Ethylbenzene	ND	20.0	19.6	0.2	98	32-160
p,m-Xylene	ND	20.0	20.3	0.3	101	46-148
o-Xylene	0.2	20.0	19.8	0.2	98	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:

Kevin L. Jensen
Analyst

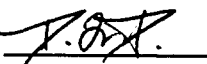
Mavis D. Young
Review

SOIL ANALYSIS**QUALITY CONTROL REPORT / DUPLICATE ANALYSIS****CLIENT: ENVIROTECH****PROJECT: GCU 181****Location:** WP # 39**Sample Matrix:** Soil**Preservative:** Cool**Condition:** Intact**Date of Report:** 02/15/94**Date Sampled:** 02/09/94**Date Received:** 02/09/94**Date Analyzed:** 02/11/94

Sample ID	Laboratory ID	Nitrogen (mg/kg)
WP #39 @ 1'	33031	2.3
WP #39 @ 1'	33031D	2.3
Relative Percent Difference		0%

REFERENCES

Methods of Soil Analysis, Monograph #9, American Society of Agronomy, 1965.
- Method 84 - 5: Nitrate by Colorimetric Methods

COMMENTS
Reviewed

CHAIN OF CUSTODY RECORD

Client/Project Name		Project Location		ANALYSIS/PARAMETERS							Remarks		
Amoco # 92140		GCC 181									C4456		
Sampler: (Signature) R. E. O'Neil				Chain of Custody Tape No.									
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	REF	FEEL	WATER	NO. AS N				
T @ 10A	2-9-94	1040	6823	WATER	4	✓	✓		✓			RUSH	
MW # 28	2-9-94	1135	6824	"	4	✓	✓		✓			"	
MW # 32	2-9-94	1110	6825	"	4	✓	✓		✓			"	
WP # 34A	2-9-94	1230	6826	"	4	✓	✓		✓			"	
WP # 39	2-9-94	1340	6827	"	4	✓	✓		✓			"	
WP # 41	2-9-94	1300	6828	"	4	✓	✓		✓			"	
WP # 39 @ 1'	2-9-94	1345	6829	SOL	1				✓			"	
Relinquished by: (Signature) R. E. O'Neil				Date	Time	Received by: (Signature) Dennis J. Caputo		Date		Time			
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

CHAIN OF CUSTODY RECORD

Client/Project Name		Project Location		ANALYSIS/PARAMETERS										Remarks	
AMOCO # 92140		6C4 181												C4456	
Sampler: (Signature) R. E. Oñed				Chain of Custody Tape No.											
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	REF									
MW # 5	2-9-94	0955	6830	WATER	2	✓									RUSH
MW # 7	2-9-94	0925	6831	"	2	✓									"
MW # 25	2-9-94	1200	6832	"	2	✓									"
WP # 31A	2-9-94	1445	6833	"	2	✓									"
MW # 36	2-9-94	1020	6834	"	2	✓									"
WP # 40	2-9-94	1420	6835	"	2	✓									"
Relinquished by: (Signature) R. E. Oñed				Date	2-9-94	Time	1547	Received by: (Signature) Dennis L. Capen				Date	2-9-94	Time	1547
Relinquished by: (Signature)								Received by: (Signature)							
Relinquished by: (Signature)								Received by: (Signature)							

ENVIROTECH INC.

5796 U.S. Highway 64-3014

Farmington, New Mexico 87401

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