

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Submit 1 copy to appropriate District Office and 1 copy to the Santa Fe Office

(Revised 3/9/94)

PIT REMEDIATION AND CLOSURE REPORT

30-045-27933

Operator: Hallador Petroleum, LLP Telephone: 1-800-839-5506

Address: 1660 Lincoln Street, Denver, CO 80264

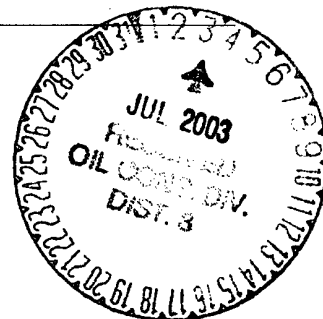
Facility Or: Horton 5

Well Name

Location: Unit G Sec 7, T 32N, R 11W, County San Juan, NM

Pit Type: Separator  Dehydrator \_\_\_\_\_ Other \_\_\_\_\_

Land Type: BLM , State \_\_\_\_\_, Fee \_\_\_\_\_ Other \_\_\_\_\_



Pit Location: Pit dimensions: length 20', width 20', depth 25'

(Attach diagram)

Reference: wellhead , other \_\_\_\_\_

Footage from reference: 25'

Direction from reference: 15 Degrees East of North

Depth To Ground Water (Vertical distance from contaminants to seasonal high water elevation of ground water.)	Less than 50 feet <b>No</b> 50 feet to 99 feet Greater than 100 feet	(20 points) (10 points) ( 0 points) <u>0</u>
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Wellhead Protection Area: (Less than 200 feet from a private domestic water source, or; less than 1000 feet from all other water sources.)		(20 points) <b>No</b> ( 0 points) <u>0</u>
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Distance To Surface Water: (Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches.)	Less than 200 feet 200 feet to 1000 feet <b>Yes</b> Greater than 1000 feet	(20 points) (10 points) ( 0 points) <u>0</u>
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RANKING SCORE (TOTAL POINTS): 10

Date Remediation Started: 10/1999 Date completed: 6/2003

Remediation Method: Excavation  Approx. cubic yards 370

(Check all appropriate sections.)

Landfarmed

In situ Bioremediation

Other \_\_\_\_\_

Remediation Location: Onsite  Landfarmed \_\_\_\_\_ Offsite \_\_\_\_\_

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

General Description of Remedial Action: Contaminated soils were excavated from pit area to a bedrock (shale) at approx. 25 feet. Recovered soil was distributed on the location and plowed and tilled periodically over a two year period.

Ground Water Encountered: No  Yes \_\_\_\_\_ Depth \_\_\_\_\_

Final Pit:

Sample location Horton 5, pit excavation bottom

Closure Sampling:

Sample depth 1' below excavated bottom approx. 25' BGS

(if multiple samples,

Sample Date 11/09/00 Sample time 1005

attach sample results

Sample Results

and diagram of sample

Benzene(ppm) NA

locations and depths)

Total BTEX(ppm) NA

Field headspace(ppm) 0.0

TPH 290 mg/Kg

Sample location Horton 5, side wall

Sample depth 3-4' BGS

Sample Date 11/09/00 Sample time 1015

Sample Results

Benzene(ppm) NA

Total BTEX(ppm) NA

Field headspace(ppm) 0.0

TPH ND mg/Kg

Ground Water Sample: Yes \_\_\_\_\_ No  (If yes, attach sample results)

As an agent for Hallador, LLP, I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Date 7/1/03

Signature

Printed Name: John Hagstrom  
and Title: Environ. Technician

**Operator: Hallador Petroleum Inc.**  
**Location Name: Horton 5**  
**Location: Unit G Sec. 7, T 32N, R 11W, San Juan County, NM**  
**Risk Ranking: 10**

## **RATIONAL FOR RISK-BASED CLOSURE OF PRODUCTION PITS LOCATED INSIDE OF THE VULNERABLE ZONE IN SAN JUAN BASIN**

This production pit location was ranked according to the criteria in the New Mexico Oil Conservation Division's Unlined Surface Impoundment Closure Guidelines and received a ranking score of ten. The estimated depth to groundwater is more than 100-feet beneath ground surface (BGS); the pit is not in a well head protection area. There are surface water bodies within 1,000 horizontal feet of the pit location (ephemeral washes).

The primary source of contamination, discharge to the pit has been removed. There has been no discharge to the pit for at least two (2) years. The pit has been closed for at least two years. Bedrock was encountered at approximately 25 feet with no ground water encountered.

The pit has not been back filled with clean soil yet. When back filling is accomplished it will be graded in a manner to divert precipitation away from excavated area. Minimal infiltration of rainfall is expected. Any rainfall that does infiltrate the ground surface must migrate through clean backfill before reaching the residual hydrocarbons.

There is no source material at the ground surface, so direct contact with livestock and populous is not likely.

In general, outside of the vulnerable area and alluvial valleys, bedrock material is generally encountered within twenty (20) feet of the ground surface. Bedrock material in the San Juan Basin consists of interbedded sandstones, shales and clays. According to Freeze and Cherry, 1979, the hydraulic conductivity of the bedrock material are as follows:

Sandstone	$10^{-9}$ to $10^{-13}$ cm/sec
Shale	$10^{-12}$ to $10^{-16}$ cm/sec
Clay	$10^{-12}$ to $10^{-15}$ cm/sec

Based on this information, the residual hydrocarbons should not migrate to groundwater.

Natural process' (bioremediation) are degrading the residual hydrocarbon to carbon dioxide and water and will continue until source is gone, therefore minimizing any impact to the environment.

Based on the above information, it is highly unlikely that any source material will impact groundwater or ever find an exposure pathway to effect human health, therefore

Hallador Petroleum Inc. requests closure of this pit location.

District I

State of New Mexico

SUBMIT 1 COPY  
TO  
APPROPRIATE

P.O. Box 1980,  
Hobbs, NM  
District II

Energy, Minerals and Natural Resources  
Department

DISTRICT  
OFFICE  
AND 1 COPY TO

P.O. Drawer DD,  
Artesia, NM 88211  
District III

**OIL CONSERVATION DIVISION**

SANTA FE  
OFFICE

1000 Rio Brazos  
Rd, Aztec, NM  
87410

P.O. Box 2088

**Landfarm Remediation and Closure Report**

**Owner/Operator: Hallador Petroleum, LLP**

**Telephone: 1-800-839-5506**

**Address: 1660 Lincoln Street Denver, CO 80264**

**Facility or Well Name: Horton 5**

**Location: Unit G, Section: 7 T32N R11W**

County: San Juan

**Land Type** BLM , State , Fee , Other

**Landfarm location** Length: 125' Width: 60'

**Reference:** Wellhead:  Other:

Footage from reference: 50'

Direction from reference: 43° West of North

**Refer to attached map for land farm location**

**GENERAL DISCRIPTION of LANDFARM ACTIVITIES:** Contaminated soils were excavated from the pit area to bedrock of shale at approx. 22'. Recovered soil was distributed on location and plowed/tilled, numerous times over a twenty four month period. Following clearance sampling and land farm remediation, treated soils will be backfilled in original pit area.

**SAMPLING INFORMATION**

Type of sample: Grab:  Composite: 10 points

Sample Depth : 0-12"

Sample Date: 6/9/03 Sample Time: 1130

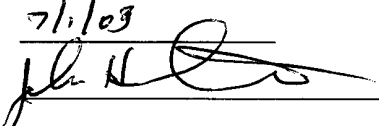
Laboratory Analysis: BTEX NA (ppm) TPH ND mg/Kg (ppm)

OVM/PID 0.0 units

**Refer to attached map for sample location. Laboratory results attached**

AS AN AGENT FOR HALADOR, LLP, I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

Date: 7/1/03

Signature: 

Print Name: John Hagstrom

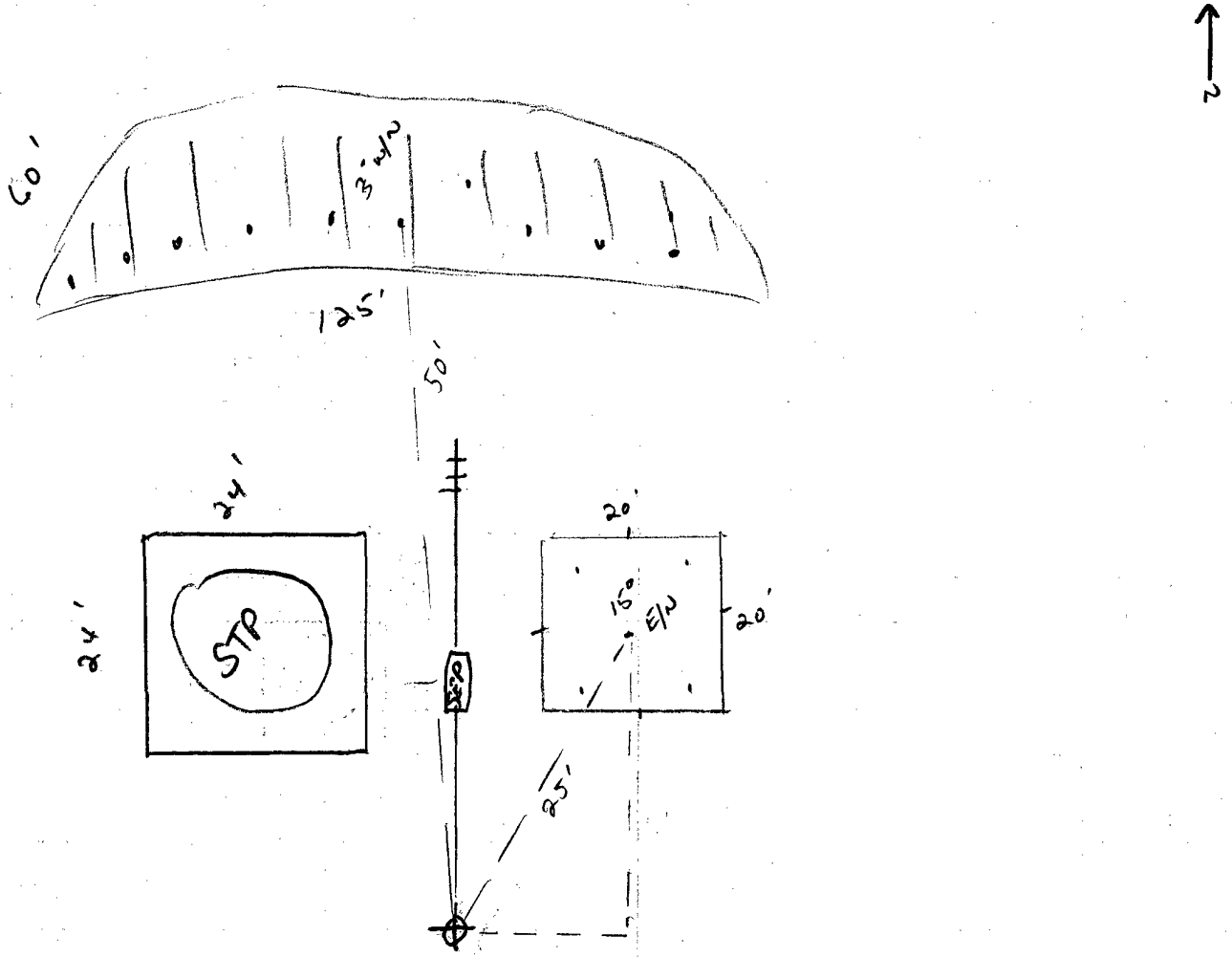
Title: Environmental Technician

# ON SITE

TECHNOLOGIES, LTD.

DATE 11/9/00  
BY JPH

SUBJECT HORTON 5  
SW/NE SEC 7 T32N R11W SAN JUAN COUNTY



612 E. Murray Drive  
Farmington, NM 87499

Off: (505) 327-1072  
FAX: (505) 327-1496

# *iiná bá*

P.O. Box 3788  
Shiprock, NM 87420

Off: (505) 368-4065

## ANALYTICAL REPORT

Date: 17-Jun-03

**CLIENT:** Souder, Miller & Associates  
**Work Order:** 0306017  
**Project:** 1114128; Horton 5 Landfarm  
**Lab ID:** 0306017-001A

**Client Sample Info:** Horton 5  
**Client Sample ID:** Landfarm Sample  
**Collection Date:** 6/9/2003 11:30:00 AM  
**Matrix:** SOIL

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
<b>DIESEL RANGE ORGANICS</b>						Analyst: JEM
T/R Hydrocarbons: C10-C28	ND	25.0		mg/Kg	1	6/16/2003
<b>GASOLINE RANGE ORGANICS</b>						Analyst: JEM
T/R Hydrocarbons: C6-C10	ND	4.50		mg/Kg	25	6/16/2003

**Qualifiers:**

ND - Not Detected at the Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

\* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted precision limits

E - Value above Upper Quantitation Limit - UQL

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MAINTAINING HARMONY BETWEEN MAN AND HIS ENVIRONMENT