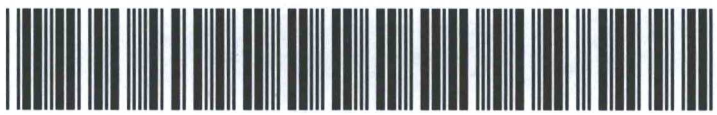
AE Order Number Banner

Report Description

This report shows an AE Order Number in Barcode format for purposes of scanning. The Barcode format is Code 39.



App Number: pENV000003RP48

3RP - 48

BP AMERICA PRODUCTION COMPANY

2/8/2017

INITIAL MONITORING REPORT
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1 - TANK BATTERY
PRODUCTION TANK PIT AREA
SE/4, SE/4 (P) 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/C4028

JULY 1993

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

(505) 632-0615

JULY 1993 PROJECT/PIT NO: 92140/C4012

INITIAL MONITORING REPORT
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1 - TANK BATTERY
PRODUCTION TANK PIT AREA
SE/4, SE/4 (P) 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 proposed Remedial Action Plan (RAP) to abate 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 Southeast 1/4 of Section 21, Township 29N, Range 13W, NMPM, San Juan County, New Mexico (refer to Vicinity Map - Appendix A). Monthly monitoring of the remediation system has been required by the New Mexico Oil Conservation Division (NMOCD) for the initial three months of the system operation.

This is the initial monitoring report (IMR) that Envirotech, Inc. has produced for this site. The monthly sampling event was not initiated until approval of the RAP, prepared by Envirotech, was given by the New Mexico Oil Conservation Division. A copy of the letter providing this approval, dated June 28, 1993 located in Appendix A.

Included in the IMR are groundwater and treatment system analyses and an outline of the sampling schedule for the remaining 1993 calendar year (located within the Purpose and Scope of Work section on the following page).

PURPOSE AND SCOPE OF WORK

The purpose and scope of this initial monthly monitoring is to collect groundwater samples for benzene, toluene, ethylbenzene, and xylenes (BTEX), Polynuclear Aromatic Hydrocarbons (PAH), heavy metals, and major cations and anions analyses using appropriate EPA laboratory methods.

In addition, measurements of all standard field parameters (i.e. static water level, free product thickness, pH, specific conductivity, and water temperature) will be collected as required by the NMOCD's RAP approval letter.

The scope of work consisted of the following:

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

B. Documentation of analytical results from the sampling event.

C. The 1993 calendar year sampling schedule is as follows:

SAMPLING SCHEDULE

	JUL 6, 93	AUG 6, 93	SEP 6, 93	OCT-DEC, 93
MW - 1	X			X
MW - 2	X			
MW - 3	X			X
MW - 4	X			
MW - 5	X			X
MW - 6	X			
MW - 7	X			X
EFFLUENT	X	X	X	X

ANALYTICAL RESULTS

For this initial monthly monitoring, all of the monitor wells were purged by bailing until a minimum of three (3) well volumes had been removed. After purging, BTEX groundwater samples were collected in laboratory supplied new 40 ml VOA vials and preserved with 5% $HgCl_2$; Polynuclear Aromatic Hydrocarbons (PAH) in a new 1 liter amber coated glass container with teflon closure, heavy metals in a 250 ml plastic container, and the major cations and anions in a 1 liter plastic container. The groundwater samples were placed on ice and transported to Envirotech's laboratory later that day. Sampling was preformed in accordance with USEPA SW-846 protocol.

The field and laboratory results are summarized as follows:

1. Table 1 summarizes the field sampling and groundwater conditions for this initial monthly report.

2. Table 2 & 3 summarizes the laboratory analyses for the effluent and monitor wells.

3. Table 4 summarizes the Clean-up Standards for groundwater for the State of New Mexico.

Groundwater elevations were measured on July 6, 1993. The static water levels of the monitor wells were measured with a Solinst Interface Meter, Model 121. Depths are from the top of the well casing to water level.

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

TABLE 1

SUMMARY OF SAMPLING & GROUNDWATER CONDITIONS
AMOCO PRODUCTION COMPANY
SAN JUAN GRAVEL A-1 - TANK BATTERY
PRODUCTION TANK PIT AREA

SAMPLING DATE: JULY 6, 1993

SAMPLING POINT	TOTAL DEPTH (ft.)	STATIC WATER LEVEL (ft.)	GROUND-WATER ELEV. (FT.)	WELL BORE VOLUME (gals)	WATER CONDITIONS			COMMENTS
					TEMP. (°C)	CONDUCT (µS)	pH	
MW-1	11.5	9.12	92.65	0.45	20.6	1200	7.03	murky, no odor
MW-2	12.8	8.06	91.46	0.79	21.1	900	7.01	murky, no odor
MW-3	13.0	8.27	91.35	0.67	20.6	900	7.05	murky, no odor
MW-4	14.0	8.62	91.93	0.90	18.9	900	7.02	black color, strong odor
MW-5	12.0	5.48	92.26	1.19	20.6	900	7.10	black color, strong odor
MW-6	9.4	6.30	91.82	0.34	20.6	1100	7.01	light gray color, strong odor
MW-7	15.3	7.76	93.56	1.26	18.9	600	6.98	murky, no odor
Effluent	NA	NA	NA	NA	20.0	900	7.02	clear, no odor

NOTE: NA - Indicates measurement not applicable.

TABLE 2

RESULTS OF THE AIR STRIPPER EFFLUENT LABORATORY ANALYSIS
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1 - TANK BATTERY
PRODUCTION TANK PIT AREA

BTEX and PAH (µg/L)

SAMPLING POINT	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Zylenes (µg/L)	PAH (µg/L)
Effluent	1.1	ND	0.7	1.4	ND

HEAVY METALS (mg/L)

SAMPLING POINT	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)	Mercury (mg/L)	Selenium (mg/L)
Effluent	ND	0.11	0.0013	0.0043	0.0035	0.0149	0.0109

NOTE: **NA - No data available.**
ND - Non detectable at the stated detection limit (see laboratory analyses).
µg/L = parts per billion.
mg/L = parts per million.

TABLE 2
(PART 2 OF 2)

LABORATORY ANALYSES		LABORATORY ANALYSES		
			mg/L	meq/L
Lab pH	7.60	Bicarbonate as HCO3	571	9.36
Lab Conductivity, µmhos/cm @ 25°C	1980	Carbonate as CO3	0	0
		Chloride	100	2.81
Total Dissolved Solids (180°C), mg/L	1470	Sulfate	567	11.81
Total Dissolved Solids (calc), mg/L	1400	Calcium	191	9.51
Total Alkalinity as CaCO3, mg/L	468	Magnesium	72	5.94
Total Hardness as CaCO3, mg/L	772	Potassium	4.1	0.11
NOTE: NA - NO DATA AVAILABLE. µmhos/cm = micro mhos per centimeter mg/L = parts per million meq/L = milliequivalent per liter		Sodium	188	8.18
		Hydroxide as OH	0	0
		Major Cations	NA	23.73
		Major Anions	NA	23.99
		Cation/Anion Differ.	NA	.54%

NOTE: NA - Indicates measurements not applicable.

TABLE 3

RESULTS OF THE MONITOR WELLS LABORATORY ANALYSIS
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1 - TANK BATTERY
PRODUCTION TANK PIT AREA
(Part 1 of 3)

LABORATORY ANALYSES	MW - 1	MW - 2	MW - 3	MW - 4	MW - 5	MW - 6	MW - 7
Benzene, (µg/L)	ND	2.4	ND	37.3	229	ND	ND
Toluene, (µg/L)	ND	ND	ND	1.6	2.6	ND	ND
Ethylbenzene, (µg/L)	ND	ND	ND	2.2	3.3	ND	ND
Total Xylenes, (µg/L)	ND	2.0	ND	6.2	3.9	ND	ND
PAH, (µg/L)	ND	ND	ND	ND	ND	ND	ND
Arsenic, (mg/L)	0.0108	ND	0.0083	0.0336	ND	0.0047	ND
Barium, (mg/L)	0.39	ND	ND	0.75	0.65	ND	ND
Cadmium, (mg/L)	0.0007	0.0015	0.0010	ND	0.0023	0.0009	0.0016
Chromium, (mg/L)	0.0062	0.0070	0.0043	0.0059	0.0051	0.0058	0.0039
Lead, (mg/L)	0.0018	0.0029	0.0026	0.0028	0.0001	0.0031	0.0072
Mercury, (mg/L)	0.0036	0.0074	0.0099	0.0057	0.0032	0.0050	0.0113
Selenium, (mg/L)	ND	0.0242	ND	0.0314	ND	ND	ND

NOTE: **ND - Non detectable at the stated detection limit (see laboratory analyses)**
µg/L = parts per billion.
mg/L = parts per million.

TABLE 3
RESULTS OF THE MONITOR WELLS LABORATORY ANALYSIS
CONTINUED
(PART 2 OF 3)

LABORATORY ANALYSES	MW - 1	MW - 2	MW - 3	MW - 4	MW - 5	MW - 6	MW - 7
Lab pH	7.10	7.40	7.30	6.90	7.30	7.20	7.20
Lab Conductivity, μmhos/cm @ 25°C	2440	2230	2130	2780	2730	3470	1690
Total Dissolved Solids (180°C), mg/L	1770	1710	1600	2230	1920	3000	1290
Total Dissolved Solids (calc), mg/L	1750	1610	1580	2050	1970	2870	1180
Total Alkalinity as $CaCO_3$, mg/L	573	681	648	919	1010	432	430
Total Hardness as $CaCO_3$, mg/L	900	938	907	1420	1170	1510	720

NOTE: **μmhos/cm = micro mhos per centimeter.**
mg/L = parts per million.

TABLE 3
RESULTS OF THE MONITOR WELLS LABORATORY ANALYSIS
CONTINUED
(PART 3 OF 3)

LABORATORY ANALYSES	MW - 1		MW - 2		MW - 3		MW - 4		MW - 5		MW - 6		MW - 7	
	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Bicarbonate as HCO_3	699	11.46	831	13.62	791	12.96	1120	18.38	1230	20.15	527	8.64	525	8.60
Carbonate as CO_3	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Chloride	107	3.03	116	3.26	95	2.69	85	2.41	132	3.71	173	4.87	77	2.17
Sulfate	760	15.83	556	11.59	596	12.41	770	16.03	549	11.44	1550	32.23	467	9.72
Calcium	264	13.18	252	12.57	267	13.33	436	21.75	311	15.51	454	22.65	214	10.67
Magnesium	58	4.81	75	6.19	58	4.81	81	6.63	97	7.95	93	7.65	45	3.72
Potassium	2.7	0.07	3.8	0.10	3.6	0.09	6.1	0.16	4.2	0.11	4.6	0.12	3.1	0.08
Sodium	214	9.31	198	8.61	167	7.26	123	5.35	269	11.70	343	14.92	121	5.26
Hydroxide as OH	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Major Cations	NA	27.37	NA	27.47	NA	25.50	NA	33.88	NA	35.27	NA	45.34	NA	19.73
Major Anions	NA	30.31	NA	28.47	NA	28.06	NA	36.82	NA	35.29	NA	45.74	NA	20.49
Cation/Anion Difference	NA	5.11%*	NA	1.79%	NA	4.78%*	NA	4.16%*	NA	0.03%	NA	0.44%	NA	1.89%

NOTE: NA - Indicates measurements not applicable.
mg/L = parts per million.
meq/L = milliequivalent per liter.
*** - Analyses rerun without significant change to Cation/Anion Balance.**

Clean Up Standards:

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 4.

TABLE 4

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

Parameter	Max. Allowable Limits Groundwater
	(µg/L)
Benzene	10
Toluene	750
Ethylbenzene	750
Total Xylene	620
Polynuclear aromatic Hydrocarbons	(µg/L)
Total Naphthalene	30
Benzo(a)pyrene	0.7
Heavy Metals	(mg/L)
Arsenic	0.1
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Total Mercury	0.002
Selenium	0.05
Additional Information	(mg/L)
Protected Groundwater Total Dissolved Solids	<10000

Notes: 1) **µg/L – equivalent to parts per billion.**
mg/L – equivalent to parts per million.

DISCUSSION

Groundwater Flow Direction

Based upon groundwater elevation measurements taken on July 6, 1993, the groundwater flow direction appears to be towards the west-southwest (refer to Site Diagram - Appendix A). Measurements taken on March 3, 1993 indicated similar results, therefore it may be deduced that the groundwater flow direction has remained relatively stable during this time period. It should be noted that the water level has dropped approximately one half of a foot since the March 3rd sampling event.

Laboratory Analyses

The laboratory analyses conducted indicate that monitor wells #4 and #5 have Benzene levels exceeding regulatory standards. Also, the Air Stripper Effluent and all monitor wells were found to exceed regulatory standards for total Mercury. Since the up-gradient monitor well (MW-7) contains a high level of Mercury, it appears that this is a naturally occurring background in the aquifer and unrelated to this spill incident.

In addition, the Total Dissolved Solids analysis for the Air Stripper Effluent and all monitor wells indicate that the groundwater contains less than 10,000 ppm. Therefore, based on NMWQCC Regulations, Part 3-101-A, these waters are to be protected for present and potential future domestic and/or agriculture use.

System Effectiveness

Due to the initiation of the remediation system, all data presented is insufficient to draw any conclusive evidence concerning system effectiveness. However, the Air Stripper Effluent can be regarded as effectively treating injected water from the recovery wells on the site to drinking water standards for hydrocarbon contamination.

LIMITATIONS AND CLOSURE

The scope of Envirotech's services was limited to sampling of the designated monitor wells, the air stripper effluent, and measurements of the standard field parameters in those wells. All work has been performed in accordance with generally accepted professional practices in geotechnical/ environmental engineering and hydrogeology.

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

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

Respectfully Submitted,
ENVIROTECH, INC.

Nelson Velez
Geologist

Reviewed By:

Michael K. Lane, P.E.
Geological Engineer

Appendices

NV/nv

SJG2QM93.RPT

LEGEND

RECOVERY WELL

MONITOR WELL

WELL HEAD

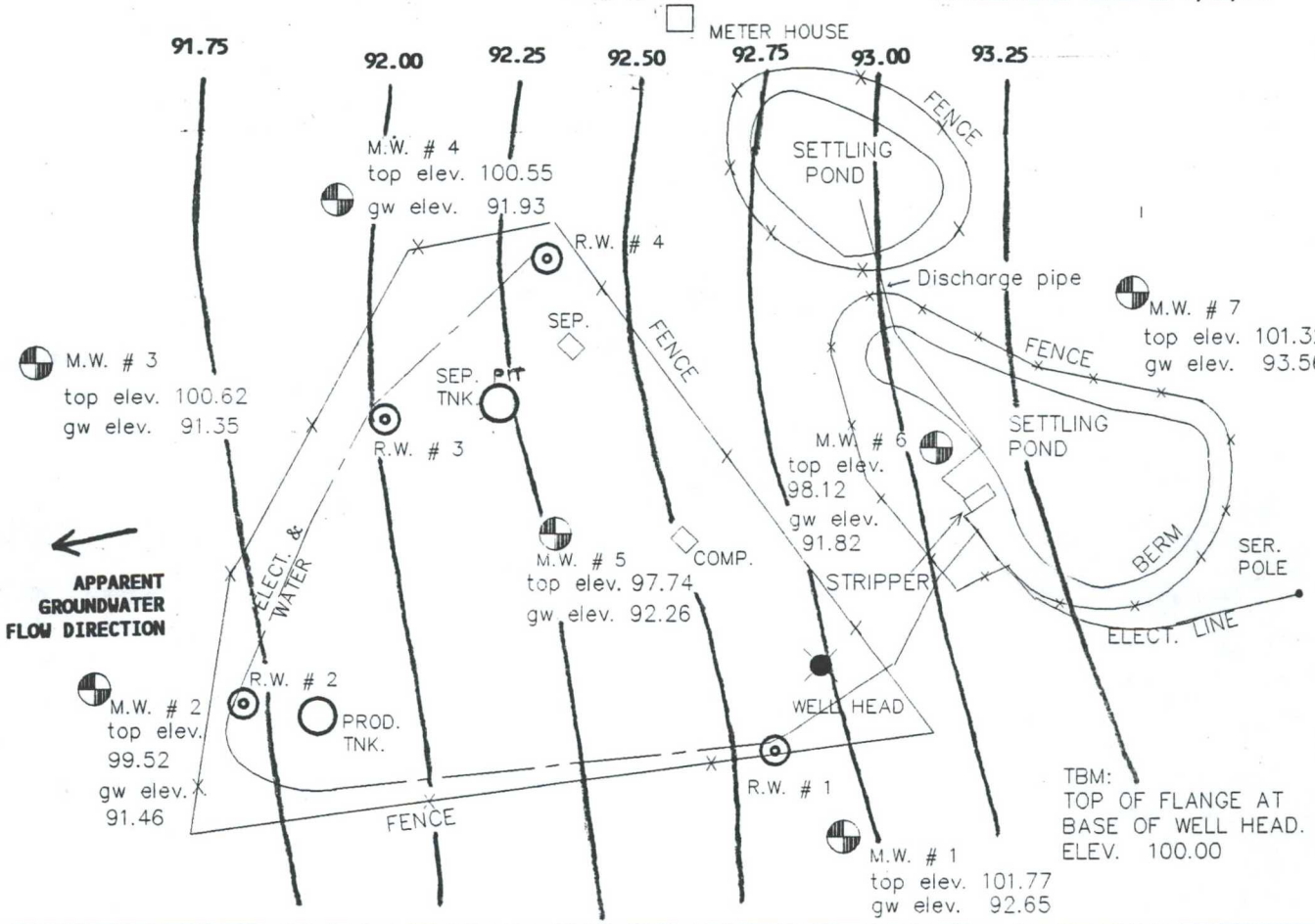
SCALE
IN FEET

10 0 50 100

N

GROUNDWATER CONTOUR ELEVATIONS (FT.)

(measurments taken on 7/06/93)



SITE DIAGRAM
AMOCO PRODUCTION CO
SAN JUAN GRAVEL A1
TANK BATTERY

PROJECT No. 92140/C4028

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

ENGINEERED BY: DEF
EDITED BY: NV
DATE SURVEYED: 2/24/93
DATE DRAWN: 7/30/93
SHEET: # 1

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

June 23, 1993

CERTIFIED MAIL
RETURN RECEIPT NO. P-667-242-347

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

RE: GROUND WATER REMEDIATION PLAN
SAN JUAN GRAVEL A#1 LEASE SITE
FARMINGTON, NEW MEXICO

Dear Mr. Shaw:

The New Mexico Oil Conservation Division (OCD) has completed a review of the April 1993 " PROPOSED REMEDIAL ACTION PLAN, AMOCO PRODUCTION COMPANY, SAN JUAN GRAVEL TANK BATTERY A#1 PRODUCTION TANK PIT AREA, FARMINGTON, SAN JUAN COUNTY, NEW MEXICO" which was submitted by Envirotech, Inc. on behalf of Amoco. The plan details Amoco's proposal for remediating petroleum contaminated ground water at Amoco's San Juan Gravel A#1 lease site.

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

1. The effluent from the air stripper will be sampled on a monthly basis during the first quarter of operation. Thereafter, the air stripper effluent will be analyzed on a quarterly basis. Please be aware that OCD may require analysis for additional constituents if there are contaminants observed during the initial ground water sampling that are not proposed to be monitored.

2. Ground water from all of the monitor wells sampled during the "initial water analysis" will be analyzed for volatile aromatic hydrocarbons, polynuclear aromatic hydrocarbons, heavy metals and major cations and anions using appropriate EPA laboratory methods. Amoco will submit the analytic results of the "initial water analysis" to OCD **by August 6, 1993**. The OCD will determine if the extent of ground water contamination has been adequately defined based upon these results.

   (Note: The OCD does not require water samples to be analyzed for concentrations of total petroleum hydrocarbons.)

3. All ground water sampling events will include measurement of all standard field parameters such as the water table elevation, free product thickness, pH and specific conductivity.

4. Quarterly reports will be submitted to OCD **by February 1, May 1, August 1 and November 1** for the previous quarter.

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#1 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

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:	Effluent	Date Reported:	07-12-93
Laboratory Number:	5584	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	HgCl and Cool	Date Analyzed:	07-07-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	1.1	0.3
Toluene	ND	0.5
Ethylbenzene	0.7	0.3
p,m-Xylene	1.0	0.4
o-Xylene	0.4	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	97 %
Bromofluorobenzene	95 %

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: SJ GVL A 1 Production Pit C4028

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 # 1	Date Reported:	07-12-93
Laboratory Number:	5585	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	HgCl and Cool	Date Analyzed:	07-07-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	98 %
Bromofluorobenzene	95 %

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: SJ GVL A 1 Production Pit C4028

Analyst

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 # 2	Date Reported:	07-12-93
Laboratory Number:	5586	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	HgCl and Cool	Date Analyzed:	07-07-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	2.4	0.3
Toluene	ND	0.5
Ethylbenzene	ND	0.3
p,m-Xylene	1.2	0.4
o-Xylene	0.8	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	96 %
Bromofluorobenzene	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: SJ GVL A 1 Production Pit C4028

Analyst

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 # 3	Date Reported:	07-12-93
Laboratory Number:	5587	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	HgCl and Cool	Date Analyzed:	07-07-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	96 %
Bromofluorobenzene	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: SJ GVL A 1 Production Pit C4028

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 4	Date Reported:	07-12-93
Laboratory Number:	5588	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	HgCl and Cool	Date Analyzed:	07-07-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	37.3	0.6
Toluene	1.6	1.0
Ethylbenzene	2.2	0.6
p,m-Xylene	6.2	0.8
o-Xylene	ND	0.6

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	96 %
Bromofluorobenzene	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: SJ GVL A 1 Production Pit C4028

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 # 5	Date Reported:	07-12-93
Laboratory Number:	5589	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	HgCl and Cool	Date Analyzed:	07-07-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	229	0.3
Toluene	2.6	0.5
Ethylbenzene	3.3	0.3
p,m-Xylene	3.2	0.4
o-Xylene	0.7	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	98 %
Bromofluorobenzene	97 %

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: SJ GVL A 1 Production Pit C4028

Analyst

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 6	Date Reported:	07-12-93
Laboratory Number:	5590	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	HgCl and Cool	Date Analyzed:	07-08-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	106 %
Bromofluorobenzene	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: SJ GVL A 1 Production Pit C4028

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 7	Date Reported:	07-12-93
Laboratory Number:	5591	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	HgCl and Cool	Date Analyzed:	07-08-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	102 %
Bromofluorobenzene	107 %

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: SJ GVL A 1 Production Pit C4028

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	07-12-93
Laboratory Number:	0707PM.BLK	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	07-07-93
Condition:	NA	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	96 %
Bromofluorobenzene	89 %

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:	07-12-93
Laboratory Number:	0708AM.BLK	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	07-08-93
Condition:	NA	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	91 %
Bromofluorobenzene	94 %

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

Client:	NA	Project #:	NA
Sample ID:	Sample Spike	Date Reported:	07-12-93
Laboratory Number:	5589-S-BTEX.	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Analysis Requested:	BTEX	Date Analyzed:	07-07-93
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	228.9	20.0	232.5	0.3	93	39-150
Toluene	2.6	20.0	19.6	0.5	87	46-148
Ethylbenzene	3.3	20.0	18.9	0.3	81	32-160
p,m-Xylene	3.2	20.0	20.2	0.4	87	46-148
o-Xylene	0.7	20.0	21.7	0.3	105	46-148

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

Client:	NA	Project #:	NA
Sample ID:	Sample Spike	Date Reported:	07-12-93
Laboratory Number:	5622-S-BTEX.	Date Sampled:	07-07-93
Sample Matrix:	Water	Date Received:	07-07-93
Analysis Requested:	BTEX	Date Analyzed:	07-08-93
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	0.7	20.0	20.2	0.3	97	39-150
Toluene	ND	20.0	19.7	0.4	98	46-148
Ethylbenzene	ND	20.0	19.8	0.3	98	32-160
p,m-Xylene	ND	20.0	19.8	0.4	97	46-148
o-Xylene	0.4	20.0	18.3	0.3	90	46-148

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

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CHAIN OF CUSTODY RECORD

C4028

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
AMOCO 92140	PROD. PIT SJ GVL A1	
Sampler: (Signature) Kelson Villey	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8020)						Remarks
EFFLUENT	7/6/93	1323	5584	WATER	2	✓						
MW #1	7/6/93	1140	5585	WATER	2	✓						
MW # 2	7/6/93	1206	5586	WATER	2	✓						
MW #3	7/6/93	1211	5587	WATER	2	✓						
MW #4	7/6/93	1230	5588	WATER	2	✓						
MW #5	7/6/93	1310	5589	WATER	2	✓						
MW #6	7/6/93	1251	5590	WATER	2	✓						
MW #7	7/6/93	1237	5591	WATER	2	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Kelson Villey	7/6/93	1431	Denise L. Ogletree	7-6-93	1431
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	Effluent	Date Reported:	07-13-93
Laboratory Number:	5615	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-12-93
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	0.2
Phenanthrene	ND	0.2
Anthracene	ND	0.2
Fluoranthene	ND	0.2
Pyrene	ND	0.2
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	0.2

SURROGATE RECOVERY	Parameter	Percent Recovery
	1-fluoronapthalene	102 %

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: SJ GVL A1 C4028

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EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 1	Date Reported:	07-13-93
Laboratory Number:	5608	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-12-93
Condition:	Cool & Intact	Analysis Requested:	8100

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Naphthalene	ND	0.20
Acenaphthylene	ND	0.20
Acenaphthene	ND	0.20
Fluorene	ND	0.20
Phenanthrene	ND	0.20
Anthracene	ND	0.20
Fluoranthene	ND	0.20
Pyrene	ND	0.20
Benzo(a)anthracene	ND	0.20
Chrysene	ND	0.20
Benzo(b) & Benzo(k) fluoranthene	ND	0.20
Benzo(a)pyrene	ND	0.20
Indeno(1,2,3-cd) pyrene & Dibenzo(a,h)anthracene	ND	0.20
Benzo(g,h,i)perylene	ND	0.20

SURROGATE RECOVERY	Parameter	Percent Recovery
	1-fluoronapthalene	98 %

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: SJ GVL A 1 C4028

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EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 2	Date Reported:	07-13-93
Laboratory Number:	5609	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-12-93
Condition:	Cool & Intact	Analysis Requested:	8100

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Naphthalene	ND	0.20
Acenaphthylene	ND	0.20
Acenaphthene	ND	0.20
Fluorene	ND	0.20
Phenanthrene	ND	0.20
Anthracene	ND	0.20
Fluoranthene	ND	0.20
Pyrene	ND	0.20
Benzo(a)anthracene	ND	0.20
Chrysene	ND	0.20
Benzo(b) & Benzo(k) fluoranthene	ND	0.20
Benzo(a)pyrene	ND	0.20
Indeno(1,2,3-cd) pyrene & Dibenzo(a,h)anthracene	ND	0.20
Benzo(g,h,i)perylene	ND	0.20

SURROGATE RECOVERY	Parameter	Percent Recovery
	1-fluoronapthalene	100 %

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: SJ GVL A 1 C4028

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EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 3	Date Reported:	07-13-93
Laboratory Number:	5610	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-12-93
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	0.2
Phenanthrene	ND	0.2
Anthracene	ND	0.2
Fluoranthene	ND	0.2
Pyrene	ND	0.2
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	0.2

SURROGATE RECOVERY	Parameter	Percent Recovery
	1-fluoronapthalene	92 %

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: SJ GVL A 1 C4028

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EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 4	Date Reported:	07-13-93
Laboratory Number:	5611	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-12-93
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	0.2
Phenanthrene	ND	0.2
Anthracene	ND	0.2
Fluoranthene	ND	0.2
Pyrene	ND	0.2
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	0.2

SURROGATE RECOVERY	Parameter	Percent Recovery
	1-fluoronapthalene	97 %

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: SJ GVL A1 C4028

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EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 5	Date Reported:	07-13-93
Laboratory Number:	5612	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-12-93
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	0.2
Phenanthrene	ND	0.2
Anthracene	ND	0.2
Fluoranthene	ND	0.2
Pyrene	ND	0.2
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	0.2

SURROGATE RECOVERY	Parameter	Percent Recovery
	1-fluoronapthalene	86 %

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: SJ GVL A1 C4028

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EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 6	Date Reported:	07-13-93
Laboratory Number:	5613	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-12-93
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	0.2
Phenanthrene	ND	0.2
Anthracene	ND	0.2
Fluoranthene	ND	0.2
Pyrene	ND	0.2
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	0.2

SURROGATE RECOVERY	Parameter	Percent Recovery
	1-fluoronapthalene	84 %

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: SJ GVL A1 C4028

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EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 7	Date Reported:	07-13-93
Laboratory Number:	5614	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-12-93
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	0.2
Phenanthrene	ND	0.2
Anthracene	ND	0.2
Fluoranthene	ND	0.2
Pyrene	ND	0.2
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	0.2

SURROGATE RECOVERY	Parameter	Percent Recovery
	1-fluoronapthalene	85 %

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: SJ GVL A1 C4028

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ENVIROTECH LABS

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EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	07-13-93
Laboratory Number:	0712pah.blk	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	07-12-93
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	0.2
Phenanthrene	ND	0.2
Anthracene	ND	0.2
Fluoranthene	ND	0.2
Pyrene	ND	0.2
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	0.2

SURROGATE RECOVERY:

Parameter	Percent Recovery
1-fluoronapthalene	107 %

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:

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EPA METHOD 8100
POLYNUCLEAR AROMATIC HYDROCARBONS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	07-13-93
Laboratory Number:	0712BPAH.BLK	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	07-12-93
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	0.2
Phenanthrene	ND	0.2
Anthracene	ND	0.2
Fluoranthene	ND	0.2
Pyrene	ND	0.2
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	0.2

SURROGATE RECOVERY	Parameter	Percent Recovery
	1-fluoronapthalene	92 %

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

2774

CHAIN OF CUSTODY RECORD

C4028

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
Amoco 92140	SJ GUL A1	
Sampler: (Signature) Nelson Velez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	PAH (8100)						Remarks
MW #1	7/6/93	1148	5608	WATER	1	✓						
MW #2	7/6/93	1205	5609	WATER	1	✓						
MW #3	7/6/93	1210	5610	WATER	1	✓						
MW #4	7/6/93	1228	5611	WATER	1	✓						
MW #5	7/6/93	1305	5612	WATER	1	✓						
MW #6	7/6/93	1254	5613	WATER	1	✓						
MW #7	7/6/93	1230	5614	WATER	2	✓						
EFFLUENT	7/6/93	1320	5615	WATER	1	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	7/6/93	1446	Denise L. Gilmore	7-6-93	1446
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

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Farmington, New Mexico 87401

Client:	ENVIROTECH		
Sample ID:	Effluent (5607)	Date Reported:	07/28/93
Laboratory ID:	3154	Date Sampled:	07/06/93
Sample Matrix:	Water	Time Sampled:	1336
Condition:	Cool/Intact	Date Received:	07/09/93

Parameter	Analytical Result	Units		Units
Lab pH	7.6	s.u.		
Lab Conductivity @ 25° C	1,980	umhos/cm		
Total Dissolved Solids @ 180°C	1,470	mg/L		
Total Dissolved Solids (Calc)	1,400	mg/L		
Total Alkalinity as CaCO3	468	mg/L		
Total Hardness as CaCO3	772	mg/L		
Bicarbonate as HCO3	571	mg/L	9.36	meq/L
Carbonate as CO3	0	mg/L	0.00	meq/L
Hydroxide as OH	0	mg/L	0.00	meq/L
Chloride	100	mg/L	2.81	meq/L
Sulfate	567	mg/L	11.81	meq/L
Calcium	191	mg/L	9.51	meq/L
Magnesium	72	mg/L	5.94	meq/L
Potassium	4.1	mg/L	0.11	meq/L
Sodium	188	mg/L	8.18	meq/L
Cations			23.73	meq/L
Anions			23.99	meq/L
Cation/Anion Difference			0.54	%

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 

Inter·Mountain Laboratories, Inc.

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Client:	ENVIROTECH		
Sample ID:	MW #1 (5600)	Date Reported:	07/28/93
Laboratory ID:	3147	Date Sampled:	07/06/93
Sample Matrix:	Water	Time Sampled:	1135
Condition:	Cool/Intact	Date Received:	07/09/93

Parameter	Analytical Result	Units		Units
Lab pH	7.1	s.u.		
Lab Conductivity @ 25° C	2,440	umhos/cm		
Total Dissolved Solids @ 180°C	1,770	mg/L		
Total Dissolved Solids (Calc)	1,750	mg/L		
Total Alkalinity as CaCO3	573	mg/L		
Total Hardness as CaCO3	900	mg/L		
Bicarbonate as HCO3	699	mg/L	11.46	meq/L
Carbonate as CO3	0	mg/L	0.00	meq/L
Hydroxide as OH	0	mg/L	0.00	meq/L
Chloride	107	mg/L	3.03	meq/L
Sulfate	760	mg/L	15.83	meq/L
Calcium	264	mg/L	13.18	meq/L
Magnesium	58	mg/L	4.81	meq/L
Potassium	2.7	mg/L	0.07	meq/L
Sodium	214	mg/L	9.31	meq/L
Cations			27.37	meq/L
Anions			30.31	meq/L
Cation/Anion Difference			5.11*	%

*Analyses rerun without significant change to Cation/Anion Balance

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.

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Client:	ENVIROTECH		
Sample ID:	MW #2 (5601)	Date Reported:	07/28/93
Laboratory ID:	3148	Date Sampled:	07/06/93
Sample Matrix:	Water	Time Sampled:	1255
Condition:	Cool/Intact	Date Received:	07/09/93

Parameter	Analytical Result	Units		Units
Lab pH	7.4	s.u.		
Lab Conductivity @ 25° C	2,230	umhos/cm		
Total Dissolved Solids @ 180°C	1,710	mg/L		
Total Dissolved Solids (Calc)	1,610	mg/L		
Total Alkalinity as CaCO3	681	mg/L		
Total Hardness as CaCO3	938	mg/L		
Bicarbonate as HCO3	831	mg/L	13.62	meq/L
Carbonate as CO3	0	mg/L	0.00	meq/L
Hydroxide as OH	0	mg/L	0.00	meq/L
Chloride	116	mg/L	3.26	meq/L
Sulfate	556	mg/L	11.59	meq/L
Calcium	252	mg/L	12.57	meq/L
Magnesium	75	mg/L	6.19	meq/L
Potassium	3.8	mg/L	0.10	meq/L
Sodium	198	mg/L	8.61	meq/L
Cations			27.47	meq/L
Anions			28.47	meq/L
Cation/Anion Difference			1.79	%

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

Inter·Mountain Laboratories, Inc.

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Client:	ENVIROTECH		
Sample ID:	MW #3 (5602)	Date Reported:	07/28/93
Laboratory ID:	3149	Date Sampled:	07/06/93
Sample Matrix:	Water	Time Sampled:	1300
Condition:	Cool/Intact	Date Received:	07/09/93

Parameter	Analytical Result	Units		Units
Lab pH	7.3	s.u.		
Lab Conductivity @ 25° C	2,130	umhos/cm		
Total Dissolved Solids @ 180°C	1,600	mg/L		
Total Dissolved Solids (Calc)	1,580	mg/L		
Total Alkalinity as CaCO3	648	mg/L		
Total Hardness as CaCO3	907	mg/L		
Bicarbonate as HCO3	791	mg/L	12.96	meq/L
Carbonate as CO3	0	mg/L	0.00	meq/L
Hydroxide as OH	0	mg/L	0.00	meq/L
Chloride	95	mg/L	2.69	meq/L
Sulfate	596	mg/L	12.41	meq/L
Calcium	267	mg/L	13.33	meq/L
Magnesium	58	mg/L	4.81	meq/L
Potassium	3.6	mg/L	0.09	meq/L
Sodium	167	mg/L	7.26	meq/L
Cations			25.50	meq/L
Anions			28.06	meq/L
Cation/Anion Difference			4.78*	%

*Analysis rerun without significant change to Cation/Anion Balance

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 Jeff Haws

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Client:	ENVIROTECH		
Sample ID:	MW #4 (5603)	Date Reported:	07/28/93
Laboratory ID:	3150	Date Sampled:	07/06/93
Sample Matrix:	Water	Time Sampled:	1232
Condition:	Cool/Intact	Date Received:	07/09/93

Parameter	Analytical Result	Units		Units
Lab pH	6.9	s.u.		
Lab Conductivity @ 25° C	2,780	umhos/cm		
Total Dissolved Solids @ 180°C	2,230	mg/L		
Total Dissolved Solids (Calc)	2,050	mg/L		
Total Alkalinity as CaCO3	919	mg/L		
Total Hardness as CaCO3	1,420	mg/L		
Bicarbonate as HCO3	1,120	mg/L	18.38	meq/L
Carbonate as CO3	0	mg/L	0.00	meq/L
Hydroxide as OH	0	mg/L	0.00	meq/L
Chloride	85	mg/L	2.41	meq/L
Sulfate	770	mg/L	16.03	meq/L
Calcium	436	mg/L	21.75	meq/L
Magnesium	81	mg/L	6.63	meq/L
Potassium	6.1	mg/L	0.16	meq/L
Sodium	123	mg/L	5.35	meq/L
Cations			33.88	meq/L
Anions			36.82	meq/L
Cation/Anion Difference			4.16*	%

*Analysis rerun without significant change to Cation/Anion Balance

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

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Client:	ENVIROTECH		
Sample ID:	MW #5 (5604)	Date Reported:	07/28/93
Laboratory ID:	3151	Date Sampled:	07/06/93
Sample Matrix:	Water	Time Sampled:	1320
Condition:	Cool/Intact	Date Received:	07/09/93

Parameter	Analytical Result	Units		Units
Lab pH	7.3	s.u.		
Lab Conductivity @ 25° C	2,730	umhos/cm		
Total Dissolved Solids @ 180°C	1,920	mg/L		
Total Dissolved Solids (Calc)	1,970	mg/L		
Total Alkalinity as CaCO3	1,010	mg/L		
Total Hardness as CaCO3	1,170	mg/L		
Bicarbonate as HCO3	1,230	mg/L	20.15	meq/L
Carbonate as CO3	0	mg/L	0.00	meq/L
Hydroxide as OH	0	mg/L	0.00	meq/L
Chloride	132	mg/L	3.71	meq/L
Sulfate	549	mg/L	11.44	meq/L
Calcium	311	mg/L	15.51	meq/L
Magnesium	97	mg/L	7.95	meq/L
Potassium	4.2	mg/L	0.11	meq/L
Sodium	269	mg/L	11.70	meq/L
Cations			35.27	meq/L
Anions			35.29	meq/L
Cation/Anion Difference			0.03	%

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

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Client:	ENVIROTECH		
Sample ID:	MW #6 (5605)	Date Reported:	07/28/93
Laboratory ID:	3152	Date Sampled:	07/06/93
Sample Matrix:	Water	Time Sampled:	1258
Condition:	Cool/Intact	Date Received:	07/09/93

Parameter	Analytical Result	Units		Units
Lab pH	7.2	s.u.		
Lab Conductivity @ 25° C	3,470	umhos/cm		
Total Dissolved Solids @ 180°C	3,000	mg/L		
Total Dissolved Solids (Calc)	2,870	mg/L		
Total Alkalinity as CaCO3	432	mg/L		
Total Hardness as CaCO3	1,510	mg/L		
Bicarbonate as HCO3	527	mg/L	8.64	meq/L
Carbonate as CO3	0	mg/L	0.00	meq/L
Hydroxide as OH	0	mg/L	0.00	meq/L
Chloride	173	mg/L	4.87	meq/L
Sulfate	1,550	mg/L	32.23	meq/L
Calcium	454	mg/L	22.65	meq/L
Magnesium	93	mg/L	7.65	meq/L
Potassium	4.6	mg/L	0.12	meq/L
Sodium	343	mg/L	14.92	meq/L
Cations			45.34	meq/L
Anions			45.74	meq/L
Cation/Anion Difference			0.44	%

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 JEFF THOMAS

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Client:	ENVIROTECH		
Sample ID:	MW #7 (5606)	Date Reported:	07/28/93
Laboratory ID:	3153	Date Sampled:	07/06/93
Sample Matrix:	Water	Time Sampled:	1235
Condition:	Cool/Intact	Date Received:	07/09/93

Parameter	Analytical Result	Units		Units
Lab pH	7.2	s.u.		
Lab Conductivity @ 25° C	1,690	umhos/cm		
Total Dissolved Solids @ 180°C	1,290	mg/L		
Total Dissolved Solids (Calc)	1,180	mg/L		
Total Alkalinity as CaCO3	430	mg/L		
Total Hardness as CaCO3	720	mg/L		
Bicarbonate as HCO3	525	mg/L	8.60	meq/L
Carbonate as CO3	0	mg/L	0.00	meq/L
Hydroxide as OH	0	mg/L	0.00	meq/L
Chloride	77	mg/L	2.17	meq/L
Sulfate	467	mg/L	9.72	meq/L
Calcium	214	mg/L	10.67	meq/L
Magnesium	45	mg/L	3.72	meq/L
Potassium	3.1	mg/L	0.08	meq/L
Sodium	121	mg/L	5.26	meq/L
Cations			19.73	meq/L
Anions			20.49	meq/L
Cation/Anion Difference			1.89	%

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 

2773

CHAIN OF CUSTODY RECORD

C 4028

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
Amoco 92140	PROD. PIT SJ GUL A1	

Sampler: (Signature) Nelson Velez

Chain of Custody Tape No.

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	ANION / CATION						Remarks
												ANION/CATION SUBMITTED TO: IML
MW #1	7/6/93	1135	5600	WATER	1	✓						
MW #2	7/6/93	1255	5601	WATER	1	✓						
MW #3	7/6/93	1300	5602	WATER	1	✓						
MW #4	7/6/93	1232	5603	WATER	1	✓						
MW #5	7/6/93	1320	5604	WATER	1	✓						
MW #6	7/6/93	1258	5605	WATER	1	✓						
MW #7	7/6/93	1235	5606	WATER	1	✓						
EFFLUENT	7/6/93	1336	5607	WATER	1	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	7/6/93	1440	Dennis L. Johnson	7-6-93	1440
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.
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ENVIROTECH LABS

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TRACE METAL ANALYSIS

Client:	Amoco	Project #:	92140
Sample ID:	Effluent	Date Reported:	07-09-93
Laboratory Number:	5599	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-08-93
Condition:	Cool & Intact	Analysis Needed:	Trace metals

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
ARSENIC	ND	0.0001
BARIUM	0.11	0.01
CADMIUM	0.0013	0.0001
CHROMIUM	0.0043	0.0001
LEAD	0.0035	0.0001
MERCURY	0.0149	0.0002
SELENIUM	0.0109	0.0001

Method: Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, Sept. 1986

Methods 7060A, 7080A, 7131A, 7191, 7470A, 7421, 7740, 7760A Analysis of Metals by GFAA and FLAA, SW-846, USEPA

ND - Parameter not detected at the stated detection limit.

Comments: SJ GVL A1 Production Pit C4028

Analyst

Review

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TRACE METAL ANALYSIS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 1	Date Reported:	07-09-93
Laboratory Number:	5592	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-08-93
Condition:	Cool & Intact	Analysis Needed:	Trace metals

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
ARSENIC	0.0108	0.0001
BARIUM	0.39	0.01
CADMIUM	0.0007	0.0001
CHROMIUM	0.0062	0.0001
LEAD	0.0018	0.0001
MERCURY	0.0036	0.0002
SELENIUM	ND	0.0001

Method: Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, Sept. 1986

Methods 7060A, 7080A, 7131A, 7191, 7470A, 7421, 7740, 7760A Analysis of Metals by GFAA and FLAA, SW-846, USEPA

ND - Parameter not detected at the stated detection limit.

Comments: SJ GVL A1 Production Pit C4028

Analyst

Review

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TRACE METAL ANALYSIS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 2	Date Reported:	07-09-93
Laboratory Number:	5593	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-08-93
Condition:	Cool & Intact	Analysis Needed:	Trace metals

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
ARSENIC	ND	0.0001
BARIUM	ND	0.01
CADMIUM	0.0015	0.0001
CHROMIUM	0.0070	0.0001
LEAD	0.0029	0.0001
MERCURY	0.0074	0.0002
SELENIUM	0.0242	0.0001

Method: Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, Sept. 1986

Methods 7060A, 7080A, 7131A, 7191, 7470A, 7421, 7740, 7760A Analysis of Metals by GFAA and FLAA, SW-846, USEPA

ND - Parameter not detected at the stated detection limit.

Comments: SJ GVL A1 Production Pit C4028

Analyst

Review

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TRACE METAL ANALYSIS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 3	Date Reported:	07-09-93
Laboratory Number:	5594	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-08-93
Condition:	Cool & Intact	Analysis Needed:	Trace metals

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
ARSENIC	0.0083	0.0001
BARIUM	ND	0.01
CADMIUM	0.0010	0.0001
CHROMIUM	0.0043	0.0001
LEAD	0.0026	0.0001
MERCURY	0.0099	0.0002
SELENIUM	ND	0.0001

Method: Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, Sept. 1986

Methods 7060A, 7080A, 7131A, 7191, 7470A, 7421, 7740, 7760A Analysis of Metals by GFAA and FLAA, SW-846, USEPA

ND - Parameter not detected at the stated detection limit.

Comments: SJ GVL A1 Production Pit C4028

Analyst

Review

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TRACE METAL ANALYSIS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 4	Date Reported:	07-09-93
Laboratory Number:	5595	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-08-93
Condition:	Cool & Intact	Analysis Needed:	Trace metals

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
ARSENIC	0.0336	0.0001
BARIUM	0.75	0.01
CADMIUM	ND	0.0001
CHROMIUM	0.0059	0.0001
LEAD	0.0028	0.0001
MERCURY	0.0057	0.0002
SELENIUM	0.0314	0.0001

Method: Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, Sept. 1986

Methods 7060A, 7080A, 7131A, 7191, 7470A, 7421, 7740, 7760A Analysis of Metals by GFAA and FLAA, SW-846, USEPA

ND - Parameter not detected at the stated detection limit.

Comments: SJ GVL A1 Production Pit C4028

Analyst

Review

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TRACE METAL ANALYSIS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 5	Date Reported:	07-09-93
Laboratory Number:	5596	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-08-93
Condition:	Cool & Intact	Analysis Needed:	Trace metals

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
ARSENIC	ND	0.0001
BARIUM	0.65	0.01
CADMIUM	0.0023	0.0001
CHROMIUM	0.0051	0.0001
LEAD	0.0001	0.0001
MERCURY	0.0032	0.0002
SELENIUM	ND	0.0001

Method: Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, Sept. 1986

Methods 7060A, 7080A, 7131A, 7191, 7470A, 7421, 7740, 7760A Analysis of Metals by GFAA and FLAA, SW-846, USEPA

ND - Parameter not detected at the stated detection limit.

Comments: SJ GVL A1 Production Pit C4028

Analyst

Review

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TRACE METAL ANALYSIS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 6	Date Reported:	07-09-93
Laboratory Number:	5597	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-08-93
Condition:	Cool & Intact	Analysis Needed:	Trace metals

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
ARSENIC	0.0047	0.0001
BARIUM	ND	0.01
CADMIUM	0.0009	0.0001
CHROMIUM	0.0058	0.0001
LEAD	0.0031	0.0001
MERCURY	0.0050	0.0002
SELENIUM	ND	0.0001

Method: Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, Sept. 1986

Methods 7060A, 7080A, 7131A, 7191, 7470A, 7421, 7740, 7760A Analysis of Metals by GFAA and FLAA, SW-846, USEPA

ND - Parameter not detected at the stated detection limit.

Comments: SJ GVL A1 Production Pit C4028

Analyst

Review

ENVIROTECH LABS

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TRACE METAL ANALYSIS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 7	Date Reported:	07-09-93
Laboratory Number:	5598	Date Sampled:	07-06-93
Sample Matrix:	Water	Date Received:	07-06-93
Preservative:	Cool	Date Analyzed:	07-08-93
Condition:	Cool & Intact	Analysis Needed:	Trace metals

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
ARSENIC	ND	0.0001
BARIUM	ND	0.01
CADMIUM	0.0016	0.0001
CHROMIUM	0.0039	0.0001
LEAD	0.0072	0.0001
MERCURY	0.0113	0.0002
SELENIUM	ND	0.0001

Method: Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, Sept. 1986

Methods 7060A, 7080A, 7131A, 7191, 7470A, 7421, 7740, 7760A Analysis of Metals by GFAA and FLAA, SW-846, USEPA

ND - Parameter not detected at the stated detection limit.

Comments: SJ GVL A1 Production Pit C4028

Analyst

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TRACE METAL ANALYSIS - BLANKS

Client:	NA	Project #:	NA
Sample ID:	Blanks	Date Reported:	07-09-93
Laboratory Number:	NA	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	Cool	Date Analyzed:	07-08-93
Condition:	NA	Analysis Needed:	Trace Metals

Parameter	Instrument Blank (mg/L)	Method Blank (mg/L)	Det. Limit (mg/L)
ARSENIC	ND	ND	0.0001
BARIUM	ND	ND	0.01
CADMIUM	ND	ND	0.0001
CHROMIUM	ND	ND	0.0001
LEAD	ND	ND	0.0001
MERCURY	ND	ND	0.0002
SELENIUM	ND	ND	0.0001

Method: Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, Sept. 1986

Methods 7060A, 7080A, 7131A, 7191, 7470A, 7421, 7740, 7760A Analysis of Metals by GFAA and FLAA, SW-846, USEPA

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review

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QUALITY ASSURANCE REPORT

TRACE METAL ANALYSIS - MATRIX SPIKE

Client:	NA	Project #:	NA
Sample ID:	NA	Date Reported:	07-09-93
Laboratory Number:	NA	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Analysis Requested:	Trace Metals	Date Analyzed:	07-08-93
Condition:	NA	Date Extracted:	NA

Parameter	Spike Added (mg/L)	Sample Result (mg/L)	Spiked Sample Result (mg/L)	Percent Recovery
ARSENIC	0.100	ND	0.101	101
BARIUM	10.0	3.5	13.5	100
CADMIUM	0.050	0.033	0.084	102
CHROMIUM	0.100	0.005	0.104	99
LEAD	0.100	0.166	0.267	101
MERCURY	0.025	0.025	0.050	100
SELENIUM	0.100	0.031	0.131	100

QA ACCEPTANCE CRITERIA:

Parameter	Acceptance Range %
Trace Metals	80 - 120

Method: Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, Sept. 1986

Methods 7060A, 7080A, 7131A, 7191, 7470A, 7421, 7740, 7760A Analysis of Metals by GFAA and FLAA, SW-846, USEPA

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review

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CHAIN OF CUSTODY RECORD

C4028

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
Amoco 92140	PROD. PIT SJ GUL A1	
Sampler: (Signature) Nelson Velez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	HEAVY METALS						Remarks
												HEAVY METALS As, Ba, Cd, Cr, Pb, Hg, Se ONLY
MW #1	7/6/93	1148	5592	WATER	1	✓						
MW #2	7/6/93	1207	5593	WATER	1	✓						
MW #3	7/6/93	1212	5594	WATER	1	✓						
MW #4	7/6/93	1227	5595	WATER	1	✓						
MW #5	7/6/93	1305	5596	WATER	1	✓						
MW #6	7/6/93	1250	5597	WATER	1	✓						
MW #7	7/6/93	1235	5598	WATER	2	✓						
EFFLUENT	7/6/93	1326	5599	WATER	1	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	7/6/93	1434	Denise L. Aylmer	7-6-93	1434
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.
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Farmington, New Mexico 87401
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