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REPORTS

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QUARTERLY MONITORING REPORT

3RD QUARTER 1993

AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA

FARMINGTON, NEW MEXICO

Prepared For
Mr. Buddy Shaw
Environmental Coordinator
AMOCO Production Company

OCTOBER 1993

Project: 92140

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

QUARTERLY MONITORING REPORT
3rd Quarter, 1993
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA
SE/4, NE/4 (H) SECTION 21, T29N, R13W, NMPM
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

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

PROJECT/PIT NO.: 92140/C4012

OCTOBER 1993

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

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FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

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

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

INTRODUCTION

Amoco Production Company has installed a pump and treat system as part of a Remedial Action Plan (RAP) to abate groundwater contamination from the production equipment and storage system associated with the subject well located south of Farmington, in the Southeast 1/4 of the Northeast 1/4 of Section 21, Township 29N, Range 13W, NMPM, San Juan County, New Mexico (refer to Vicinity Map - Appendix A). Quarterly monitoring of the remediation system has been required by the New Mexico Oil Conservation Division (NMOCD).

This is the second quarterly monitoring report (QMR) that Envirotech, Inc. has prepared for this site. The quarterly sampling event was not initiated until approval of the GROUNDWATER MONITORING PLAN, prepared by Envirotech, was received by the New Mexico Oil Conservation Division.

Included in this QMR are groundwater and treatment system analyses, a potentiometric map showing the hydraulic gradient of the groundwater, and a table listing all of the past laboratory analyses that have been conducted.

The QMR also outlines a sampling schedule for the last quarter in 1993 and the next three (3) quarters of 1994 (located within the Purpose and Scope of Work section on the following page). It should be noted that the effluent was last sampled July 6, 1993 for the 2nd quarter. Therefore, the effluent sampling schedule has been changed from the 1st and 3rd quarters to the 2nd and 4th quarters.

This third quarter sampling event was conducted between October 13 and 15, 1993 (at the end of the fourth quarter). Future sampling event will be conducted prior to the end of each quarter to alleviate any confusion. The fourth quarter sampling event is tentatively scheduled for the end of December, 1993.

PURPOSE AND SCOPE OF WORK

The purpose of this quarterly monitoring is to verify that the pump and treat system is effectively remediating groundwater contamination at the referenced site. Verification is conducted by monitoring the site hydrology (static water levels) and water quality on a quarterly basis.

The scope of work includes collection of groundwater samples for benzene, toluene, ethylbenzene, and xylenes (BTEX), Polynuclear Aromatic Hydrocarbons (PAH) analyses [semi-annually on the air stripper effluent and the sump (recovery well-collection system) only], and to gather data on depth to water for development of a potentiometric map showing the hydraulic gradient of the groundwater.

The scope of work consisted of the following:

A. Notification to the New Mexico Oil Conservation Division (NMOCD) at least 72 hours prior to a sampling event.

B. Sampling of the monitor wells and the sump to verify the status of the groundwater during the remediation.

C. Documentation of the analytical results from the sampling event.

FUTURE SAMPLING SCHEDULE

	OCT-DEC, 93	JAN-MAR, 94	APR-MAY, 94	OCT-DEC, 94
MW - 1		X		X
MW - 2	X		X	
MW - 3		X		X
MW - 4	X		X	
MW - 5		X		X
MW - 6	X	X	X	X
MW - 7		X		X
EFFLUENT	X		X	
SUMP	X	X	X	X

ANALYTICAL RESULTS

For this quarterly monitoring, monitor wells #'s 1, 3, 5, 6, and 7, were purged by bailing until a minimum of three (3) well volumes had been removed. After purging, water samples were collected in laboratory supplied 40 ml VOA vials and preserved with 5% $HgCl_2$. The water samples were placed on ice and transported to Envirotech's laboratory for BTEX analysis using United States Environmental Protection Agency (USEPA) Method 8020, SW-846. 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 quarterly report.

2. Table 2-4 summarizes the historical and current laboratory analyses for the effluent, sump, and monitor wells.

3. Table 5 summarizes the Clean-up Standards for groundwater for the State of New Mexico as for this sampling event.

Surface mounding as recommended in the GROUNDWATER MONITORING PLAN was initiated at the end of June, 1993 and has been on-going.

Groundwater elevations were measured on October 11, 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 quarterly sampling event are presented in Appendix B.

TABLE 1

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

SAMPLING DATE: JULY 6, 1993

SAMPLING POINT	TOTAL DEPTH (ft.)	GROUND-WATER ELEVATION (ft.)	STATIC WATER LEVEL (ft.)	WELL BORE VOLUME (gals)	WATER CONDITIONS TEMP. (°C)	CONDUCT (µS)	pH	COMMENTS
MW-1	11.10	94.62	5.91	0.87	22.0	600	7.70	not sampled
MW-2	8.15	94.45	3.86	NA	NA	NA	NA	slightly murky, no odor
MW-3	7.90	95.29	2.60	0.88	21.0	500	7.40	not sampled
MW-4	6.95	97.07	2.56	NA	NA	NA	NA	slightly murky
MW-5	10.55	95.31	4.92	0.94	21.0	500	7.60	slightly murky, no odor
MW-6	10.10	95.49	4.92	0.86	22.0	500	7.30	black color, strong odor
MW-7	8.0	96.35	4.49	0.59	21.0	500	7.30	not sampled
Sump	9.8	NA	NA	NA				clear to slightly murky, no odor

NOTE: NA - INDICATES NO DATA AVAILABLE
µS = micro mhos per centimeter.

TABLE 2
(Part 1 of 2)

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

LABORATORY ANALYSES	08/31/92	10/05/92	11/13/92	01/06/93	02/25/93	07/06/93
Benzene, (µg/L)	ND	0.2	1.3	ND	ND	ND
Toluene, (µg/L)	1.0	1.0	10.2	ND	1.0	ND
Ethylbenzene, (µg/L)	ND	ND	2.4	ND	0.6	ND
Total Xylene, (µg/L)	2.1	2.2	51.0	0.4	ND	ND
Polynuclear Aromatic Hydrocarbons, (µg/L)	NA	NA	ND	ND	ND	ND
TPH, (mg/L)	ND	ND	NA	NA	NA	NA

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
AIR STRIPPER EFFLUENT LABORATORY ANALYSES
CONTINUED
(PART 2 OF 2)

LABORATORY ANALYSES	08/31/92	10/05/92	11/13/92	01/06/93	02/25/93
Lab pH	7.90	7.92	8.00	8.20	8.00
Lab Conductivity, µhms/cm @ 25°C	569	752	883	903	937
Lab Resistivity, ohms-m	17.6	13.3	11.3	NA	NA
Total Dissolved Solids (180°C), mg/L	436	488	576	586	652
Total Dissolved Solids (calc), mg/L	372	470	552	554	604
Total Alkalinity as $CaCO_3$, mg/L	159	188	199	236	241
Total Hardness as $CaCO_3$, mg/L	219	303	349	371	394
Sodium Adsorption Ratio	1.31	1.11	1.17	1.17	NA

LABORATORY ANALYSES	08/31/92		10/05/92		11/13/92		01/06/93		02/25/93	
	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meg/L	mg/L	meq/L
Bicarbonate as HCO_3	195	3.19	230	3.77	243	3.98	290	3.98	290	4.82
Carbonate as CO_3	< .1	<.01	< .1	<.01	< .1	< .01	0	0.00	0	0.00
Chloride	14.9	.42	29.1	.82	47.2	1.33	30	0.84	30	1.21
Sulfate	142	2.96	165	3.44	201	4.2	200	4.08	200	4.46
Calcium	38.7	1.93	103	5.15	113	5.65	110	5.26	110	6.14
Magnesium	29.7	2.44	11.1	.91	16.3	1.34	26	2.16	t 26	1.74
Potassium	6.65	.17	3.5	.09	3.55	.09	3.2	.08	3.2	.08
Sodium	44.4	1.93	44.5	1.94	50.4	2.19	52	52	52	2.37
Major Cations	NA	6.47	NA	8.09	NA	9.27	NA	9.75	NA	10.34
Major Anions	NA	6.57	NA	8.03	NA	9.51	NA	9.64	NA	10.50
Cation/Anion Difference	NA	.74%	NA	.42%	NA	1.27%	NA	0.58%	NA	0.81%

NOTE: NA - INDICATES NO DATA AVAILABLE.
mg/L = parts per million.
meq/L = milliequivalent per Liter.
µmhos/cm = micro mhos per centimeter.
ohms-m = reciprocal of micro mhos per centimeter.

TABLE 3

HISTORICAL RESULTS OF THE SUMP LABORATORY ANALYSIS
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA

LABORATORY ANALYSES	08/03/92	11/19/92	07/06/93	10/15/93
Benzene, (µg/L)	ND	4.2	ND	ND
Toluene, (µg/L)	ND	1.6	ND	0.4
Ethylbenzene, (µg/L)	0.6	3.7	ND	ND
Total Xylene, (µg/L)	1.3	4.7	ND	1.1
Polynuclear Aromatic Hydrocarbons, (µg/L)	NA	NA	ND	NA
TPH, (mg/L)	ND	ND	NA	NA

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 4

HISTORICAL RESULTS OF MONITOR WELLS LABORATORY ANALYSIS
AMOCO PRODUCTION CORPORATION
SAN JUAN GRAVEL A-1E
PRODUCTION TANK PIT AREA

Monitor Well	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
# 1	06-01-92	ND	ND	ND	ND
	10-08-92	0.5	0.7	ND	0.6
	11-16-92	ND	ND	ND	0.4
	10-13-93	ND	0.9	ND	1.1
# 2	06-01-92	ND	1.1	0.4	1.1
	11-16-92	ND	ND	ND	0.8
	04-04-93	ND	ND	ND	1.1
	07-06-93	2.0	ND	ND	8.0
# 3	06-01-92	ND	ND	ND	0.9
	10-08-92	ND	ND	ND	ND
	11-16-92	ND	ND	ND	0.9
	10-13-93	ND	ND	ND	ND
# 4	06-01-92	ND	ND	ND	ND
	11-16-92	ND	ND	ND	1.3
	04-04-93	ND	ND	ND	ND
	07-06-93	ND	ND	ND	ND
# 5	06-01-92	ND	54.0	ND	64.4
	10-08-92	0.3	1.2	ND	1.4
	11-16-92	ND	ND	ND	ND
	04-04-93	ND	ND	1.5	0.9
	07-06-93	ND	ND	ND	ND
	10-13-93	ND	1.5	0.6	3.4
# 6	06-01-92	540	235	294	3060
	11-16-92	6.2	58	159	783
	04-04-93	230	62	159	784
	07-06-93	54	2.9	36.1	233
	10-11-93	243	5.5	332	1071
# 7	06-02-92	0.2	2.9	ND	1.2
	10-08-92	1.6	3.4	ND	4.0
	11-16-92	0.7	3.4	2.1	7.0
	10-13-93	ND	0.3	ND	0.3

NOTE: ND - NON DETECTABLE AT STATED DETECTION LIMIT (SEE LABORATORY ANALYSES).
µg/L = parts per billion.

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 5.

TABLE 5

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

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

DISCUSSION

Surface Mounding

As mentioned earlier, surface mounding was initiated at the end of June, 1993. The static water level appears to have stabilized once the rate of flow into the air stripper was increased. The normal flow rate into the air stripper was at approximately 2 - 4 gallons per minute (gpm). After initiating the surfacing mounding (flow rate at 2 - 4 gpm), the flow rate into the air stripper was increased to approximately 6 - 8 gpm.

With daily monitoring of the flow rates mentioned above (on a temporary basis), the remediation system should increase in terms of effectiveness. However; at this time, there is insufficient historical data to draw a firm conclusion.

Groundwater Gradient

The potentiometric map (refer to Appendix A) indicates that the groundwater flow direction for the area of the contaminated plume leads directly into the sump and the intercept gallery. Since the surface mounding and the in-flow to the air stripper appears to be at equilibrium, the area of the suspected hydrocarbon contamination within the vadose zone should theoretically be remediating (i.e. maintaining optimal soil moisture in the vadose zone enhancing microbial activity of hydrocarbon degrading bacteria).

System Effectiveness

Based upon the laboratory analyses, the system appears to be remediating the site. With up-gradient infiltration of treated groundwater and down-gradient intercept of the hydrocarbon contaminated groundwater, the system is theoretically closed.

Monitor well #6, which is located within the area of the suspected hydrocarbon contaminated plume, is the only well sampled with Benzene and total Xylenes above the regulatory standards at this time. The previous laboratory analysis for monitor well # 6 reports a lower level of Benzene and total Xylenes. Because of the dramatic increase in these levels, it appears that the mounding has infiltrated the hydrocarbon contamination within the vadose zone. We anticipate the contamination will migrate towards the intercept trench or sump (recovery well).

Once the Benzene and/or total BTEX for monitor well #6 has dropped below the regulatory standards for at least 3 consecutive quarters, a final follow-up site assessment will be conducted within the suspected hydrocarbon plume area to verify that contamination within the vadose zone is also below the regulatory standards.

Lastly, a sheen of apparent petroleum hydrocarbon was observed on the surface of the sump water. In reviewing the historical BTEX analysis for the sump, above standard levels of the four constituents has never been reached. It is therefore postulated that three scenarios may be taken place independently or simultaneously. 1) The slight aeration created by the pump within the sump may be enhancing the volatilization of the BTEX constituents, 2) the surface area in the sump may be large enough to enhance volatilization for the BTEX compounds without the effect of the pump within it, and 3) the free hydrocarbon contamination viewed within the sump is may be of heavier oil composition than the BTEX constituents.

LIMITATIONS AND CLOSURE

The scope of Envirotech's services was limited to sampling of the designated monitor wells, the sump (recovery well-collection system), and measurement of the water level in those wells. All work has been performed in accordance with generally accepted professional practices in geotechnical/ environmental engineering and hydrogeology.

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

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

Respectfully Submitted,
ENVIROTECH, INC.

Nelson Velez
Staff Geologist

Reviewed By:

Michael K. Lane, P.E.
Geological Engineer

Appendix

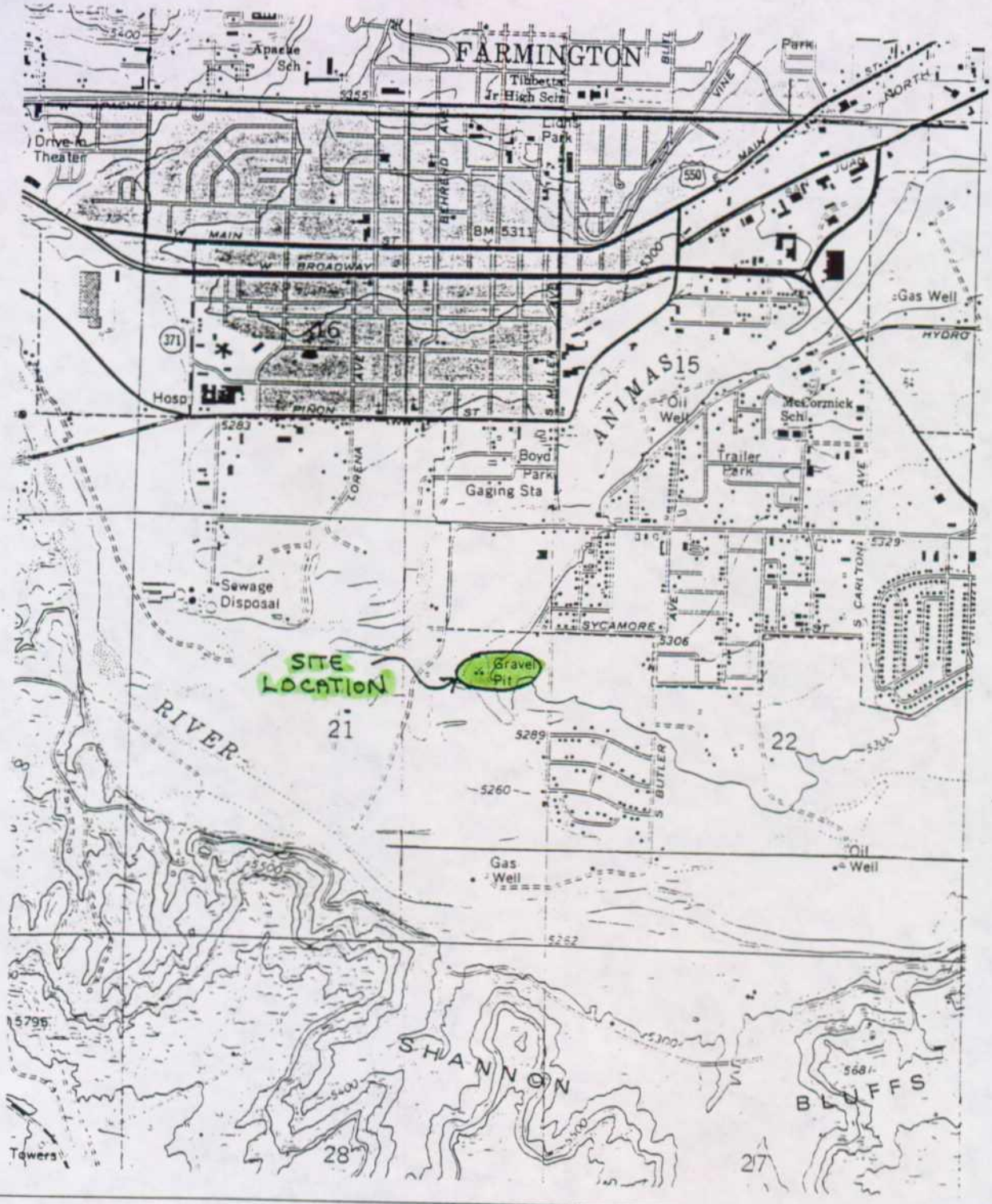
NV/nv

SJG3QM93.RPT

VICINITY MAP

SHEET: 1 DATE: 10/93

REVISED BY: N/A PROJ MGR: MKL



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

QUARTERLY MONITORING REPORT PROJECT NO: 93140 (2-012)

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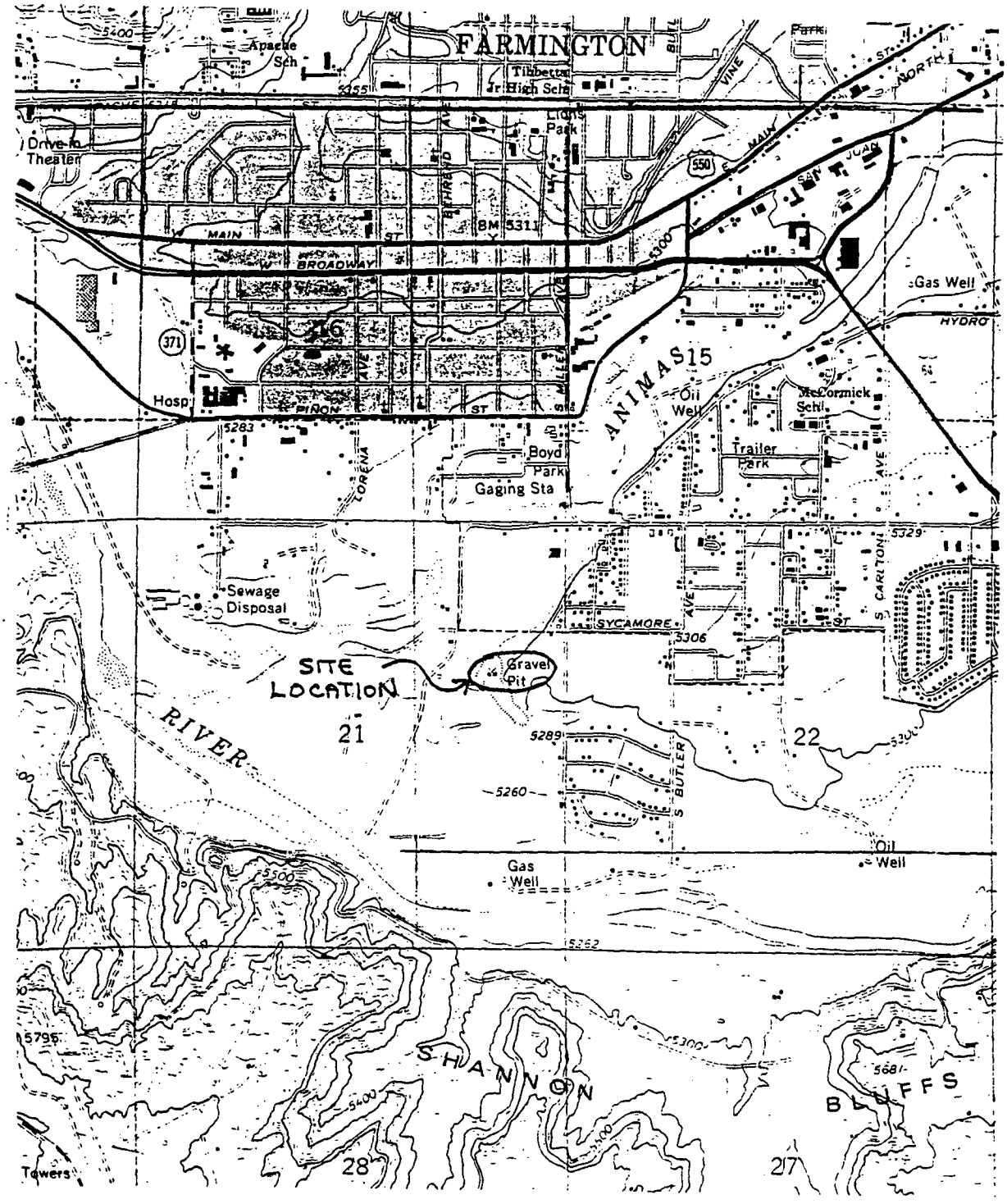
VICINITY MAP

SHEET: 1 DATE: 10/93

REVISED BY: WP PRJ MGR: MKL



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

QUARTERLY MONITORING REPORT PROJECT NO: 92140.0401.21

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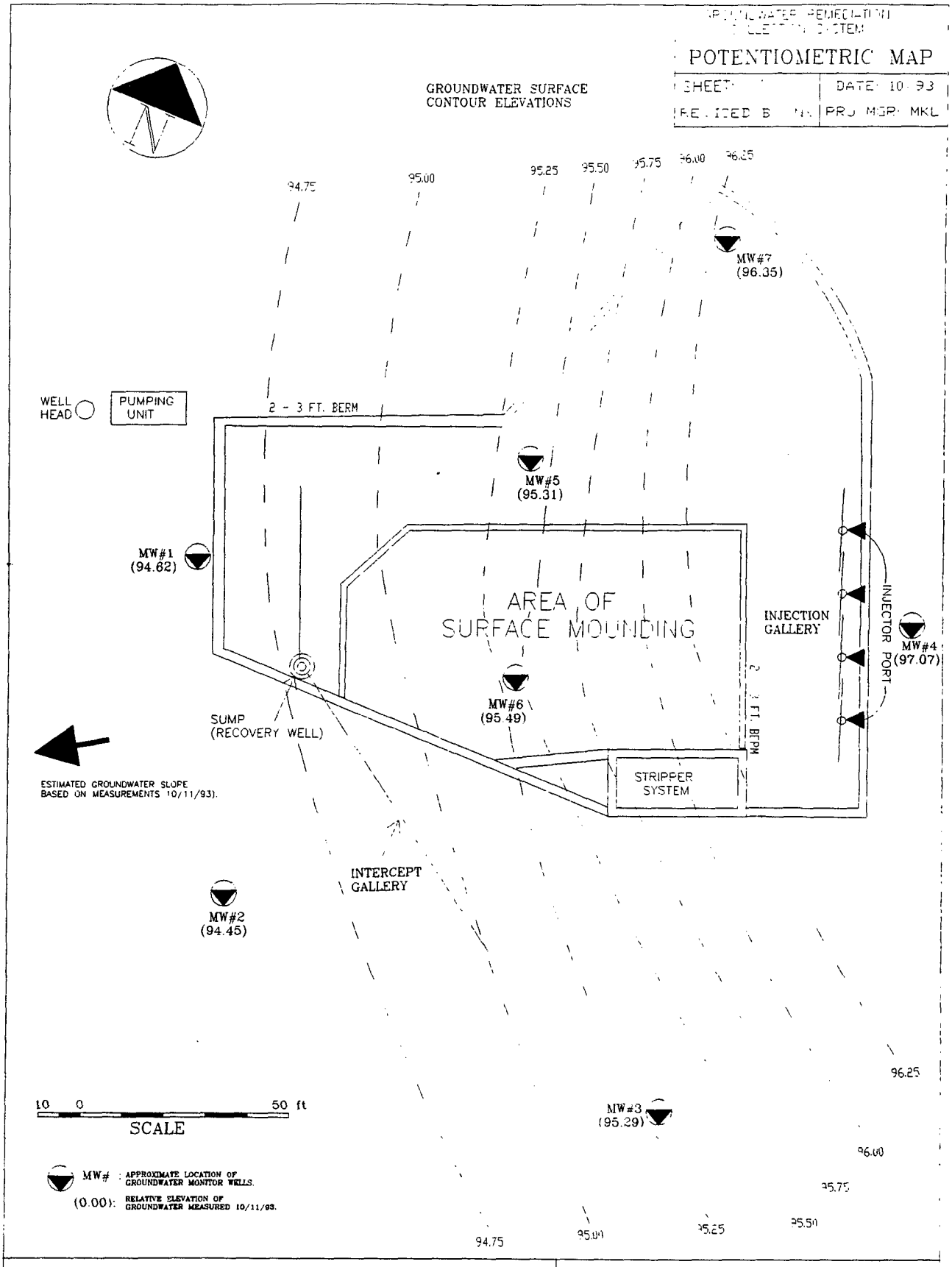

AMOCO PRODUCTION COMPANY
SAN JUAN GRAVEL A-1E
SEC 21, TWP 29N, RNG 13W
SAN JUAN COUNTY, NEW MEXICO
PRODUCTION TANK PIT AREA
QUARTERLY MONITORING REPORT PROJECT NO: 93140.0401

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 1	Date Reported:	10-14-93
Laboratory Number:	6298	Date Sampled:	10-13-93
Sample Matrix:	Water	Date Received:	10-13-93
Preservative:	HgCl and Cool	Date Analyzed:	10-14-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.4
Toluene	0.9	0.2
Ethylbenzene	ND	0.3
p,m-Xylene	1.1	0.2
o-Xylene	ND	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	95 %
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: SJ GVL A1E Production Pit C4012

Analyst

Review

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 3	Date Reported:	10-14-93
Laboratory Number:	6301	Date Sampled:	10-13-93
Sample Matrix:	Water	Date Received:	10-13-93
Preservative:	HgCl and Cool	Date Analyzed:	10-14-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	97 %
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: SJ GVL A1E Production Pit C4012

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 5	Date Reported:	10-14-93
Laboratory Number:	6299	Date Sampled:	10-13-93
Sample Matrix:	Water	Date Received:	10-13-93
Preservative:	HgCl and Cool	Date Analyzed:	10-14-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.4
Toluene	1.5	0.2
Ethylbenzene	0.6	0.3
p,m-Xylene	2.9	0.2
o-Xylene	0.5	0.3

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	95 %
Bromofluorobenzene	99 %

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

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

ND - Parameter not detected at the stated detection limit.

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 6	Date Reported:	10-14-93
Laboratory Number:	6287	Date Sampled:	10-11-93
Sample Matrix:	Water	Date Received:	10-11-93
Preservative:	HgCl and Cool	Date Analyzed:	10-13-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	243	0.2
Toluene	5.5	0.4
Ethylbenzene	332	0.2
p,m-Xylene	691	0.3
o-Xylene	380	0.2

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	99 %
Bromofluorobenzene	97 %

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

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

ND - Parameter not detected at the stated detection limit.

Comments: SJ GVL A1E Production Pit C4012

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	MW # 7	Date Reported:	10-14-93
Laboratory Number:	6300	Date Sampled:	10-13-93
Sample Matrix:	Water	Date Received:	10-13-93
Preservative:	HgCl and Cool	Date Analyzed:	10-14-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	97 %
Bromofluorobenzene	99 %

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

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

ND - Parameter not detected at the stated detection limit.

Comments: SJ GVL A1E Production Pit C4012

Analyst

Review

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	Sump	Date Reported:	10-19-93
Laboratory Number:	6328	Date Sampled:	10-15-93
Sample Matrix:	Water	Date Received:	10-15-93
Preservative:	HgCl & Cool	Date Analyzed:	10-18-93
Condition:	Cool & Intact	Analysis Requested:	BTEX

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

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	106 %
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: SJ GVL A-1E, Production Pit C4012

Analyst

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EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	NA	Project #:	NA
Sample ID:	Laboratory Blank	Date Reported:	10-14-93
Laboratory Number:	1013AM.BLK	Date Sampled:	NA
Sample Matrix:	Water	Date Received:	NA
Preservative:	NA	Date Analyzed:	10-13-93
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	103 %
Bromofluorobenzene	97 %

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

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

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

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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:	10-14-93
Laboratory Number:	6291-S-BTEX	Date Sampled:	10-12-93
Sample Matrix:	Water	Date Received:	10-12-93
Analysis Requested:	BTEX	Date Analyzed:	10-13-93
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	9.0	20.0	28.2	0.2	97	39-150
Toluene	0.5	20.0	20.6	0.4	101	46-148
Ethylbenzene	6.2	20.0	26.8	0.2	103	32-160
p,m-Xylene	20.7	20.0	42.3	0.3	104	46-148
o-Xylene	1.3	20.0	21.6	0.2	102	46-148

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

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

ND - Parameter not detected at the stated detection limit.

Comments:

Analyst

Review

3099

CHAIN OF CUSTODY RECORD

C4012

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

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8020)						Remarks
MW #1	10/13/93	1145	6298	WATER	2	✓						
MW #5	10/13/93	1210	6299	WATER	2	✓						
MW # 7	10/13/93	1225	6300	WATER	2	✓						
MW # 3	10/13/93	1240	6301	WATER	2	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	10/13/93	1350	C. Chaharlang	10-13-93	1430
Relinquished by: (Signature)			**Received by: (Signature)**		
Relinquished by: (Signature)			**Received by: (Signature)**		

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3093

CHAIN OF CUSTODY RECORD

C4012

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

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8020)						Remarks
MW # 2	10/11/93	1345	6285	WATER	2	✓						CANCEL AU 10/13/93
MW # 4	10/11/93	1420	6286	WATER	2	✓						CANCEL AU 10/13/93
MW #6	10/11/93	1400	6287	WATER	2	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	10/11/93	1503	Tony Tristano	10/11/93	1600
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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3107

C4012

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
Amoco 92140	PROD. PIT SJ GUL A-1E	
Sampler: (Signature) Nelson Velez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8020)						Remarks
SUMP	10/15/93	0940	6328	WATER	2	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	10/15/93	1130	Tony Tristano	10/15/93	1130
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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