

Date Remediation Started: _____ Date Completed: 10/5/98
 Remediation Method: Excavation Approx. cubic yards 1,200
 (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. BEARSK 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 14' (EAST SIDEWALL)
 Sample date 10/5/98 Sample time 1330

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 10/5/98 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: Ker C Munn DATE: 12-28-98

CLIENT: <u>AMOCO</u>	BLAGG ENGINEERING, INC. P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632-1199	LOCATION NO: <u>BJ651</u> C.D.C. NO: _____
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FIELD REPORT: <u>CLOSURE VERIFICATION</u>	PAGE No: <u>1</u> of <u>1</u>
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LOCATION: NAME: <u>JICA AP 102</u> WELL #: <u>14</u> PIT: <u>BLOW</u>	DATE STARTED: <u>10/5/98</u> DATE FINISHED: _____
QUAD/UNIT: <u>F</u> SEC: <u>9</u> TWP: <u>26N</u> RNG: <u>4W</u> PM: <u>NM</u> CNTY: <u>RA</u> ST: <u>NM</u>	ENVIRONMENTAL SPECIALIST: <u>NV</u>
QTR/FOOTAGE: <u>1620' FWL</u> <u>1730' FWL</u> CONTRACTOR: <u>P+S</u>	

EXCAVATION APPROX. <u>41</u> FT. x <u>40</u> FT. x <u>20</u> FT. DEEP.	CUBIC YARDAGE: <u>1,200</u>
DISPOSAL FACILITY: <u>ON-SITE</u> <u>JICA AP 102-18</u> REMEDIATION METHOD: <u>LANDFARM</u>	
LAND USE: <u>RANGE</u> LEASE: <u>TIC 102</u> FORMATION: <u>DK</u>	

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY 168 FT. N47E FROM WELLHEAD.

DEPTH TO GROUNDWATER: <u>>100'</u>	NEAREST WATER SOURCE: <u>>1000'</u>	NEAREST SURFACE WATER: <u>>1000'</u>
NMOC D RANKING SCORE: <u>0</u>	NMOC D TPH CLOSURE STD: <u>5000</u> PPM	

SOIL AND EXCAVATION DESCRIPTION:

SIDEWALLS - MOSTLY OK. YELL. ORANGE SAND, NON COHESIVE SLIGHTLY MOIST FIRM, STAINING OBSERVED IN NW CORNER OF EXCAVATION DET. '4'-8' BELOW GRADE, NO APPARENT HC ODOOR W/IN EXCAVATION OR IN ANY OF THE OUM SAMPLES.

BOTTOM - BEDROCK (SANDSTONE), OLIVE TO MED. GLAY IN COLOR, VERY HARD, STRONG HC ODOOR IN OUM SAMPLES.

CHECK ONE:

PIT ABANDONED

STEEL TANK INSTALLED

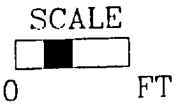
FIBERGLASS TANK INSTALLED

BEDROCK
BOTTOM

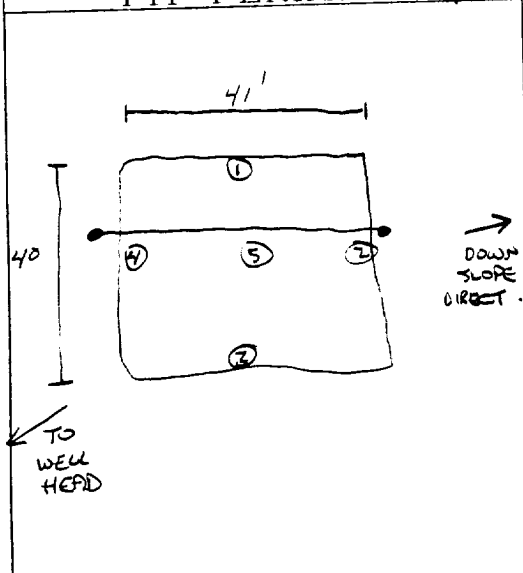
RISK ASSESSED

FIELD 418.1 CALCULATIONS

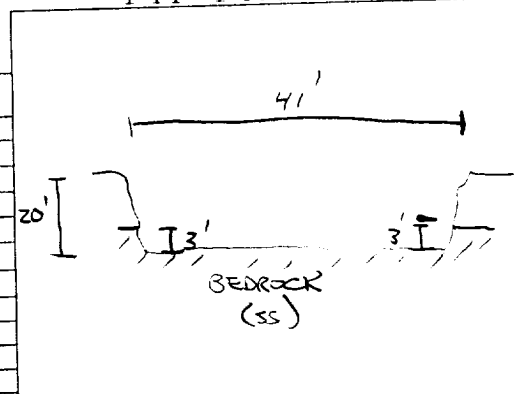
TIME	SAMPLE I.D.	LAB No:	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm
1330	<u>2 @ 14'</u>	<u>TPH-2047</u>	<u>5</u>	<u>20</u>	<u>1:1</u>	<u>4</u>	<u>ND</u>



PIT PERIMETER



PIT PROFILE



OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)
<u>1 @ 14'</u>	<u>0.0</u>
<u>2 @ 14'</u>	<u>0.0</u>
<u>3 @ 14'</u>	<u>0.0</u>
<u>4 @ 15'</u>	<u>0.0</u>
<u>5 @ 20'</u>	<u>139.8</u>

LAB SAMPLES

SAMPLE ID	ANALYSIS	TIME

TRAVEL NOTES: CALLOUT: _____ ONSITE: 10/5/98

Well Name:	Jicarilla Apache 102 #14
Well Site location:	Unit F, Sec. 9, T26N, R4W
Pit Type:	Blow Pit
Producing Formation:	Basin Dakota
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 sandstone bedrock at 20 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 sandstone bedrock located 20 feet below grade. Groundwater levels located on or close to the well pad are estimated to be at a much greater depth below sandstone 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 1.26 miles north of the nearest vulnerable area boundary (Tapacito Creek).

(Refer to Vigas Canyon Quadrangle, New Mexico - Rio Arriba County, 7.5 Minute Series (Topographic), photorevised 1982, (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 sandstone 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.

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:	2 @ 14'	Date Analyzed:	10-05-98
Project Location:	Jicarilla Apache # 102 - 14	Date Reported:	10-05-98
Laboratory Number:	TPH-2047	Sample Matrix:	Soil

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

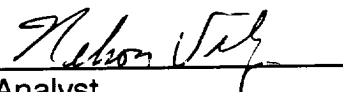
ND = Not Detectable at stated detection limits.

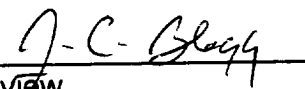
QA/QC:	QA/QC Sample TPH mg/kg	Duplicate TPH mg/kg	% *Diff.
	236	220	7.02

*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 - BJ651


Analyst


Review

BLAGG ENGINEERING, INC.

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

Field TPH-Worksheet

Max Characters:

Client:	Amoco	Project #:	
Sample ID:	2 @ 14'	Date Analyzed:	10-05-98
Project Location:	Jicarilla Apache # 102 - 14	Date Reported:	10-05-98
Laboratory Number:	TPH-2047	Sample Matrix:	Soil

Sample Weight:	5.00 grams
Volume Freon:	20.00 mL
Dilution Factor:	1 (unitless)
TPH Reading:	4 mg/kg

TPH Result:	16.0 mg/kg
Reported TPH Result:	16 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.
	----- 236	----- 220	----- 7.02

Comments: *****Max Characters*****

Comments: Blow Pit - BJ651

8J651

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

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

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 APACHE # 102 - 14

Location: Unit or Qtr/Qtr Sec F Sec 9 T 26N R 4W County RIO ARriba

Pit Type: Separator Dehydrator Other

Land Type: RANGE

Pit Location: Pit dimensions: length 29', width 40', depth 8'
(Attach diagram)

Reference: wellhead , other

Footage from reference: 183'

Direction from reference: 64 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)	<u>0</u>
	Greater than 100 feet	(0 points)	
Distance to Nearest Lake, Playa, or Watering Pond (Downgradient lakes, playas and livestock or wildlife watering ponds)	Less than 100 feet	(10 points)	<u>0</u>
	Greater than 100 feet	(0 points)	
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)	<u>0</u>
	No	(0 points)	
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)	<u>0</u>
	Greater than 1000 feet	(0 points)	

RANKING SCORE (TOTAL POINTS): 0

Date Remediation Started: _____ Date Completed: 10/5/98

Remediation Method: Excavation Landfarmed Other _____
Check all appropriate sections) Approx. cubic yards 340 Insitu Bioremediation _____

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: (if multiple samples, attach sample results and diagram of sample locations and depths)
Sample location see Attached Documents
Sample depth 4' (NORTH SIDEWALL)
Sample date 10/7/98 Sample time 1200

Sample Results

Soil: Benzene	(ppm)	<u>0.128</u>	Water: Benzene	(ppb)	_____
Total BTEX	(ppm)	<u>15.370</u>	Toluene	(ppb)	_____
Field Headspace	(ppm)	<u>530</u>	Ethylbenzene	(ppb)	_____
TPH	(ppm)	<u>727</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 KNOWLEGE AND BELIEF

DATE 10/7/98 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: [Signature] DATE: 3-31-99

CLIENT: <u>AMOCO</u>	BLAGG ENGINEERING, INC. P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632-1199	LOCATION NO: <u>BJ651</u> C.D.C. NO: <u>6285</u>
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FIELD REPORT: <u>CLOSURE VERIFICATION</u>	PAGE No: <u>1</u> of <u>1</u>
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LOCATION: NAME: <u>JICA. AP. 102</u> WELL #: <u>14</u> PIT: <u>SEP</u>	DATE STARTED: <u>10/5/98</u> DATE FINISHED: _____
QUAD/UNIT: <u>F SEC: 9 TWP: 26N RNG: 4W PM: NM CNTY: RA ST: NM</u>	ENVIRONMENTAL SPECIALIST: <u>NV</u>
QTR/FOOTAGE: <u>1620'FWL 1730'FWL</u> CONTRACTOR: <u>P&S</u>	

EXCAVATION APPROX. <u>29</u> FT. x <u>40</u> FT. x <u>8</u> FT. DEEP. CUBIC YARDAGE: <u>340</u>
DISPOSAL FACILITY: <u>ON-SITE</u> REMEDIATION METHOD: <u>LANDFARM</u>
LAND USE: <u>RANGE</u> LEASE: <u>JIC 102</u> FORMATION: <u>DK</u>

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY 183 FT. S64W FROM WELLHEAD.

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

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

SOIL AND EXCAVATION DESCRIPTION:

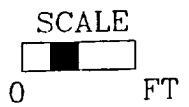
CHECK ONE:	
<input checked="" type="checkbox"/>	PIT ABANDONED
<input type="checkbox"/>	STEEL TANK INSTALLED
<input type="checkbox"/>	FIBERGLASS TANK INSTALLED

SIDEWALLS - DK. YELL. BROWN SAND TO DUSKY RED/LT. GRAY SILTY CLAY TO CLAY (SOUTH & WEST SIDEWALLS), NON COHESIVE TO SLIGHTLY PLASTIC, SLIGHTLY MOIST FIRM TO VERY STIFF NO NOTICEABLE STAINING OBSERVED, SLIGHT HE ODOR DETECTED W/IN EXCAVATION, STRONG HE ODOR IN ALL DUM SAMPLES.

BOTTOM - BEDROCK (SANDSTONE), DK. YELL. ORANGE TO LT. GRAY IN COLOR, VERY HARD, SLIGHT HE ODOR IN DUM SAMPLE.

BEDROCK BOTTOM

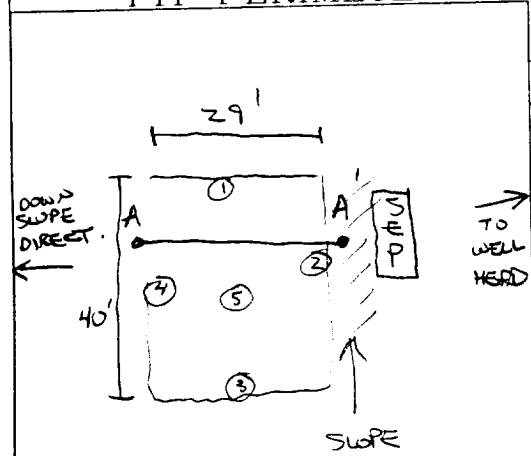
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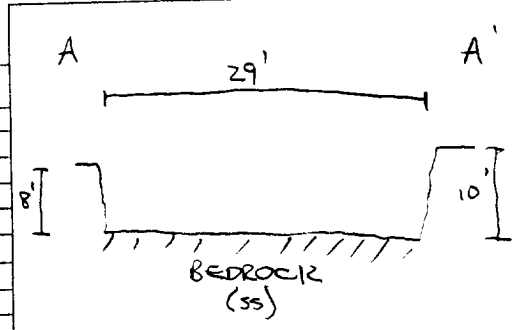
FIELD 418.1 CALCULATIONS

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

PIT PERIMETER



PIT PROFILE



OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)
1 @ 4'	530
2 @ 4'	432
3 @ 4'	258
4 @ 4'	472
5 @ 8'	31.9

LAB SAMPLES

SAMPLE ID	ANALYSIS	TIME
① @ 4'	TPH BTEX	1200
<u>BOD PASSED</u>		

TRAVEL NOTES: CALLOUT: 9/29/98 ONSITE: 10/5/98

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

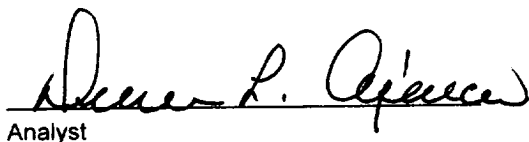
Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	1 @ 4'	Date Reported:	10-07-98
Laboratory Number:	E032	Date Sampled:	10-05-98
Chain of Custody No:	6285	Date Received:	10-07-98
Sample Matrix:	Soil	Date Extracted:	10-07-98
Preservative:	Cool	Date Analyzed:	10-07-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	221	0.2
Diesel Range (C10 - C28)	506	0.1
Total Petroleum Hydrocarbons	727	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 Apache #102 - 14 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:	1 @ 4'	Date Reported:	10-07-98
Laboratory Number:	E032	Date Sampled:	10-05-98
Chain of Custody:	6285	Date Received:	10-07-98
Sample Matrix:	Soil	Date Analyzed:	10-07-98
Preservative:	Cool	Date Extracted:	10-07-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	128	8.8
Toluene	1,700	8.4
Ethylbenzene	827	7.6
p,m-Xylene	8,290	10.8
o-Xylene	4,420	5.2
Total BTEX	15,370	

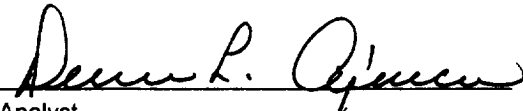
ND - Parameter not detected at the stated detection limit.


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 Apache #102 - 14 Separator Pit.


Analyst


Review

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

ON-SITE SOIL REMEDIATION REPORT

Operator: AMOCO PRODUCTION COMPANY Telephone: (505) 326-9200
 Address: 200 Amoco Court, Farmington, NM 87401
 Facility or Well Name: JICARILLA APACHE 102-14
 Location: Unit or Qtr/Qtr Sec F Sec 9 T 26N R 4W County RIO ARRIBA
 Land Type: RANGE

Date Remediation Started: 10-5-98 Date Completed: 4/19/99
 Remediation Method: Landfarmed Approx. cubic yards 1540
 Composted
 Other

<p>Depth To Groundwater: (pts.) <u>0</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></p>	<p style="text-align: center;">Final Closure Sampling:</p> <p>Sampling Date: <u>4-15-99</u> Time: <u>1230</u> Sample Results: Field Headspace (ppm) <u>3.2</u> (LF-1) TPH (ppm) <u>5.9</u> Method <u>8015</u> Other <u>MULTIPLE SAMPLES - SEE ATTACHED FORM</u></p>
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I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 4/19/99 PRINTED NAME Buddy D. Shaw
 SIGNATURE Buddy D. Shaw AND TITLE Environmental Coordinator

AFTER REVIEW OF THE SOIL REMEDIATION INFORMATION, ON-SITE REMEDIATION IS APPROVED IN ACCORDANCE TO THE JICARILLA APACHE TRIBE PIT CLOSURE ORDINANCE.

APPROVED: YES NO (REASON) _____

SIGNED: Kesha M... DATE: 6-18-99

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

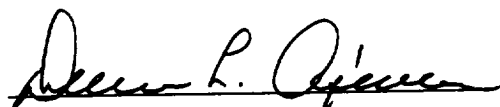
Client:	Blagg / AMOCO	Project #:	403410
Sample ID:	LF - 1	Date Reported:	04-19-99
Laboratory Number:	F053	Date Sampled:	04-15-99
Chain of Custody No:	6890	Date Received:	04-16-99
Sample Matrix:	Soil	Date Extracted:	04-16-99
Preservative:	Cool	Date Analyzed:	04-19-99
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

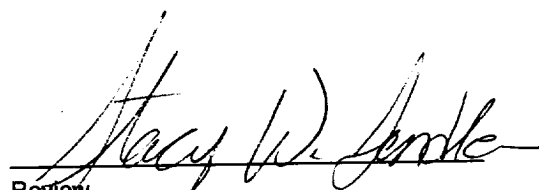
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	4.0	0.2
Diesel Range (C10 - C28)	1.9	0.1
Total Petroleum Hydrocarbons	5.9	0.2

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 Apache 102 - 14 Landfarm. 5 Pt. Composite.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

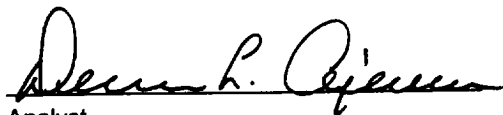
Client:	Blagg / AMOCO	Project #:	403410
Sample ID:	LF - 2	Date Reported:	04-19-99
Laboratory Number:	F054	Date Sampled:	04-15-99
Chain of Custody No:	6890	Date Received:	04-16-99
Sample Matrix:	Soil	Date Extracted:	04-16-99
Preservative:	Cool	Date Analyzed:	04-19-99
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	2.9	0.2
Diesel Range (C10 - C28)	0.5	0.1
Total Petroleum Hydrocarbons	3.4	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 Apache 102 - 14 Landfarm. 5 Pt. Composite.


Analyst


Review

