

JICARILLA APACHE TRIBE  
ENVIRONMENTAL PROTECTION OFFICE  
P.O. BOX 507  
DULCE, NEW MEXICO 87528

101W Comp 85598  
RISK - bedrock  
RISK - bedrock  
SUBMIT 1 COPY TO:  
NATURAL RESOURCE DEPT  
AND STATE LAND ADMINISTRATION  
5ep - RECEIVED  
AUG 18 1999

PIT REMEDIATION AND CLOSURE REPORT OIL CON. DIV.  
DIST. 3

Operator: AMOCO PRODUCTION COMPANY Telephone: (505) 326-9200  
Address: 200 Amoco Court, Farmington, NM 87401  
Facility or Well Name: JICARILLA CONTRACT # 147-9E  
Location: Unit or Qtr/Qtr Sec 0 Sec 7 T 25N R 5W County RIO ARriba  
Pit Type: Separator      Dehydrator      Other BLOW  
Land Type: RANGE

Pit Location: Pit dimensions: length 40', width 37', depth 18'  
(Attach diagram) Reference: wellhead X, other       
Footage from reference: 170'  
Direction from reference: 16 Degrees      East of North       
X West of South X

Depth To Groundwater: (Vertical distance from contaminants to seasonal high water elevation of groundwater)	Less than 50 feet 50 feet to 99 feet Greater than 100 feet	(20 points) (10 points) ( 0 points)	<u>0</u>
Distance to an Ephemeral Stream (Downgradient dry wash greater than ten feet in width)	Less than 100 feet Greater than 100 feet	(10 points) ( 0 points)	<u>0</u>
Distance to Nearest Lake, Playa, or Watering Pond (Downgradient lakes, playas and livestock or wildlife watering ponds)	Less than 100 feet Greater than 100 feet	(10 points) ( 0 points)	<u>0</u>
Wellhead Protection Area: (Less than 200 feet from a private domestic water source, or: less than 1000 feet from all other water sources)	Yes No	(20 points) ( 0 points)	<u>0</u>
Distance To Surface Water: (Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 100 feet 100 feet to 1000 feet Greater than 1000 feet	(20 points) (10 points) ( 0 points)	<u>0</u>

RANKING SCORE (TOTAL POINTS): 0

Date Remediation Started: \_\_\_\_\_ Date Completed: 7/22/98  
Remediation Method: Excavation ☒ Approx. cubic yards 750  
Check all appropriate sections) Landfarmed ☒ Insitu Bioremediation \_\_\_\_\_  
Other \_\_\_\_\_

Remediation Location: Onsite ☒ Offsite \_\_\_\_\_  
(i.e. landfarmed onsite, name and location of offsite facility)

General Description of Remedial Action: Excavation. BEDROCK BOTTOM.

Groundwater Encountered: No ☒ Yes \_\_\_\_\_ Depth \_\_\_\_\_

Final Pit: Closure Sampling: Sample location see Attached Documents  
(if multiple samples, attach sample results and diagram of sample locations and depths) Sample depth 13' (SOUTH SIDEWALL)  
Sample date 7/22/98 Sample time 1030

Sample Results

Soil: Benzene	(ppm)	_____	Water: Benzene	(ppb)	_____
Total BTEX	(ppm)	_____	Toluene	(ppb)	_____
Field Headspace	(ppm)	<u>0.0</u>	Ethylbenzene	(ppb)	_____
TPH	(ppm)	<u>ND</u>	Total Xylenes	(ppb)	_____

Groundwater Sample: Yes \_\_\_\_\_ No ☒ (If yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 7/22/98 PRINTED NAME Buddy D. Shaw  
SIGNATURE Buddy D. Shaw AND TITLE Environmental Coordinator

AFTER REVIEW OF THE PIT CLOSURE INFORMATION, PIT CLOSURE IS APPROVED IN ACCORDANCE TO THE JICARILLA APACHE TRIBE PIT CLOSURE ORDINANCE.

APPROVED: YES ☒ NO \_\_\_\_\_ (REASON) \_\_\_\_\_

SIGNED: Ken C Marshall DATE: 9-9-98

CLIENT: <u>AMOCO</u>	BLAGG ENGINEERING, INC. P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632-1199	LOCATION NO: <u>BJ590</u> C.O.C. NO: _____
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FIELD REPORT: CLOSURE VERIFICATION	PAGE No: <u>1</u> of <u>1</u>
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LOCATION: NAME: <u>JICA CONTR. 147</u> WELL #: <u>9E</u> PIT: <u>BLW</u> QUAD/UNIT: <u>0</u> SEC: <u>7</u> TWP: <u>25N</u> RNG: <u>SW</u> PM: <u>NM</u> CNTY: <u>RA</u> ST: <u>NM</u> QTR/FOOTAGE: <u>910' FSL</u> <u>1740' FEL</u> CONTRACTOR: <u>P &amp; S</u>	DATE STARTED: <u>7/22/98</u> DATE FINISHED: _____ ENVIRONMENTAL SPECIALIST: <u>NV</u>
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EXCAVATION APPROX. <u>40</u> FT. x <u>37</u> FT. x <u>18</u> FT. DEEP.	CUBIC YARDAGE: <u>750</u>
DISPOSAL FACILITY: <u>ON-SITE</u> REMEDIATION METHOD: <u>LANDFARM</u>	
LAND USE: <u>RANGE</u> LEASE: <u>JICA 147</u> FORMATION: <u>DK/GP</u>	

FIELD NOTES & REMARKS:	PIT LOCATED APPROXIMATELY <u>170</u> FT. <u>S16W</u> FROM WELLHEAD. DEPTH TO GROUNDWATER: <u>&gt;100'</u> NEAREST WATER SOURCE: <u>&gt;1000'</u> NEAREST SURFACE WATER: <u>&gt;1000'</u> NMOC RANKING SCORE: <u>0</u> NMOC TPH CLOSURE STD: <u>5000</u> PPM SOIL AND EXCAVATION DESCRIPTION:
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SOIL MOSTLY DR. YELL. ORANGE TO OLIVE GRAY SAND, NON COHESIVE, SLIGHTLY MUST FIRM, ISOLATED STAINING OBSERVED @ BOTTOM 2' OF WEST SIDEWALL ONLY, NO APPARENT HC ODOR DETECTED W/IN EXCAVATION OR IN ANY OF THE RUM SAMPLES.

BOTTOM - BEDROCK (SHALE) PALE YELL. BROWN/VERY DR. RED COLOR MIXTURES, HARD, NO APPARENT STAINING OR HC ODOR OBSERVED W/IN EXCAVATION, NO APPARENT HC ODOR IN RUM SAMPLE.

BEDROCK BOTTOM

CLOSED

SCALE

0 FT

FIELD 418.1 CALCULATIONS

TIME	SAMPLE I.D.	LAB No:	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm
1030	③ @ 13'	TPH-2003	5	20	1:1	5	ND

PIT PERIMETER

OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)
1 @ 13'	0.0
2 @ 13'	0.0
3 @ 13'	0.0
4 @ 13'	0.0
5 @ 18'	0.0

PIT PROFILE

LAB SAMPLES

SAMPLE ID	ANALYSIS	TIME

TRAVEL NOTES: CALLOUT: 7/21/98 - AFTER. ONSITE: 7/22/98 - MORN.

**BLAGG ENGINEERING, INC.**  
P.O. Box 87, Bloomfield, New Mexico 87413  
Phone: (505)632-1199 Fax: (505)632-3903

**FIELD MODIFIED EPA METHOD 418.1  
TOTAL PETROLEUM HYDROCARBONS**

Client:	AMOCO	Project #:	
Sample ID:	3 @ 13'	Date Analyzed:	07-22-98
Project Location:	Jicarilla Contract # 147 - 9E	Date Reported:	07-22-98
Laboratory Number:	TPH-2003	Sample Matrix:	Soil

Parameter	Result, mg/kg	Detection Limit, mg/kg
Total Recoverable Petroleum Hydrocarbons	ND	20

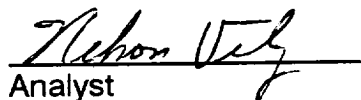
ND = Not Detectable at stated detection limits.

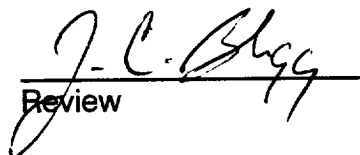
QA/QC:	QA/QC Sample TPH mg/kg	Duplicate TPH mg/kg	% *Diff.
	1684	1712	1.65

\*Administrative Acceptance limits set at 30%.

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

Comments: Blow Pit - BJ590

  
Analyst

  
Review

**BLAGG ENGINEERING, INC.**

P.O. Box 87, Bloomfield, New Mexico 87413

Phone: (505)632-1199 Fax: (505)632-3903

**Field TPH-Worksheet**

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Max Characters:

Client:

Sample ID:

Project Location:

Laboratory Number:

AMOCO

3 @ 13'

Jicarilla Contract # 147 - 9E

TPH-2003

Project #:

Date Analyzed:

Date Reported:

Sample Matrix:

07-22-98

07-22-98

Soil

Sample Weight: 5.00 grams  
Volume Freon: 20.00 mL  
Dilution Factor: 1 (unitless)  
TPH Reading: 5 mg/kg

TPH Result: 20.0 mg/kg  
Reported TPH Result: 20 mg/kg  
Actual Detection Limit: 20.0 mg/kg  
Reported Detection Limit: 20 mg/kg

QA/QC:

Original  
TPH mg/kg

Duplicate  
TPH mg/kg

%  
Diff.

-----  
1684

-----  
1712

-----  
1.65

Comments:

\*\*\*\*\*Max Characters\*\*\*\*\*

Comments:

Blow Pit - BJ590

**JICARILLA APACHE TRIBE  
ENVIRONMENTAL PROTECTION OFFICE  
P.O. BOX 507  
DULCE, NEW MEXICO 87528**

87590

SUBMIT 1 COPY TO  
NATURAL RESOURCE DEPT  
AND OIL & GAS ADMINISTRATION

**PIT REMEDIATION AND CLOSURE REPORT**

**Operator:** AMOCO PRODUCTION COMPANY **Telephone:** (505) 326-9200  
**Address:** 200 Amoco Court, Farmington, NM 87401  
**Facility or Well Name:** JICARILLA CONTRACT # 147 - YE  
**Location:** Unit or Qtr/Qtr Sec 0 Sec 7 T 35N R 5W County RIO ARIZONA  
**Pit Type:** Separator      Dehydrator      Other COMPRESSOR  
**Land Type:** RANGE

**Pit Location:** Pit dimensions: length 29', width 31', depth 21'  
(Attach diagram) Reference: wellhead X, other       
Footage from reference: 110  
Direction from reference: 43 Degrees      East of North X  
X West of South     

<b>Depth To Groundwater:</b> (Vertical distance from contaminants to seasonal high water elevation of groundwater)	Less than 50 feet (20 points) 50 feet to 99 feet (10 points) Greater than 100 feet (0 points)	<u>0</u>
<b>Distance to an Ephemeral Stream</b> (Downgradient dry wash greater than ten feet in width)	Less than 100 feet (10 points) Greater than 100 feet (0 points)	<u>0</u>
<b>Distance to Nearest Lake, Playa, or Watering Pond</b> (Downgradient lakes, playas and livestock or wildlife watering ponds)	Less than 100 feet (10 points) Greater than 100 feet (0 points)	<u>0</u>
<b>Wellhead Protection Area:</b> (Less than 200 feet from a private domestic water source, or: less than 1000 feet from all other water sources)	Yes (20 points) No (0 points)	<u>0</u>
<b>Distance To Surface Water:</b> (Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 100 feet (20 points) 100 feet to 1000 feet (10 points) Greater than 1000 feet (0 points)	<u>0</u>

**RANKING SCORE (TOTAL POINTS):** 0

Date Remediation Started: \_\_\_\_\_ Date Completed: 7/24/98

Remediation Method: Excavation ☒ Approx. cubic yards 600  
 Check all appropriate sections) Landfarmed ☒ Insitu Bioremediation \_\_\_\_\_  
 Other \_\_\_\_\_

Remediation Location:  
 (i.e. landfarmed onsite,  
 name and location of  
 offsite facility)

Onsite ☒ Offsite \_\_\_\_\_

General Description of Remedial Action: Excavation. BEDROCK BOTTOM. RISK ASSESSED.

Groundwater Encountered: No ☒ Yes \_\_\_\_\_ Depth \_\_\_\_\_

Final Pit:  
 Closure Sampling:  
 (if multiple samples,  
 attach sample results  
 and diagram of sample  
 locations and depths)

Sample location see Attached Documents

Sample depth 15' (NORTH SIDEWALL)

Sample date 7/22/98

Sample time 0930

Sample Results

Soil: Benzene	(ppm)	<u>ND</u>	Water: Benzene	(ppb)	_____
Total BTEX	(ppm)	<u>0.112</u>	Toluene	(ppb)	_____
Field Headspace	(ppm)	<u>50.5</u>	Ethylbenzene	(ppb)	_____
TPH	(ppm)	<u>0.6</u>	Total Xylenes	(ppb)	_____

Groundwater Sample: Yes \_\_\_\_\_ No ☒ (If yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 7/24/98 PRINTED NAME Buddy D. Shaw

SIGNATURE Buddy D. Shaw AND TITLE Environmental Coordinator

AFTER REVIEW OF THE PIT CLOSURE INFORMATION, PIT CLOSURE IS APPROVED IN ACCORDANCE TO THE JICARILLA APACHE TRIBE PIT CLOSURE ORDINANCE.

APPROVED: YES ☒ NO \_\_\_\_\_ (REASON) R.A. Attached

SIGNED: Ke-C Mando DATE: 9-9-98

CLIENT: <u>AMOCO</u>	BLAGG ENGINEERING, INC. P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632-1199	LOCATION NO: <u>8TS90</u> C.D.C. NO: <u>6108</u>
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<b>FIELD REPORT: CLOSURE VERIFICATION</b>	PAGE No: <u>1</u> of <u>1</u>
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LOCATION: NAME: <u>JICA CONTR. 147 WELL #: 9E</u> PIT: <u>COMPR.</u> QUAD/UNIT: <u>0 SEC: 7 TWP: 25N RNG: 5W</u> PM: <u>NM</u> CNTY: <u>RA</u> ST: <u>NM</u> QTR/FOOTAGE: <u>910' FSL/1740' FEL</u> CONTRACTOR: <u>P&amp;S</u>	DATE STARTED: <u>7/22/98</u> DATE FINISHED: _____ ENVIRONMENTAL SPECIALIST: <u>NV</u>
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EXCAVATION APPROX. <u>29</u> FT. x <u>31</u> FT. x <u>21</u> FT. DEEP.	CUBIC YARDAGE: <u>600</u>
DISPOSAL FACILITY: <u>ON-SITE</u>	REMEDIATION METHOD: <u>LANDFARM</u>
LAND USE: <u>RANGE</u>	LEASE: <u>JIC 147</u> FORMATION: <u>DK/GP</u>

FIELD NOTES & REMARKS:	PIT LOCATED APPROXIMATELY <u>110</u> FT. <u>N43W</u> FROM WELLHEAD. DEPTH TO GROUNDWATER: <u>0</u> NEAREST WATER SOURCE: <u>&gt;1000'</u> NEAREST SURFACE WATER: <u>&gt;1000'</u> NMOC D RANKING SCORE: <u>&gt;100'</u> NMOC D TPH CLOSURE STD: <u>5000</u> PPM
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CHECK ONE:  
☒ PIT ABANDONED  
☐ STEEL TANK INSTALLED  
☐ FIBERGLASS TANK INSTALLED

**SOIL AND EXCAVATION DESCRIPTION:**

SIDEWALLS MOSTLY CONSIST OF SAND, COLOR Varies FROM DR. YELL. ORANGE TO OLIVE GRAY NOW COHESIVE, SLIGHTLY MOIST, FIRM, SOME SMALL COARSEL DISPERSED W/IN VARYING INTERVALS NEAR PIT BOTTOM, STAINING APPARENT IN NORTH SIDEWALL ONLY NO APPARENT HC ODOR DETECTED W/IN EXCAVATION, SLIGHT HC ODOR IN NORTH SIDEWALL DUM SAMPLE ONLY.

BOTTOM - BEDROCK (SHALE), LT GRAY/DUSKY RED IN COLOR, HARD, HC ODOR DETECTED IN DUM SAMPLE.

**BEDROCK BOTTOM**

**RISK ASSESSED**

SCALE

0 FT

FIELD 418.1 CALCULATIONS

TIME	SAMPLE I.D.	LAB No:	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm

**PIT PERIMETER**

**OVM RESULTS**

SAMPLE ID	FIELD HEADSPACE PID (ppm)
1E 15'	50.5
2E 17'	8.5
3E 15'	0.0
4E 15'	9.5
5E 21'	118.3

**LAB SAMPLES**

SAMPLE ID	ANALYSIS	TIME
0E15'	TPH	0930
<b>PASSED</b>		

**PIT PROFILE**

TRAVEL NOTES:	CALLOUT: <u>7/21/98 - AFTER</u> ONSITE: <u>7/22/98 - MORNING</u>
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<b>Well Name:</b>	<b>Jicarilla Contract 147 #9E</b>
<b>Well Site location:</b>	<b>Unit O, Sec. 7, T25N, R5W</b>
<b>Pit Type:</b>	<b>Compressor Pit</b>
<b>Producing Formation:</b>	<b>Basin Dakota/Gallup</b>
<b>Pit Category:</b>	<b>Non Vulnerable</b>
<b>Horizontal Distance to Surface Water:</b>	<b>&gt; 1000 ft.</b>
<b>Vicinity Groundwater Depth:</b>	<b>&gt; 100 ft.</b>

## **RISK ASSESSMENT (non-vulnerable area)**

Pit remediation activities were terminated when trackhoe encountered shale bedrock at 21 feet below grade.

No past or future threat to surface water or groundwater is likely based on the following considerations:

1. Past production fluids were contained locally by a relatively shallow shale bedrock located 21 feet below grade. Groundwater levels located on or close to the well pad are estimated to be at a much greater depth below shale bedrock.
2. Topographic information does not indicate off site lateral fluid migration near the earthen pit.
3. Daily discharge into the earthen pit has been terminated (pit abandoned). Prior discharge into the pit is believed to be under 5 barrels per day.
4. Well site located within the **non-vulnerable area** and is approximately 0.40 miles north of the nearest vulnerable area boundary (Gonzales Canyon wash).

**(Refer to Gonzales Mesa Quadrangle, New Mexico - Rio Arriba County, 7.5 Minute Series (Topographic), 1963, (vulnerable area boundary developed by Mr. William C. Olson, Hydrogeologist, Environmental Bureau, New Mexico Oil Conservation Division).**

Based upon the information given, we conclude that the shale bottom creates enough of an impermeable barrier as to subdue impact to groundwater below it (please refer to AMOCO's report "Post Excavation Pit Closure Investigation Summary, July, 1995", with cover letter dated November 30, 1995). AMOCO requests pit closure approval on this location.

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

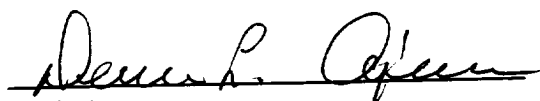
Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	1 @ 15'	Date Reported:	07-24-98
Laboratory Number:	D684	Date Sampled:	07-22-98
Chain of Custody No:	6108	Date Received:	07-24-98
Sample Matrix:	Soil	Date Extracted:	07-24-98
Preservative:	Cool	Date Analyzed:	07-24-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

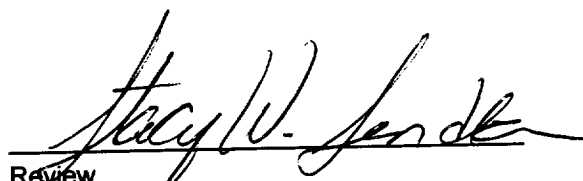
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	0.6	0.2
Diesel Range (C10 - C28)	ND	0.1
Total Petroleum Hydrocarbons	0.6	0.2

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: Jicarilla Contract #147 - 9E Compressor Pit.

  
Analyst

  
Review

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	1 @ 15'	Date Reported:	07-24-98
Laboratory Number:	D684	Date Sampled:	07-22-98
Chain of Custody:	6108	Date Received:	07-24-98
Sample Matrix:	Soil	Date Analyzed:	07-24-98
Preservative:	Cool	Date Extracted:	07-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	8.8
Toluene	ND	8.4
Ethylbenzene	ND	7.6
p,m-Xylene	77.1	10.8
o-Xylene	35.2	5.2
Total BTEX	112	

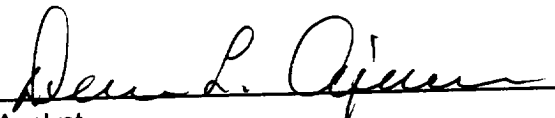
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	96 %
	Bromofluorobenzene	96 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: Jicarilla Contract #147 - 9E Compressor Pit.

  
Analyst

  
Review

87590

**JICARILLA APACHE TRIBE  
ENVIRONMENTAL PROTECTION OFFICE  
P.O. BOX 507  
DULCE, NEW MEXICO 87528**

SUBMIT 1 COPY TO  
NATURAL RESOURCE DEPT  
AND OIL & GAS ADMINISTRATION

**PIT REMEDIATION AND CLOSURE REPORT**

**Operator:** AMOCO PRODUCTION COMPANY **Telephone:** (505) 326-9200

**Address:** 200 Amoco Court, Farmington, NM 87401

**Facility or Well Name:** JICARILLA CONTRACT #147-9E

**Location:** Unit or Qtr/Qtr Sec 0 Sec 7 T 25N R 5W County RIO ARIZONA

**Pit Type:** Separator ☒ Dehydrator ☐ Other ☐

**Land Type:** RANGE

**Pit Location:** (Attach diagram) Pit dimensions: length 30, width 30, depth 17'  
Reference: wellhead ☒, other ☐  
Footage from reference: 168'  
Direction from reference: 74 Degrees ☐ East of North ☒  
☒ West of South ☐

**Depth To Groundwater:**

(Vertical distance from  
contaminants to seasonal  
high water elevation of  
groundwater)

Less than 50 feet	(20 points)	
50 feet to 99 feet	(10 points)	
Greater than 100 feet	(0 points)	<u>0</u>

**Distance to an Ephemeral Stream**

(Downgradient dry wash greater than  
ten feet in width)

Less than 100 feet	(10 points)	
Greater than 100 feet	(0 points)	<u>0</u>

**Distance to Nearest Lake, Playa, or Watering Pond**

(Downgradient lakes, playas and  
livestock or wildlife watering ponds)

Less than 100 feet	(10 points)	
Greater than 100 feet	(0 points)	<u>0</u>

**Wellhead Protection Area:**

(Less than 200 feet from a private  
domestic water source, or: less than  
1000 feet from all other water sources)

Yes	(20 points)	
No	(0 points)	<u>0</u>

**Distance To Surface Water:**

(Horizontal distance to perennial  
lakes, ponds, rivers, streams, creeks,  
irrigation canals and ditches)

Less than 100 feet	(20 points)	
100 feet to 1000 feet	(10 points)	
Greater than 1000 feet	(0 points)	<u>0</u>

**RANKING SCORE (TOTAL POINTS):** 0

Date Remediation Started: \_\_\_\_\_ Date Completed: 7/24/98

Remediation Method: Excavation ☒ Approx. cubic yards 500  
 Check all appropriate sections) Landfarmed ☒ Insitu Bioremediation \_\_\_\_\_  
 Other \_\_\_\_\_

Remediation Location: Onsite ☒ Offsite \_\_\_\_\_  
 (i.e. landfarmed onsite, name and location of offsite facility)

General Description of Remedial Action: Excavation. BEDROCK BOTTOM. RISK ASSESSED.

Groundwater Encountered: No ☒ Yes \_\_\_\_\_ Depth \_\_\_\_\_

Final Pit: Sample location see Attached Documents  
 Closure Sampling: \_\_\_\_\_  
 (if multiple samples, attach sample results and diagram of sample locations and depths)  
 Sample depth 12' (WEST SIDEWALL)  
 Sample date 7/22/98 Sample time 0830

Sample Results

Soil: Benzene	(ppm)	<u>2,740</u>	Water: Benzene	(ppb)	_____
Total BTEX	(ppm)	<u>179.030</u>	Toluene	(ppb)	_____
Field Headspace	(ppm)	<u>1,110</u>	Ethylbenzene	(ppb)	_____
TPH	(ppm)	<u>1,800</u>	Total Xylenes	(ppb)	_____

Groundwater Sample: Yes \_\_\_\_\_ No ☒ (If yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 7/24/98 PRINTED NAME Buddy D. Shaw  
 SIGNATURE Buddy D. Shaw AND TITLE Environmental Coordinator

AFTER REVIEW OF THE PIT CLOSURE INFORMATION, PIT CLOSURE IS APPROVED IN ACCORDANCE TO THE JICARILLA APACHE TRIBE PIT CLOSURE ORDINANCE.

APPROVED: YES ☒ NO \_\_\_\_\_ (REASON) R.A. Attached

SIGNED: K. C. M... DATE: 9-9-98

CLIENT: <u>AMOCO</u>	BLAGG ENGINEERING, INC. P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632-1199	LOCATION NO: <u>BJ590</u> C.O.C. NO: <u>6108</u>
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<b>FIELD REPORT: CLOSURE VERIFICATION</b>	PAGE No: <u>1</u> of <u>1</u>
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LOCATION: NAME: <u>JICA. CONTR.</u> 147 WELL #: <u>9E</u> PIT: <u>SEP</u> QUAD/UNIT: <u>0</u> SEC: <u>7</u> TWP: <u>25N</u> RNG: <u>5W</u> PM: <u>NM</u> CNTY: <u>RA</u> ST: <u>NM</u> QTR/FOOTAGE: <u>910' FSL</u> / <u>1740' FEL</u> CONTRACTOR: <u>P &amp; S</u>	DATE STARTED: <u>7/22/98</u> DATE FINISHED: _____ ENVIRONMENTAL SPECIALIST: <u>NV</u>
---	---

EXCAVATION APPROX. <u>30</u> FT. x <u>30</u> FT. x <u>17</u> FT. DEEP. CUBIC YARDAGE: <u>500</u> DISPOSAL FACILITY: <u>ON-SITE</u> REMEDIATION METHOD: <u>LANDFARM</u> LAND USE: <u>RANGE</u> LEASE: <u>JIC 147</u> FORMATION: <u>OK/6P</u>
---

FIELD NOTES & REMARKS:	PIT LOCATED APPROXIMATELY <u>168</u> FT. <u>N74W</u> FROM WELLHEAD. DEPTH TO GROUNDWATER: <u>&gt;100'</u> NEAREST WATER SOURCE: <u>&gt;1000'</u> NEAREST SURFACE WATER: <u>&gt;1000'</u> NMCD RANKING SCORE: <u>0</u> NMCD TPH CLOSURE STD: <u>5000</u> PPM <b>SOIL AND EXCAVATION DESCRIPTION:</b>
------------------------	--

SIDEWALLS CONSIST OF DK. YELL. ORANGE (NORTH SIDEWALL) TO OLIVE GRAY (SOUTH & WEST SIDEWALLS) SAND NOW COHESIVE, SLIGHTLY MOIST, FIRM, EAST SIDEWALL PRIMARILY BEDROCK (SOFT, DUSKY RED SHALE) SOUTH & WEST SIDEWALLS REVEAL STAINING ON APPROX. 75% OF SIDEWALLS, NO APPARENT HC ODOR DETECTED W/IN EXCAVATION, STRONG HC ODOR DETECTED IN SOUTH & WEST SIDEWALL SOIL SAMPLES.  
 BOTTOM - BEDROCK (SHALE), LT. GRAY IN COLOR VERY HARD, NO APPARENT HC ODOR W/IN EXCAVATION OR SOIL SAMPLE, NO APPARENT STAINING EVIDENT.

**BEDROCK BOTTOM**

**RISK ASSESSED.**

SCALE

0  FT

FIELD 418.1 CALCULATIONS

TIME	SAMPLE I.D.	LAB NO:	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm

**PIT PERIMETER**

**OVMS RESULTS**

SAMPLE ID	FIELD HEADSPACE PID (ppm)
1 @ 11'	0.0
2 @ 10'	21.9
3 @ 12'	618
4 @ 12'	1,110
5 @ 17'	0.0

**LAB SAMPLES**

SAMPLE ID	ANALYSIS	TIME
4 @ 12'	TPH / BTX	0830

TPH - PASSED

BTX - FAILED

**PIT PROFILE**

TRAVEL NOTES: CALLOUT: <u>7/21/98 - AFTER.</u>	ONSITE: <u>7/22/98 - MORN.</u>
--	--------------------------------

Well Name:	Jicarilla Contract 147 #9E
Well Site location:	Unit O, Sec. 7, T25N, R5W
Pit Type:	Separator Pit
Producing Formation:	Basin Dakota/Gallup
Pit Category:	Non Vulnerable
Horizontal Distance to Surface Water:	> 1000 ft.
Vicinity Groundwater Depth:	> 100 ft.

## **RISK ASSESSMENT (non-vulnerable area)**

Pit remediation activities were terminated when trackhoe encountered shale bedrock at 17 feet below grade.

No past or future threat to surface water or groundwater is likely based on the following considerations:

1. Past production fluids were contained locally by a relatively shallow shale bedrock located 17 feet below grade. Groundwater levels located on or close to the well pad are estimated to be at a much greater depth below shale bedrock.
2. Topographic information does not indicate off site lateral fluid migration near the earthen pit.
3. Daily discharge into the earthen pit has been terminated (pit abandoned). Prior discharge into the pit is believed to be under 5 barrels per day.
4. Well site located within the non-vulnerable area and is approximately 0.40 miles north of the nearest vulnerable area boundary (Gonzales Canyon wash).

**(Refer to Gonzales Mesa Quadrangle, New Mexico - Rio Arriba County, 7.5 Minute Series (Topographic), 1963, (vulnerable area boundary developed by Mr. William C. Olson, Hydrogeologist, Environmental Bureau, New Mexico Oil Conservation Division).**

Based upon the information given, we conclude that the subsurface lateral impact from the earthen pit is very limited and that the shale bottom creates enough of an impermeable barrier as to subdue impact to groundwater below it (please refer to AMOCO's report "Post Excavation Pit Closure Investigation Summary, July, 1995", with cover letter dated November 30, 1995). AMOCO requests pit closure approval on this location.

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

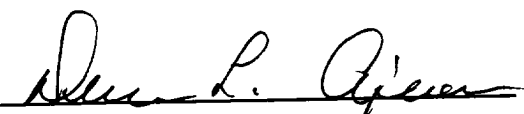
Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	4 @ 12'	Date Reported:	07-24-98
Laboratory Number:	D685	Date Sampled:	07-22-98
Chain of Custody No:	6108	Date Received:	07-24-98
Sample Matrix:	Soil	Date Extracted:	07-24-98
Preservative:	Cool	Date Analyzed:	07-24-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	632	0.2
Diesel Range (C10 - C28)	1,170	0.1
Total Petroleum Hydrocarbons	1,800	0.2

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: Jicarilla Contract #147 - 9E Separator Pit.

  
Analyst

  
Review



# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	4 @ 12'	Date Reported:	07-24-98
Laboratory Number:	D685	Date Sampled:	07-22-98
Chain of Custody:	6108	Date Received:	07-24-98
Sample Matrix:	Soil	Date Analyzed:	07-24-98
Preservative:	Cool	Date Extracted:	07-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	2,740	8.8
Toluene	68,380	8.4
Ethylbenzene	3,250	7.6
p,m-Xylene	68,970	10.8
o-Xylene	35,690	5.2
Total BTEX	179,030	

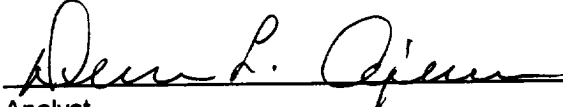
ND - Parameter not detected at the stated detection limit.

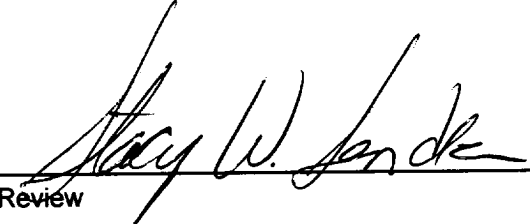
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	99 %
	Bromofluorobenzene	99 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: Jicarilla Contract #147 - 9E Separator Pit.

  
Analyst

  
Review

# CHAIN OF CUSTODY RECORD

6108

Client / Project Name <b>blast / Amoco</b>			Project Location <b>JICAUSA CONTRACT #147-9E</b>			ANALYSIS / PARAMETERS					
Sampler: <b>NTV</b>			Client No. <b>04034-10</b>			No. of Containers		Remarks			
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix							
<b>① @ 15'</b>	<b>7/22/98</b>	<b>0930</b>	<b>D684</b>	<b>SOIL</b>	<b>1</b>	<b>✓</b>	<b>✓</b>	<b>TRAH (8015)</b>	<b>BTEX (8021)</b>		<b>Compressed PIT</b>
<b>④ @ 12'</b>	<b>7/22/98</b>	<b>0830</b>	<b>D685</b>	<b>SOIL</b>	<b>1</b>	<b>✓</b>	<b>✓</b>				<b>SEPARATOR PIT</b>
											<b>BOTH SAMPLES</b>
											<b>RESERV - COOL</b>
Relinquished by: (Signature) <i>John V. [Signature]</i>			Date <b>7/24/98</b>	Time <b>0755</b>	Received by: (Signature) <i>Alvin L. [Signature]</i>			Date <b>7.24.98</b>	Time <b>0755</b>		
Relinquished by: (Signature) <i>[Signature]</i>			<b>7/24/98</b>		Received by: (Signature) <i>[Signature]</i>						
Relinquished by: (Signature)					Received by: (Signature)						

## ENVIROTECH INC.

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

Sample Receipt			
Received Intact	Y	N	N/A
Cool - Ice/Blue Ice	✓		

JICARILLA APACHE TRIBE  
ENVIRONMENTAL PROTECTION OFFICE  
P.O. BOX 507  
DULCE, NEW MEXICO 87528

85590  
SUBMIT 1 COPY TO:  
NATURAL RESOURCE DEPT  
AND OIL & GAS ADMINISTRATION

ON-SITE SOIL REMEDIATION REPORT

Operator: <u>AMOCO PRODUCTION COMPANY</u>		Telephone: <u>(505) 326-9200</u>
Address: <u>200 Amoco Court, Farmington, NM 87401</u>		
Facility or Well Name: <u>JICARILLA CONTRACT 147 9E</u>		
Location: Unit or Qtr/Qtr Sec <u>0</u> Sec <u>7</u> T <u>25N</u> R <u>5W</u> County <u>RIO ARriba</u>		
Land Type: <u>RANGE</u>		
Date Remediation Started: <u>7.22.98</u>		Date Completed: <u>4/1/99</u>
Remediation Method: Landfarmed <input checked="" type="checkbox"/>		Approx. cubic yards <u>1,850</u>
Composted <input type="checkbox"/>		
Other <input type="checkbox"/>		
Depth To Groundwater: (pts.) <u>0</u>		<b>Final Closure Sampling:</b> Sampling Date: <u>3.30.99</u> Time: <u>1145</u> Sample Results: (LF-2) Field Headspace (ppm) <u>82.2</u> TPH (ppm) <u>1,200</u> Method <u>8015</u> Other <u>MULTIPLE SAMPLES - SEE ATTACHED FORM</u>
Distance to an Ephemeral Stream (pts.) <u>0</u>		
Distance to Nearest Lake, Playa, or Watering Pond (pts.) <u>0</u>		
Wellhead Protection Area: (pts.) <u>0</u>		
Distance To Surface Water: (pts.) <u>0</u>		
RANKING SCORE (TOTAL POINTS): <u>0</u>		
I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF		
DATE <u>4/1/99</u>		PRINTED NAME <u>Buddy D. Shaw</u>
SIGNATURE <u>Buddy D. Shaw</u>		AND TITLE <u>Environmental Coordinator</u>
AFTER REVIEW OF THE SOIL REMEDIATION INFORMATION, ON-SITE REMEDIATION IS APPROVED IN ACCORDANCE TO THE JICARILLA APACHE TRIBE PIT CLOSURE ORDINANCE.		
APPROVED: YES <input type="checkbox"/> NO <input type="checkbox"/> (REASON) _____		
SIGNED: _____ DATE: _____		

CLIENT: <u>AMOCO</u>	<b>BLAGG ENGINEERING, INC.</b> P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632-1199	LOCATION NO: <u>BJS90</u> C.D.C. NO: <u>4583</u>
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## FIELD REPORT: LANDFARM/COMPOST PILE CLOSURE VERIFICATION

LOCATION: NAME: <u>SCARILLA CONTRACT 147 WELL #: 9E</u> PITS: <u>SEP, BLOW, COMP.</u> QUAD/UNIT: <u>0</u> SEC: <u>7</u> TWP: <u>25N</u> RNG: <u>5W</u> PM: <u>NM</u> CNTY: <u>RA</u> ST: <u>NM</u> QTR./FOOTAGE: <u>SW/4 SE/4</u> CONTRACTOR: <u>PTS</u>	DATE STARTED: <u>3.30.99</u> DATE FINISHED: _____ ENVIRONMENTAL SPECIALIST: <u>REP</u>
--	--

SOIL REMEDIATION:

REMEDIATION SYSTEM: <u>LANDFARM</u>	APPROX. CUBIC YARDAGE: <u>1850</u>
LAND USE: <u>RANGE</u>	LIFT DEPTH (ft): <u>2-2.5</u>

FIELD NOTES & REMARKS:

DEPTH TO GROUNDWATER: >100' NEAREST WATER SOURCE: >1000' NEAREST SURFACE WATER: >1000'

NMDCI RANKING SCORE: 0 NMDCI TPH CLOSURE STD: 5000 PPM

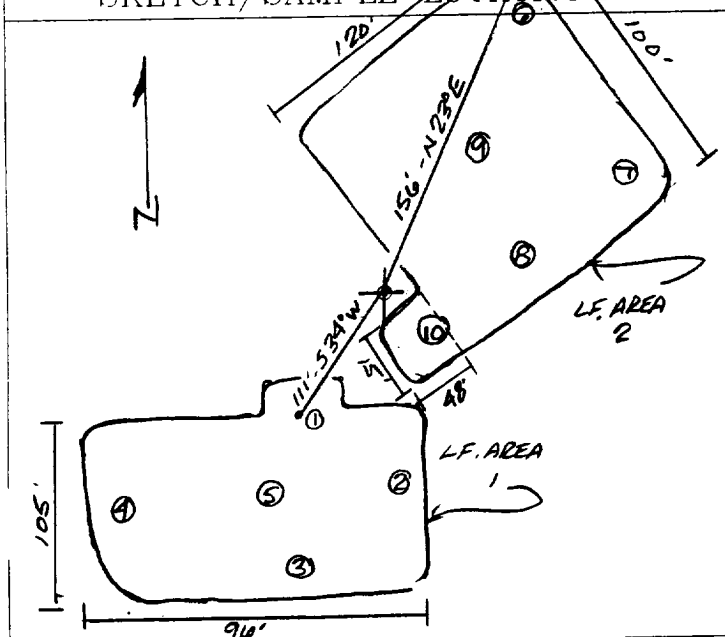
*DR YELLOWISH BROWN SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM.  
 NO APPARENT STAINING OBSERVED, SLIGHT HC ODOR DETECTED IN SAMPLING  
 POINT ⑦. SAMPLING DEPTHS RANGE FROM 6"-18". TOOK 2 5 PT  
 COMPOSITE SAMPLES FOR LAB ANALYSIS.*

CLOSED

FIELD 418.1 CALCULATIONS

SAMP. TIME	SAMPLE I.D.	LAB No:	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm

SKETCH/SAMPLE LOCATIONS

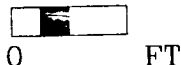


OVM RESULTS

LAB SAMPLES

SAMPLE ID	FIELD HEADSPACE PID (ppm)	SAMPLE ID	ANALYSIS	TIME	RESULTS
LF-1	59.2	LF-1	TPH (8015)	1145	924
LF-2	82.2	LF-2	TPH (8015)	1200	1,200

SCALE



TRAVEL NOTES: CALLOUT: N/A ONSITE: 3.30.99

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

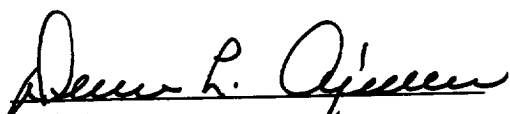
Client:	Blagg / AMOCO	Project #:	403410
Sample ID:	LF - 1	Date Reported:	04-01-99
Laboratory Number:	E920	Date Sampled:	03-30-99
Chain of Custody No:	6583	Date Received:	03-31-99
Sample Matrix:	Soil	Date Extracted:	03-31-99
Preservative:	Cool	Date Analyzed:	04-01-99
Condition:	Cool and Intact	Analysis Requested:	8015 TPH


Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	6.9	0.2
Diesel Range (C10 - C28)	917	0.1
Total Petroleum Hydrocarbons	924	0.2

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: Jicarilla Contract 147 - 9 E Landfarm. 5 Pt. Composite.

  
Analyst

  
Review

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

**EPA METHOD 8015 Modified  
Nonhalogenated Volatile Organics  
Total Petroleum Hydrocarbons**

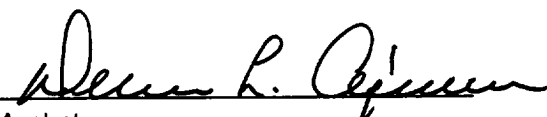
Client:	Blagg / AMOCO	Project #:	403410
Sample ID:	LF - 2	Date Reported:	04-01-99
Laboratory Number:	E921	Date Sampled:	03-30-99
Chain of Custody No:	6583	Date Received:	03-31-99
Sample Matrix:	Soil	Date Extracted:	03-31-99
Preservative:	Cool	Date Analyzed:	04-01-99
Condition:	Cool and Intact	Analysis Requested:	8015 TPH


Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	23.5	0.2
Diesel Range (C10 - C28)	1,180	0.1
Total Petroleum Hydrocarbons	1,200	0.2

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: Jicarilla Contract 147 - 9 E Landfarm. 5 Pt. Composite.

  
Analyst

  
Review

# CHAIN OF CUSTODY RECORD

6583

Client / Project Name <b>BLAKE/ANOCO</b>			Project Location <b>LANDFARM</b>			ANALYSIS / PARAMETERS							
Sampler:			Client No. <b>04034-10</b>			Remarks							
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH (8015)							
LF-1	3-30-99	1145	E920	SOIL	1	✓					SPT COMPOSITE		
LF-2	3-30-99	1200	E921	SOIL	1	✓					SPT COMPOSITE		
											SAMPLES PRESENT		
											COOL		
Relinquished by: (Signature) <i>Ed Porter</i>			Date 3/31/99			Time 0715			Received by: (Signature) <i>Sharon Vels</i>			Date 3/31/99	Time 0715
Relinquished by: (Signature) <i>Sharon Vels</i>			Date 3/31/99			Time 0756			Received by: (Signature) <i>Alvin E. Quisenberry</i>			Date 3/31/99	Time 0756
Relinquished by: (Signature)			Date			Time			Received by: (Signature)			Date	Time

**ENVIROTECH INC.**

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

**Sample Receipt**

Received Intact	Y	N	N/A
Cool - Ice/Blue Ice	✓		