NM1 - 10

GENERAL CORRESPONDENCE

YEAR(S):

1995-1993

FAX TRANSMISSION
TIERRA ENVIRONMENTAL COMPANY, INC.

2 pages

TO: Bill Olsen
Oil Conservation Division
FAX: 505-827-8177

FROM: Phil Nobis PCN
FAX: 505-334-9024

RE: TEMPORARY EMERGENCY STORAGE OF NON-EXEMPT MATERIAL AT TIERRA ENVIRONMENTAL LANDFARM FACILITY:

On-Site Technologies is presently handling a tanker truck accident on the Ute Indian Reservation in Colorado. Approximately 2,000 gallons of mixed fuel, similar in nature to blended diesel was spilled onto the ground and is endangering the Animas River. Coby Muckelroy of New Mexico Environment Department Hazardous Materials Bureau was contacted by Cindy Grey of On-Site. He has given permission to Tierra to temporarily store soil contaminated with this fuel at the Tierra Crouch Mesa Landfarm in a lined bermed area pending laboratory analysis.

I have attached a letter of authorization to accept contaminated soil under emergency conditions from the New Mexico Environment Department Hazardous Materials Bureau. The letter of authorization is a blanket letter dated April 6, 1993.

Tierra will forward copies of the appropriate analysis TCLP etc., upon receipt thereof and if the material can be exempted by said analysis, Tierra will seek permission from OCD to spread and treat it.

Do you or OCD concur.

PCN

Verbal approval for temporary storge to Phil Nobis on Thurs. Oct. 5, 1995 1515 hrs. Bill Olson

State of New Mexico
ENVIRONMENT DEPARTMENT
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-2850

BRUCE KING
GOVERNOR

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

April 6, 1993

Mr. Phil Nobis, Landfarm Operator
Tierra Environmental
Farmington, NM

Dear Mr. Nobis:

SUBJECT: Letter of Authorization

The New Mexico Environment Department hereby authorizes transport and temporary storage of contaminated soil at Tierra Environmental. The Hazardous and Radioactive Materials Bureau allows the shipment of the material to the landfarm providing the following conditions are met:

1. The contaminated soil will be stored in an isolated area on the landfarm.

2. The contaminated soil will be stored on plastic (10 ml liner), and bermed (18 inches).

3. The contaminated soil will be kept slightly moist to keep the soil from blowing.

4. The landfarm facility will run a TCLP analysis for characterization of hazardous waste contaminants.

5. The operator will dispose of the waste as soon as possible in an appropriate manner based on the analytical results.

If you have any questions, please feel free to contact me at (505)827-4358 or Michael Le Scouarnec at (505) 827-4308.

Sincerely,

Benito J. Garcia, Chief
Hazardous and Radioactive Materials Bureau

cc: Roger Anderson, OCD
John Geddie, Office of the Secretary
Edward Horst, RCRA Enforcement

NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 S. Pacheco
Santa Fe, New Mexico 87505

September 26, 1995

CERTIFIED MAIL
RETURN RECEIPT NO. P-176-012-195

Phil C. Nobis
Tierra Environmental Corporation
PO Drawer 15250
Farmington, New Mexico 87401

Re: Free Liquid Processing Procedure
Crouch Mesa Landfarm
San Juan County, New Mexico

Dear Mr. Nobis:

The Oil Conservation Division (OCD) has received Tierra Environmental Corporation's (Tierra) request dated June 2, 1995 for extending a pilot project an additional six (6) months for the treatment of free liquids on a five (5) acre test cell at the above referenced facility.

Based upon the information provided, your request is hereby approved for an additional six months (expiring March 27, 1996) with the following conditions:

1. Prior to applying the oversaturated sludges and/or tank bottoms, the five (5) acre test cell will be prepared by spreading a six (6) inch lift of certified remediated soils and topped with a two (2) inch cover of the Sorb-1 (an organic cellulose pellet) material.

2. Free liquid and/or oversaturated materials will be applied to the test cell in a uniform manner and volume that ensures the liquids will not migrate past the Sorb-1 and the six (6) inch cover of remediated soils.

3. Free liquids and/or oversaturated materials will be applied in volumes not to exceed two (2) barrels per square yard of the prepared test cell(s).

4. Following application of the free liquids and/or oversaturated material, the area will remain undisturbed (though closely monitored) for a minimum of twenty-four (24) hours to allow for complete absorption of the liquids.

5. Immediately after the appropriate setting time the material within the test cell will be tilled to work the Sorb-1 mixture into the underlying six (6) inch lift.

6. Every thirty days one sample per acre (5 total) will be collected, in a symmetrical grid patten, from the treatment monitoring zone and analyzed for Total Petroleum Hydrocarbons and the results will be submitted to both the OCD Aztec Office and the OCD Santa Fe Office.

7. There will be no free liquids visible after a 24 hour absorption period.

8. Any miscellaneous hydrocarbons or sediment oil must be accompanied by an approved OCD Form C-117.

Please be advised that this approval does not relieve Tierra of liability should their operation result in actual pollution of surface water, groundwater or the environment actionable under other laws and/or regulations. In addition, OCD approval does not relieve Tierra of liability for compliance with any other laws and/or regulations.

If you have any questions, please do not hesitate to call me at (505) 827-7152.

Sincerely,

Roger C. Anderson
Environmental Bureau Chief

xc: OCD - Aztec Office

Roger Anderson

From: Denny Foust
To: Roger Anderson
Subject: Free Liquid Processing Tierra Crouch Mesa Landfarm
Date: Thursday, July 06, 1995 2:53PM

July 7, 1995

TO: ROGER ANDERSON

FROM: DENNY FOUST

RE: FREE LIQUID PROCESSING PROCEDURES AT TIERRA CROUCH MESA LANDFARM ENVIRONMENTAL

This procedure was verbally approved by Roger Anderson 12/22/95 for a period of six months followed by written approval from Chris Eustice 01/18/95. Tierra has used this six inch lift of remediated soil, with a two inch lift of organic cellulose pellets in the bottom of a bermed cell approximately six times over the six month duration of the temporary permit.

Initially two problems were rather extreme, odors were strong in December with relatively cool weather conditions, liquid tended to stand on top of the adsorption material. Due to precipitation we had free standing liquids about two weeks. Even distribution of fluids during application was also a problem. These problems have steadily improved with experience. The most recent application of "glarp" from the Meridian McGrath SWD was pre-treated for 15 days in a tank with potassium permanganate yielding a drastic reduction in odor. Application was thru a smaller diameter hose 2" compared to 4", the end was flattened resulting in a more even distribution of liquids. The system works but free liquids must stand on top of the adsorption material for several days to work. The only alternative to the standing liquid is to actively mix the adsorption material during application.

It should be noted this facility is near a residential area at this time, groundwater is located at less than 100 feet in depth but probably no shallower than 70 feet.

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
P. O. Drawer 15250
Farmington, NM 87401
(505) 325-0924

OIL CONSERVATION DIVISION
RECEIVED
'95 JUN 6 AM 8 52

June 2, 1995

Mr. Roger Anderson, Bureau Chief
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

RE: PERMANENT RENEWAL OF PERMIT FOR TANK BOTTOM AND SLUDGE REMEDIATION-TIERRA CROUCH MESA LANDFARM FACILITY:

Dear Mr. Anderson:

The OCD approved on an experimental basis, a procedure to be conducted by Tierra at our Crouch Mesa Landfarm Facility, to safely handle and remediate tank bottoms and sludges.

The procedure consisted of using a remediated cell of soil six inches deep. The cell or grid within the cell would be bermed. We would then place about two inches of our absorbent product Ven Pel on top of the soil within the berm. Ven Pel will absorb approximately ten times it weight in liquid. The tank bottoms and sludges would be applied and allowed to stand until they were absorbed sufficiently by the Ven-Pel. At that time the Ven-Pel and soil would be tilled and spread in a six inch lift for remediation.

The concerns were, would the liquid sludge migrate through the Ven-Pel and the six inches of dirt into the sub surface of the landfarm. Tierra agreed to conduct monthly monitoring for TPH sub surface below the cells containing the sludge. The analysis of composite samples taken through May indicate that there was no migration to the sub surface which approached the OCD regulatory limit of one-hundred parts per million TPH. January through May have been unusually wet months. The hydraulic drive from rainfall has apparently had no effect on the process.

Therefore I would respectfully request that the permit to treat tankbottoms and sludges, be made a permanent part of our operational permit for the landfarm, with a slight modification. Because of the unusual rainfall, it has been necessary for Tierra to store some of the tank bottom material in a frac tank until the landfarm dried out enough to be able to sufficiently prepare the cell and spread the material. We would ask official permission to store the material in a frac tank temporarily should circumstances dictate that necessity. Also because of the unusual rain fall, it has sometimes taken longer than twenty-four

hours for the combined Ven-Pel and soil to sufficiently absorb the tank bottoms and sludges. Therefore we would request that the twenty-four rule be amended to allow a reasonable time not to exceed seven days. One further concern that has been expressed by "others" is that our original permit prohibits the application of free liquids and further prohibits free standing or pooling of liquid. Those "others" feel that our procedure for handling tank bottoms is in conflict with the original permit. The reason for our procedure in handling tank bottoms is so that the sub surface is protected sufficiently. Pooling must take place in this limited situation. Therefore we would only ask that the pooling or free standing rule be waived only for the purpose of the treatment and remediation of tank bottoms. Sufficient precautions have been take pursuant to our procedure which have successfully demonstrated that the sub surface of the landfarm will be protected.

As a point of information, Ven-Pel is a patented product, manufactured by Venture Chemical Corporation of Lafayette, LA. Tierra has a partnering agreement with Venture wherein Tierra is the exclusive national distributor of the product in the environmental field. Tierra is applying for a patent on the tank bottom remediation procedure using Ven-Pel.

Thank you for your consideration. If you have any questions or require further information please call me anytime.

Sincerely,

Phillip C. Nobis
President / CEO

xc: D.Foust - OCD Aztec

TIERRA ENVIRONMENTAL CORPORATION

LARRY F. HUNTER
MANAGER - OPERATING ENGINEER
CROUCH MESA LANDFARM
420 CR 3100
AZTEC, NM 87410

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 1

To Roger Anderson	From Ph. I
Co. OCD	Co. Tierra
Dept.	Phone #
Fax # 505-827-8177	Fax #

June 27, 1995

To: Phil Nobis
President & CEO

RE: TANK BOTTOM SLUDGES i.e.: ODOR CONTROL

As of this morning the last batch of TBS's were spread in the normal fashion from our 520bbl storage tank. When the tank was placed in operation for this purpose as you may remember there was approximately 10 to 20 bbls of mixed 8.4% KMNo4 still in the tank, this was left as a method to control the generation of potential H_2S within the tank and I am pleased to inform you that this mixing of the TBS's and KMNo4 was very successful as the odor that had been noticed on prior spreading was non detectable this time. The normal odor found prior was <u>not</u> noticeable even as the truck blew down, breaking up the stream into a fine spray and being down wind.

There for it would be recommendable to re-establish the roll line and mixing hopper on the tank so that KMNo4 can be blended into the TBS's thus allowing a pre-treatment of the TBS's for H_2S and general odor control. The volume of dry KMNo4 to achieve this would only amount to 2, 110.25# cans per 400bbl.

LFH

XC: Roger Anderson OCD
D. Foust OCD

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

June 14, 1995

CERTIFIED MAIL
RETURN RECEIPT NO.P-176-012-147

Mr. Phil Nobis
Tierra Environmental Corporation
P.O. Drawer 15250
Farmington, New Mexico 87401

RE: **Request To Recycle Soils**
Crouch Mesa Landfarm
San Juan County, New Mexico

Dear Mr. Nobis:

The New Mexico Oil Conservation Division (OCD) has received Tierra Environmental Corporation's (Tierra) request dated March 14, 1995 for authorization to recycle soils deemed remediated by Tierra for the following projects:

Project # 93054, On-Site Technologies/Red Willow Operating
350 cubic yards of soil received October 4, 1993
TPH concentration of 90 ppm as of March 30, 1995

Project# 93057, Nassau Resources (John Brimhall #1)
1736 cubic yards of soil received September 30, 1993
TPH concentration of 80 ppm as of March 30, 1995

Based upon the information provided your request is hereby approved.

In addition, authorization is being granted to use the remediated soils as a mixing agent to stabilize tank bottoms and sludges prior to landfarming.

If you have any questions please call me at (505) 827-7153.

Sincerely,

Chris Eustice
Geologist

xc: Denny Foust - OCD Aztec Office

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
P. O. Drawer 15250
Farmington, NM 87401
(505) 325-0924

March 14, 1995

Mr. Chris Eustice, Environmental Geologist
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

RE: REQUEST FOR APPROVAL TO RECYCLE SOILS

Dear Mr. Eustice:

Analysis for Total Petroleum Hydrocarbons (TPH) conducted by Dr. Dan Hoover of Tierra on March 3, 1995 shows two projects contained upon the Tierra Crouch Mesa Landfarm are remediated to below OCD requirements of 100 ppm TPH.

Project # 93054, On-Site Technologies / Red Willow Operating
350 Cubic Yards of Soil, received October 4, 1993
TPH Analysis March 3, 1995, 90 ppm.

Tierra requests permission to recycle the soil for use upon our landfarm facility as mix for tank bottoms and sludges.

Project # 93057, Nassau Resources (John Brimhall # 1)
1,736 Cubic Yards of Soil, received September 30, 1993
TPH Analysis March 3, 1995, 80 ppm.

Tierra request permission to recycle the soil for use upon our landfarm facility as mix for tank bottoms and sludges.

Thank you for your cooperation. Please call me if you have any questions.

Sincerely,
TIERRA ENVIRONMENTAL CORPORATION

Phillip C. Nobis
President / CEO

xc: D.Foust OCD Aztec
File 93054
93057

TIERRA ENVIRONMENTAL CORPORATION

P.O. Drawer 15250, Farmington NM 87401
505-325-0924, FAX 505-327-1920

Cost/effective solutions for all of your soil and water environmental concerns - anywhere in the world

TO: Phil Nobis
FROM: Dan Hoover
SUBJECT: Remediation of hydrocArbon contaminated soils at the TIERRA ENVIRONMENTAL CORPORATION Crouch Mesa Land Farm - Jobs # 93054 and # 93057

SOIL ANALYSES: Total Petroleum Hydrocarbons (TPH) via Buck 404 I.R. and BTEX via OVM TEI 580-B

DATE SAMPLED: 3-9-95

TYPE SAMPLE: Composit, 5 samples @ 4 In. depth

DATE ANALYZED: 3-9-95

JOB # 93045 - On Site Technologies (Red Willow)
DATE RECEIVED - 10-4-93
AMOUNT RECEIVED- 250 Cu/Yds
LAND FARM CELL- #3 , 6 In lift

Job # 93057 - Nassau Resources (John A. Brimhall # 1)
DATE RECEIVED- 9-30-93
AMOUNT RECEIVED- 1,767 Cu/Yds
LAND FARM CELL- #2, 6 in lift

* See attached laboratory report for results

TIERRA ENVIRONMENTAL CORPORATION

P.O. Drawer 15250, Farmington NM 87401
505-325-0924, FAX 505-327-1920

Cost/effective solutions for all of your soil and water environmental concerns - anywhere in the world

LABORATORY REPORT

Project Name: Job # 93054 (On site Technologies - Red Willow)
Job # 93057 (Nassau Resourses - John A. Brimhall #1)

Location : Crouch Mesa Land Farm
Sampled By: Dan Hoover Date: 3-9-95
Analyzed By: Dan Hoover Date: 3-9-95
Type of Ssmple: Soil **Sample condition:** GIST **UNITS:** mg/kg & ppm

Composit Sample	TRPHC*	BTEX **	
# 93054	90	0.0	
# 93057	80	0.0	

Methods:

*** Total Recoverable Petroleum Hydrocarbons, EPA 418.1-Buck 404 , Infrared Spectroscopy, mg/kg**

**** BTEX-OVM TEI 580-B , ppm**

NOTE:

Dan Hoover Date 3-10-4

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal	Time	Date
	1105 AM	3-14-95

Originating Party	Other Parties
Chris Eustice	Phil Nobis - Tierra Enviro.
	325-0924

Subject

Deeming soils "remediated".
Verbal approval requested.

Discussion

Phil faxed to me a letter requesting soils be classified as "remediated". Along w/ the letter was a 'hand written' analytical report for TPH levels for the soils proposed, done under EPA Method 418.1

No BTEX results were included

Conclusions or Agreements

We need laboratory generated analytical report and a report on the BTEX concentrations. I allowed them to use head space this time only with results reported.
Verbal Denied.

Distribution

Signed C Eustice

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal | Time: 330 pm | Date: 3-15-95

Originating Party	Other Parties
Chris Eustice	Phil Nobis

Subject Request for authorization to remove, stockpile and re-use soils deemed 'remediated'. Tierra Wanted a verbal to avoid further frac tank rental.

Discussion

Based upon the laboratory measurements and information provided in the request. I granted the verbal.

Conclusions or Agreements

I Told Phil that if their plans change from what was proposed, they had to seek authorization.

Distribution

Signed C Eustice

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

New Mexico DRUG FREE It's a State of Mind!

February 7, 1995

CERTIFIED MAIL
RETURN RECEIPT NO.P-176-012-108

Mr. Phil Nobis
Tierra Environmental Corporation
P.O. Drawer 15250
Farmington, New Mexico 87401

RE: Soils Remediation Requests
Crouch Mesa Landfarm
San Juan County, New Mexico

Dear Mr. Nobis:

The New Mexico Oil Conservation Division (OCD) has received Tierra Environmental Corporations (Tierra) request and analytical results dated December 29, 1995 for authorization to recycle and use as a mixing agent soils from the Steere Tank Lines JP-8 Spill deemed remediated. Based upon the information provided your request is hereby approved.

Note that authorization is being granted to use the remediated soils as a mixing agent with sludges from Meridian Oil McGrath disposal facility. If Tierra wants to move the soils from the facility proper separate OCD authorization must be granted prior to doing so.

If you have any questions don't hesitate to call me at (505) 827-7153.

Sincerely,

Chris Eustice
Geologist

xc: Denny Foust - OCD Aztec Office

VILLAGRA BUILDING - 408 Galisteo
Forestry and Resources Conservation Division
P.O. Box 1948 87504-1948
827-5830
Park and Recreation Division
P.O. Box 1147 87504-1147
827-7465

2040 South Pacheco
Office of the Secretary
827-5950
Administrative Services
827-5925
Energy Conservation & Management
827-5900
Mining and Minerals
827-5970
Oil Conservation
827-7131

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

January 18, 1995

CERTIFIED MAIL
RETURN RECEIPT NO. P-176-012-089

Phil C. Nobis
Tierra Environmental Corporation
909 W. Apache
Farmington, New Mexico 87401

Re: Free Liquid Processing Procedure
Crouch Mesa Landfarm
San Juan County, New Mexico

Dear Mr. Nobis:

The Oil Conservation Division (OCD) has received your request, dated December 12, 1994 for approval to treat free liquids at your Crouch Mesa Landfarm by combining remediated soils and Sorb-1, a Tierra product, with oversaturated sludges and/or tank bottoms containing free liquids.

Based upon the information provided, your request is hereby approved with the following conditions:

1. Prior to applying the oversaturated sludges and/or tank bottoms, the cell(s) will be prepared by spreading a six (6) inch lift of certified remediated soils and topped with a two (2) inch cover of the Sorb-1 (an organic cellulose pellet) material.

2. Free liquid and/or oversaturated materials will be applied to the cell in a uniform manner that ensures the liquids will not migrate past the Sorb-1 and the six (6) inch cover of remediated soils.

3. Free liquids and/or oversaturated materials will be applied in volumes not to exceed two (2) barrels per square yard of the prepared cell(s).

4. Following application of the free liquids and/or oversaturated material, the area will remain undisturbed (though closely monitored) for a minimum of twelve (12) hours to allow for complete absorption of the liquids.

VILLAGRA BUILDING - 408 Galisteo
Forestry and Resources Conservation Division
P.O. Box 1948 87504-1948
827-5830
Park and Recreation Division
P.O. Box 1147 87504-1147
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827-5925
Energy Conservation & Management
827-5900
Mining and Minerals
827-5970
Oil Conservation
827-7131

5. Immediately after the appropriate setting time the material within the cell(s) will be tilled to work the Sorb-1 mixture into the underlying six (6) inch lift.

6. Samples will be collected from the treatment zones below these cells and tested for Total Petroleum Hydrocarbons every thirty (30) days following application for a period of six (6) months, thereafter, according to the treatment zone monitoring schedule specified in your original conditions of approval.

Please be advised that this approval does not relieve you of liability should your operation result in actual pollution of surface water, groundwater or the environment actionable under other laws and/or regulations. In addition, OCD approval does not relieve you of liability for compliance with any other laws and/or regulations.

If you have any questions, please do not hesitate to call me at (505) 827-7153.

Sincerely,

Chris E. Eustice
Environmental Geologist

xc: OCD - Aztec Office

TIERRA
ENVIRONMENTAL CORPORATION

OIL CONSERVATION DIVISION
'94 DEC 14 PM 8 52

CORPORATE OFFICE
P. O. Drawer 15250
Farmington, NM 87401
(505) 325-0924

December 16, 1994

Mr. Roger Anderson, Bureau Chief
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

RE: PERMISSION TO RECYCLE SOILS, TIERRA PROJECT 93061, STEERE TANK LINES JP-8 SPILL, BLANCO NEW MEXICO

Dear Mr. Anderson:

Enclosed herewith are the results of a laboratory analysis conducted on a composite sample taken from the soil referenced above, currently located on our Crouch Mesa Landfarm.

The analysis indicates that TPH levels are below regulatory limits at six (6) parts per million.

Therefore, on behalf of Tierra, I would ask that permission be granted by OCD allow us to re-cycle the soil for the purpose of use as a mixing material with the proposed remediation of sludges from Meridian Oil Mc Grath disposal facility.

Thank you for your cooperation.

Verbal granted 1-3-94 @ 215 pm CE

Sincerely,

TIERRA ENVIRONMENTAL CORPORATION

Phillip C. Nobis
President/CEO

xc: D. Foust, OCD, Aztec Office
File

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240
PHONE (505) 326-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

FINAL ANALYSIS REPORT

Company: TIERRA ENVIRONMENTAL
Address: P.O. Box 15250
City, State: Farmington, NM. 87401

Date: 12/16/94
Lab # SJ1141

Project Name: Blanco JP-8
Project Location: Tierra Land Farm
Sampled by: DH Date: 12/15/94 Time: 3:00 p.m.
Analyzed by: SW Date: 12/16/94 Time: 8:10 a.m.
Type of Samples: Soil Sample Condition: Cool/Sealed Units: mg/kg

Samp #	Field Code	TPH
1	Blanco JP-8	6.0
	QC Recovery	81.0
	QC Spike	88.0
	Accuracy	92.0%
	Air Blank	***

Methods - INFRARED SPECTROSCOPY
- EPA SW-846; EPA METHODS 3540 OR 3510, 418.1

Sharon Williams

Date 12-16-94

Sharon Williams

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
P. O. Drawer 15250
Farmington, NM 87401
(505) 325-0924

RCA gave me this
1-3-95
CE

December 2, 1994

Roger Anderson, Bureau Chief
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

RE: FREE LIQUID PROCESSING PROCEDURE, TIERRA ENVIRONMENTAL CROUCH MESA LANDFARM

Dear Mr. Anderson:

On October 28, 1993, Tierra received approval from OCD to construct and operate a pre-treatment facility, using a soil cement lined impoundment. Problems concerning an appropriate method with which to conduct sub-surface monitoring were encountered and discussed. A secondary method for pre-treatment was discussed and verbally approved using a self contained mud tank. No monitoring would be required.

To date Tierra has not constructed either facility. Other problems concerning cost to client because of double handling of the material were reviewed and discussed.

Dr. Dan Hoover PHD, Tierra Director of Research and Connie Dinning PE, Tierra Special Projects Manager, have developed an alternative method of treatment for free liquids i.e.: Tank Bottoms and Sludges etc. The method or procedure appears to satisfy both Tierra's and OCD's concerns regarding the sub-surface migration of contaminants, while at the same time providing the versatility of one time application and handling. Costs therefore to both the client and Tierra are also reduced.

The procedure is outlined in detail in the enclosed Operating Procedure Draft for your review.

After you and staff review the procedure, I would then ask for approval to implement it at our Crouch Mesa Facility.

If you have any questions or require more information please contact me.

Sincerely,

Phillip C. Nobis
President/CEO

DRAFT PROCEDURE FOR FREE LIQUID DISPOSAL

TIERRA ENVIRONMENTAL CORPORATION CROUCH MESA

LANDFARM FACILITY

Prior to the acceptance of free liquids i.e: tank bottoms and sludges, etc, a cell will be especially prepared for its arrival in the following manner:

1. Certified remediated soil will be spread in six inch (6) lifts within the cell.

2. Sorb-1, a Tierra Product which is an organic cellulose pellet, will be spread on top of the six (6) inches of soil in two (2) inch lifts.

   Note: Sorb-1 will absorb 2.64 barrels per square yard spread in two (2) inch lifts.

3. Free liquid would then be applied to the prepared cell in a uniform spray at an amount not to exceed two (2) barrels per square yard of surface area. This would allow a safety factor of 1.3.

4. Following application of the free liquid in the manner described, the area will remain undisturbed for a minimum of twelve (12) hours to allow complete absorption of the free liquids.

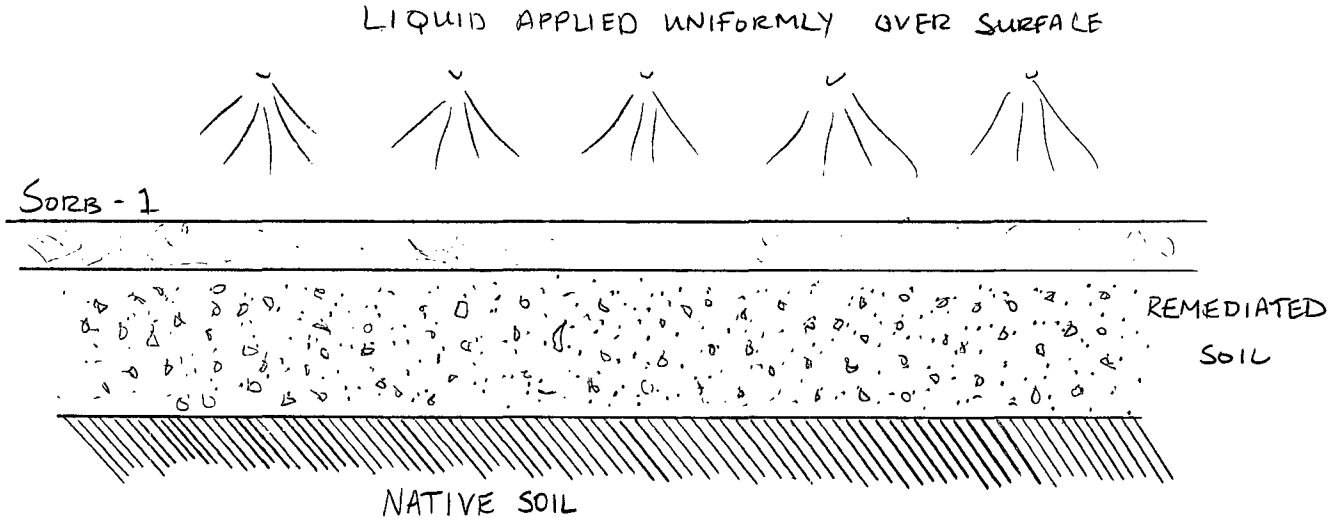
5. Following the appropriate setting time, the area will be tilled to work the Sorb-1 mixture into the underlying six (6) inch lift.

6. In addition to the quarterly sub surface monitoring required by our current permit, samples will be collected from beneath the cell and tested for TPH thirty (30) days following application and for a period of six months thereafter every thirty (30) days.

General Purpose Worksheet

Subject	Page No. 1 Of 1
File	By CSD Date 12/2/94

FREE LIQUIDS DISPOSAL PROCEDURE



General Purpose Worksheet

Subject	Page No.	Of
File	By	Date

SORB-1 CAPACITY

BASED ON YD^2 UNIT AREA, 2" LIFT OF SORB-1

$\left(\frac{2''}{12''/ft}\right)\left(\frac{1}{3}ft/yd\right) = 0.056\ YD$

$(1\ YD^2)(0.056\ YD) = 0.056\ YD^3$

SORB 1 ABSORPTION CAPABILITY = 10X ITS VOLUME of LIQUID

WATER VOLUME $= 10(0.056\ YD^3)$
$= 0.56\ YD^3$

$\left(7.48\ gal/ft^3\right)\frac{27\ ft^3}{yd^3} = 202\ gal/yd^3$ LIQUID

$1\ YD^3 = 4.8$ bbl LIQUID

$.56\ YD^3 = 2.64$ bbl

∴ MAX SORB-1 CAPACITY IS 2.64 BBL LIQUID / YD^2 FOR 2" LIFTS

E.G. 80 YD^2 of LAND AREA WILL HOLD:

$(80\ YD^2)(2.64\ BBL/YD^2) = 211$ BBLS

TO GAIN ADDITIONAL SAFETY FACTOR, APPLY AT 2 BBLS / YD^2

$2.64/2.00 = 1.32$

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal	Time 1350	Date 6/23/94

Originating Party	Other Parties
Bill Olson - Envir. Bureau	Phil Nobis - Tierra Envir 325-0924

Subject

Chem. - JP-4 spill

Discussion

Soils currently stored on plastic in Chaves at side of road where spill took place

Conclusions or Agreements

Gave him verbal approval to temporarily store the contaminated soils on plastic at facility while they are tested for hazardous characteristics

Distribution RCA

Signed Bill Olson

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal	Time 1340 hrs	Date 6/23/94

Originating Party	Other Parties
Bill Olson - Envir. Bureau	Cathy Muddeman - NMED Haz-waste 827-4308

Subject

Chama JP-4 spill

Discussion

Check with Haz-waste on acceptance of JP-4 contaminated soils at Tierra

Conclusions or Agreements

He OK'd it stockpiled in separate area on plastic while Haz characteristics determined

Distribution RCA

Signed Bill Olson

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal	Time 1130 hrs	Date 6/23/94
Originating Party		**Other Parties**
Denny Foust - OCD Aztec		Bill Olson - Envir. Bureau

Subject

JP-4 spill near Chama

Discussion

He received call from Tierra requesting acceptance of soils from truck spill of JP-4 in town of Chama because of public safety emergency. He stated that Tierra told him they have approval from Coby MacLeroy - NMED Hgz write to stockpile contaminated soil on plastic at Tierra landfarm while awaiting TCLP results

Conclusions or Agreements

I will check with Roger Anderson RCA OK 6/23/94 @ 11:40 am # OK with NMED

Distribution RCA

Signed Bill Olson

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

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

April 8, 1994

CERTIFIED MAIL
RETURN RECEIPT NO. P-111-334-167

Mr. Phillip C. Nobis
Tierra Environmental Corporation
909 W. Apache
Farmington, New Mexico 87401

RE: **APPROVAL TO ACCEPT DRILLING MUD**
TIERRA CROUCH MESA LANDFARM
SAN JUAN COUNTY, NEW MEXICO

Dear Mr. Nobis:

The New Mexico Oil Conservation Division (OCD) has received your request dated February 23, 1994, for authorization to construct a self-contained area to pre-treat drilling mud and then to spread the treated mud on your Crouch Mesa Landfarm located in Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico.

Based on the information provided in your request, the OCD hereby approves the pre-treatment and landfarming of drilling mud under the following conditions:

1. The pre-treatment area will consist of above ground metal tanks. An adequate freeboard will be maintained to prevent spillage and overflow of liquid from the tanks. The OCD may require a pad and curb beneath the tanks if future conditions warrant.

2. Any free oil will be removed from the drilling mud prior to removal of the mud from the pre-treatment area. The oil will be stored in above ground closed top tanks.

3. Free water will be removed from the drilling mud prior to removal of the mud from the pre-treatment area. The water will be stored in above ground closed top tanks and may then be spread on the landfarm for dust control and to enhance bioremediation in accordance with the original OCD approval, Order R-9772. Use of this water will be in accordance with the May 25, 1993 OCD letter "Approval to Apply Produced Water..."

4. An OCD approved test will be conducted on the mud to determine the moisture content prior to spreading the mud on the landfarm. Mud will be spread in accordance with OCD Order R-9772 including prevention of ponding, pooling, and run-off. Mud will not be spread on soils being actively remediated. Records from the tests will be maintained on file for five years from the date of record.

5. No mud will be accepted at the facility without prior approval from the OCD District Supervisor to move the mud from the drilling location. In addition, each incoming load of drilling mud will be accompanied by the following information: 1) well operator name, 2) the well name and location from which the mud was transported, 3) transporter, 4) description of mud program (ie. mud composition including volume and type of chemicals added), and 5) exact cell location where the material is to be remediated. All mud information will be maintained on file at the facility for five years from the date of receipt.

6. Remediation levels for recycling of drilling mud will be in accordance with OCD Order R-9772. District approval must be obtained in order to remove reconditioned mud from the facility.

7. Loads of drilling mud which contain miscellaneous hydrocarbons exceeding 2/10 of 1% of the total volume of mud must be accompanied by an OCD approved C-117A from the well operator. Accumulations of miscellaneous hydrocarbons must be reported monthly on form C-112 and transportation of these hydrocarbons shall be permitted only by an approved C-104.

Please be advised that this approval does not relieve you of liability should your operation result in actual pollution of surface waters, ground waters, or the environment actionable under other laws and/or regulations. In addition, the OCD approval does not relieve you of liability for compliance with any other laws and/or regulations.

If you have any questions please do not hesitate to contact Chris Eustice at (505) 827-5824.

Sincerely,

Kathy M. Brown
Geologist

xc: Denny Foust, OCD Aztec Office

Bill Olson

STATE OF NEW MEXICO

ENERGY, MINERALS and NATURAL RESOURCES DIVISION

OIL CONSERVATION DIVISION

AZTEC DISTRICT OFFICE

RECEIVED

'94 APR 1 AM 8 49

New Mexico DRUG FREE It's a State of Mind!

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

MARCH 30, 1994

Mr. Phil Nobis
Tierra Environmental Company
909 West Apache
Farmington, NM 87401

RE: Remediation of Unauthorized Produced Water Dumping Tierra Crouch Mesa Landfarm Expansion Area

Dear Mr. Nobis:

The unauthorized illegal dumping of produced waters by unknown parties will require remediation. Tierra has volunteered to remediate this material in place by utilizing tilling with the addition of nutrients in the form of Quad 5 and moisture to enhance microbe growth. Tierra will continue the remediation treatment until the exempt waste falls below the OCD regulatory limits of 100 ppm TPH, 50 ppm BTEX and 10 ppm benzene. Tierra will analyze one composite sample from the surface and one composite sample of sufficient depth exceeding two feet to document the vertical remediation of this spill by unknown parties.

Please be advised that OCD approval does not relieve Tierra Environmental Corporation of liability as landowner if contamination exists which is beyond the scope of this plan or if contaminants remain which would pose a threat to human health, groundwater, surface water or the environment. In addition OCD approval does not relieve Tierra Environmental Corporation of compliance with other federal, state or local laws and/or regulations.

The OCD commends Tierra for their initiative and cooperation in remediating this incidence of illegal dumping of produced oilfield waters by unknown parties.

If you have questions please feel free to call this office.

Yours truly,

Denny G. Foust

Denny G. Foust
Environmental Geologist

xc: OCD Environmental Bureau
Environmental file
DGF file

Respose Quad five "Document cleanup level vertically" "4 point at 2ft"

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
12205 E. Skelley Drive
Tulsa, OK 74128
918-437-6200

OPERATIONS OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

March 21, 1994

Mr. D. Foust
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, New Mexico 87410

RE: UNAUTHORIZED DUMPING OF LIQUID TIERRA CROUCH MESA, LANDFARM EXPANSION AREA

Dear Mr. Foust:

The RCRA TCLP analysis on the above captioned incident has been received. Results are enclosed for your review and appear to be below the regulatory limits, are not a hazardous waste, being characteristically exempt by analysis.

Therefore Tierra would propose the following remedial action. The soil in the spill area would be tilled. Tierra Quad 5, would be applied with moisture and allowed to stand for approximately one week. Composite samples of the spill area would then be collected for analysis of TPH and BTEX. If the material within the spill area tests at below the OCD regulatory limits for characteristically exempt waste, following treatment at less than 100 ppm TPH, 50 ppm BTEX and 10 ppm Benzene, Tierra would propose to declare the site clean.

If you have any questions or require more information, please give me a call.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President Operations

RECEIVED
MAR 22 1994
OIL CON. DIV.
DIST. 3

PCN/lp

xc: Landfarm CM
File 94011

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TEXAS 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NEW MEXICO 88240

TCLP ANALYSIS REPORT

Company: Tierra Environmental
Address: 909 W. Apache
City, State: Farmington, NM

Date: 03/10/94
Lab # SJ1005-1

Project Name: Rd to Amoco Land Farm
Project Location: Farmington, NM
Sampled by: DH
Type of Sample: Soil
Sample Condition:
Date: 03/01/94

Sample ID: Crouch Mesa

TCLP ORGANICS

PARAMETER	RESULT	UNITS
Benzene	<0.01	mg/L
Carbon Tetrachloride	<0.01	mg/L
Chlorobenzene	<0.25	mg/L
Chloroform	<0.25	mg/L
1,4-Dichlorobenzene	<0.25	mg/L
1,2-Dichloroethane	<0.25	mg/L
1,1-Dichloroethene	<0.25	mg/L
2,4-Dinitrotoluene	<0.02	mg/L
Hexachlorobenzene	<0.02	mg/L
Hexachlorobutadiene	<0.02	mg/L
Hexachloroethane	<0.02	mg/L
Nitrobenzene	<0.02	mg/L
Pentachlorophenol	<0.10	mg/L
Tetrachloroethylene	<0.25	mg/L
Trichloroethylene	<0.25	mg/L
2,4,5-Trichlorophenol	<0.02	mg/L
2,4,6-Trichlorophenol	<0.02	mg/L
Vinyl Chloride	<0.50	mg/L
Cresol (O,M,P)	<0.02	mg/L
Methy Ethyl Ketone	0.05	mg/L
Pyridine	<0.02	mg/L

TCLP ANALYSIS REPORT

Company: Tierra Environmental
Address: 909 W. Apache
City, State: Farmington, NM

Date: 03/10/94
Lab#: SJ1005-1

Project Name: Rd to Amoco Land Farm
Project Location: Farmington, NM
Sampled by: DH
Type of Sample: Soil

Date: 03/01/94
Sample Condition:

Sample ID: Crouch Mesa

TCLP INORGANICS (Leachate)

PARAMETER	RESULT	UNITS
Arsenic	<0.002	mg/L
Barium	0.15	mg/L
Cadmium	<0.002	mg/L
Chromium	<0.02	mg/L
Lead	<0.05	mg/L
Mercury	<0.0005	mg/L
Selenium	0.005	mg/L
Silver	<0.01	mg/L

METHODS: TCLP ORGANICS - EPA 8240/8270
METHODS: TCLP INORGANICS (Leachate) - EPA 1311/3005/7000

Michael R. Fowler

3-10-94

Michael R. Fowler

Date

Roger Anderson

INCIDENT REPORT

Date: February 28, 1994

Location: Tierra Crouch Mesa Landfarm Expansion

Nature of Incident: Illegal dumping

Project Number: 94011

On February 28, 1994 at about 2:00 P.M., I was contacted by Larry Hunter, Tierra Landfarm Manager. Hunter related that he had received a call from Ms. Cathy Block of Environmental Protection Company, the operator of Amoco Productions landfarm facility adjacent to the Tierra Crouch Mesa facility. According to Ms. Block her personnel had discovered what appeared to be a large liquid deposit on an unknown substance on the road leading to the Amoco facility and upon Tierra property.

At about 2:15 P.M., I contacted D. Foust of the Aztec Oil Conservation Division Office (OCD), and reported the incident to him. I was informed by Foust that Ms. Block had just reported the same incident.

At about 2:20 P.M. I re-contacted Larry Hunter and advised him to call the San Juan County Sheriffs Department (SJCSO)

At about 3:15 P.M. I arrived at the scene of the incident. Present were D. Foust OCD, Deputy D. Vaughn SJCSO, Larry Hunter and Blaine Williams, Tierra Environmental Technician. Also present were one of EPCs employees.

At the location of the discharge, I observed dark staining on the roadway for a distance of approximately 150 feet. It appeared that a water truck type vehicle had opened its valve on the roadway and dumped the liquid. The liquid then ran off the roadway to the north and south. The liquid on the north side entered a culvert that drained into a wash area on the southside of the roadway where it commingled with the runoff from the south. It appeared that the (water truck), then drove easterly on the roadway continuing to dump liquid onto the roadway which spilled onto the south side and also into the wash area. Also present on the south side of the roadway, I observed three (3) dead ducks and two (2) dead geese. Following the drainage south the spill extended for approximately 100 yards. Hydrocarbon odor was obvious in the stained soils on the roadway as well as the wash area. What appeared to be paraffin residue was also obvious.

I instructed Larry Hunter to berm the end of the spill area with a front end loader, in order contain it in case of rainfall and prevent any further migration of the contaminants. Rainfall was threatening at the time. Hunter constructed a bermed area approximately 4 feet in height and 50 feet long, sufficient to retain any runoff.

At the direction of Dr. Dan Hoover, Tierra Director of Research, Tierra Technician Blaine Williams obtained composite samples of the spill area, including from the roadway. They will be preserved for laboratory analysis for TPH, and RCRA TCLP analysis for Volatiles, Semi-volatiles, metals, reactivity, corrositivity and ignitibility.

It appears the horizontal extent of the spill to the south may have left Tierra property and entered BLM land. The BLM was notified by Deputy Vaughn.

At about 4:00 P.M., I notified the New Mexico Environment Department Hazardous Materials Bureau of the incident and informed them OCD and the SJCSO was investigating.

On March 1, 1994, at about 9:30 A.M. Dr. Hoover and I met with Deputy Vaughn, BLM Ranger Al Avey, D. Foust OCD at the scene. The New Mexico Game and Fish Department was also present. According to the Game and Fish the dead water fowl had been shot and appeared to have been on the ground for about a month preceding the spill. Therefore their presence appeared to be unrelated.

BLM Ranger Al Avey is attempting to make a determination whether or not the spill migrated onto BLM property.

D. Foust agreed that the spill area was contained and posed no further threat. He authorized Tierra to leave the material in place pending RCRA TCLP analysis. If the analysis proves the material is non-hazardous Tierra will treat the contamination in place. We offered to BLM if the contamination has migrated onto their property that Tierra would remediate it also at no charge as part of the contiguous remediation program we would be conducting.

A preliminary Total Petroleum Hydrocarbon (TPH) analysis was conducted on one of the samples obtained from the roadway by Dr. Dan Hoover using EPA Method 418.1 conducted on Tierra,s I.R. Instrument. The preliminary results showed 1990 ppm TPH in the soil.

The RCRA TCLP sample was delivered to Cardinal Laboratories in Farmington, N.M. for analysis. According to the laboratory the analysis should be complete within five (5) working days. The results will be forwarded to OCD and to BLM for review.

by: Phillip C. Nobis

Phillip C. Nobis
Vice President Operations
Tierra Environmental Company, Inc.

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
12205 E. Skelley Drive
Tulsa, OK 74128
918-437-6200

OPERATIONS OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

February 23, 1994

Mr. Roger Anderson, Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

RE: REQUEST AND PROPOSAL TO PRE-TREAT AND SPREAD DRILLING MUD ON TIERRA CROUCH MESA LANDFARM

Dear Mr. Anderson:

Tierra Environmental has received numerous calls from clients regarding the disposal of drilling mud. As you are aware we nor anyone else in the San Juan Basin is currently permitted to accept drilling muds. We understand that another environmental company in the Basin is currently going through the permit process for earthen mud pits.

We are not interested in being permitted to operate earthen mud pits, etc. However following some research we have conducted, Tierra would propose the following method to pre-treat the muds and when sufficiently dry, i.e.: devoid of free liquids, to then spread the material onto the landfarm, treating it as a solid exempt oilfield waste.

Tierra would propose to construct a self-contained pre-treatment facility for drilling mud, using portable steel mud tanks. The mud would be delivered to the facility and deposited in one of the self-contained steel tanks, then treated with a flocculent and surfactant. The mud would be then transferred via slurry pump to as yet another tank, where the flocculent and surfactant would be allowed to react with the mud, freeing the liquid. The free liquid, i.e. (water), being extracted would be dropped out of the mud through a filter membrane to a compartment below in the steel tank. The water would then be pumped off into a holding tank for recycling onto the landfarm proper. A retort test would be conducted on the remaining mud following treatment in order to determine the moisture content. Records of the test results would be kept on file for OCD inspection. If no free liquids are obviously present, the mud would be spread onto the landfarm proper in accordance with our existing permit requirements.

When the mud appears to be remediated and fit for re-use, a composite sample of the mud would be taken for laboratory analysis in order to verify that it contains no TPH contamination that exceeds the OCD regulatory requirement. Those results would be furnished to OCD, seeking permission to remove the mud for re-use i.e.: recycling as backfill material or other uses consistent with existing laws regulations, etc. Tierra has an I.R. at the landfarm that is capable of conducting accurate EPA 418.1 analysis. In the interests of cost savings, we would like to run the final composite on our I.R.

In addition to the retort testing records for moisture content, records would also be kept and available for OCD inspection regarding generator, originating location, transporter, final disposition, etc., as is the case with all other materials accepted at the landfarm facility.

The working area where the steel mud tank pre-treatment system is located would be bermed sufficiently in order to contain the largest volume of material that could be released in case of a system failure, and allow for additional free board to contain the most severe rainfall within twenty-five years in accordance with 40 CFR 265.193 (d),(2),(i) & (ii).

In some cases, a client might want the mud reconditioned for re-use in the field. In that event the mud would not be spread, but would be treated within the closed system and re-sold as drilling mud, similar to the system Basin Disposal formerly Drilling Mud Recycling is currently operating.

Tierra is currently permitted for a pre-treatment location for tank bottoms and sludges. Those facilities have not yet been constructed. We feel that the pre-treatment of drilling mud in the manner described would not constitute a major modification in our current landfarm permit, therefore we respectfully request your consideration and approval.

We appreciate your cooperation in this matter.

Sincerely,

TIERRA ENVIRONMENTAL CORPORATION

Phillip C. Nobis
Vice President

PCN/lp

xc: File
Denny Foust, OCD, Aztec, New Mexico

ON SITE
TECHNOLOGIES LIMITED

RECEIVED
DEC 2 3 1993
OIL CONSERVATION DIV.
SANTA FE

SPILL RESPONSE AND REMEDIATION

OF J.P. 4 JET TURBINE AVIATION FUEL

MILE MARKER 72.8 ON U.S. HIGHWAY 64, BLANCO, NEW MEXICO

OCTOBER 13, 1993 THROUGH OCTOBER 19, 1993

REPORT PREPARED FOR: Steere Tank Lines
TELC Corporation
P. O. Box 9048
Albuquerque, New Mexico 87119

REPORT DATE: November 30, 1993

REPORT PREPARED BY: On Site Technologies, LTD
Ms. Cynthia A. Sluyter-Gray, Site Supervisor

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
3005 NORTHRIDGE DRIVE ▪ SUITE F ▪ P. O. BOX 2606 ▪ FARMINGTON, NEW MEXICO 87499

OCTOBER 13, 1993 THROUGH OCTOBER 19, 1993
SPILL RESPONSE AND REMEDIATION OF J. P. 4 JET TURBINE AVIATION FUEL
MILE MARKER 72.8, U.S. HIGHWAY 64, BLANCO, NEW MEXICO

SECTION 1 - INTRODUCTION

Steere Tank Lines requested urgent spill response and site remediation of a spill of J.P. 4 jet turbine aviation fuel from a Steere tanker truck after an accident at Mile Marker 72.8 just west of Blanco, New Mexico on U.S. Highway 64 in San Juan County. This report documents those operations. It is organized into five sections including this introduction. Section 2 describes the notification, general site hazards and situation, and the initial response of the On Site Technologies team. A narrative of the containment and remediation operations is contained in Section 3 with a summary of sampling methods, protocols, and laboratory testing results described in Section 4. Section 5 presents a summary of special problems encountered and resolved as well as results of the operations and conclusions. Detailed daily field reports, location and site maps, laboratory and field test results, transport logs, and site photographs are included in the Appendix as Exhibits 1, 2, 3,4, and 5 respectively.

SECTION 2 - NOTIFICATION AND INITIAL RESPONSE

October 13, 1993 at 1:00 AM, the on-duty dispatcher for the New Mexico State Police, on the instruction of Steere Tank Lines personnel, contacted On Site Technologies, LTD requesting emergency response to a tanker truck accident on U.S. Highway 64 near Mile Marker 72 approximately 1 mile west of Blanco, San Juan County, New Mexico. On Site personnel were told that a Steere tanker truck loaded with approximately 8,000 gallons of J.P. 8 jet turbine aviation fuel had lost control on a curve and overturned, discharging a sizeable quantity of fuel primarily into the borrow area and an irrigation ditch adjacent to the highway at approximately 11:45 PM, October 12. It was later determined that the product was J.P. 4 jet turbine aviation fuel. The spill occurred within the extended rural community of Blanco approximately 100 yards from two private homes, 500 to 600 yards west of the Blanco Elementary School, 200 yards north of a major gas pipeline transmission corridor, and encompassing a section of the Blanco Water District main treated water transmission line. Rapid containment and stabilization of the spill was crucial to prevent the contamination of additional irrigation surface water and shallow groundwater as well as damage to the water transmission line. The spill of J.P. 4 fuel posed a substantial potential for both fire and environmental damage in a populated area as well as being within the San Juan River Basin Designated Vulnerable Area.

On Site Technologies immediately gathered and dispatched a containment assessment supervisor, Mr. Robert Griffee, and a three-man team of initial response personnel and equipment to the site at approximately 1:30 AM. Upon arrival at 2:00 AM, Mr. Griffee began coordination with the Blanco Fire Department and the New Mexico State Police Officer on the scene, the initial incident commander. The members of the Blanco Fire Department and the New Mexico State Police were effectively initiating basic fire prevention and initial containment procedures at the time of the On Site team's arrival. The driver and co-driver had already been extricated and transported to San Juan Regional Medical Center. The upstream irrigation gate had been closed but water continued to seep into the ditch.

On Site Technologies personnel plugged a hole in the tanker and assisted the Fire Department in stopping the flow of fuel from tanker orifices allowing the fuel to be off-loaded and the tanker to be righted and removed. The New Mexico State Police approved Mr. Griffee's recommendation for the application of a layer of *Sphag Sorb*[1] absorbent to the fuel floating on the irrigation water as well as pools of standing fuel. The *Sphag Sorb* both stabilized the free product and provided a vapor suppression blanket over the discharged fuel. Additional *Sphag Sorb* was used to construct dikes isolating the contaminated irrigation water in the borrow area down slope of the tanker to block further runoff of the spilled fuel. J.P. 4 is a low viscosity kerosene-type fuel which is highly transmissible in the type of soil and rock in the area of the spill. The prompt application of *Sphag Sorb* by On Site personnel to the spill area and the irrigation ditch helped minimize the spread of the J.P. 4.

Throughout the initial response, the team took field measurements of the vapor levels in the area of the tanker and the spilled fuel using a Combustible Gas Indicator and an Organic Vapor Analyzer/ Photoionization Detector to check the explosivity of the site and to roughly estimate the surface extent of the spill. Soil samples were taken after sunrise for laboratory analysis to establish the intensity and extent of the soil contamination. Steere Tank Lines later stated that approximately 7100 gallons of fuel were recovered from the tanker which was initially loaded with 8101 gallons leaving a probable net spill of about 1001 gallons. After daylight, it was also evident that a quantity of diesel fuel had spilled from the tractor's fuel tank during the accident. After the site was considered stablized at approximately 5:00 AM, personnel returned to Farmington to prepare for the cleanup and remediation and to make the appropriate State and local notifications.

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[1] *Sphag Sorb*, by Lakeland Peat, Inc., is the tradename for a dehydrated sphagnum peat moss; an extremely light weight hydrophobic, hydrocarbon-seeking fibrous particulate absorbent material which On Site Technologies, LTD has found to be extremely effective in spill response situations.

SECTION 3 - CONTAINMENT AND REMEDIATION OPERATIONS

As initial response efforts proceeded, heavy equipment and personnel subcontracted by On Site Technologies from Site Reclamation Services were mobilized to the area to continue the process of spill containment and to begin remediation. The New Mexico State Police dispatcher telephoned New Mexico One-Call service at 7:00 AM for emergency underground line location by affected utility companies in the area of the spill.

On Site Technologies' site supervisor Ms. Cynthia Sluyter-Gray contacted Mr. Denny Foust of the local office of the New Mexico Oil Conservation Division and Mr. Phil Nobis of Tierra Environmental Landfarm between 6:30 and 7:00 AM by mobile telephone. Mr. Foust advised that the Hazardous and Radioactive Materials group of the New Mexico Environment Department has jurisdiction over refined products spilled during transportation and that permission to excavate, transport and dispose of the contaminated materials should be sought from that agency. Mr. Ed Horst of NMED HazMat was notified as soon as the Santa Fe office opened and gave permission to excavate and transport the materials on an emergency basis to the Tierra Environmental Landfarm for temporary placement in a specially constructed lined bermed isolation area pending laboratory analysis.

Mr. Rufino Armenta of the New Mexico Department of Transportation brought by additional traffic control cones and signage to augment that previously rented and placed by On Site Technologies to slow traffic on a very busy blind curve on U.S. Highway 64.

Steere Tank Lines safety personnel, Mr. Robert Musgraves, Mr. Greg Musgraves, and Mr. Ron Stewart arrived at the site in the early hours of the morning and were advised of the situation. At approximately 7:20 AM. the line locator foreman for Gas Company of New Mexico as well as Mr. Paul Velasquez and Mr. Jim Riley, board members of the Blanco Water District, responded to the One-Call request.

An active two inch natural gas pipeline buried in the 1940s was flagged between the irrigation ditch and the landowner's fence at an estimated depth of two feet. Gas Company warned that the line would be very fragile due to its age and extreme care should be exercised in excavating close to it.

The main treated water transmission line for the Blanco Community serving approximately 100 homes could not be located with any certainty by the Blanco Water District. Mr. Velasquez and Mr. Riley believed it to be parallel to the fence and the gas line, probably at a depth of three to four feet below grade or one to two feet directly

below the irrigation ditch. They stated that the line is a two inch PVC pipe with glued joints which are easily damaged and permeated by benzene and other constituents of J.P.4 fuel. This raised the possibility of contamination of the domestic use water. Therefore, an attempt was made to notify Mr. David Tomko of the local office of the New Mexico Environment Department.

Prior to beginning even exploratory excavation in the area of the Gas Company of New Mexico pipeline, it was considered prudent to brief the principal of the Blanco Elementary School and to establish a method for emergency communication in the event that an evacuation of the school might become necessary. Once that was accomplished by Ms. Sluyter-Gray and Mr. Greg Musgraves, hand excavation of a test hole adjacent to the gas line revealed 109 parts per million (ppm) by field organic vapor analysis (OVM) indicating that substantial contamination had reached that area and most probably the area of the Blanco water line. A test hole excavated by the backhoe in the upper area of the spill near the highway showed significant contamination down to approximately three feet with a reading of 7 ppm at four feet. During the excavation of that test hole, a one hundred pair telephone cable was encountered but not damaged. New Mexico One-Call service was called again to mobilize US West line location. Until their arrival mid-afternoon, all digging had to be done very tentatively or by hand.

During a telephone conference with Mr. Coby Muckelroy of NMED HazMat at 10:00 AM, Ms. Sluyter-Gray advised him of the test results and the physical hazards of the gas line and the water line running through the spill affected area. His instructions were to carry the excavation to limits where readings of 50 ppm or less on the Organic Vapor Meter could be obtained without jeopardizing the natural gas pipeline. "Limits of horizontal and vertical excavation" samples were to be taken and analyzed in the laboratory for BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) for site closure. In areas where less than 50 ppm OVM field analysis were not obtainable without excessive risk to the pipeline, *Sphag Sorb.*[2] dehydrated peat absorbent was to be applied to lock in the fuel and prevent its migration with the rise and fall of surface and irrigation water.

At 11:45 AM on Day 1, October 13, the first eighteen cubic yard truckload was hauled to the isolation area of the Tierra Environmental Landfarm. Vapor monitoring for flammability continued as contaminated soils were uncovered. In some areas, as excavation proceeded, the fuel vapors were so intense that it was necessary for equipment operators and technicians to wear respiratory protection. Additional *Sphag Sorb* was applied to irrigation water seepage as it surfaced carrying fuel to suppress vapor formation and to absorb as much product from the top of the water as possible.

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[2]*Sphag Sorb* has an extraordinary ability to absorb and contain hydrocarbons through a capillary action. Absorbed liquid hydrocarbons will not leach out allowing safer transportation of contaminated material.

A total of 74 cubic yards of contaminated soil was transported from the site to the landfarm on Day 1. Lighted barricades and cautionary signs were rented and positioned around the excavation and equipment to close the site for the night.

Excavation resumed at 7:00 AM on Day 2, October 14, 1993, stockpiling contaminated soils to be hauled to minimize the standby time for the trucks. Mrs. Margaret Ismay, the owner of the property bordering the spill, visited the site with her concerns regarding reconstruction of the irrigation ditch, possibly necessary but unwanted removal of trees in the spill area, and the possible extent of the spill into her field. On Site HazMat Technician Garin Lee crossed the fence with Mrs. Ismay and her son-in-law Mr. Dennis Ray to sample and field analyze the soils at a depth of 1.5 feet with the PhotoVac Photo Ionization Detector. Those samples were below detection limits for the instrument.

Mr. David Tomko of the local New Mexico Environment Department visited the site at 9:45 AM and observed operations until 10:30 AM. He concurred with our approach to the many problems inherent in the site and agreed to do random sampling of Blanco domestic water in several homes to rule out current penetration of the water line by fuel.

Field testing continued to determine the necessary lateral and vertical limits of excavation. Samples for laboratory testing were taken in areas where those limits were reached. On Day 2, a total of 235 cubic yards of contaminated material was taken to the landfarm. The Blanco water line was not located but the entire telephone cable was cleared. A Case 690B Trackhoe was ordered for Day 3 to expedite the deeper excavation and more easily move material up the slope to load at the highway.

Excavation, testing, hauling and traffic control continued Day 3 with a total of 304 cubic yards of contaminated material transported. The Blanco water line was located by hand digging and high levels of contamination were found surrounding portions of it. Mr. Musgraves of Steere Tank Lines requested that work continue through the weekend in the interest of clearing contamination around the water line and replacing the line as soon as possible. Stockpiling of clean backfill material was begun in the afternoon with a total of 69.5 cubic yards backhauled to the site before shutting down for the night.

Mr. Jim Riley of the Blanco Water District was on the site early on Day 4 to locate the shutoffs to isolate the affected section of water line. Mr. Velasquez, also of the water district, delivered replacement piping and connectors for the line. Excavation continued to clean limits along the highway and in the southwest area of the spill. The diesel spill from the fuel tank was also excavated to passing parameters. Record closure samples for laboratory testing were taken. Those areas were then backfilled to allow better

equipment access to the water line, irrigation ditch and gas pipeline. Remaining small areas of contamination were identified through field and laboratory testing. Those areas were excavated until clean material was encountered. 156 cubic yards of contaminated material were hauled out with 259 cubic yards of clean fill brought in on backhaul. Personnel were scheduled for Sunday work, Day 5. A vacuum water truck was scheduled for Sunday when we planned to cut, drain, and replace the water line.

However. a severe rainstorm early Sunday morning, Day 5, forced the project to be shut down until Monday, Day 6, due to very slick conditions both at the site and at the landfarm. Before the site was shut down, 130 cubic yards of clean backfill were hauled to the site, spread, and compacted to improve access to the water line and gas line areas for Monday.

Work resumed Monday, Day 6, with finishing the backfill of the primary excavation area. A vacuum water truck was ordered from Inland Corporation to arrive at approximately noon to collect and dispose of the treated water resulting from draining the water line. Mr. Chuck Peterson of the local NMED office in Farmington visited the site at 8:30 AM to confirm our plan to deal with the contamination around the water line. The water was shut off to isolate the damaged section at 12:00. The contaminated soil was excavated from around the water line to within one foot laterally and two feet vertically of the gas pipeline. Samples were taken and field analyzed to control the depth of the excavation below the water line. When those tested below 50 ppm, record samples for laboratory analysis were taken and excavation discontinued. The water pipe was cut at two joints approximately forty feet apart, drained, and replaced with PVC pipe which had been disinfected with bleach. The pipe was partially bedded to prevent blowout when repressurized. It was then checked for leaks under pressure. As agreed with NMED HazMat, *Sphag Sorb* absorbent was then spread at the limit of excavation between the water line and the unexcavated support for the gas line to absorb residual fuel contamination and prevent its later migration toward the water line. The remainder of the water line trench was backfilled and reshaped into its previous irrigation ditch configuration. Water service was restored at approximately 2:00 PM. On the final day, Day 6, 20 cubic yards of contaminated material were hauled to the landfarm and 10 cubic yards of additional clean backfill were backhauled to complete the site.

On Site Technologies personnel demobilized, returning equipment and traffic control signage to both the rental company and the New Mexico Department of Transportation. Site Reclamation remained to complete backfilling, compaction, and final shaping. Reseeding of the area was performed the next day.

SECTION 4 - SUMMARY OF SAMPLING METHODS AND TEST RESULTS

The purpose of the sampling and field analysis with the PhotoVac Microtip Photo Ionization detector October 13 through October 18 was to determine the horizontal and vertical extent of the plume of contamination and to establish the necessary limits of the remedial action. A site sketch is included with the test results in the Appendix, Exhibit 3, detailing locations and depths of samples taken for laboratory confirmation of field screening. A composite sample was also taken from the contaminated material in the isolation area at Tierra Environmental Landfarm October 14, 1993 for a TCLP Analysis by Core Laboratories of Houston, Texas, an EPA approved laboratory. The results of the TCLP were required to characterize the material for State approval and landfarm acceptance as a non-hazardous solid waste. Soil samples were taken with a decontaminated stainless steel spoon and placed in clean 8 oz. Teflon-capped sample jars for refrigerated transport under Chain of Custody to the On Site Technologies Laboratory in Farmington, New Mexico. All sampling equipment was decontaminated between samples.

Soil samples taken to the laboratory throughout the project should be considered clearance samples. Samples were taken from the lateral and vertical limits of the excavation. All clearance samples except Sample #0643 were below the detection limit of 2.0 parts per billion for the material of concern, Benzene. Sample #0643 (10 ppb Benzene) was taken from the southwest end of the water line trench adjacent to the gas line in an area which could not be excavated without jeopardizing the gas line. As agreed previously with the NMED, that area received Sphag Sorb absorbent to stabilize the remaining contamination while it biodegrades over time.

SECTION 5 - SUMMARY AND CONCLUSIONS

The accident of October 12, 1993 involving a Steere Tank Lines tanker resulted in a spill of approximately 1000 gallons of J.P.4 jet turbine aviation fuel, creating both an explosion and fire hazard and a threat to adjacent residences, a school, and a community treated domestic water transmission line. Rapid initial response by On Site Technologies personnel coupled with excellent emergency response by the local fire department and law enforcement agencies effectively resolved the immediate danger and confined the fuel spill to a limited area on the highway shoulder and in the irrigation ditch. The tanker wreck was righted and removed without incident allowing the reopening of U.S. Highway 64 within Day 1. Despite delays due to inclement weather and the added difficulties of various utilities passing through the spill area, the contamination was effectively absorbed, excavated, and safely transported to the Tierra Environmental Landfarm by midday, Day 4. All laboratory results from the limits of

excavation were below the parameters agreed upon with the New Mexico Environment Department Hazardous and Radioactive Materials personnel.

Backfilling began on Day 3 and continued until Day 6. Approximately 789 cubic yards of material were transported to the landfarm for treatment and disposal. Final cleanup and finish grading of the site was accomplished on October 18, six days after the accident and spill. All field and laboratory measurements taken for closure were below all action levels. It is expected that no further action will be required at this site.

If further information is desired or clarification required, please do not hesitate to contact On Site Technologies, LTD. We appreciate the opportunity to assist Steere Tank Lines and will be available to respond on an emergency basis or otherwise should the need arise.

Respectfully submitted,

Cynthia A. Sluyter-Gray
Site Supervisor
ON SITE TECHNOLOGIES, LTD

APPENDIX

EXHIBIT 1	DAILY FIELD REPORTS
EXHIBIT 2	LOCATION AND SITE MAPS
EXHIBIT 3	ANALYTICAL RESULTS CHAIN OF CUSTODY SAMPLE REFERENCE MAP
EXHIBIT 4	TRANSPORT LOGS
EXHIBIT 5	SITE PHOTOGRAPHS

Exhibit 1

DAILY FIELD REPORTS

ON SITE TECHNOLOGIES, LTD.

P. O. BOX 2606 • FARMINGTON, NM 87499
(505) 327-7105

FIELD REPORT

REPORT
№ 0266

Day 7
Reclamation

Customer Steere Tank Lines | Customer No. | Invoice No.

Address | Date Tuesday 10-19-93

Work Location Mile 22.8, Hwy 64, Blanco, NM | Customer P. O. Number | On Site Job No. 4-1038

City | County | State

FROM	TO	HOURS	DESCRIPTION
0900	1200		Final grading, resurfacing, re seeding of backfilled and disturbed spill area. Final policing of area and transport of equipment.

NAME	TITLE	HOURS	RATE	AMOUNT	EQUIPMENT or vehicle	UNIT NO.	HOURS or mileage	RATE	AMOUNT
			TOTAL					TOTAL	

MATERIALS / SUBCONTRACTOR / EXPENSES	AMOUNT
Site Reclamation - 1-operator, 3 laborers, dozer, seed.	433.18

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FIELD REPORT

REPORT № 0265

Day 6
Clean up

Customer Steere Tank Lines | Customer No. | Invoice No.

Address | Date Monday 10-18-93

Work Location Mile 22.8, Hwy 64, Blanco, NM | Customer P. O. Number | On Site Job No. 4-1038

City | County | State

FROM	TO	HOURS	DESCRIPTION
0730	1700		Finish primary excavation backfill. Arrange for pumper truck to drain waterline. Shut off water, excavate around water line, cut pipe, drain & pump water, replace w/ bleach-washed pipe and new joints. Turn water back on, test pipe, Sphag between water pipe and gas line as agreed with NMED Haz Mat to absorb any residual. Clearance sampling done. SRS bed and backfill. On Site personnel demobilize and haul equipment and trailer. SRS to shape and reseed. Tuesday
1230			
1400			

NAME	TITLE	HOURS	RATE	AMOUNT	EQUIPMENT or vehicle	UNIT NO.	HOURS or mileage	RATE	AMOUNT
Cindy Sluyter-Gray	Site Super	8.0	55.00	440.00	S.U.V. (CG)	OS#4	49	0.65	31.85
Garin Lee	H.M. Tech	7.5	25.00	187.50	Pickup (GL)	OS#5	49	0.65	31.85
Tina Hart	Traffic Control	9.5	15.00	142.50	Pickup (TH)		10	0.65	6.50
Teresa Tafoya	Traffic Control	9.5	15.00	142.50	Truck & Trailer	OS#1	49	1.25	61.25
Korbi Hart	Tech	2.0	18.50	37.00	S.U.V. (RW)	OS#3	49	0.65	31.85
Rick Winer	Tech	1.5	18.50	27.75	Traffic Control Eq.	Return 5 PM Day		55.00	55.00
			TOTAL	977.25				TOTAL	218.30

MATERIALS / SUBCONTRACTOR / EXPENSES	AMOUNT
Sphag Sorb 6ea 4 cf. @ 62.95 ea.	377.70
Mobile phone 1 @ 40.00	40.00
PhotoVac PID OVM	25.00
Laboratory - clearance BTEXs	See lab invoice
Landfarm - contaminated 20 yds.	400.00
clean backfill 10 yds.	20.00
SRS - 3 operators, 2 laborers, backhoe, dozer, pumper truck, 5 18yd dumps, 1 10yd. truck, fill dirt	5128.00

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FIELD REPORT

REPORT
№ 0264

Day 5
Clean up

Customer Steere Tank Lines | Customer No. | Invoice No.

Address | Date Sunday 10-17-93

Work Location Mile 32.8, Hwy 64, Blanco, NM | Customer P. O. Number | On Site Job No. 4-1038

City | County | State

FROM	TO	HOURS	DESCRIPTION
0800	1130		Continue backfill to gain access to excavate waterline. Heavy rain in Bloomfield-Farmington area creating slick conditions at landfarm. Shut down hauling @ 1035. Spread and compact fill. Close site until Monday pending weather. SRS will haul remaining fill needed from Fesco pit on Monday.

NAME	TITLE	HOURS	RATE	AMOUNT	EQUIPMENT or vehicle	UNIT NO.	HOURS or mileage	RATE	AMOUNT
Cindy Sluyter-Gray	Site Supvr	1.5	55.00 OT 12.50	82.50	S.U.V. (co.)	OS#4	49	0.65	31.85
Garin Lee	HM Tech	1.0 R	25.00	30.50	Pickup (GL)	OS#5	49	0.65	31.85
Teresa Tafoya	Traffic Control	2.0	15.00	30.00	Pickup (TT)		10	0.65	6.50
Tracy Tafoya	Traffic Control	2.0	15.00	30.00					
					Traffic Control Eq.		Day	55.00	55.00
			TOTAL	180.00				TOTAL	125.20

MATERIALS / SUBCONTRACTOR / EXPENSES	AMOUNT
Mobile Phone 1/2 @ 40.00	20.00
Photovac PID OVM	N/C
Landfarm - contaminated 0 yds	0.00
clean back fill 130 yds.	260.00
SRS - 2 operators, 1 laborer,	1913.00
backhoe, dozer, 4 18yd dumps.	

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FIELD REPORT

REPORT
№ 0263

Day 4
Cleanup

Customer Steere Tank Lines | Customer No. | Invoice No.

Address | Date Saturday 10-16-93

Work Location Mile 22.8, Hwy 64, Blanco, NM | Customer P. O. Number | On Site Job No. 4-1038

City | County | State

FROM	TO	HOURS	DESCRIPTION
0700	1800		Excavate to clean next to highway. Backfill. Locate water shut offs. Excavate to clean in SW area. Backfill. Shut off water. Dig by hand and test to determine limits. Water back on. Excavate to clean in NE area. Dig out diesel spill from overturned tractor. Continue locating and excavating "hot spots". Continue using back haul from landfarm to haul in clean fill. Sample and test limits of spill. Obtain water pipe replacement from Blanco Water District. Plan Sunday work per Bob Musgraves.

NAME	TITLE	HOURS	RATE	AMOUNT	EQUIPMENT or vehicle	UNIT NO.	~~HOURS~~ or mileage	RATE	AMOUNT
Cindy Sluyter-Gray	Site Supvr.	7	55.00	385.00	S.U.V. (CG)	OS#4	52	0.65	33.80
Garin Lee	H.M. Tech	7 OT R	12.50 25.00	262.50	Pickup (GL)	OS#5	49	0.65	31.85
Teresa Tafoya	Traffic Control	9.5	15.00	142.50	Pickup (TT)		10	0.65	6.50
Tracy Tafoya	Traffic Control	9.5	15.00	142.50					
					Traffic Control Eq. Day			55.00	55.00
			TOTAL	932.50				TOTAL	127.15

MATERIALS / SUBCONTRACTOR / EXPENSES	AMOUNT
Mobile Phone 1 @ 40.00	40.00
Photovac PID OVM	25.00
Laboratory - BTEX for clearance	see lab. invoice
Landfarm - contaminated 156 yds	3120.00
clean backfill 259 yds	518.00
SRS - 2 operators, 2 laborers, backhoe, trackhoe, dozer, 3 18yd trucks, 3 10yd trucks	4392.50
Miscellaneous Expense	82.81

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FIELD REPORT

REPORT
No. 0262

Day 3
Cleanup

Customer Steere Tank Lines | Customer No. | Invoice No.

Address | Date Friday 10-15-93

Work Location Mile 22.8, Hwy 64, Blanco NM | Customer P. O. Number | On Site Job No. 4-1038

City | County | State

FROM	TO	HOURS	DESCRIPTION
0700			Continue excavation w/ trackhoe, backhoe, and hand shovel. Haul contaminated dirt to Landfarm isolation berm. Fuel spill identified as JP4, not JP8, per Steere. Begin backhauling fill @ noon. Locate Blanco water line by hand digging. Discovered intense fuel contamination around water line. Notified Dave Tomko NMED, Blanco Water, put hand labor on standby for weekend excavation and replacement of line. Release standby @ 1440. Site sampling continues. Plan weekend work
1245			
1330			
	1730		

NAME	TITLE	HOURS	RATE	AMOUNT	EQUIPMENT or vehicle	UNIT NO.	~~HOURS~~ or mileage	RATE	AMOUNT
Cindy Sluyter-Gray	Site Supvr.	9	55.00	495.00	S.U.V. (cc)	OS#4	49	0.65 per Bob Musgrave	31.85
Garin Lee	H.M. Tech	8.5	25.00	212.50	Pickup (6L)	OS#5	49	0.65	31.85
Tina Hart	Traffic Control	9.5	15.00	142.50					
					Traffic Control Eq.	Day		55.00	55.00
			TOTAL	850.00				TOTAL	118.70

MATERIALS / SUBCONTRACTOR / EXPENSES	AMOUNT
Mobile phone 1 @ 40.00	40.00
Photovac PID OVM	75.00
Laboratory - BTEX for clearance	See lab Inv.
Landfarm - contaminated 304 yds.	6080.00
clean backfill 69.5 yds.	139.00
SRS - 2 operators, 2 laborers, backhoe, trackhoe, 18yd caddump, 3 10yd. dump.	4248.50
Miscellaneous expense	13.32

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FIELD REPORT

REPORT
№ 0261

Day 2
Clean up

Customer Steere Tank Lines | Customer No. | Invoice No.

Address | Date Thursday 10-14-93

Work Location Mile 22.8, Hwy 64, Blanco, NM | Customer P. O. Number | On Site Job No. 4-1038

City | County | State

FROM	TO	HOURS	DESCRIPTION
0730	1730		Excavation around phone cable with backhoe & dozer & hand shovel all day. Test with OVM on site and take Lab samples for BTEX when excavation limits (clean) reached at vertical and horizontal extent. Land farm constructed special lined isolation berm 10-13 to receive. Water seeping in and floating fuel in ditch area out of soil. Sphag applied to catch fuel & prevent migration. Continue excavation, hauling and testing. Still can't locate PVC Blanco Water line. Call for track hoe for tomorrow.

NAME	TITLE	HOURS	RATE	AMOUNT
Cindy Sluyter-Gray	Site Supvr	8.5	55.00	467.50
Carlos Lee	H.M. Tech	8.0	25.00	200.00
Tina Hart	Traffic Control	9.5	15.00	142.50
			TOTAL	810.00

EQUIPMENT or vehicle	UNIT NO.	HOURS or mileage	RATE	AMOUNT
S.U.V. (CC)	OS#4	49	0.65	31.85
Pickup (GL)	OS#5	49	0.65	31.85
Traffic Control Eq.	Day		55.00	55.00
			TOTAL	118.70

MATERIALS / SUBCONTRACTOR / EXPENSES	AMOUNT
Sphag Sorb 2ea. 4 cf @ 62.85	125.80
Mobilephone 1 @ 40.00	40.00
Photovac PID OVM	25.00
Laboratory. 1 TPH, BTEX, 2 BTEX, trip to landfarm to sample for TCLP, etc.	See lab invoice
Landfarm - 235 yds @ 20.00	4700.00
SRS - 3 operators, 2 laborers, backhoe, ~~backhoe~~, dozer, 1 18yd end dump 3 10yd dumps	3826.00
Landfarm Berm, Liner, Double Handling	2650.00

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FIELD REPORT

REPORT
№ 0260

Day 1
Start Cleanup

Customer Steere Tank Lines | Customer No. | Invoice No.

Address | Date Wednesday 10-13-93

Work Location Tanker Spill Mile 22.8, Hwy 64, Blanco | Customer P. O. Number | On Site Job No. 4-1038

City | County | State

FROM	TO	HOURS	DESCRIPTION
6:00am	7:30am	1.5	Contact Tierra Landfarm personnel, New Mexico OCD, New Mexico "One Call" for line location, P; G Rental for traffic control equipment, pick up sampling eq.; return site, meet w/ landowners, Blanco Water District, Gas Co NM, principal at adjacent Blanco Elem. School; phone NMED HazMat; receive permission to transport
7:30am	9:00am		
900	1100		Dig test holes w/ backhoe and by hand and test; continue site monitoring; soil sampling. Spbag on free fuel.
~~1100~~ ~~9:00am~~	1700hrs		Begin excavation, stockpile, load, transport to Tierra. (74 yds)

NAME	TITLE	HOURS	RATE	AMOUNT	EQUIPMENT or vehicle	UNIT NO.	~~HOURS~~ or mileage	RATE	AMOUNT
Cindy Sluyter-Gray	Site Supervisor	11	55.00	605.00	S.U.V. (GG)	OS#4	90	0.65	58.50
Garin Lee	HM Tech	8	25.00	200.00	Pick up (GL)	OS*5	49	0.65	31.85
~~SRS 2 Operators~~ 2 Laborers					Traffic Control Eq.	Day		55.00	55.00
			TOTAL	805.00				TOTAL	145.35

MATERIALS / SUBCONTRACTOR / EXPENSES	AMOUNT
SRS - 2 Operators, backhoe, 2 Laborers (also traffic control), 1 18 yd end dump, 1 10 yd end dump dozer arr. 3 PM.	2409.00
Spbag Sorb 2 ea. 4 cf. @ 62.95	125.80
Respirators 2 @ 10.00	20.00
Mobilephone 1 @ 40.00	40.00
Landfarm 74 yds. @ 20.00	1480.00
Photovac PID Organic Vapor Meter	75.00

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FIELD REPORT

REPORT
№ 0259

Day 1
Initial Response

Customer Steere Tank Lines Customer No. _____ Invoice No. _____

Address _____ Date Wednesday 10-13-93

Work Location Tanker Spill Mile 72.8 Hwy 64, Blanco NM Customer P. O. Number _____ On Site Job No. 4-1038

City _____ County _____ State _____

FROM	TO	HOURS	DESCRIPTION
1:00am	2:00am	1	Mobilize initial response team and equipment to site of JP8 fuel tanker rollover.
2:00am	5:00am	3	Stabilize spilled fuel with Sphag-Sorb, plug hole in tanker, assist with removal of wreck, dam and dike affected irrigation ditch, monitor site for explosivity during initial operations. Site Reclamation mobilizing equipment for use after sunrise.

NAME	TITLE	HOURS	RATE	AMOUNT	EQUIPMENT or vehicle	UNIT NO.	~~HOURS~~ or mileage	RATE	AMOUNT
Robert Griffee	Foreman	4	55.00	220.00	Track/trailer	OS #1	49	1.25	61.25
Joe Wilbanks	HM Tech	4	25.00	100.00	Truck	OS#2	49	0.65	31.85
Korbi Hart	HM Tech	4	25.00	100.00					
Garin Lee	HM Tech	4	25.00	100.00					
			TOTAL	520.00				TOTAL	93.10

MATERIALS / SUBCONTRACTOR / EXPENSES	AMOUNT
Sphag Sorb 35 ea. 4 cf. @ ~~69.80~~ ~~2448.25~~ @ 62.95	2203.25
Explosimeter (CGI) 40.00 / day	40.00
Respirators 4 @ 10.00 / day	40.00
Mobilephones 1 @ 40.00/day	40.00
Response trailer and hand tools	50.00
	2373.25

PAGE TOTAL 2986.35
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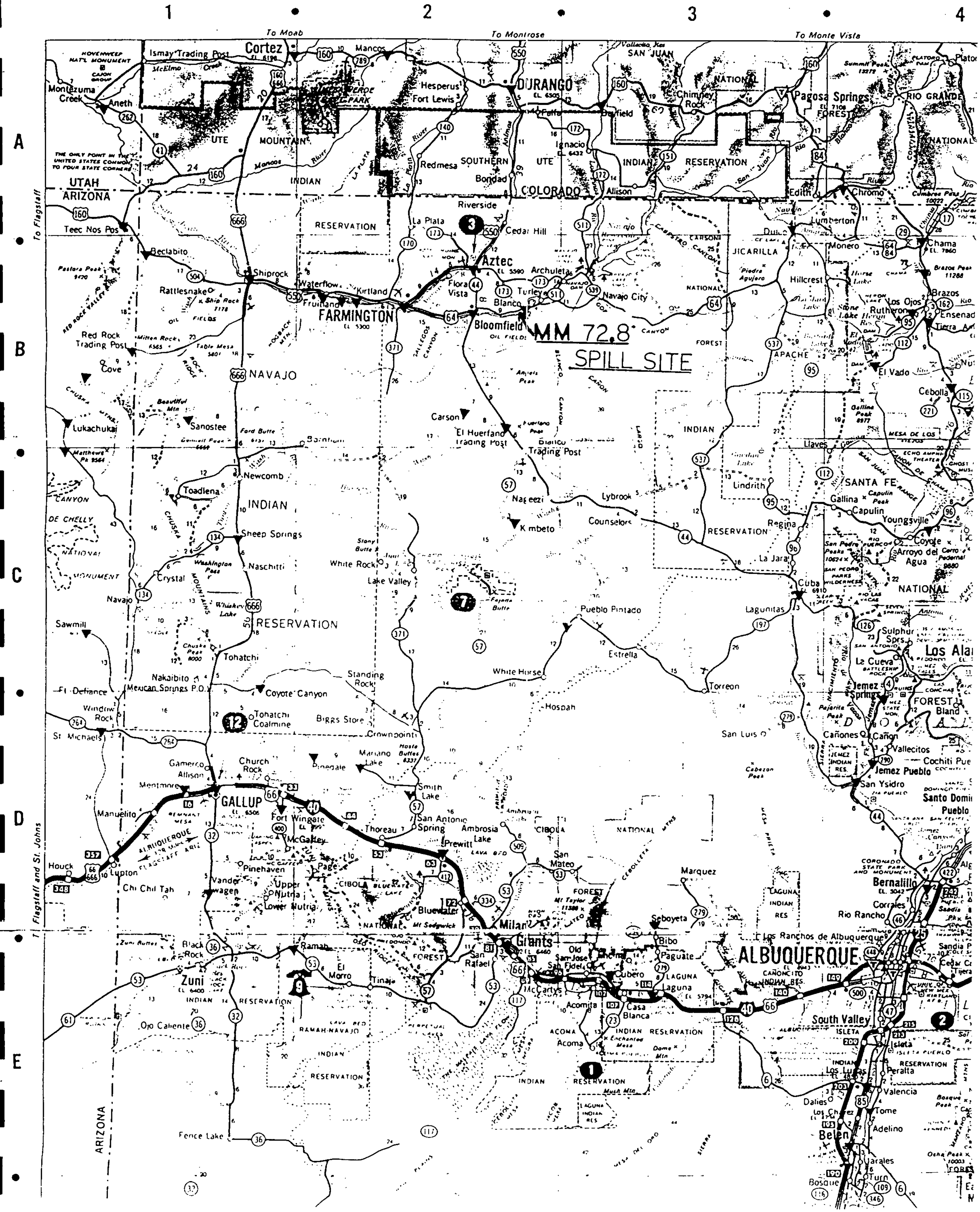
Exhibit 2

LOCATION AND SITE MAPS



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To Moab
To Montrose
To Monte Vista
To Flagstaff
Flagstaff and St. Johns
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Cortez
Mancos
DURANGO
Pagosa Springs
Ismay Trading Post
Montezuma Creek
Aneth
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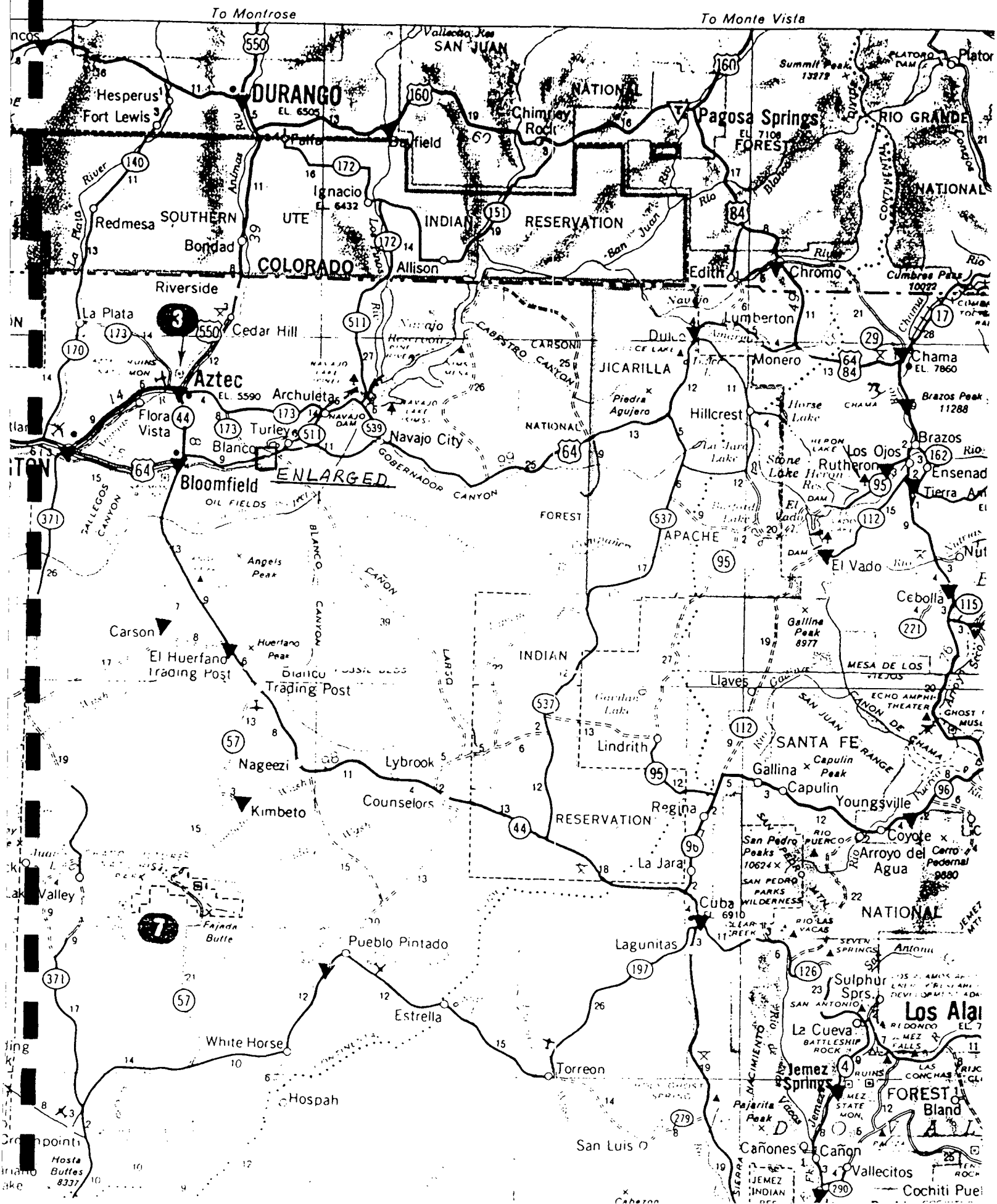
Edith
Chromo
UTE
MOUNTAIN
SOUTHERN
UTE
INDIAN
RESERVATION
UTAH
ARIZONA
COLORADO
Teec Nos Pos
Beclabito
Riverside
La Plata
Cedar Hill
Aztec
Shiprock
Rattlesnake
Waterflow
Kirtland
Fruitland
FARMINGTON
Flora Vista
Archuleta
Turley
Blanco
Navajo City
Bloomfield
Lumberton
Dulce
Monero
Chama
JICARILLA
APACHE
Hillcrest
Los Ojos
Brazos
Ensenada
Tierra Amarilla
El Vado
Cebolla
Red Rock Trading Post
Cove
NAVAJO
Lukachukai
Sanostee
Barnhum
Carson
El Huerfano Trading Post
Blanco Trading Post
Llaves
Toadlena
Newcomb
Lindrith
SANTA FE
Gallina
Capulin
Youngsville
Nageezi
Lybrook
Counselors
Kimbeto
Regina
Coyote
Arroyo del Agua
La Jara
Cuba
NATIONAL
FOREST
CANYON DE CHELLY
NATIONAL MONUMENT
Sheep Springs
Naschitti
Crystal
Navajo
White Rock
Lake Valley
Pueblo Pintado
Lagunitas
Sawmill
RESERVATION
Tohatchi
Estrella
Sulphur Sprs.
La Cueva
Los Alamos
Nakaibito
Mexican Springs P.O.
Ft. Defiance
Window Rock
St. Michaels
Coyote Canyon
Standing Rock
White Horse
Torreon
Jemez Springs
Tohatchi Coalmine
Biggs Store
Hospah
Crownpoint
San Luis
Cañones
Cañon
Vallecitos
Cochiti Pueblo
Jemez Pueblo
Gamerco
Allison
Church Rock
Mariano Lake
Pinedale
Smith Lake
Mentmore
Manuelito
GALLUP
Fort Wingate
McGaffey
Thoreau
San Antonio Spring
Ambrosia Lake
Prewitt
San Ysidro
Santo Domingo Pueblo
CIBOLA
NATIONAL
Houck
Lupton
Chi Chil Tah
Vanderwagen
Pinehaven
Upper Nutria
Lower Nutria
Page
Bluewater
San Mateo
Marquez
Milan
Grants
Seboyeta
Bibo
Paguate
Bernalillo
Corrales
Rio Rancho
Los Ranchos de Albuquerque
ALBUQUERQUE
Black Rock
Zuni
Ramah
El Morro
Tinaja
San Rafael
Old San Jose
San Fidel
Encinal
Cubero
LAGUNA
Laguna
McCartys
Acomita
Casa Blanca
Cañoncito Indian Res.
South Valley
Ojo Caliente
RAMAH NAVAJO
INDIAN
RESERVATION
ACOMA
Acoma
INDIAN RESERVATION
Isleta
Los Lunas
Peralta
Valencia
Tome
Adelino
Belen
Jarales
Bosque
Fence Lake
ARIZONA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To Montrose
To Monte Vista
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Hesperus
Fort Lewis
Bayfield
Chimney Rock
Pagosa Springs
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Redmesa
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COLORADO
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Riverside
La Plata
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Aztec
Archuleta
Flora Vista
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Blanco
Navajo City
Bloomfield
ENLARGED
Lumberton
Monero
Chama
JICARILLA
Hillcrest
Brazos
Los Ojos
Rutheron
Ensenada
Tierra Amarilla
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Carson
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Blanco Trading Post
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Nageezi
Lybrook
Counselors
Regina
Kimbeto
Coyote
Arroyo del Agua
Cuba
La Jara
Valley
Pueblo Pintado
Lagunitas
Sulphur Sprs.
Los Alamos
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Jemez Springs
FOREST
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Torreon
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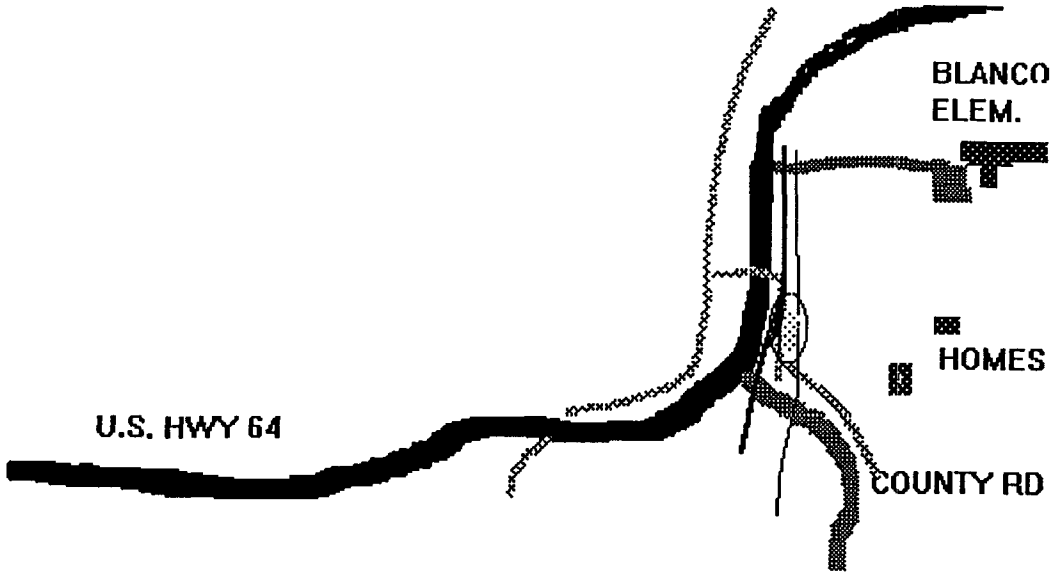
San Luis
Cañones
Cañon
Vallecitos
Cochiti Pueblo



SPILL AREA

IRRIGATION DITCH

GAS LINE

WATER LINE

Exhibit 3

ANALYTICAL RESULTS
CHAINS OF CUSTODY
SAMPLE REFERENCE MAP

ON SITE TECHNOLOGIES, LTD.

FIELD TESTING / PID - ZERO HEADSPACE ANALYSIS

Attn:	*Cindy Gray*	Date:	10/25/93
Company:	*Steere Tank Lines c/o On Site Technologies*	*Lab ID:*	
Address:	*3005 Northridge, Ste.F*	*Sample ID:*	
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name: ***Steere Tank Lines / Blanco Job No. 4-1038***
Project Location:
Sampled by: GL Date: Time:
Analyzed by: GL Date:
Sample Matrix: *Soil*

PID - Zero Headspace Analysis

Sample No.	*Sample Identification*	*Measured Concentration*
1	*SE Quadrant - Side of wall; 3 ft. depth*	43 *ppm*
2	*SE Quadrant - Side of wall; 3.5 ft. depth*	13 *ppm*
3	*SE Quadrant - Side of wall; 2.5 ft. depth*	13 *ppm*
4	*SE Quadrant - Side of wall; 3.5 ft. depth*	6 *ppm*
5	*SE Quadrant - Side of wall; 3.5 ft. depth*	13 *ppm*
6	*SW Quadrant - Side of wall; 5 ft. depth*	27 *ppm*
7	*SW Quadrant - Side of wall; 4.5 ft. depth*	7 *ppm*
8	*SE Quadrant - Bottom of Pit; 5 ft. depth*	17 *ppm*
9	*NW Quadrant - Side of wall; 2.5 ft. depth*	6 *ppm*
10	*NW Quadrant - Side of wall; 4 ft. depth*	1 *ppm*
11	*NW Quadrant - Side of wall; 2 ft. depth*	<1 *ppm*
12	*NW Quadrant - Side of wall; 4 ft. depth*	8 *ppm*
13	*SE Quadrant - Bottom of Pit; 6 ft. depth*	<1 *ppm*
14	*SE Quadrant - Roadside S Hwy 64; 1 ft. depth*	<1 *ppm*
15	*SE Quadrant - Roadside S Hwy 64; 1.5 ft. depth*	<1 *ppm*
16	*SW Quadrant - Side of wall; 1 ft. depth*	27 *ppm*
17	*NW Quadrant - Side of wall; 3 ft. depth*	4 *ppm*
18	*NW Quadrant - Side of wall; 3 ft. depth*	1 *ppm*
19	*SW Quadrant - Roadside S Hwy 64; 1.5 ft. depth*	2 *ppm*
20	*SW Quadrant - Roadside S Hwy 64; 0.5 ft. depth*	9 *ppm*
21	*SW Quadrant - Roadside S Hwy 64; 2 ft. depth*	21 *ppm*
22	*SW Quadrant - Roadside S Hwy 64; 2 ft. depth*	13 *ppm*
23	*SW Quadrant - Roadside S Hwy 64; 2 ft. depth*	18 *ppm*
24	*NE Quadrant - Bottom of Pit ; 3 ft. depth*	3 *ppm*
25	*NE Quadrant - Bottom of Pit ; 4 ft. depth*	1 *ppm*

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
3005 NORTHRIDGE DRIVE ▪ SUITE F ▪ P. O. BOX 2606 ▪ FARMINGTON, NEW MEXICO 87499

ON SITE TECHNOLOGIES, LTD.

FIELD TESTING / PID - ZERO HEADSPACE ANALYSIS

Attn:	*Cindy Gray*	Date:	10/25/93
Company:	*Steere Tank Lines c/o On Site Technologies*	*Lab ID:*	
Address:	*3005 Northridge, Ste.F*	*Sample ID:*	
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name: ***Steere Tank Lines / Blanco Job No. 4-1038***
Project Location:
Sampled by: GL Date: Time:
Analyzed by: GL Date:
Sample Matrix: *Soil*

PID - Zero Headspace Analysis

Sample No.	*Sample Identification*	*Measured Concentration*
26	*NE Quadrant - Bottom of Pit; 4.5 ft. depth*	<1 *ppm*
27	*NE Quadrant - Bottom of Pit; 5 ft. depth*	5 *ppm*
28	*NW Quadrant - Bottom of Pit; 5 ft. depth*	16 *ppm*
29	*NW Quadrant - Bottom of Pit; 4.5 ft. depth*	2 *ppm*
30	*SW Quadrant - Bottom of Pit; 6 ft. depth*	<1 *ppm*
31	*SE Quadrant - Bottom of Pit; 6 ft. depth*	10 *ppm*
32	*NE Quadrant - Bottom of Pit; 5.5 ft. depth*	23 *ppm*
33	*NW Quadrant - Bottom of Pit; 5.5 ft. depth*	17 *ppm*

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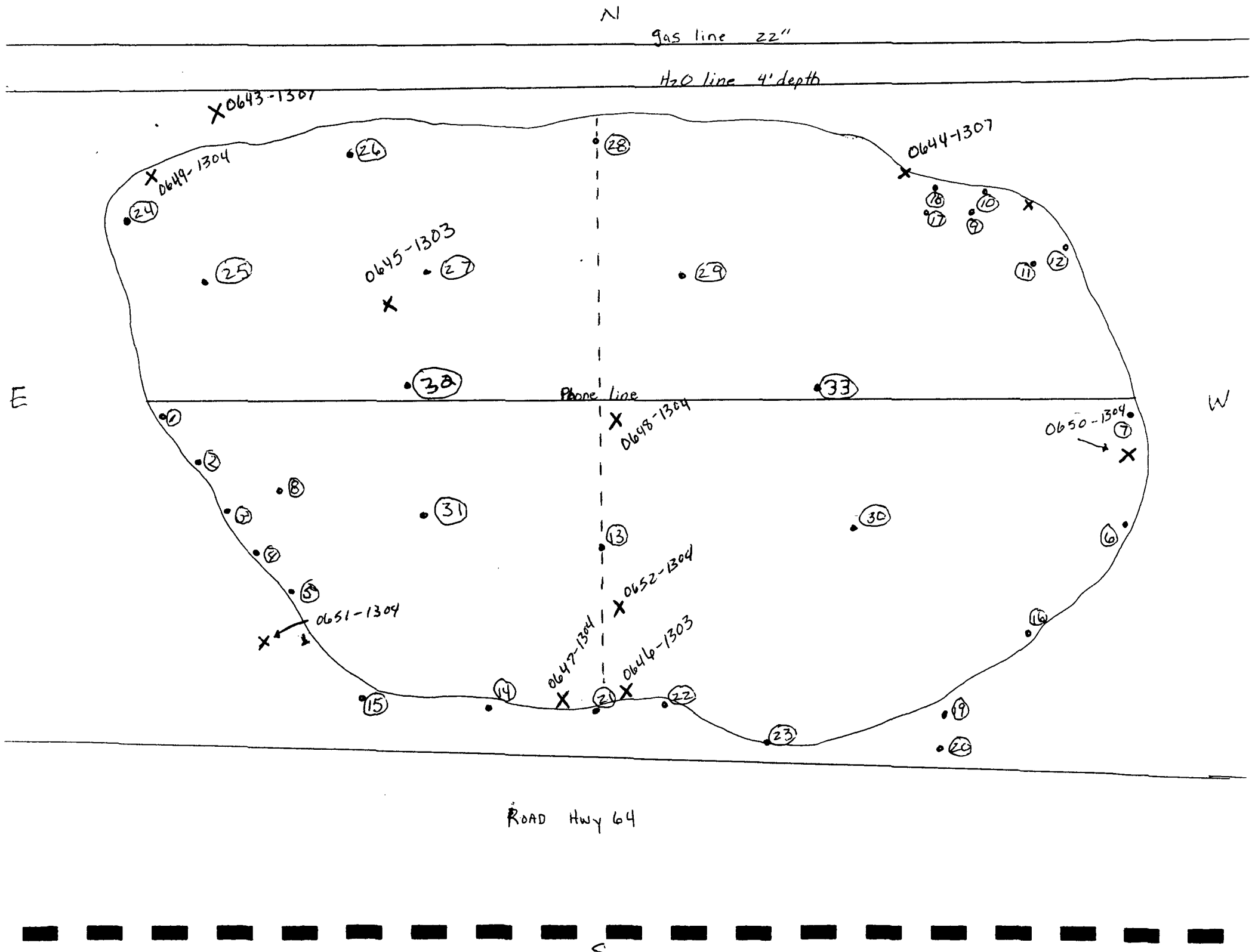
3005 NORTHRIDGE DRIVE ▪ SUITE F ▪ P. O. BOX 2606 ▪ FARMINGTON, NEW MEXICO 87499


N
gas line 22"
H2O line 4' depth
0643-1307
0649-1304
0644-1307
0645-1303
E
W
Phone line
0648-1304
0650-1304
0651-1304
0652-1304
0647-1304
0646-1303
ROAD Hwy 64
S

ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn:	*Cindy Gray*	Date:	10/27/93
Company:	*Steere Tank Lines c/o On Site Technologies*	*Lab ID:*	*1300*
Address:	*3005 Northridge, Ste.F*	*Sample ID:*	*#0642*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name:	***Steere Tank Lines / Blanco Job No. 4-1038***				
Project Location:	***Initial Composite***				
Sampled by:	GL	Date:	10/18/93	Time:	1100
Analyzed by:	DC	Date:	10/27/93		
Sample Matrix:	*Soil*				

Aromatic Volatile Organics

Component	***Measured Concentration mg/kg
Benzene	*6.4*
Toluene	*254.4*
Chlorobenzene	*25.5*
Ethylbenzene	*115.1*
m,p-Xylene	*246.0*
o-Xylene	*121.4*
1,3-Dichlorobenzene	*50.6*
1,4-Dichlororbenzene	*59.4*
1,2-Dichlorobenzene	*6.5*
TOTAL	*885.3 mg/kg*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/kg*

Method *- SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 10/27/93

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
3005 NORTHRIDGE DRIVE ▪ SUITE F ▪ P. O. BOX 2606 ▪ FARMINGTON, NEW MEXICO 87499

CHAIN OF CUSTODY RECORD

№ 1300

ON SITE TECHNOLOGIES LIMITED

657 W. Maple ▪ P. O. Box 2606 ▪ Farmington, NM 87499
LAB: (505) 325-5667 ▪ FAX: (505) 325-6256

Date: 10/11/93

Page 1 of 1

Purchase Order No.:	Reference No.:		
SEND INVOICE TO: Name		REPORT RESULTS TO: Name	Title
Company	Dept.	Company	
Address		Mailing Address	
City, State, Zip		City, State, Zip	
		Telephone No.	Telefax No.

Special Instructions:

Sampler:

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE/ GRAB	PRESERVATIVES	Number of Containers	ANALYSIS REQUESTED: TPH	BTEX	Remarks (matrix)
1412-1300	10/11/93 1300	G		1	X	X	

Relinquished by:	Date/Time 10/11/93 1320	Received by:	Date/Time 10/11/93 1440
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Authorized by: _____ Date _____
(Client Signature Must Accompany Request)

Rush	5 Working Days	10 Working Days	Sampling Location:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

ON SITE TECHNOLOGIES, LTD.

TOTAL PETROLEUM HYDROCARBONS

Attn:	*Cindy Gray*	Date:	10/27/93
Company:	*Red Willow c/o On Site Technologies*	*Lab ID:*	*1296*
Address:	*3005 Northridge Ste. F*	*Sample No.*	*#0640*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name:	***Steere Tank Lines / Blanco Job No. 4-1038***				
Project Location:	***Tierra Environmental - Blanco Berm Composite***				
Sampled by:	TW	Date:	10/14/93	Time:	1115
Analyzed by:	DC	Date:	10/15/93		
Type of Sample:	*Soil*				

Laboratory Analysis

Laboratory Identification	***Sample Identification***	***Total Petroleum Hydrocarbons***
0640-1296	*Steere Tank Lines / Blanco Job No. 4-1038 Tierra Environmental - Blanco Berm Comp.*	56 *ppm wt.*

Method - *EPA Method 418.1 Total Petroleum Hydrocarbons*

Approved by:
Date: 10/27/93

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
3005 NORTHRIDGE DRIVE ▪ SUITE F ▪ P. O. BOX 2606 ▪ FARMINGTON, NEW MEXICO 87499

ON SITE TECHNOLOGIES LIMITED

657 W. Maple ▪ P. O. Box 2606 ▪ Farmington, NM 87499
LAB: (505) 325-5667 ▪ FAX: (505) 325-6256

CHAIN OF CUSTODY RECORD

No. 1296

Date: 10/14/93

Page 1 of 1

Purchase Order No.:	Reference No.:		
SEND INVOICE TO: Name		REPORT RESULTS TO: Name	Title
Company	Dept.	Company	
Address		Mailing Address	
City, State, Zip		City, State, Zip	
		Telephone No.	Telefax No.

Special Instructions:

Sampler:

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE/ GRAB	PRESERVATIVES	Number of Containers	ANALYSIS REQUESTED: TPH	BTEX	TCLP	IGN	(illegible)	TPH	Remarks (matrix)
0640-1296	10/14/93	Comp		4	X	X	X	X	X	X	

Relinquished by:	Date/Time 10/14/93 1115	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Authorized by: _____ Date 10/14/93
(Client Signature Must Accompany Request)

Rush	5 Working Days	10 Working Days	Sampling Location:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

Western Atlas International

CORE LABORATORIES

CORE LABORATORIES
A N A L Y T I C A L R E P O R T

Job Number: 932469
Prepared For:

ONSITE TECHNOLOGIES LIMITED
DAVE COX
657 W. MAPLE
FARMINGTON, NM 87401

Date: 10/26/93

Chip Meador
Signature

10/28/93
Date:

Name: Chip Meador

Title: Regional Manager

CORE LABORATORIES
1733 NORTH PADRE ISLAND DRIVE
CORPUS CHRISTI, TX 78408

Western Atlas International

CORE LABORATORIES

LABORATORY TESTS RESULTS
10/26/93

JOB NUMBER: 932469 CUSTOMER: ONSITE TECHNOLOGIES LIMITED ATTN: DAVE COX

CLIENT I.D.....: 0640-1298
DATE SAMPLED.....: 10/14/93
TIME SAMPLED.....: 11:15
WORK DESCRIPTION...: 0640-1298

LABORATORY I.D...: 932469-0001
DATE RECEIVED....: 10/15/93
TIME RECEIVED....: 10:00
REMARKS.....: SAMPLED BY: T.W.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
TCLP Semivolatiles		*1		EPA SW-846 8270	10/22/93	GEF
1,4-Dichlorobenzene	<10	10	ug/L	EPA SW-846 8270		
2,4-Dinitrotoluene	<10	10	ug/L	EPA SW-846 8270		
Hexachlorobenzene	<10	10	ug/L	EPA SW-846 8270		
Hexachlorobutadiene	<10	10	ug/L	EPA SW-846 8270		
Hexachloroethane	<10	10	ug/L	EPA SW-846 8270		
Nitrobenzene	<10	10	ug/L	EPA SW-846 8270		
Pentachlorophenol	<50	50	ug/L	EPA SW-846 8270		
2,4,5-Trichlorophenol	<10	10	ug/L	EPA SW-846 8270		
2,4,6-Trichlorophenol	<10	10	ug/L	EPA SW-846 8270		
Pyridine	<10	10	ug/L	EPA SW-846 8270		
Cresols (Total)	<30	30	ug/L	EPA SW-846 8270		
TCLP Volatiles		*10		EPA SW-846 8260	10/22/93	BJH
Benzene	<50	50	ug/L	EPA SW-846 8260		
Carbon Tetrachloride	<50	50	ug/L	EPA SW-846 8260		
Chlorobenzene	<50	50	ug/L	EPA SW-846 8260		
Chloroform	<50	50	ug/L	EPA SW-846 8260		
2-Butanone	<100	100	ug/L	EPA SW-846 8260		
Trichloroethene	<50	50	ug/L	EPA SW-846 8260		
Vinyl chloride	<40	40	ug/L	EPA SW-846 8260		
1,2-Dichloroethane	<50	50	ug/L	EPA SW-846 8260		
Tetrachloroethene	<50	50	ug/L	EPA SW-846 8260		
1,1-Dichloroethene	<50	50	ug/L	EPA SW-846 8260		
Extraction - TCLP Semivolatiles	Completed			EPA SW-846 3520	10/20/93	SEB
Glass Jar Extraction for Metals	Completed			EPA SW-846 1311	10/18/93	RAD
Glass Jar Extraction-Semivolatiles	Completed			EPA SW-846 1311	10/18/93	RAD
Arsenic (As), extractable TCLP	<0.05	0.05	mg/L	EPA SW-846 6010	10/22/93	JEM
Barium (Ba), extractable TCLP	1.30	0.05	mg/L	EPA SW-846 6010	10/22/93	JEM
Cadmium (Cd), extractable TCLP	<0.05	0.05	mg/L	EPA SW-846 6010	10/22/93	JEM
Chromium (Cr), extractable TCLP	<0.05	0.05	mg/L	EPA SW-846 6010	10/22/93	JEM
Lead (Pb), extractable TCLP	<0.05	0.05	mg/L	EPA SW-846 6010	10/22/93	JEM
Selenium (Se), extractable TCLP	0.06	0.05	mg/L	EPA SW-846 6010	10/22/93	JEM

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CORE LABORATORIES

LABORATORY TESTS RESULTS
10/26/93

JOB NUMBER: 932469 CUSTOMER: ONSITE TECHNOLOGIES LIMITED ATTN: DAVE COX

LIENT I.D.....: 0640-1298
DATE SAMPLED.....: 10/14/93
TIME SAMPLED.....: 11:15
ORK DESCRIPTION...: 0640-1298

LABORATORY I.D...: 932469-0001
DATE RECEIVED....: 10/15/93
TIME RECEIVED....: 10:00
REMARKS.....: SAMPLED BY: T.W.

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
ilver (Ag), extractable TCLP	0.06	0.05	mg/L	EPA SW-846 6010	10/22/93	JEM
Flammability Potential Screening	Negative		+ or -	ASTM D4982-89	10/19/93	DC
orrosivity by pH	7.9	0.1	pH units	EPA SW-846 9045	10/19/93	GCC
Mercury (Hg), extractable, TCLP	<0.002	0.002	mg/L	EPA SW-846 7470	10/22/93	JJP
etals Digest on Extracted Sample	Completed			EPA SW-846 3010	10/18/93	CH
Zero Headspace Extraction-Volatile	Completed			EPA SW-846 1311	10/18/93	RAD

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CORPUS CHRISTI, TX 78408
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CORE LABORATORIES

QUALITY ASSURANCE REPORT
10/26/93

JOB NUMBER: 932469 CUSTOMER: ONSITE TECHNOLOGIES LIMITED ATTN: DAVE COX

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
PARAMETER:Flammability Potential Screening			DATE/TIME ANALYZED:10/19/93 08:30							QC BATCH NUMBER:947662
REPORTING LIMIT/DF:	UNITS:+ or -		METHOD REFERENCE :ASTM D4982-89							TECHNICIAN:DC
DUPLICATE	MD	932467-1	Positive	Positive	0					
PARAMETER:Corrosivity by pH			DATE/TIME ANALYZED:10/19/93 14:30							QC BATCH NUMBER:947729
REPORTING LIMIT/DF: 0.1	UNITS:pH units		METHOD REFERENCE :EPA SW-846 9040							TECHNICIAN:GCC
STANDARD	ICV	1,81,16	6.98			7.00	100			
STANDARD	CCV	1,81,16	6.99			7.00	100			
DUPLICATE	MD	932469-1	7.88	7.91	0					
PARAMETER:Mercury (Hg), extractable, TCLP			DATE/TIME ANALYZED:10/22/93 15:06							QC BATCH NUMBER:947867
REPORTING LIMIT/DF: 0.002	UNITS:mg/L		METHOD REFERENCE :EPA SW-846 7470							TECHNICIAN:JJP
BLANK	MB	DI H2O	<0.002							
STANDARD	RS	WP1085	0.021			0.020	105			
SPIKE	MS	932467-1	0.052					<0.002	0.050	104
DUPLICATE	MD	932467-1	<0.002	<0.002	NC					
PARAMETER:Arsenic (As), extractable TCLP			DATE/TIME ANALYZED:10/22/93 13:27							QC BATCH NUMBER:947876
REPORTING LIMIT/DF: 0.05	UNITS:mg/L		METHOD REFERENCE :EPA SW-846 6010							TECHNICIAN:JEM
BLANK	MB	3010	<0.05							
STANDARD	CCV	B6080	4.98			5.00	100			
STANDARD	ICV	QC19N	0.98			1.00	98			
SPIKE	MS	932467-001	0.48					<0.05	0.50	96
DUPLICATE	MD	932467-001	<0.05	<0.05	NC					
PARAMETER:Silver (Ag), extractable TCLP			DATE/TIME ANALYZED:10/22/93 13:27							QC BATCH NUMBER:947877
REPORTING LIMIT/DF: 0.05	UNITS:mg/L		METHOD REFERENCE :EPA SW-846 6010							TECHNICIAN:JEM
BLANK	MB	3010	<0.05							
STANDARD	CCV	B6080	4.85			5.00	97			
STANDARD	ICV	QC-7	0.98			1.00	98			
SPIKE	MS	932467-001	1.87					<0.05	2.00	94
DUPLICATE	MD	932467-001	<0.05	<0.05	NC					
PARAMETER:Barium (Ba), extractable TCLP			DATE/TIME ANALYZED:10/22/93 13:27							QC BATCH NUMBER:947878
REPORTING LIMIT/DF: 0.05	UNITS:mg/L		METHOD REFERENCE :EPA SW-846 6010							TECHNICIAN:JEM
BLANK	MB	3010	<0.05							
STANDARD	CCV	B6080	5.00			5.00	100			
STANDARD	ICV	QC-7	1.00			1.00	100			
SPIKE	MS	932467-001	1.01					0.53	0.50	96
DUPLICATE	MD	932467-001	0.53	0.53	0					

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CORE LABORATORIES

QUALITY ASSURANCE REPORT
10/26/93

JOB NUMBER: 932469 CUSTOMER: ONSITE TECHNOLOGIES LIMITED ATTN: DAVE COX

ANALYSIS				DUPLICATES		REFERENCE STANDARDS		MATRIX SPIKES		
ANALYSIS TYPE	ANALYSIS SUB-TYPE	ANALYSIS I.D.	ANALYZED VALUE (A)	DUPLICATE VALUE (B)	RPD or (|A-B|)	TRUE VALUE	PERCENT RECOVERY	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY
ARAMETER:Cadmium (Cd), extractable TCLP				DATE/TIME ANALYZED:10/22/93 13:27						QC BATCH NUMBER:947879
EPORTING LIMIT/DF: 0.05 UNITS:mg/L				METHOD REFERENCE :EPA SW-846 6010						TECHNICIAN:JEM
BLANK	MB	3010	<0.05							
TANDARD	CCV	B6080	5.03			5.00	101			
TANDARD	ICV	QC19N	1.01			1.00	101			
SPIKE	MS	932467-001	0.53					<0.05	0.50	106
DUPLICATE	MD	932467-001	<0.05	<0.05	NC					
ARAMETER:Chromium (Cr), extractable TCLP				DATE/TIME ANALYZED:10/22/93 13:27						QC BATCH NUMBER:947880
EPORTING LIMIT/DF: 0.05 UNITS:mg/L				METHOD REFERENCE :EPA SW-846 6010						TECHNICIAN:JEM
BLANK	MB	3010	<0.05							
TANDARD	CCV	B6080	5.05			5.00	101			
TANDARD	ICV	QC19N	1.02			1.00	102			
SPIKE	MS	932467-001	0.49					<0.05	0.50	98
DUPLICATE	MD	932467-001	<0.05	<0.05	NC					
ARAMETER:Lead (Pb), extractable TCLP				DATE/TIME ANALYZED:10/22/93 13:27						QC BATCH NUMBER:947881
EPORTING LIMIT/DF: 0.05 UNITS:mg/L				METHOD REFERENCE :EPA SW-846 6010						TECHNICIAN:JEM
BLANK	MB	3010	<0.05							
TANDARD	CCV	B6080	5.02			5.00	100			
TANDARD	ICV	QC19N	1.00			1.00	100			
SPIKE	MS	932467-001	0.51					<0.05	0.50	102
DUPLICATE	MD	932467-001	<0.05	<0.05	NC					
ARAMETER:Selenium (Se), extractable TCLP				DATE/TIME ANALYZED:10/22/93 13:27						QC BATCH NUMBER:947882
EPORTING LIMIT/DF: 0.05 UNITS:mg/L				METHOD REFERENCE :EPA SW-846 6010						TECHNICIAN:JEM
BLANK	MB	3010	<0.05							
TANDARD	CCV	B6080	4.95			5.00	99			
TANDARD	ICV	QC19N	1.00			1.00	100			
SPIKE	MS	932467-001	0.56					<0.05	0.50	112
DUPLICATE	MD	932467-001	<0.05	<0.05	NC					

1733 NORTH PADRE ISLAND DRIVE
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CORE LABORATORIES

QUALITY ASSURANCE REPORT
10/26/93

JOB NUMBER: 932469 CUSTOMER: ONSITE TECHNOLOGIES LIMITED ATTN: DAVE COX

TCLP SEMIVOLATILES DATE ANALYZED: 10/22/93 TIME ANALYZED: 09:33 METHOD: EPA SW-846 8270 QC NUMBER:947927

BLANKS

TEST DESCRIPTION	ANALY SUB-TYPE	ANALYSIS I.D.	DILUTION FACTOR	ANALYZED VALUE	DETECTION LIMIT	UNITS OF MEASURE
1,4-Dichlorobenzene	MB	10/20/93	1	<10	10	ug/l
2,4-Dinitrotoluene	MB	10/20/93	1	<10	10	ug/l
Hexachlorobenzene	MB	10/20/93	1	<10	10	ug/l
Hexachlorobutadiene	MB	10/20/93	1	<10	10	ug/l
Hexachloroethane	MB	10/20/93	1	<10	10	ug/l
Nitrobenzene	MB	10/20/93	1	<10	10	ug/l
Pentachlorophenol	MB	10/20/93	1	<50	50	ug/l
2,4,5-Trichlorophenol	MB	10/20/93	1	<10	10	ug/l
2,4,6-Trichlorophenol	MB	10/20/93	1	<10	10	ug/l
Pyridine	MB	10/20/93	1	<10	10	ug/l
Cresols (Total)	MB	10/20/93	1	<30	30	ug/L

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CORE LABORATORIES

QUALITY ASSURANCE REPORT
10/26/93

JOB NUMBER: 932469 CUSTOMER: ONSITE TECHNOLOGIES LIMITED ATTN: DAVE COX

CLP SEMIVOLATILES DATE ANALYZED: 10/22/93 TIME ANALYZED: 09:33 METHOD: EPA SW-846 8270 QC NUMBER:947927

REFERENCE STANDARDS

TEST DESCRIPTION	ANALYSIS SUB-TYPE	ANALYSIS I. D.	DILUTION FACTOR	ANALYZED VALUE	TRUE VALUE	PERCENT RECOVERY	DETECTION LIMITS	UNITS OF MEASURE
-Fluorophenol	RS	B285.86.13	1	220	200	110	10	ug/l
henol-d6	RS	B285.86.13	1	230	200	115	10	ug/l
Nitrobenzene-d5	RS	B285.86.13	1	119	100	119	10	ug/l
2-Fluorobiphenyl	RS	B285.86.13	1	120	100	120	10	ug/l
2,4,6-Tribromophenol	RS	B285.86.13	1	220	200	110	10	ug/l
erphenyl-d14	RS	B285.86.13	1	110	100	110	10	ug/l
,4-Dichlorobenzene	RS	B285.86.13	1	110	100	110	10	ug/l
2,4-Dinitrotoluene	RS	B285.86.13	1	110	100	110	10	ug/l
Hexachlorobenzene	RS	B285.86.13	1	80	100	80	10	ug/l
exachlorobutadiene	RS	B285.86.13	1	120	100	120	10	ug/l
exachloroethane	RS	B285.86.13	1	110	100	110	10	ug/l
Nitrobenzene	RS	B285.86.13	1	116	100	116	10	ug/l
Pentachlorophenol	RS	B285.86.13	1	90	100	90	50	ug/l
2,4,5-Trichlorophenol	RS	B285.86.13	1	120	100	120	10	ug/l
,4,6-Trichlorophenol	RS	B285.86.13	1	120	100	120	10	ug/l
yridine	RS	B285.86.13	1	120	100	120	10	ug/l
Cresols (Total)	RS	B285.86.13	1	340	300	113	30	ug/L

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CLP SEMIVOLATILES DATE ANALYZED: 10/22/93 TIME ANALYZED: 09:33 METHOD: EPA SW-846 8270 QC NUMBER:947927

MATRIX SPIKES

TEST DESCRIPTION	ANALYSIS SUB-TYPE	ANALYSIS I. D.	DILUTION FACTOR	ANALYZED VALUE	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY	DETECTION LIMITS	UNITS OF MEASURE
-Fluorophenol	MB	932467-00	1	70	0	200	35	10	ug/l
	SS	932467-1	1	70	0	200	35	10	ug/l
	SS	932467-2	1	120	0	200	60	10	ug/l
	SS	932469-1	1	60	0	200	30	10	ug/l
henol-d6	MB	932467-00	1	110	0	200	55	10	ug/l
	SS	932467-1	1	120	0	200	60	10	ug/l
	SS	932467-2	1	140	0	200	70	10	ug/l
	SS	932469-1	1	90	0	200	45	10	ug/l
Nitrobenzene-d5	MB	932467-00	1	60	0	100	60	10	ug/l
	SS	932467-1	1	70	0	100	70	10	ug/l
	SS	932467-2	1	70	0	100	70	10	ug/l
	SS	932469-1	1	60	0	100	60	10	ug/l
2-Fluorobiphenyl	MB	932467-00	1	50	0	100	50	10	ug/l
	SS	932467-1	1	70	0	100	70	10	ug/l
	SS	932467-2	1	80	0	100	80	10	ug/l
	SS	932469-1	1	50	0	100	50	10	ug/l
2,4,6-Tribromophenol	MB	932467-00	1	120	0	200	60	10	ug/l
	SS	932467-1	1	150	0	200	75	10	ug/l
	SS	932467-2	1	140	0	200	70	10	ug/l
	SS	932469-1	1	100	0	200	50	10	ug/l
erphenyl-d14	MB	932467-00	1	60	0	100	60	10	ug/l
	SS	932467-1	1	70	0	100	70	10	ug/l
	SS	932467-2	1	70	0	100	70	10	ug/l
	SS	932469-1	1	60	0	100	60	10	ug/l
,4-Dichlorobenzene	MS	932467-1	1	160	0	250	64	10	ug/l
	MS	932467-2	1	180	0	250	72	10	ug/l
	MS	932469-1	1	180	0	250	72	10	ug/l
	MSD	932469-1	1	170	0	250	68	10	ug/l
,4-Dinitrotoluene	MS	932467-1	1	160	0	250	64	10	ug/l
	MS	932467-2	1	190	0	250	76	10	ug/l
	MS	932469-1	1	170	0	250	68	10	ug/l
	MSD	932469-1	1	150	0	250	60	10	ug/l
exachlorobenzene	MS	932467-1	1	190	0	250	76	10	ug/l
	MS	932467-2	1	210	0	250	84	10	ug/l
	MS	932469-1	1	210	0	250	84	10	ug/l
	MSD	932469-1	1	200	0	250	80	10	ug/l
exachlorobutadiene	MS	932467-1	1	200	0	250	80	10	ug/l
	MS	932467-2	1	200	0	250	80	10	ug/l
	MS	932469-1	1	210	0	250	84	10	ug/l
	MSD	932469-1	1	190	0	250	76	10	ug/l
exachloroethane	MS	932467-1	1	180	0	250	72	10	ug/l
	MS	932467-2	1	180	0	250	72	10	ug/l
	MS	932469-1	1	180	0	250	72	10	ug/l
	MSD	932469-1	1	170	0	250	68	10	ug/l
Nitrobenzene	MS	932467-1	1	200	0	250	80	10	ug/l

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QUALITY ASSURANCE REPORT
10/26/93

JOB NUMBER: 932469 CUSTOMER: ONSITE TECHNOLOGIES LIMITED ATTN: DAVE COX

CLP SEMIVOLATILES DATE ANALYZED: 10/22/93 TIME ANALYZED: 09:33 METHOD: EPA SW-846 8270 QC NUMBER:947927

MATRIX SPIKES

TEST DESCRIPTION	ANALYSIS SUB-TYPE	ANALYSIS I. D.	DILUTION FACTOR	ANALYZED VALUE	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY	DETECTION LIMITS	UNITS OF MEASURE
	MS	932467-2	1	330	0	250	132	10	ug/l
	MS	932469-1	1	220	0	250	88	10	ug/l
	MSD	932469-1	1	200	0	250	80	10	ug/l
Pentachlorophenol	MS	932467-1	1	530	0	750	71	50	ug/l
	MS	932467-2	1	510	0	750	68	50	ug/l
	MS	932469-1	1	390	0	750	52	50	ug/l
	MSD	932469-1	1	290	0	750	39	50	ug/l
2,4,5-Trichlorophenol	MS	932467-1	1	580	0	750	77	10	ug/l
	MS	932467-2	1	650	0	750	87	10	ug/l
	MS	932469-1	1	580	0	750	77	10	ug/l
	MSD	932469-1	1	540	0	750	72	10	ug/l
2,4,6-Trichlorophenol	MS	932467-1	1	210	0	250	84	10	ug/l
	MS	932467-2	1	230	0	250	92	10	ug/l
	MS	932469-1	1	200	0	250	80	10	ug/l
	MSD	932469-1	1	180	0	250	72	10	ug/l
yridine	MS	932467-1	1	350	0	500	70	10	ug/l
	MS	932467-2	1	340	0	500	68	10	ug/l
	MS	932469-1	1	380	0	500	76	10	ug/l
	MSD	932469-1	1	380	0	500	76	10	ug/l
resols (Total)	MS	932467-1	1	570	0	750	76	30	ug/L
	MS	932467-2	1	650	0	750	87	30	ug/L
	MS	932469-1	1	560	0	750	75	30	ug/L
	MSD	932469-1	1	570	0	750	76	30	ug/L

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QUALITY ASSURANCE REPORT
10/26/93

JOB NUMBER: 932469 CUSTOMER: ONSITE TECHNOLOGIES LIMITED ATTN: DAVE COX

CLP Volatiles DATE ANALYZED: 10/22/93 TIME ANALYZED: 09:10 METHOD: EPA SW-846 8260 QC NUMBER:947972

BLANKS

TEST DESCRIPTION	ANALY SUB-TYPE	ANALYSIS I.D.	DILUTION FACTOR	ANALYZED VALUE	DETECTION LIMIT	UNITS OF MEASURE
Vinyl chloride	MB	10/18/93	1	<5	5	ug/l
	MB	10/21/93	1	<5	5	ug/l
,1-Dichloroethene	MB	10/18/93	1	<5	5	ug/l
	MB	10/21/93	1	<5	5	ug/l
2-Butanone	MB	10/18/93	1	<10	10	ug/l
	MB	10/21/93	1	<10	10	ug/l
hloroform	MB	10/18/93	1	<5	5	ug/l
	MB	10/21/93	1	<5	5	ug/l
Carbon Tetrachloride	MB	10/18/93	1	<5	5	ug/l
	MB	10/21/93	1	<5	5	ug/l
,2-Dichloroethane	MB	10/18/93	1	<5	5	ug/l
	MB	10/21/93	1	<5	5	ug/l
Benzene	MB	10/18/93	1	<5	5	ug/l
	MB	10/21/93	1	<5	5	ug/l
richloroethene	MB	10/18/93	1	<5	5	ug/l
	MB	10/21/93	1	<5	5	ug/l
etrachloroethene	MB	10/18/93	1	<5	5	ug/l
	MB	10/21/93	1	<5	5	ug/l
Chlorobenzene	MB	10/18/93	1	<5	5	ug/l
	MB	10/21/93	1	<5	5	ug/l

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QUALITY ASSURANCE REPORT
10/26/93

JOB NUMBER: 932469 CUSTOMER: ONSITE TECHNOLOGIES LIMITED ATTN: DAVE COX

CLP Volatiles DATE ANALYZED: 10/22/93 TIME ANALYZED: 09:10 METHOD: EPA SW-846 8260 QC NUMBER:947972

REFERENCE STANDARDS

TEST DESCRIPTION	ANALYSIS SUB-TYPE	ANALYSIS I. D.	DILUTION FACTOR	ANALYZED VALUE	TRUE VALUE	PERCENT RECOVERY	DETECTION LIMITS	UNITS OF MEASURE
ibromofluoromethane	RS	B285.52.12	1	51	50	102	5	ug/l
oluene d-8	RS	B285.52.12	1	49	50	98	5	ug/l
4-Bromofluorobenzene	RS	B285.52.12	1	55	50	110	5	ug/l
Vinyl chloride	RS	B285.52.12	1	120	100	120	5	ug/l
,1-Dichloroethene	RS	B285.52.12	1	108	100	108	5	ug/l
-Butanone	RS	B285.52.12	1	89	100	89	10	ug/l
hloroform	RS	B285.52.12	1	61	100	61	5	ug/l
Carbon Tetrachloride	RS	B285.52.12	1	106	100	106	5	ug/l
1,2-Dichloroethane	RS	B285.52.12	1	99	100	99	5	ug/l
enzene	RS	B285.52.12	1	101	100	101	5	ug/l
richloroethene	RS	B285.52.12	1	104	100	104	5	ug/l
Tetrachloroethene	RS	B285.52.12	1	123	100	123	5	ug/l
Chlorobenzene	RS	B285.52.12	1	119	100	119	5	ug/l

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QUALITY ASSURANCE REPORT
10/26/93

JOB NUMBER: 932469 CUSTOMER: ONSITE TECHNOLOGIES LIMITED ATTN: DAVE COX

CLP Volatiles DATE ANALYZED: 10/22/93 TIME ANALYZED: 09:10 METHOD: EPA SW-846 8260 QC NUMBER:947972

MATRIX SPIKES

TEST DESCRIPTION	ANALYSIS SUB-TYPE	ANALYSIS I. D.	DILUTION FACTOR	ANALYZED VALUE	ORIGINAL VALUE	SPIKE ADDED	PERCENT RECOVERY	DETECTION LIMITS	UNITS OF MEASURE
Dibromofluoromethane	BS	932467-00	1	530	0	500	106	5	ug/l
	SS	932467-1	1	520	0	500	104	5	ug/l
	SS	932467-2	1	540	0	500	108	5	ug/l
	SS	932469-1	1	510	0	500	102	5	ug/l
	BS	932502-00	1	2560	0	2500	102	5	ug/l
	SS	932502-1	1	2740	0	2500	110	5	ug/l
	SS	932503-1	1	2810	0	2500	112	5	ug/l
	SS	932504-1	1	590	0	500	118	5	ug/l
Toluene d-8	BS	932467-00	1	480	0	500	96	5	ug/l
	SS	932467-1	1	470	0	500	94	5	ug/l
	SS	932467-2	1	490	0	500	98	5	ug/l
	SS	932469-1	1	490	0	500	98	5	ug/l
	SS	932502-00	1	2490	0	2500	100	5	ug/l
	SS	932502-1	1	2450	0	2500	98	5	ug/l
	SS	932503-1	1	2440	0	2500	98	5	ug/l
	SS	932504-1	1	490	0	500	98	5	ug/l
4-Bromofluorobenzene	BS	932467-00	1	560	0	500	112	5	ug/l
	SS	932467-1	1	530	0	500	106	5	ug/l
	SS	932467-2	1	570	0	500	114	5	ug/l
	SS	932469-1	1	560	0	500	112	5	ug/l
	SS	932502-00	1	2830	0	2500	113	5	ug/l
	SS	932502-1	1	2910	0	2500	116	5	ug/l
	SS	932503-1	1	2670	0	2500	107	5	ug/l
	SS	932504-1	1	540	0	500	108	5	ug/l

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QUALITY ASSURANCE FOOTER
10/26/93

Standard Methods for the Examination of Water and Wastewater, 17th Ed. APHA,AWWA,WPCF.
USEPA SW-846 3rd. Edition, Test Methods for the Evaluation of Solid Waste
EPA-600/4-79-020, Methods for the Analysis of Water and Wastes, March 1983
Federal Register, Friday, October 26, 1984 (40 CFR Part 136).
EPA-600/2-78-054, Field and Laboratory Methods Applicable to Overburdens and Minesoils.

Quality control acceptance criteria are method dependent.
GCMS tuning criteria meet EPA CLP Statement of Work OLM01.0.
All data reported on sample "as received" unless noted.
Sample IDs with a "-00" at the end indicate a blank spike or blank spike duplicate associated with the numbered sample.
NC = Not Calculated due to value at or below detection limit.

NOTE: Data in QA report may differ from final results due to digestion and/or dilution of sample into analytical range.

The "TIME ANALYZED" in the QA Report refers to the start time of the analytical batch which may not reflect the actual time of each analysis. The "DATE ANALYZED" is the actual date of analysis.

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QC SAMPLE IDENTIFICATION

1. BLANKS	Method or Method / Type	MB or MB / type^
	Reagent	RB
	Initial Calibration	ICB
	Continuing Calibration	CCB
	Storage	SB
2. STANDARDS	Laboratory Control	LCS
	Reference	RS
	Initial Calibration	ICV
	Continuing Calibration	CCV
3. SPIKES	Matrix	MS
	Blank	BS
	Surrogate	SS
	Post Digestion Spike	PDS
	Matrix Spike Duplicate	MSD
4. DUPLICATES	Matrix	MD
	Post Digestion Duplicate	PDD

^ In the event that several different method blanks are analyzed, the blank type will be designated by the preparation method, i.e., ZHE, TCLP, 3010, 3050, etc.

Subcontracted Analysis Codes

Anaheim	*AN
Aurora	*AU
Casper	*CA
Houston	*HP
Lake Charles	*LC
Long Beach	*LB
Other Laboratories	*XX

* The asterisk in the "TECHN" column signifies that the analysis was performed by a subcontract laboratory.

ON SITE TECHNOLOGIES LIMITED

CHAIN OF CUSTODY RECORD

№ 1298

Date: 10/14/93

Page 1 of 1

657 W. Maple ▪ P. O. Box 2606 ▪ Farmington, NM 87499
LAB: (505) 325-5667 ▪ FAX: (505) 325-6256

Purchase Order No.: | Reference No.: 1298

SEND INVOICE TO

Name [illegible]
Company ~~PO Box 2606~~ ON SITE TECH | Dept.
Address ~~Farm~~ PO Box 2606
City, State, Zip Farmington NM 87499

REPORT RESULTS TO

Name DAVE COX | Title [illegible]
Company ON SITE TECH
Mailing Address 657 W Maple
City, State, Zip FARMINGTON, NM 87401
Telephone No. 505-325-5667 | Telefax No.

Special Instructions: Full TCLP excluding Pesticides & Herbicides

[illegible]

Sampler:

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE/ GRAB	PRESERVATIVES	Number of Containers	TCLP	Ignitability	Corrosivity								Remarks (matrix)
0640-1298	10/14/93 1115	Comp		3	X	X	X			✓					

Relinquished by: [illegible] Date/Time 10/14/93 1300 | Received by: | Date/Time

Relinquished by: | Date/Time | Received by: | Date/Time

Relinquished by: | Date/Time | Received by: | Date/Time

Method of Shipment:

Authorized by: [illegible] Date 10/14/93
(Client Signature Must Accompany Request)

Rush	5 Working Days	10 Working Days	Sampling Location:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

ON SITE TECHNOLOGIES, LTD.

TOTAL PETROLEUM HYDROCARBONS

Attn:	*Cindy Gray*	Date:	10/27/93
Company:	*Red Willow c/o On Site Technologies*	*Lab ID:*	*1299*
Address:	*3005 Northridge Ste. F*	*Sample No.*	*#0614*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name:	***Steere Tank Lines / Blanco Job No. 4-1038***				
Project Location:	***Leonard Gonzales Land***				
Sampled by:	GL	Date:	10/14/93	Time:	1227
Analyzed by:	DC	Date:	10/15/93		
Type of Sample:	*Soil*				

Laboratory Analysis

Laboratory Identification	***Sample Identification***	***Total Petroleum Hydrocarbons***
0614-1299	*Steere Tank Lines / Blanco Job No. 4-1038 Leonard Gonzales Land*	44 *ppm wt.*

Method - *EPA Method 418.1 Total Petroleum Hydrocarbons*

Approved by: Jan Gr
Date: 10/27/93

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
3005 NORTHRIDGE DRIVE ▪ SUITE F ▪ P. O. BOX 2606 ▪ FARMINGTON, NEW MEXICO 87499

ON SITE TECHNOLOGIES LIMITED
657 W. Maple • P. O. Box 2606 • Farmington, NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

CHAIN OF CUSTODY RECORD

№ 1299

Date: 1[illegible]/1[illegible]/9[illegible]

Page 1 of 1

Purchase Order No.:
Reference No.: 2-[illegible]

SEND INVOICE TO
Name
Company — Dept.
Address
City, State, Zip

REPORT RESULTS TO
Name [illegible] — Title
Company
Mailing Address P.O. Box 85
City, State, Zip [illegible], NM 87413
Telephone No. 632-1246 — Telefax No.

Special Instructions:

Sampler: [illegible]

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE/GRAB	PRESERVATIVES	Number of Containers	TPH										Remarks (matrix)
[illegible]-1299	10/14/93 1223	G	4°C	1	X										

ANALYSIS REQUESTED

Relinquished by: — Date/Time — Received by: [illegible] — Date/Time 1/19/9[illegible]
Relinquished by: — Date/Time — Received by: — Date/Time
Relinquished by: — Date/Time — Received by: — Date/Time

Method of Shipment:

Rush ✓ — 5 Working Days — 10 Working Days — Sampling Location:

Authorized by: ____________ Date ____
(Client Signature Must Accompany Request)

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn:	*Cindy Gray*	Date:	10/22/93
Company:	*Steere Tank Lines c/o On Site Technologies*	*Lab ID:*	*1303*
Address:	*3005 Northridge, Ste.F*	*Sample ID:*	*#0645*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name:	***Steere Tank Lines / Blanco Job No. 4-1038***				
Project Location:	***NNE 20 ft. S; 13 ft. depth***				
Sampled by:	GL	Date:	10/15/93	Time:	1645
Analyzed by:	DC	Date:	10/22/93		
Sample Matrix:	*Soil*				

Aromatic Volatile Organics

Component	****Measured Concentration ug/L***
Benzene	*ND*
Toluene	*ND*
Chlorobenzene	*ND*
Ethylbenzene	*ND*
m,p-Xylene	*ND*
o-Xylene	*ND*
1,3-Dichlorobenzene	*ND*
1,4-Dichlorobenzene	*ND*
1,2-Dichlorobenzene	*ND*
TOTAL	*0 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/L*

Method *- SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 10/22/93

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ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn:	*Cindy Gray*	Date:	10/22/93
Company:	*Steere Tank Lines c/o On Site Technologies*	*Lab ID:*	*1303*
Address:	*3005 Northridge, Ste.F*	*Sample ID:*	*#0646*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name:	***Steere Tank Lines / Blanco Job No. 4-1038***				
Project Location:	***Roadside***				
Sampled by:	GL	Date:	10/15/93	Time:	1645
Analyzed by:	DC	Date:	10/22/93		
Sample Matrix:	*Soil*				

Aromatic Volatile Organics

Component	***Measured Concentration ug/L
Benzene	*ND*
Toluene	*ND*
Chlorobenzene	*ND*
Ethylbenzene	*ND*
m,p-Xylene	*ND*
o-Xylene	*ND*
1,3-Dichlorobenzene	*ND*
1,4-Dichlorobenzene	*ND*
1,2-Dichlorobenzene	*ND*
TOTAL	*0 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/L*

***Method** - SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by: [signature]
Date: 10/22/93

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CHAIN OF CUSTODY RECORD

№ 1303

ON SITE TECHNOLOGIES LIMITED

657 W. Maple ▪ P. O. Box 2606 ▪ Farmington, NM 87499
LAB: (505) 325-5667 ▪ FAX: (505) 325-6256

Date: 10-15-93

Page 1 of 1

Purchase Order No.:	Reference No.:		
SEND INVOICE TO: Name		REPORT RESULTS TO: Name	Title
Company	Dept.	Company	
Address		Mailing Address	
City, State, Zip		City, State, Zip	
		Telephone No.	Telefax No.

Special Instructions: Please

Sampler:

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE/ GRAB	PRESERVATIVES	Number of Containers	ANALYSIS REQUESTED: BTEX	Remarks (matrix)
0615-1303	10/15/93 1615	G		1	X	
0616-1303	10/15/93 1615	G		1	X	

Relinquished by:	Date/Time 10/15 5:54	Received by:	Date/Time 10/16/93 0930
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Authorized by: _____ Date 10/15/93
(Client Signature Must Accompany Request)

Rush	5 Working Days	10 Working Days	Sampling Location:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn:	*Cindy Gray*	Date:	10/22/93
Company:	*Steere Tank Lines c/o On Site Technologies*	*Lab ID:*	*1304*
Address:	*3005 Northridge, Ste.F*	*Sample ID:*	*#0647*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name:	***Steere Tank Lines / Blanco Job No. 4-1038***				
Project Location:	***South End of Pit 3 ft. from Top, 20 ft. from Road***				
Sampled by:	GL	Date:	10/16/93	Time:	930
Analyzed by:	DC	Date:	10/22/93		
Sample Matrix:	*Soil*				

Aromatic Volatile Organics

Component	***Measured Concentration ug/L
Benzene	*ND*
Toluene	*ND*
Chlorobenzene	*ND*
Ethylbenzene	*ND*
m,p-Xylene	*ND*
o-Xylene	*ND*
1,3-Dichlorobenzene	*ND*
1,4-Dichlorobenzene	*ND*
1,2-Dichlorobenzene	*ND*
TOTAL	*0 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/L*

Method *- SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 10/22/93

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ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn:	*Cindy Gray*	Date:	10/22/93
Company:	*Steere Tank Lines c/o On Site Technologies*	*Lab ID:*	*1304*
Address:	*3005 Northridge, Ste.F*	*Sample ID:*	*#0648*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name:	***Steere Tank Lines / Blanco Job No. 4-1038***				
Project Location:	***Center Floor***				
Sampled by:	GL	Date:	10/16/93	Time:	1110
Analyzed by:	DC	Date:	10/22/93		
Sample Matrix:	*Soil*				

Aromatic Volatile Organics

Component	****Measured Concentration ug/L***
Benzene	*ND*
Toluene	*21*
Chlorobenzene	*ND*
Ethylbenzene	*8*
m,p-Xylene	*20*
o-Xylene	*13*
1,3-Dichlorobenzene	*3*
1,4-Dichlorobenzene	*ND*
1,2-Dichlorobenzene	*5*
TOTAL	*70 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/L*

Method *- SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 10/22/93

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ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn: Cindy Gray
Company: Steere Tank Lines c/o On Site Technologies
Address: 3005 Northridge, Ste.F
City, State: Farmington, NM 87499

Date: 10/22/93
Lab ID: 1304
Sample ID: #0649
Job No. 4-1038

Project Name: Steere Tank Lines / Blanco Job No. 4-1038
Project Location: NE Corner of Pit
Sampled by: GL Date: 10/16/93 Time: 1130
Analyzed by: DC Date: 10/22/93
Sample Matrix: Soil

Aromatic Volatile Organics

Component	**Measured Concentration ug/L
Benzene	ND
Toluene	ND
Chlorobenzene	ND
Ethylbenzene	ND
m,p-Xylene	6
o-Xylene	ND
1,3-Dichlorobenzene	2
1,4-Dichlorobenzene	8
1,2-Dichlorobenzene	4
	TOTAL 20 ug/L

ND - Not Detectable
** - Method Detection Limit, 2.0 ug/L

Method - SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography

Approved by: [signature]
Date: 10/22/93

ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn: *Cindy Gray*
Company: *Steere Tank Lines c/o On Site Technologies*
Address: *3005 Northridge, Ste.F*
City, State: *Farmington, NM 87499*

Date: 10/22/93
Lab ID: *1304*
Sample ID: *#0650*
Job No. *4-1038*

Project Name: ***Steere Tank Lines / Blanco Job No. 4-1038***
Project Location: ***W End of Pit, 35 ft. from Road***
Sampled by: GL Date: 10/16/93 Time: 1200
Analyzed by: DC Date: 10/21/93
Sample Matrix: *Soil*

Aromatic Volatile Organics

Component	*****Measured Concentration ug/L***
Benzene	*ND*
Toluene	*ND*
Chlorobenzene	*ND*
Ethylbenzene	*ND*
m,p-Xylene	*ND*
o-Xylene	*ND*
1,3-Dichlorobenzene	*ND*
1,4-Dichlorobenzene	*ND*
1,2-Dichlorobenzene	*ND*
	TOTAL *0 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/L*

Method - *SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by: [signature]
Date: 10/22/93

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PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn:	*Cindy Gray*	Date:	10/22/93
Company:	*Steere Tank Lines c/o On Site Technologies*	*Lab ID:*	*1304*
Address:	*3005 Northridge, Ste.F*	*Sample ID:*	*#0651*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name:	***Steere Tank Lines / Blanco Job No. 4-1038***				
Project Location:	***NW Road Site; 3 ft. depth***				
Sampled by:	GL	Date:	10/16/93	Time:	1320
Analyzed by:	DC	Date:	10/21/93		
Sample Matrix:	*Soil*				

Aromatic Volatile Organics

Component	***Measured Concentration ug/L
Benzene	*ND*
Toluene	*ND*
Chlorobenzene	*ND*
Ethylbenzene	*ND*
m,p-Xylene	*ND*
o-Xylene	*ND*
1,3-Dichlorobenzene	*ND*
1,4-Dichlorobenzene	*ND*
1,2-Dichlorobenzene	*ND*
TOTAL	*0 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/L*

Method *- SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 10/22/93

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
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ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn:	*Cindy Gray*	Date:	10/22/93
Company:	*Steere Tank Lines c/o On Site Technologies*	*Lab ID:*	*1304*
Address:	*3005 Northridge, Ste.F*	*Sample ID:*	*#0652*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name:	***Steere Tank Lines / Blanco Job No. 4-1038***				
Project Location:	***NE 5 ft. from Pit, 8 ft. from Road***				
Sampled by:	GL	Date:	10/16/93	Time:	1400
Analyzed by:	DC	Date:	10/21/93		
Sample Matrix:	*Soil*				

Aromatic Volatile Organics

Component	***Measured Concentration ug/L
Benzene	*ND*
Toluene	*ND*
Chlorobenzene	*ND*
Ethylbenzene	*ND*
m,p-Xylene	*ND*
o-Xylene	*ND*
1,3-Dichlorobenzene	*ND*
1,4-Dichlorobenzene	*ND*
1,2-Dichlorobenzene	*ND*
TOTAL	*0 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/L*

Method *- SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 10/22/93

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
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ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn:	*Cindy Gray*	Date:	10/22/93
Company:	*Steere Tank Lines c/o On Site Technologies*	*Lab ID:*	*1304*
Address:	*3005 Northridge, Ste.F*	*Sample ID:*	*#0653*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name:	***Steere Tank Lines / Blanco Job No. 4-1038***				
Project Location:	***Roadside 3 ft. from Road - Center of Pit***				
Sampled by:	GL	Date:	10/16/93	Time:	1400
Analyzed by:	DC	Date:	10/21/93		
Sample Matrix:	*Soil*				

Aromatic Volatile Organics

Component	***Measured Concentration ug/L
Benzene	*ND*
Toluene	*ND*
Chlorobenzene	*ND*
Ethylbenzene	*ND*
m,p-Xylene	*ND*
o-Xylene	*ND*
1,3-Dichlorobenzene	*ND*
1,4-Dichlorobenzene	*ND*
1,2-Dichlorobenzene	*ND*
TOTAL	*0 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/L*

Method *- SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 10/22/93

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
3005 NORTHRIDGE DRIVE ▪ SUITE F ▪ P. O. BOX 2606 ▪ FARMINGTON, NEW MEXICO 87499

ON SITE TECHNOLOGIES, LTD.

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 10/22/93

Internal QC No.: 0222-STD
Surrogate QC No.: 0223-STD
Reference Standard QC No.: 0221-STD

Reference Standards

Component	Analyzed Value	True Value	Percent Recovery	Detection Limit	Units of Measure	**Check
Benzene	21	20	105	2	ug/L	YES
Flourobenzene	40	40	100	2	ug/L	YES
1,4-Diflourobenzene	38	40	95	2	ug/L	YES
Toluene	25	20	125	2	ug/L	YES
Chlorobenzene	22	20	110	2	ug/L	YES
Ethylbenzene	22	20	110	2	ug/L	YES
m,p-Xylene	24	20	120	2	ug/L	YES
o-Xylene	23	20	115	2	ug/L	YES
1,3-Dichlorobenzene	23	20	115	2	ug/L	YES
1,4-Dichlorobenzene	24	20	120	2	ug/L	YES
1,2-Dichlorobenzene	18	20	90	2	ug/L	YES
4-Bromobenzene	37	40	93	2	ug/L	YES

***Check: QC Acceptance Criteria Table 3. SW-846 EPA Method 8020 Aromatic Volatile Organics*

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ON SITE TECHNOLOGIES, LTD.

QUALITY ASSURANCE REPORT

for EPA Method 8020

Date Analyzed: 10/22/93
Lab ID: 1304
Sample ID: #0650
Job No. 4-1038
Matrix Spike No.: 0221-STD

Matrix Spikes

Data File: QS02001J.RAW

Component	Analyzed Value	Original Value	Spike Added	Percent Recovery	Detection Limits	Units of Measure
Benzene	18	0	20	90	2	ug/L
Toluene	19	0	20	95	2	ug/L
Chlorobenzene	21	0	20	105	2	ug/L
Ethylbenzene	22	0	20	110	2	ug/L
m,p-Xylene	22	0	20	110	2	ug/L
o-Xylene	21	0	20	105	2	ug/L
1,3-Dichlorobenzene	25	0	20	125	2	ug/L
1,4-Dichlorobenzene	22	0	20	110	2	ug/L
1,2-Dichlorobenzene	24	0	20	120	2	ug/L

Matrix Spikes - Duplicate

Data File: QS02002C.RAW

Component	Analyzed Value	Original Value	Spike Added	Percent Recovery	Detection Limits	Units of Measure
Benzene	20	0	20	100	2	ug/L
Toluene	21	0	20	105	2	ug/L
Chlorobenzene	24	0	20	120	2	ug/L
Ethylbenzene	25	0	20	125	2	ug/L
m,p-Xylene	24	0	20	120	2	ug/L
o-Xylene	24	0	20	120	2	ug/L
1,3-Dichlorobenzene	28	0	20	140	2	ug/L
1,4-Dichlorobenzene	28	0	20	140	2	ug/L
1,2-Dichlorobenzene	28	0	20	140	2	ug/L

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CHAIN OF CUSTODY RECORD

№ 1304

ON SITE TECHNOLOGIES LIMITED

657 W. Maple • P. O. Box 2606 • Farmington, NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

Date: 10/16/93

Page 1 of 1

Purchase Order No.:	Reference No.:		
SEND INVOICE TO: Name		REPORT RESULTS TO: Name	Title
Company	Dept.	Company	
Address		Mailing Address	
City, State, Zip		City, State, Zip	
		Telephone No.	Telefax No.

Special Instructions:

Sampler:

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE/ GRAB	PRESERVATIVES	Number of Containers	Remarks (matrix)

Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Authorized by: Date
(Client Signature Must Accompany Request)

Rush	5 Working Days	10 Working Days	Sampling Location:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn:	*Cindy Gray*	Date:	10/22/93
Company:	*Steere Tank Lines c/o On Site Technologies*	*Lab ID:*	*1307*
Address:	*3005 Northridge, Ste.F*	*Sample ID:*	*#0643*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name:	***Steere Tank Lines / Blanco Job No. 4-1038***				
Project Location:	***H2O Line West End of Pit***				
Sampled by:	GL	Date:	10/18/93	Time:	1400
Analyzed by:	DC	Date:	10/21/93		
Sample Matrix:	*Soil*				

Aromatic Volatile Organics

Component	***Measured Concentration ug/L
Benzene	*10*
Toluene	*11*
Chlorobenzene	*12*
Ethylbenzene	*12*
m,p-Xylene	*12*
o-Xylene	*12*
1,3-Dichlorobenzene	*29*
1,4-Dichlorobenzene	*14*
1,2-Dichlorobenzene	*17*
TOTAL	*129 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/L*

Method *- SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 10/22/93

FAX: (505) 327-1496 • 24 HR. – (505) 327-7105 • OFF.: (505) 325-8786
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ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn:	*Cindy Gray*	Date:	10/22/93
Company:	*Steere Tank Lines c/o On Site Technologies*	*Lab ID:*	*1307*
Address:	*3005 Northridge, Ste.F*	*Sample ID:*	*#0644*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1038*

Project Name:	***Steere Tank Lines / Blanco Job No. 4-1038***				
Project Location:	***H2O Line East End of Pit***				
Sampled by:	GL	Date:	10/18/93	Time:	1400
Analyzed by:	DC	Date:	10/21/93		
Sample Matrix:	*Soil*				

Aromatic Volatile Organics

Component	****Measured Concentration ug/L***
Benzene	*ND*
Toluene	*ND*
Chlorobenzene	*ND*
Ethylbenzene	*ND*
m,p-Xylene	*ND*
o-Xylene	*ND*
1,3-Dichlorobenzene	*ND*
1,4-Dichlorobenzene	*ND*
1,2-Dichlorobenzene	*ND*
TOTAL	*0 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/L*

Method *- SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 10/22/93

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
3005 NORTHRIDGE DRIVE ▪ SUITE F ▪ P. O. BOX 2606 ▪ FARMINGTON, NEW MEXICO 87499

CHAIN OF CUSTODY RECORD

No. 1307

ON SITE TECHNOLOGIES LIMITED

657 W. Maple ▪ P. O. Box 2606 ▪ Farmington, NM 87499
LAB: (505) 325-5667 ▪ FAX: (505) 325-6256

Date: 10/12/93

Page 1 of 1

Purchase Order No.:	Reference No.:		
SEND INVOICE TO: Name		REPORT RESULTS TO: Name	Title
Company	Dept.	Company STEWART - BLANCO SITE	
Address		Mailing Address	
City, State, Zip		City, State, Zip	
		Telephone No.	Telefax No.

Special Instructions:

Sampler:

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE/ GRAB	PRESERVATIVES	Number of Containers	ANALYSIS REQUESTED: STEX	Remarks (matrix)
CC43-1307	10/8 [illegible]	G	4°C	1	X	
CC44-1307	10/8 [illegible]	G	4°C	1	X	

Relinquished by:	Date/Time	Received by:	Date/Time 10/12/93 1600
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Authorized by: _____ Date _____
(Client Signature Must Accompany Request)

Rush	5 Working Days	10 Working Days	Sampling Location:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

Exhibit 4

TRANSPORT LOGS

(UPON AUTHORIZED REQUEST)

Exhibit 5

SITE PHOTOGRAPHS

(UPON AUTHORIZED REQUEST)

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

December 1, 1993

CERTIFIED MAIL
RETURN RECEIPT NO. P-111-334-077

Mr. Phillip C. Nobis
Vice President Operations
Tierra Environmental Corporation
909 W. Apache
Farmington, New Mexico 87401

RE: **APPROVAL TO RECYCLE REMEDIATED SOILS**
CROUCH MESA LANDFARM
SAN JUAN COUNTY, NEW MEXICO

Dear Mr. Nobis:

The New Mexico Oil Conservation Division (OCD) has received your request dated November 11, 1993, for authorization to recycle remediated soils from your Crouch Mesa Landfarm located in Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. The request and attached analyses is for recycling the remediated soils from the Steer Tanklines accident (Project 93016) and the Rust Tractor pit closure (Project 93005). The laboratory analysis for Project 93016 shows the Total Petroleum Hydrocarbons (TPH) is 27 ppm and the Volatile Aromatic Organics (BTEX) is non- detect. The laboratory analysis for Project 93005 shows the TPH is 260 ppm and the BTEX is non-detect.

Based on the information provided in your request, the OCD hereby approves the removal of the remediated soils from the active portion of the landfarm under the following conditions:

1. The remediated soils from Project 93016 may be used at the landfarm facility for construction of roads, berms, and other dirt work operations or for backfill at environmental clean-up projects at oil and gas exploration and production operations. Any other use of the remediated soils must be reviewed by the OCD Santa Fe Office on a case-by-case basis and receive OCD approval prior to moving the soils.

2. The remediated soils from Project 93005 may only be used at the Crouch Mesa Landfarm Facility for construction of roads, berm and other dirt work operations.

3. Comprehensive records for all remediated soils either moved within the landfarm or removed from the landfarm will be maintained at the facility. The records for all remediated soil will include: 1) the date, volume and final destination of soil moved, 2) the soil history including original place of contamination and exact cell location where the material was remediated, and 3) laboratory analyses of the remediated soils.

Please be advised that this approval does not relieve you of liability should your operation result in actual pollution of surface waters, ground waters, or the environment actionable under other laws and/or regulations. In addition, the OCD approval does not relieve you of liability for compliance with any other laws and/or regulations.

If you have any questions please do not hesitate to contact me at (505) 827-5884.

Sincerely,

Kathy M. Brown

Kathy M. Brown
Geologist

xc: Denny Foust, OCD Aztec Office

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

November 11, 1993

Ms. Kathy Brown
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

RE: PERMISSION TO RECYCLE SOILS, TIERRA PROJECTS 93016 AND 93005

Dear Ms. Brown:

Enclosed herewith are the results of laboratory analysis conducted on composite soil samples on the above referenced projects which are currently at our Crouch Mesa Landfarm.

Project 93016, was JP-4 contaminated soil from Steer Tanklines accident, 4/7/93 M.P. 84 Hwy 64, containing 3194 cubic yards. Final Analysis indicates TPH is 27 ppm, BTEX is non-detect. Tierra would propose to use the remediated soil as roadbase, berm construction at the Crouch Mesa Landfarm or for backfill returning to the excavations resulting from oil and gas cleanups.

Project 93005 is from the Rust Tractor pit closure 4/16/93 containing 3180 cubic yards. Soil was contaminated with motor oil. (prior to OCD rule change re: industrial hydrocarbon contaminated soil acceptance). Final Analysis indicates TPH at 260 ppm, BTEX is non-detect. OCD current rules re: pit closures, allow levels of remediation to exceed 100 ppm in cases where there is no threat to groundwater or other environmental concerns. In this case Tierra would propose to use the soils from Project 93005, for roadbase, or berm construction upon the Crouch Mesa Landfarm facility only. It would not be returned to the Oil and Gas Fields nor used for any other purpose.

Accurate records of final disposition and where the material was used from both projects would be kept at the Tierra Office for OCD inspection.

If you have any questions or require more information please call me. Thank you for your cooperation.

Sincerely,

TIERRA ENVIRONMENTAL CORPORATION

Phillip C. Nobis
Vice President Operations

cc: D. Foust OCD Aztec, N.M.
File 93005
File 93016

ON SITE TECHNOLOGIES, LTD.

TOTAL PETROLEUM HYDROCARBONS

Attn: *Dan Hoover, Ph.D*
Company: *Tierra Environmental Corporation*
Address: *909 W Apache St.*
City, State: *Farmington, NM 87499*

Date: 11/2/93
Lab ID: *1316*
Sample No. *#0702*
Job No. *2-1000*

Project Name: ***Tierra Environmental Project No. 93016***
Project Location:
Sampled by: LH Date: 11/2/93 Time: 1100
Analyzed by: TW Date: 11/2/93
Type of Sample: *Soil*

Laboratory Analysis

Laboratory Identification	***Sample Identification***	***Total Petroleum Hydrocarbons***
0702-1316	*Tierra Environmental Project No. 93016* ***Arkansas #6***	29 *ppm wt.*

Tierra Job# 93016

[JP-4 - Colorado]

Method *- EPA Method 418.1 Total Petroleum Hydrocarbons*

Approved by:
Date: 11/2/93

ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn: *Dan Hoover, Ph.D*
Company: *Tierra Environmental Corporation*
Address: *909 W Apache St.*
City, State: *Farmington, NM 87499*

Date: 11/3/93
Lab ID: *1316*
Sample ID: *#0702*
Job No. *2-1000*

Project Name: ***Tierra Environmental Project No. 93016***
Project Location: ***Arkansas #6***
Sampled by: LH Date: 11/2/93 Time: 1100
Analyzed by: DC Date: 11/3/93
Sample Matrix: *Soil*

Aromatic Volatile Organics

Component	***Measured Concentration ug/L
Benzene	*ND*
Toluene	*ND*
Chlorobenzene	*ND*
Ethylbenzene	*ND*
m,p-Xylene	*ND*
o-Xylene	*ND*
1,3-Dichlorobenzene	*ND*
1,4-Dichlorobenzene	*ND*
1,2-Dichlorobenzene	*ND*
TOTAL	*0 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/L*

Method *- SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by: Jan Cx
Date: 11/3/93

ON SITE TECHNOLOGIES, LTD.

TOTAL PETROLEUM HYDROCARBONS

Attn: *Dan Hoover, Ph.D*
Company: *Tierra Environmental Corporation*
Address: *909 W Apache St.*
City, State: *Farmington, NM 87499*

Date: 11/2/93
Lab ID: *1316*
Sample No. *#0703*
Job No. *2-1000*

Project Name: ***Tierra Environmental Project No. 93005***
Project Location:
Sampled by: LH Date: 11/2/93 Time: 1100
Analyzed by: TW Date: 11/2/93
Type of Sample: *Soil*

Laboratory Analysis

Laboratory Identification	***Sample Identification***	***Total Petroleum Hydrocarbons***
0703-1316	*Tierra Environmental Project No. 93005* ***Rosebud #5***	260 *ppm wt.*

Method *- EPA Method 418.1 Total Petroleum Hydrocarbons*

Approved by:
Date: 11/2/93

ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn:	Dan Hoover, Ph.D	Date:	11/3/93
Company:	Tierra Environmental Corporation	Lab ID:	1316
Address:	909 W Apache St.	Sample ID:	#0703
City, State:	Farmington, NM 87499	Job No.	2-1000

Project Name:	Tierra Environmental Project No. 93005				
Project Location:	Rosebud #5				
Sampled by:	LH	Date:	11/2/93	Time:	1100
Analyzed by:	DC	Date:	11/3/93		
Sample Matrix:	Soil				

Aromatic Volatile Organics

Component	**Measured Concentration ug/L
Benzene	ND
Toluene	ND
Chlorobenzene	ND
Ethylbenzene	ND
m,p-Xylene	ND
o-Xylene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,2-Dichlorobenzene	ND
TOTAL	0 ug/L

ND - Not Detectable
** - Method Detection Limit, 2.0 ug/L

Method - SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography

Approved by: Dan Hoover
Date: 11/3/93

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

November 5, 1993

Mr. Roger Anderson, Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

RE: BARREL DEPOSITED ON CROUCH MESA FACILITY BY SITE RECLAMATION SERVICES 10/5/93

Dear Mr. Anderson:

I have received the results of the analysis you had requested on the contents of the barrel and they are enclosed.

It appears that the material is non-hazardous.

The barrel is still contained in a bermed lined area. Based on the analysis, I would like to remove the barrel and mix its contents with the rest of the Red Willow soil for remediation.

Also enclosed is a memo from Cindy Gray, On-Site Technologies, memorializing her activity relative to sampling and analysis.

I have also enclosed a copy of the incident report, because I cant remember if you received one.

Thanks for your cooperation.

Sincerely,

TIERRA ENVIRONMENTAL CORPORATION

Phillip C. Nobis
Vice President

xc: D.Foust, Aztec OCD

11/2/93

To: Phil Nobis
Tierra Environmental Landfarm

Re: Drum Hauled In Error From Red Willow Site #1

The following is a transcription of my notes made 10/5/93 documenting the events surrounding the subject drum. Results of laboratory analyses are attached as well.

"10:10 AM Phil Nobis phoned. 1st truck this AM from Red Willow #1 dumped a drum with grey oily sludge in it at the landfarm. OCD notified by Tierra. (Cindy Gray) Phoned Korbi (Hart) at the site. 'Drum had been half buried at the site and used for waste oil from the compressors. SRS loaded it by mistake.'

"Took Phil Nobis out to landfarm. Drum partially crushed. Associated soil and drum stored in plastic-lined berm in emergency storage area. Drum contains 3 to 4 gallons dark grey oily sludge. Sampled by CAS at 11:00 AM. CAS phoned Roger Anderson, OCD. (He) requested TCLP Metals only, BTEX, TPH. If under Haz Waste limits, (it) can be solidified and spread at the landfarm. Sample to laboratory at 11:40 AM."

It was also my understanding at the time from Roger that the material could be solidified with either dirt or SphagSorb. He did not request ignitability or corrosivity due to the suspected origin of the material (waste oil and rainwater). If you have any questions, please call me.

Cindy Sluyter-Gray
On Site Technologies, Ltd.

ON SITE TECHNOLOGIES, LTD.

TOTAL PETROLEUM HYDROCARBONS

Attn:	*Cindy Gray*	Date:	10/19/93
Company:	*Red Willow c/o On Site Technologies*	*Lab ID:*	*1275*
Address:	*3005 Northridge Ste. F*	*Sample No.*	*#0614*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1010*

Project Name:	***Red Willow Job No. 4-1010***				
Project Location:	***Red Willow Site No.1 Drum***				
Sampled by:		Date:	10/5/93	Time:	1145
Analyzed by:	TW	Date:	10/7/93		
Type of Sample:	*Sludge*				

Laboratory Analysis

Laboratory Identification	***Sample Identification***	***Total Petroleum Hydrocarbons***
0614-1275	*Red Willow Job No. 4-1010* *Red Willow Site No.1 Drum*	445,000 *ppm wt.*

Method *- EPA Method 418.1 Total Petroleum Hydrocarbons*

Approved by:
Date: 10/19/93

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
3005 NORTHRIDGE DRIVE ▪ SUITE F ▪ P. O. BOX 2606 ▪ FARMINGTON, NEW MEXICO 87499

ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn:	*Cindy Gray*	Date:	10/6/93
Company:	*Red Willow c/o On Site Technologies*	*Lab ID:*	*1275*
Address:	*3005 Northridge Ste. F*	*Sample ID:*	*#0614*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1010*

Project Name:	***Red Willow Job No. 4-1010***				
Project Location:	***Red Willow Site No.1 Drum***				
Sampled by:		Date:	10/5/93	Time:	1145
Analyzed by:	DC	Date:	10/6/93		
Sample Matrix:	*Sludge*				

Aromatic Volatile Organics

Component	****Measured Concentration ug/L***
Benzene	*28*
Toluene	*101*
Chlorobenzene	*ND*
Ethylbenzene	*ND*
m,p-Xylene	*8*
o-Xylene	*2*
1,3-Dichlorobenzene	*9*
1,4-Dichlorobenzene	*4*
1,2-Dichlorobenzene	*ND*
TOTAL	*152 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2.0 ug/L*

Method *- SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by:
Date: 10/6/93

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
3005 NORTHRIDGE DRIVE ▪ SUITE F ▪ P. O. BOX 2606 ▪ FARMINGTON, NEW MEXICO 87499

ON SITE TECHNOLOGIES, LTD.

METALS - Extractable TCLP

Attn:	*Cindy Gray*	Date:	10/19/93
Company:	*Red Willow c/o On Site Technologies*	*Lab ID:*	*1275*
Address:	*3005 Northridge Ste. F*	*Sample No.*	*#0397*
City, State:	*Farmington, NM 87499*	*Job No.*	*4-1010*

Project Name:	***Red Willow Job No. 4-1010***				
Project Location:	***Red Willow Site No. 1 Drum***				
Sampled by:		Date:	10/5/93	Time:	1145
Analyzed by:	TW	Date:	10/18/93		
Type of Sample:	*Sludge*				

Analyte		*Measured Concentration*	*Limits*
Arsenic	*(As) extractable TCLP*	<0.05 *mg/L*	0.05 *mg/L*
Barium	*(Ba) extractable TCLP*	<0.05 *mg/L*	0.05 *mg/L*
Cadmium	*(Cd) extractable TCLP*	<0.05 *mg/L*	0.05 *mg/L*
Chromium	*(Cr) extractable TCLP*	<0.05 *mg/L*	0.05 *mg/L*
Lead	*(Pb) extractable TCLP*	<0.05 *mg/L*	0.05 *mg/L*
Selenium	*(Se) extractable TCLP*	<0.05 *mg/L*	0.05 *mg/L*
Silver	*(Ag) extractable TCLP*	<0.05 *mg/L*	0.05 *mg/L*

Method - *SW-846 EPA Test Methods for Evaluating Solid Waste / Metallic Analytes*
Method 1311 Toxicity Characteristic Leaching Procedure

Approved by:
Date: 10/19/93

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
3005 NORTHRIDGE DRIVE ▪ SUITE F ▪ P. O. BOX 2606 ▪ FARMINGTON, NEW MEXICO 87499

ON SITE TECHNOLOGIES LIMITED

657 W. Maple ▪ P. O. Box 2606 ▪ Farmington, NM 87499
LAB: (505) 325-5667 ▪ FAX: (505) 325-6256

CHAIN OF CUSTODY RECORD

No 1275

Date: 10-5-93

Page 1 of 1

Purchase Order No.: 4-1010 | Reference No.: ~~4-1015~~

SEND INVOICE TO
Name
Company | Dept.
Address
City, State, Zip

REPORT RESULTS TO
Name Cindy Gray | Title
Company ON Site Technologies
Mailing Address
City, State, Zip
Telephone No. | Telefax No.

Special Instructions: Note as Red Willow Site #1 Drum

Sampler: C. Gray

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE/ GRAB	PRESERVATIVES	Number of Containers	ANALYSIS REQUESTED: TCLP Metals	BTEX	TPH	Remarks (matrix)
0614-1275	10-5-93 11:00	G	Cool	3	✓	✓	✓	

Relinquished by: C. Gray | Date/Time 10/5/93 1145 | Received by: Rebecca Cahill | Date/Time 10/5/93 1145
Relinquished by: | Date/Time | Received by: | Date/Time
Relinquished by: | Date/Time | Received by: | Date/Time

Method of Shipment:

Authorized by: C. Gray (Client Signature Must Accompany Request) Date 10-5-93

Rush	5 Working Days	10 Working Days	Sampling Location:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

TIERRA ENVIRONMENTAL CORPORATION

INCIDENT REPORT

DATE: October 5, 1993

JOB NO. 93054

CLIENT: On-Site Tec./Red Willow No. 1

NATURE OF INCIDENT:

Leaking barrel of unknown gray semi-liquid deposited on Crouch Mesa Landfarm, mixed in with soils from Red Willow No. 1, delivered by Site Rec. Truck No. 9, 9:00 a.m., 10/5/93.

NARRATIVE:

On October 5, 1993, at about 9:30 a.m., Tierra Landfarm Operator, Larry Hunter notified me via telephone that he had discovered a leaking 55 gallon barrel in Cell 3 at the landfarm. According to Hunter, the barrel had been partially buried in soil that had been delivered to the landfarm at about 9:00 a.m. by Site Rec. Truck No.9 and was from the Red Willow No.1 project being managed by On-site Technologies, our client. Hunter discovered the barrel while he was spreading the load, hitting the barrel with the teeth of his loader, puncturing it and causing it to leak a gray semi-liquid substance. No label was visible on the barrel.

I instructed Hunter to place some plastic liner into the secure area located in Cell 5 and berm it, then remove the barrel, the soil on which the semi-liquid had been spilled and place it in the berm, pending disposition.

At about 9:45 a.m., I received a call from Roger Anderson, Bureau Chief OCD Santa Fe, advised him of the situation with the barrel and further advised him of what I had instructed Hunter to do with the barrel and spilled contents.

Anderson advised that the procedure had been correct. He further advised that On-Site Tec. would be required to take samples of the material in the barrel and have the samples analyzed for TPH, Metals and volatiles. In the meantime the barrel would remain in the secure area in Cell 5 pending the results of the analysis. He advised that it was not necessary to contact NMED Hazardous Materials Bureau at this time. However if the lab results identified the contents as hazardous they would have to be notified.

At about 9:50 a.m., I contacted Cindy Gray at On-Site Tec and advised her of the situation re: the barrel. She agreed to accompany me to the landfarm and conduct an inspection. At about 10:30 a.m. we arrived at the landfarm. I observed that the barrel and about two (2) cubic yards of stained soil had been removed by Hunter to the bermed area in Cell 5, placed on plastic liner and also bermed as instructed. The barrel was not labeled, bent in the center, and about a six (6) inch square hole was visible in the top. It appeared to contain about five (5) gallons of a gray semi-liquid. After conversing with Anderson (OCD) via mobile phone, Gray took a sample of the semi-liquid from the barrel. I accompanied her to On-Sites Laboratory in Farmington, where she delivered the sample for analysis at about 11:45 a.m. that same date.

According to Gray, after I had called her about the barrel, she had contacted her Project Supervisor on location at Red Willow No.1. He explained that the barrel had been found on location and set aside earlier. Before the supervisor had arrived on location their loader operator had inadvertently loaded the barrel on Truck 9 along with several cubic yards of soil. He was not made aware of the mistake until the truck had already left Red Willow No.1 enroute to the Tierra Crouch Mesa Landfarm. Tierra however was never notified by anyone that the barrel was on the truck. It was discovered by Hunter only after he struck it with his loader at the landfarm.

By,

TIERRA ENVIRONMENTAL CORPORATION

Phillip C. Nobis

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

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

October 28, 1993

CERTIFIED MAIL
RETURN RECEIPT NO. P-667-241-139

Mr. Phillip C. Nobis
Tierra Environmental Corporation
909 W. Apache
Farmington, New Mexico 87401

RE: **PRE-TREATMENT STAGING AREA APPROVAL**
CROUCH MESA LANDFARM
SAN JUAN COUNTY, NEW MEXICO

Dear Mr. Nobis:

The New Mexico Oil Conservation Division (OCD) has received your request dated June 25, 1993, for authorization to construct a working pad of soil cement with bermed sides for pre-treatment of tank bottoms at your Crouch Mesa Landfarm located in Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. The waste materials collected from cleaning tank bottoms will be mixed with dry soil and bulking agents to achieve a moisture content acceptable for distribution at the landfarm.

Based on the information provided in your request, the OCD hereby approves the construction and utilization of a pre-treatment staging under the following conditions:

1. The pretreatment staging area will be constructed with the following specifications:

   a. the soil cement will be underlain with a liner and leak detection system,

   b. the soil cement will be a minimum of 8 inches thick with a berm approximately 18 inches in height,

c. the soil cement will have an unconfined compressive strength of at least 500 psi in 7 days, a compaction to 96% density, and a permeability of less than 1×10^{-7} cms.

d. as built engineering designs for the staging area will be submitted to the OCD within 60 days of completion.

2. The leak detection monitor well for the staging area will be checked weekly and records of such inspections will be make and kept on file at the facility for two (2) years from the date of record. If fluids are found in the sump the operator shall notify the OCD Aztec District Office within twenty-four (24) hours of discovery.

3. Every load received at the facility for pretreatment in the staging area will be tested for the percentage of oil using an approved OCD method. Test results will be recorded, retained at the facility, and reported to the OCD quarterly. This approval is subject to administrative change based upon the test results and changes in oil recovery technology.

4. The operator shall file forms C-117-A, C-118, and C-120-A with the OCD Aztec District Office as required by OCD Rules 1118 and 1120.

5. No free liquids or soils with free liquids will be moved from the pretreatment staging area to the landfarm.

6. Comprehensive records of all materials received in the staging area will be maintained at the facility. The records for each load will include: 1) the origin, 2) transporter, 3) test results, 4) amount, type and origin of soil and/or bulking agents added to each load, and 5) exact cell location where the material is to be remediated.

7. The pretreatment staging area is authorized to accept only oilfield wastes which are exempt from RCRA Subtitle C regulations or "nonhazardous" non-exempt oilfield wastes on a case-by-case basis after conducting an analysis for hazardous characteristics and receiving OCD approval.

Please be advised that this approval does not relieve you of liability should your operation result in actual pollution of surface waters, ground waters, or the environment actionable under other laws and/or regulations. In addition, the OCD approval does not relieve you of liability for compliance with any other laws and/or regulations.

Please be advised that in accordance with OCD Rule 310, oil shall not be stored or retained in earthen reservoirs, or in open receptacles.

If you have any questions please do not hesitate to contact me at (505) 827-5884.

Sincerely,

Kathy M. Brown
Geologist

xc: Denny Foust, OCD Aztec Office

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

October 26, 1993

CERTIFIED MAIL
RETURN RECEIPT NO. P-667-241-140

Mr. Phillip C. Nobis
Tierra Environmental Corporation
909 W. Apache
Farmington, New Mexico 87401

RE: **RECYCLING OF REMEDIATED SOILS**
CROUCH MESA LANDFARM
SAN JUAN COUNTY, NEW MEXICO

Dear Mr. Nobis:

The New Mexico Oil Conservation Division (OCD) has received your request dated September 23, 1993, for authorization to recycle remediated soil from your Crouch Mesa Landfarm located in Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. The laboratory analysis for the remediated soil (Sample ID 93022) shows that both the Total Petroleum Hydrocarbons (TPH) and the Volatile Aromatic Organics (BTEX) are non detect.

Based on the information provided in your request, the OCD hereby approves the removal of the remediated soils from the landfarm cell under the following conditions:

1. The remediated soils may be used at the landfarm facility for construction of roads, berm, and other dirt work operations or for backfill at environmental clean-up projects at oil and gas exploration and production operations. Any other use of the remediated soils must be reviewed by the OCD Santa Fe Office on a case-by-case basis and receive OCD approval prior to moving the soils.

2. Comprehensive records for all remediated soils either moved within the landfarm or removed from the landfarm will be maintained at the facility. The records for all remediated soil will include: 1) the date, volume and final destination of soil moved, 2) the soil history including original place of contamination and exact cell location where the material was remediated, and 3) laboratory analyses of the remediated soils.

Please be advised that this approval does not relieve you of liability should your operation result in actual pollution of surface waters, ground waters, or the environment actionable under other laws and/or regulations. In addition, the OCD approval does not relieve you of liability for compliance with any other laws and/or regulations.

If you have any questions please do not hesitate to contact me at (505) 827-5884.

Sincerely,

Kathy M. Brown

Kathy M. Brown
Geologist

xc: Denny Foust, OCD Aztec Office

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time	Date
		Oct. 8, 1993

Originating Party	Other Parties
KM Brown - OCD	Phil Nobis Tierra

Subject: ① Tierra Tank Bottom Proposal
② Completed Remediation Plan - Soils Release

Discussion: ① Testing Proposal (Tank Bottoms)? Soil Cement vs. Cement? Testing Beneath Area? Permeability Testing? Tank Bottom mixed with?

① Answers: Yes, will test the incoming loads for % oil and furnish OCD with the info. Using soil cement vs. cement because it's cheaper/easier to repair, more elastic & will be more durable in weather. Could test beneath soil cement & then patch or could put tubes in place or could angle auger under area on down slope side. Yes, will test perm of soil cement prior to using. Will mix tank bottoms with soil from facility and with bulking agent (ie sawdust, compost).

Conclusions or Agreements: ② Remediated Soils: Will use these at the facility for road building or ~~cut~~ as backfill for pit closures & environmental cleanups. The TPH analyses in the request includes 2 samples. The ND sample is the one the request is for and the other 219 ppm TPH is for another irrelevant sample.

Distribution

Signed Kathy Brown

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

September 23, 1993

Ms. Kathy M. Brown
State of New Mexico Energy,
Minerals & Natural Resources Department
Oil Conversation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

Dear Ms. Brown:

This communication reports the completed remediation of soil (Code 93022) received by the Tierra Environmental Corporation Crouch Mesa Landfarm from Steere Tank Lines on May 20, 1993. The remediation plan was submitted to your office on May 10, 1993 and approved by Roger Anderson on May 17, 1993. (Pursuant to Rule 711 of the Rules and Regulations of the Oil Conservation Division)

Post-remediation laboratory analysis for the Total Petroleum Hydrocarbons (TPH) and Benzene-Toluene-Ethylbenzene-Xylenes (BTEX) in the soil are:

	DATE	BTEX	TPH
Post-remediation	9/9/93	ND	ND

(Attached are copies of the laboratory report)

I am requesting that you accept these latest analyses as meeting the remediation specifications of the OCD with consequent approval for removal of the soil from the landfarm.

Sincerely,

TIERRA ENVIRONMENTAL CORPORATION

Dan Hoover

L. Daniel Hoover, Ph.D
Director of Research

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS

Matrix Spike Analysis

Lab ID:	3597	Report Date:	09/10/93
Sample Matrix:	Soil	Date Sampled:	09/08/93
Preservative:	Cool	Date Received:	09/08/93
Condition:	Intact	Date Extracted:	09/09/93
		Date Analyzed:	09/10/93

Target Analyte	Spike Added (mg/kg)	Original Conc. (mg/kg)	Spiked Sample Conc. (mg/kg)	% Recovery	Acceptance Limits (%)
Benzene	100	0.00	81.2	81%	39-150
Toluene	100	0.00	89.1	89%	32-160
Ethylbenzene	100	0.00	93.4	93%	46-148
m,p-Xylenes	200	0.00	187	94%	NE
o-Xylene	200	0.00	187	94%	NE

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.
NE - Spike acceptance range not established by the EPA.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Toluene-d8	99	81-117%
Bromofluorobenzene	99	74-121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORT

Method Blank Analysis

Sample Matrix: Soil
Lab ID: MB34222

Report Date: 09/10/93
Date Extracted: 09/09/93
Date Analyzed: 09/10/93

Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	10.0
Toluene	ND	10.0
Ethylbenzene	ND	10.0
m,p-Xylenes	ND	20.0
o-Xylene	ND	20.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Toluene-d8	101	81-117%
Bromofluorobenzene	102	74-121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Inter·Mountain Laboratories, Inc.

2508 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS

Tierra Environmental

Project ID:	Land Farm	Report Date:	09/10/93
Sample ID:	93005	Date Sampled:	09/08/93
Lab ID:	3598	Date Received:	09/08/93
Sample Matrix:	Soil	Date Extracted:	09/09/93
Preservative:	Cool	Date Analyzed:	09/10/93
Condition:	Intact		

Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	8.80
Toluene	ND	8.80
Ethylbenzene	ND	8.80
m,p-Xylenes	ND	17.6
o-Xylene	ND	17.6

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Toluene-d8	99	81 -117%
Bromofluorobenzene	98	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS

Tierra Environmental

Project ID:	Land Farm	Report Date:	09/10/93
Sample ID:	93022	Date Sampled:	09/08/93
Lab ID:	3597	Date Received:	09/08/93
Sample Matrix:	Soil	Date Extracted:	09/09/93
Preservative:	Cool	Date Analyzed:	09/10/93
Condition:	Intact		

Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	9.51
Toluene	ND	9.51
Ethylbenzene	ND	9.51
m,p-Xylenes	ND	19.0
o-Xylene	ND	19.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Toluene-d8	98	81 -117%
Bromofluorobenzene	97	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

TOTAL PETROLEUM HYDROCARBONS

EPA Method 418.1

Tierra Environmental

Project ID:	Land Farm	Report Date:	09/10/93
Sample Matrix:	Soil	Date Sampled:	09/08/93
Preservative:	Cool	Date Received:	09/08/93
Condition:	Intact	Date Extracted:	09/09/93
		Date Analyzed:	09/09/93

Sample ID	Lab ID	Concentration (mg/kg)	Detection Limit (mg/kg)
93022	3597	ND	12.4
93005	3598	219	12.4

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986; Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Quality Control Report
TOTAL PETROLEUM HYDROCARBONS
EPA Method 418.1

Method Blank Analysis

Project ID:	Land Farm	Report Date:	09/10/93
Sample Matrix:	Soil	Date Extracted:	09/09/93
		Date Analyzed:	09/09/93

Lab ID	Concentration (mg/kg)	Detection Limit (mg/kg)
MB34221	ND	2.50

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986; Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Quality Control Report
TOTAL PETROLEUM HYDROCARBONS
EPA Method 418.1

Matrix Spike Analysis

Project ID:	Land Farm	Report Date:	09/10/93
Sample Matrix:	Soil	Date Extracted:	09/09/93
		Date Analyzed:	09/09/93

Lab ID	Spiked Sample Conc. (mg/kg)	Unspiked Sample Conc. (mg/kg)	Spike Added (mg/kg)	Percent Recovery
MBSPK34221	15.8	ND	15.0	105%

Acceptance Limits: 74 - 106%

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986; Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Quality Control Report
TOTAL PETROLEUM HYDROCARBONS
EPA Method 418.1

Matrix Spike Duplicate Analysis

Project ID:	Land Farm	Report Date:	09/10/93
Sample Matrix:	Soil	Date Extracted:	09/09/93
		Date Analyzed:	09/09/93

Lab ID	Spiked Duplicate Conc. (mg/kg)	Spiked Sample Conc. (mg/kg)	Percent Difference	Acceptance Limit
MBSPKDP34221	15.9	15.8	1%	< 15%

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986; Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Quality Control Report
TOTAL PETROLEUM HYDROCARBONS
EPA Method 418.1

Matrix Spike Duplicate Analysis

Project ID:	Land Farm	Report Date:	09/10/93
Sample Matrix:	Soil	Date Extracted:	09/09/93
		Date Analyzed:	09/09/93

Lab ID	Spiked Duplicate Conc. (mg/kg)	Spiked Sample Conc. (mg/kg)	Percent Difference	Acceptance Limit
MBSPKDP34221	15.9	15.8	1%	< 15%

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986; Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:

Analyst

Review

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

June 25, 1993

Mr. Roger C. Anderson
Environmental Bureau Chief
State of New Mexico Energy, Minerals
& Natural Resources Department
Oil Conservation Division
P.O. Box 2088 State Land Office Bldg.
Santa Fe, NM 87504-2088

RE: TIERRA ENVIRONMENTAL - CROUCH MESA SOIL REMEDIATION FACILITY

Dear Mr. Anderson:

Tierra Environmental has had numerous requests regarding the treatment of tank bottoms. Due to the processes utilized in cleaning the tanks (i.e. steam cleaning) these tank bottoms contain free liquid. Tierra has looked at several alternatives for building a pre-treatment facility at our landfarm. After recent experience with plastic liners, we do not believe that this is an efficient way to line pre-treatment or holding facilities.

Tierra is proposing to construct a working pad of soil cement with bermed sides for pre-treatment of tank bottoms. Dry soil and bulking agents would be spread to the required thickness on the working pad and then the tank bottoms would be discharged onto the mixing soil and the soil and tank bottoms mixed to a moisture content that would be acceptable for distribution over the landfarm facility. We propose to construct the working pad according the following specifications:

1. 8" minimum thickness of soil cement.
2. The soil cement shall contain a minimum of 10% cement.
3. The soil cement mixture shall be mixed with water to approximately 10% moisture content throughout the entire 8" depth.
4. The unconfined compressive strength of the mixture shall be at least 500 psi in seven (7) days.
5. The soil cement mixture shall be compacted to 96% density as determined by the appropriate Proctor and Density test procedures.

We are proposing to construct an area of approximately 24,000 square feet. The dimensions would be 120' x 200'. We would construct a berm of approximately 18" in height around the entire pad area. We believe that the soil cement mixture will attain a permeability of less than 1×10^{-7} cms. This would equate to approximately 1/10th of a foot per year. Tierra is hereby requesting permission to construct such a facility at the Tierra Environmental Landfarm on Crouch Mesa. We believe that this would alleviate a problem in the area by furnishing producers with an alternate method of disposing of tank bottoms. If you feel that such a facility could be permitted, Tierra will have Geomat Testing Laboratory conduct density, compressive strength and permeability tests needed for documentation.

Sincerely yours,

TIERRA ENVIRONMENTAL CO., INC.

Richard P. Cheney, P.S., P.E.
President

RPC:mlp

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

July 8, 1993

Mr. Roger Anderson, Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RE: SMALL SPILL MANAGEMENT AND CONTAINMENT PLAN:

Dear Mr. Anderson:

It has come to Tierra's attention that because of the most recent rule changes with respect to RCRA Non Hazardous Waste, i.e., what is exempt and what is not, operators in the San Juan Basin are now faced with exorbitant costs for analysis and remediation. Two recent examples Tierra was directly involved with, were a compressor spill in Hart Canyon for Williams Field Services and a pipeline terminal spill for Bloomfield Refining Company. In the case of Williams, a compressor was overfilled with oil. Because the oil was a refined lubricant, the RCRA TCLP routine had to be followed. The testing cost Williams $ 1,000.00 and the disposal for twelve (12) cubic yards at our Crouch Mesa Landfarm was $ 216.00. Bloomfield Refining had a small spill at their Apache Station involving about twenty (20) yards of soil contaminated with crude. Because Apache Station is a terminal for receiving crude from trucks to be placed into the pipeline, it is in the transportation system and not exempt. Again the cost of disposal of twenty (20) yards was $ 360.00. The cost of the TCLP was $ 1,000.00. Although Tierra is in the business of making a profit, we certainly sympathize with our clients. The well at this rate could soon run dry. Therefore, Tierra has developed what we feel is a cost effective solution but, it will require OCD approval.

Certain oil and gas facilities are spill prone. Compressor stations, pipeline terminals, gas plants and tank batteries seem to be the worst. Usually, the spills are small, most now are non-exempt, and require TCLP analysis prior to disposal. They also require a trucking charge for hauling to a disposal facility.

We propose to place roll off containers at sites selected by our clients. The containers are EPA approved, spill proof and self contained. Each time a compressor boils over, crude is spilled on the ground, etc., the client would remove the contaminated soil from that particular location and place it in the roll off. The spill would be recorded and reported as required, but would not be removed from the location at that time.

It would be placed in the roll off container. The containers would be dedicated by contract with Tierra to the specific site. Other soils from other locations would not be co-mingled. When the container reached near capacity, one RCRA TCLP composite would be run on the contents and one trucking charge would be involved in removing the container for disposal at our Crouch Mesa Facility. The same procedures now required, i.e.: clearance from NMED Haz Mat and then OCD would be followed prior to removal and disposal. If required, and I think it would be a good idea, records would be kept and furnished to OCD on where each container was located, the purpose of the facility i.e.: Gas Plant, Terminal etc., togather with a description of the contaminants that will be handled.

The principal concern on our part and I am sure on the part of OCD would be, safe guards to insure that wastes from other locations with different constituents were not placed in the containers. In our contract with the client, that would be a stipulation and would be tied to contract cancellation as well as a fee penalty. The RCRA TCLP would no doubt identify a problem. Tierra would of course be required to report the problem to OCD as well.

We would like your input on our proposal and hope you approve.

Sincerely,

TIERRA ENVINRONMENTAL COMPANY

Phillip C. Nobis
Vice President

cc: Denny Foust, Aztec OCD
File

PNC:lp

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

July 15, 1993

CERTIFIED MAIL
RETURN RECEIPT NO. P-667-241-999

Mr. Phillip C. Nobis
Tierra Environmental Company, Inc.
909 West Apache
Farmington, New Mexico 87401

RE: **TIERRA CROUCH MESA LANDFARM EXPANSION**
OCD RULE 711 PERMIT MODIFICATION APPROVAL

Dear Mr. Nobis:

The New Mexico Oil Conservation Division (OCD) has received your May 14, 1993, request for a permit modification to expand your current soil remediation facility. The commercial landfarm facility remediates oilfield contaminated solids which are either exempt from the Federal RCRA Subtitle C (hazardous waste) Regulations or are "nonhazardous" by characteristic testing. The facility was permitted by the Division on November 17, 1992 under Order R-9772, pursuant to OCD Rule 711. The permit modification is to expand the facility to the south an additional fifty (50) acres.

The **permit modification for expansion of the Tierra Environmental Company, Inc. Commercial Landfarm** located in the SE/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico, **is hereby approved** pursuant to Order R-9772, Page No. 7, item (3). The construction, operation, monitoring and reporting of the expanded facility shall be as specified in Order R-9772.

Please be advised approval of this facility expansion does not relieve you of liability should your operation result in actual pollution of surface or ground waters or the environment actionable under other laws and/or regulations. In addition, the OCD approval does not relieve you of liability for compliance with any other laws and/or regulations.

Commercial surface disposal facilities are approved for a period of five (5) years. The original permit approval (R-9772) was not given an expiration date. The Tierra Crouch Mesa Landfarm permit which includes the above modification will expire on July 15, 1998 and you should submit an application for renewal in ample time before that date. The Division shall have the authority to administratively change this permit to protect fresh water, human health and the environment.

If you have any questions, please do not hesitate to contact Kathy Brown at (505) 827-5884.

Sincerely,

William J. LeMay
Director

WJL/kmb

xc: Denny Foust, OCD Aztec Office

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time	Date
	2:00PM	6/18/93

Originating Party	Other Parties
Ed Horst - Haz Waste 4308	K.M. Brown OCD

Subject

Haz Waste Bureau has Recieved a Request from Tierra/BRC to take ~~waste~~ contaminated soil from refinery to Tierra.

Discussion

BRC wants to dispose of contaminated soils @ Tierra. Ed has analyses. 4% - off on surgate recovery; Lab justified. BRC has contaminated 15 cu/d of soil ~~Ed~~ with crude. Ed has no problem with them taking the wast. to Tierra. Analysis shows non-hazardous, BRC certifies soils ~~are~~ contaminated only with crude, and lab has explained why the Bank was off by 4%.

Conclusions or Agreements

Ed will tell BRC/Tierra he has no problem with the request. Will tell them to contact the OCD.

Distribution file

Signed K Brown

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

June 8, 1993

CERTIFIED MAIL
RETURN RECEIPT NO. P-667-241-992

Mr. Phillip C. Nobis
Tierra Environmental Corporation
909 W. Apache
Farmington, New Mexico 87401

RE: **Approval to Add Fertilizer**
Tierra Environmental Crouch Mesa Landfarm
San Juan County, New Mexico

Dear Mr. Nobis:

The New Mexico Oil Conservation Division (OCD) has received your request dated May 24, 1993, for authorization to add Diamonium Phosphate (DAP) to the contaminated soils at your Crouch Mesa Landfarm located in the NW/4 SE/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. DAP is a farm grade fertilizer used to enrich soils and contains no harmful chemicals. Approximately 5,000 pounds of DAP will be added to the landfarm proper to enhance the naturally occurring bacteria.

Based on the information provided in your request, the OCD hereby approves the use of DAP fertilizer at the referenced site. The volume, date and location of fertilizer added will be recorded and made available for OCD inspection at any time.

Please be advised that this approval does not relieve you of liability should your operation result in actual pollution of surface waters, ground waters, or the environment actionable under other laws and/or regulations. In addition, the OCD approval does not relieve you of liability for compliance with any other laws and/or regulations.

If you have any questions please do not hesitate to contact me at (505) 827-5884.

Sincerely,

Kathy M. Brown
Geologist

xc: Denny Foust, OCD Aztec Office

Site Reclamation Services, Inc.

722/740 Hwy. 170
Farmington, NM 87401
P.O. Box 229
Kirtland, NM 87417
Phone (505) 598-0642
Fax (505) 598-9202
Emergency (505) 599-7318

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Re: Letter of support for Tierra Environmental Company's Landfarm Expansion.

Dear Ms. Brown,
As an environmental service company, I express my full support for the permitting and expansion of Tierra Environmental Company's Landfarm.
I have worked with Tierra on several occasions and have found that in the realm of environmental landfarming, they are extremely professional towards providing landfarm activities to the local environmental service companies. They are well versed in the proper procedures needed to comply with Local, State and Federal regulations. For these reasons, my company, as well as many others, is committed to utilizing Tierra's facility solely for any landfarming application.
Due to the nature of terrain, archealogical concerns and other limitation factors, landfarming is sometimes the only viable option to soil remediation. Therefore, it is important that environmental contractors have a quality facility such as Tierra's current landfarm to properly remediate soil. Future expansion of Tierra's landfarm will provide this area's contractors with the needed capabilities for offsite remediation.
Once again, I express my full support for this project and am sure that many other area environmental service companies will concur. Should you have any questions, please feel free to contact me.

Sincerely,

DARRYL L. DUNLAP,
Manager

DLD;sj
cc:Tierra Environmental Company

ARTHUR H. BICHAN
6750 Colby Lane
Bloomfield Hills, MI 48301
(313) 851-4364

June 1, 1993

State of New Mexico
Oil Conservation Division
P.O. Box 2088
Sante Fe, New Mexico

We are owners of ten (10) acres in the SE 1/4 Section 2, T 29 N, R 12 W, San Juan County, New Mexico.

We have received written notice, together with detailed engineering drawing, of the Tierra Environmental Corporation's intent to expand their present "Land Farm" facility by some fifty (50) acres.

We have no objection to such expansion provided that the same conditions and strictures are imposed on the expansion as are imposed by the original permit.

Respectfully,

Arthur H. Bichan

ARTHUR H. BICHAN

Inez A. Bichan

INEZ A. BICHAN

C.C.: Tierra Environmental Corporation, Inc.

AFFIDAVIT OF PUBLICATION

No. 31783

STATE OF NEW MEXICO,
County of San Juan:

Jo Ellen Trujillo being duly sworn, says: "That he is the ADVERTISING DIRECTOR of The Farmington Daily Times, a daily newspaper of general circulation published in English in Farmington, said county and state, and that the hereto attached LEGAL NOTICE

was published in a regular and entire issue of the said Farmington Daily Times, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for ONE consecutive (days) (/////) on the same day as follows:

First Publication FRIDAY, MAY 28, 1993

Second Publication

Third Publication

Fourth Publication

and the cost of publication was $ 44.52

Jo Ellen Trujillo

On June 3, 1993 Jo Ellen personally appeared before me, whom I know personally to be the person who signed the above document.

Denny Beck

Notary Public, San Juan County, New Mexico

My Comm expires: April 2, 1996

COPY OF PUBLICATI

NOTICE OF PUBLICA

STATE OF NEW ME
ENERGY, MINERALS AND NATURAL RE
OIL CONSERVATION DI

Notice is hereby given that pursuant to New Me: Regulations, the following application to modify a c facility have been submitted for approval to the Division, State Land Office Building, P.O. Box 208 2088, Telephone (505) 827-5800:

Tierra Environmental Company Inc., Phill West Apache, Farmington, New Mexico, application to modify their previously appr located in the SE/4, Section 2, Township San Juan County, New Mexico. The facilit exempt and characteristically non-hazardc soils by spreading them on the ground sur periodically disking them to enhance biode modification proposes to expand the facilit acres. The ground water most likely to be discharges is at a depth of 85 feet and has of approximately 750 mg/l. The permit app construction, operations, spill/leak prevent be utilized at the site.

Any interested person may obtain further inforr Division and may submit written comments to the Division at the address given above. The discharge p the above address between 8:00 a.m. and 4:00 p.m. ruling on any proposed discharge plan or its mod Conservation Division shall allow at least thirty (30) of this notice during which comments may be subr may be requested by any interested person. Requ forth the reasons why a hearing should be held., A h determines there is significant public interest.

If no public hearing is held, the Director will appr plan based on information available. If a public h approve or disapprove the proposed plan based information submitted at the hearing. GIVEN und Conservation Commission at Santa Fe, New Mexico,

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY, Director

Legal No. 31783 published in the Farmington Mexico on Friday, May 28, 1993.

NOTICE OF PUBLICATION

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

Notice is hereby given that pursuant to New Mexico Oil Conservation Commission Regulations, the following application to modify a commercial surface waste disposal facility have been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

Tierra Environmental Company Inc., Phillip C. Nobis, Vice President, 909 West Apache, Farmington, New Mexico, 87401, has submitted an application to modify their previously approved commercial landfarm facility located in the SE/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. The facility currently remediates RCRA exempt and characteristically non-hazardous hydrocarbon contaminated soils by spreading them on the ground surface in 6 inch lifts or less and periodically disking them to enhance biodegradation of contaminants. The modification proposes to expand the facility to the south an additional 50 acres. The ground water most likely to be affected by any accidental discharges is at a depth of 85 feet and has a total dissolved solids content of approximately 750 mg/l. The permit application addresses the construction, operations, spill/leak prevention and monitoring procedures to be utilized at the site.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing should be held., A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing. GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico,

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY, Director

Legal No. 31783 published in the Farmington Daily Times, Farmington, New Mexico on Friday, May 28, 1993.

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS & NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to the New Mexico Oil Conservation Commission Regulations, the following application to modify a commercial surface waste disposal facility have been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, PO Box 2088, Santa Fe, New Mexico 87504-2088, telephone (505) 827-5800:

Tierra Environment Company, Inc., Phillip C. Nobis, Vice President, 909 West Apache, Farmington, New Mexico 87401, has submitted an application to modify their previously approved commercial landfarm facility located in the SE/4 Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. The facility currently remediates RCRA exempt and characteristically non-hazardous hydrocarbon contaminated soils by spreading them on the ground surface in 6 inch lifts or less and periodically disking them to enhance the facility to the south an additional 50 acres. The ground water most likely to be affected by any accidental discharges is at a depth of 85 feet and has a total dissolved solids content of approximately 750 mg/l. The permit application addresses the construction, operations, spill/leak prevention and monitoring procedures to be utilized at the site

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday thru Friday. Prior to ruling on any proposed discharge plan of its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Request for public hearing shall set forth the reasons why a hearing shall be held. A hearing will be held if the Director determines there is significant public interest

If no hearing is held, the Director, will approve or disapprove the plan based on the information available. If a public hearing is held, the Director will approve the plan based on the information in the plan and information presented at the hearing

GIVEN under the Seal of the New Mexico Conservation Commission at Santa Fe, New Mexico, on this 19th day of May, 1993

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/William J. LeMay
Director

Journal: May 27, 1993

STATE OF NEW MEXICO
County of Bernalillo ss

OIL CONSERVATION DIVISION
RECEIVED

'93 JUN 2 AM 8 41

Dianne Berglund being duly sworn declares and says that she is National Advertising Sales Supervisor of **The Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, copy of which is hereto attached, was published in said paper in the regular daily edition,

for 1 times, the first publication being on the 27 day of May, 1993, and the subsequent consecutive publications on _____, 1993

Dianne Berglund

Sworn and subscribed to before me, a notary Public in and for the County of Bernalillo and State of New Mexico, this 27 day of May 1993.

Bernadette Ortiz
NOTARY PUBLIC - STATE OF NEW MEXICO
My Commission Expires: 12-18-93

PRICE # 23.43

Statement to come at end of month. KMB

CLA-22-A (R-1/93) ACCOUNT NUMBER C81184

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

May 25, 1993

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

CERTIFIED MAIL
RETURN RECEIPT NO. P-667-241-989

Mr. Phillip C. Nobis
Tierra Environmental Corporation
909 W. Apache
Farmington, New Mexico 87401

RE: **Approval to Apply Produced Water**
Tierra Environmental Crouch Mesa Landfarm
San Juan County, New Mexico

Dear Mr. Nobis:

The New Mexico Oil Conservation Division (OCD) has received your request dated May 17, 1993, for authorization for the storage, treatment (if necessary) and application of produced water at your Crouch Mesa Landfarm located in the NW/4 SE/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. The water will be screened for hydrogen sulfide, oils, total dissolved solids (TDS), and pH. Water with high TDS or oil, or low pH will be rejected. Water with hydrogen sulfide will be treated to remove all traces of hydrogen sulfide prior to application.

Based on the information provided in your request, the OCD hereby approves the use of produced water at the referenced site subject to the following conditions:

1. The source, amount, and test results of each load of produced water will be recorded and made available for OCD inspection at any time.

2. Quarterly monitoring of the treatment zone will be conducted in accordance with Exhibit "B", Attachment to OCD 711 Permit Approval, OCD Order R-9772, dated November 17, 1992. In addition, any cells receiving produced water will be analyzed for general chemistry and heavy metals **quarterly** using approved EPA methods.

Please be advised that this approval does not relieve you of liability should your operation result in actual pollution of surface waters, ground waters, or the environment actionable under other laws and/or regulations. In addition, the OCD approval does not relieve you of liability for compliance with any other laws and/or regulations.

If you have any questions please do not hesitate to contact me at (505) 827-5884.

Sincerely,

Kathy M. Brown
Geologist

xc: Denny Foust, OCD Aztec Office

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 24, 1993

Kathy Brown, Geologist
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RE: PERMISSION TO ADD 1620-O FERTILIZER TO COMPLETE LANDFARM:

Dear Ms: Brown:

Dr. Dan Hoover PHD, with Tierra Environmental, has been conducting laboratory experiments regarding enhancement of natural occurring bacteria in hydrocarbon contaminated soils. He has found one of the most in-expensive methods to accelerate their activities is to add Diamonium Phosphate (DAP) to the contaminated soils.

On behalf of Tierra, I am requesting permission to add about 5,000 lbs of the fertilizer to the landfarm proper.

DAP is a farm grade fertilizer, used frequently to enrich soils. It contains no harmful chemicals. I would appreciate your cooperation.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President

x/c: D. Foust
Aztec District Office

BY

TIERRA

Environmental Company, Inc.
909 West Apache
Farmington, New Mexico 87401

RECEIVED

MAY 1 8 1993

OIL CONSERVATION DIV.
SANTA FE

APPLICATION FOR EXPANSION OF CROUCH MESA LAND FARM FACILITY, SAN JUAN COUNTY, NEW MEXICO

Prepared for

THE NEW MEXICO
OIL CONSERVATION DIVISION
SANTE FE, NEW MEXICO

MAY 1993

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 14, 1993

Mr. Roger Anderson, Bureau Chief
New Mexico Oil Conservation Division
Energy, Minerals and Natural Resources Department
P.O. Box 2088
Santa Fe, New Mexico 87504

RE: APPLICATION FOR EXPANSION OF THE TIERRA ENVIRONMENTAL COMPANY CROUCH MESA LANDFARM FACILITY, SAN JUAN COUNTY, NEW MEXICO:

Dear Mr. Anderson:

Enclosed herewith is the application and appropriate attachments requesting New Mexico Oil Conservation Division (OCD) approval for Expansion of our existing landfarm facility in San Juan County New Mexico.

The expansion will include another approximately fifty (50) acres.

Tierra hereby commits to operate the expansion facility in accordance with the provisions contained in OCD order No. R-9772 and attachments issued November 17, 1992.

Please contact me if you require any additional information or have any question.

Thanks for your cooperation.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President

State of New Mexico
Energy, Minerals and Natural Resources Department
OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, NM 87501

APPLICATION FOR SURFACE WASTE DISPOSAL FACILITY

(Refer to OCD Guidelines for assistance in completing the application.)

I. Type: ☐ Produced Water ☐ Drilling Muds ☐ Treating Fluids
☐ Solids ☑ Other Land Farm

II. OPERATOR: Tierra Environmental Company, Inc.
ADDRESS: ~~909 West Apache, Farmington N.M. 87401~~
CONTACT PERSON: (See Attached) PHONE: _____

III. LOCATION: _____ / SE¼ Section 2 Township 29 N Range R12W
Submit large scale topographic map showing exact location.

IV. IS THIS AN EXPANSION OF AN EXISTING FACILITY? ☑ Yes ☐ No

V. Attach the name and address of the landowner of the disposal facility site and landowners of record within one-half mile of the site.

VI. Attach description of the facility with a diagram indicating location of fences, pits, dikes, and tanks on the facility.

VII. Attach detailed engineering designs with diagrams prepared in accordance with Division guidelines for the construction/installation of the following: pits or ponds; leak-detection systems; aerations sytems; enhanced evaporation (spray) systems; waste treating systems and security systems.

VIII. Attach a contingency plan for reporting and clean-up of spills or releases.

IX. Attach a routine inspection and maintenance plan to ensure permit compliance.

X. Attach a closure plan.

XI. Attach geological/hydrological evidence demonstrating that disposal of oil field wastes will not adversely impact fresh water.

XII. Attach proof that the notice requirements of OCD Rule 711 have been met. (Commercial facilities only.)

XIII. Attach a contingency plan in the event of a release of H_2S.

XIV. Attach such other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.

(see attachments)

XV. CERTIFICATION

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Phillip C. Nobis Title: Vice President

Signature: Phillip C. Nobis Date: 5/14/93

DISTRIBUTION: Original and one copy to Santa Fe with one copy to appropriate Division District Office.

APPLICATION FOR EXPANSION OF EXISTING LANDFARM FACILITY

I. Type of Operation

The expansion facility will be operated as a landfarm for the purpose of remediating soils contaminated with oilfield waste as exempted by the Resource Conservation and Recovery Act (RCRA) or Soils classified as exempt by characteristic analysis, with New Mexico Oil Conservation Division (OCD) prior approval. The exact procedures mandated for the existing facilities, by OCD Order No. R-9772, will be applied to the new expansion facility. (See exhibit A OCD Order No R-9772).

II. Operator

Tierra Environmental Company, Inc.
909 West Apache
Farmington, New Mexico 87401
Phone (505) 325-0924

Contact Persons are:

Phillip C. Nobis, Vice President
Ron Castleberry, Environmental Specialist
(505) 325-0924

III. Location of Facility

See exhibit "B" location map and property survey plat

IV. This is an expansion request

The expansion is located directly adjacent to the existing facility

V. The land is being purchased from Morning Star Corporation on a contract for deed. (See exhibit C for documents)

VI. See exhibit D for engineering design and location of fences berms, dikes etc.

VII. See also exhibit D

VIII. Contingency Planning.

No spills are anticipated on location as liquid material will not be processed at this facility. Contingencies for flooding from rainfall are described in the engineering information (Exhibit D). Clean fill material is directly available to the facility owned by the operator for use in the event of failure of berms or dikes and the associated cleanup.

IX. Routine Inspection and Maintenance Plan

The facility is expected to be a low maintenance operation. Berms, dikes and fencing will be inspected daily. Berms and dikes will be given special attention during unusually severe rain fall and inspected thoroughly following each event. Any required repairs will be preformed immediately.

X. Closure Plan

When the facility is to be closed, no new material will be accepted. Existing soils will be remediated until they meet OCD standards in effect at the time of closure. Sub surface testing will be conducted in order to determine whether or not contamination has migrated into the sub surface. If contamination is discovered, those soils will be removed and landfarmed until they also meet or exceed OCD in effect standards at the time of closure. The facility will be reseeded with native grasses and otherwise returned to its natural state.

XI. The nearest surface water is the Animas River which is approximately two (2) miles north of the existing and the proposed facility. According to information from the State Engineers Office in Albuquerque, N.M. there is one water well reported in the area in SE4 of Section 34, T-30N, R12. Total depth of the well is 107'. A copy of the well record was included in the original application for the existing facility. The well surface is located at an elevation of 5800 feet. The lowest point on the existing facility is at 5900 feet. We estimate the distance to groundwater to be atleast 100 feet.

XII. OCD Rule 711 notification of landowners was complied with during the original permit process.

XII. No Hydrogen sulfide problems are expected at the facility.

XIV. Other information

The original application as well as supplemental correspondence with OCD, wherein Tierra agrees to certain terms, conditions and commitments is attached as exhibit D and will be adhered to at the expansion facility as well.

EXHIBIT "A"

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

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 10539
ORDER NO. R-9772

APPLICATION OF TIERRA ENVIRONMENTAL COMPANY, INC. FOR A COMMERCIAL SURFACE WASTE DISPOSAL FACILITY, SAN JUAN COUNTY, NEW MEXICO

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on Wednesday, September 2, 1992, at Santa Fe, New Mexico, before Examiner Michael E. Stogner, in Docket No. 28-92.

NOW, on this 17th day of November, 1992 the Division Director, having considered the testimony, the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) The New Mexico Oil and Gas Act, §70-2-12.B(21) and (22), N.M.S.A. (1978), authorizes the New Mexico Oil Conservation Division (Division) to regulate the disposition of non-domestic wastes resulting from various oil and gas activities and operations and to protect public health and the environment.

(3) Pursuant to that authority the Division has adopted regulations governing the operation of commercial surface waste disposal facilities, (Rule 711 of the *Rules and Regulations of the Oil Conservation Division*).

(9) *Mr. Bichan through comment and questions to applicant's witness discussed wind currents and natural erosion, and expressed concern about the threat of emission from both hydrocarbon vapors as well as contaminated particle matter. He commented that specialized tilling techniques and the keeping of the surface moist should be used at the landfarm to reduce volatilization of hydrocarbons and natural wind erosion.*

Mr. Vavera suggested that he would like to see a windbreak of trees planted on the property to help control blowing soil. Both Mr. Bichan and the applicant's witness testified that would probably not be effective.

Tierra Environmental Company President, Richard Cheney PE/PS, testified that the addition of moisture, if allowed by the Division, would reduce the threat of emission as well as enhance the natural biodegration of contaminants treated at the landfarm facility. He further testified that special soil tilling procedures at the facility would further reduce natural wind erosion.

FINDING: Appropriate tilling procedures and application of moisture to the cells during bioremediation will control volatilization and blowing of land farm materials onto neighboring properties; applicant should consult with and/or utilize information readily available from the U.S. Soil Conservation Service, N.M. State University County Extension Office or local Soil and Water Conservation District on soil characteristics in order to determine how much moisture is appropriate to stabilize the soil types found on Crouch Mesa and on the special tilling practices that would also reduce to the most possible degree the amount of dust and blowing dirt.

(10) *Applicant proposed to fence the property using four-strand barbed-wire fence. This may not be adequate fencing for this site because there are domestic animals in the neighborhood which could get through the fencing onto the facility.*

FINDING: Applicant should fence the property with well maintained sheep wire fencing or other mesh or grid type fencing designed to keep out dogs and other larger domestic animals. Access should be controlled by maintaining locked steel gates at all entrances.

(11) *Mrs. Vavera expressed concern about the possible impact of the facility on water quality, because her family intends to drill a water well for their residence. All the parties agreed that fresh water supplies are in excess of 100 feet deep. Division approval required monitoring of a treatment zone below the lifts.*

"9a. Disposal will only occur when an attendant is on duty. The facility will be secured when no attendant is present.

9b. The facility will have a sign at the entrance. The sign will be legible from at least fifty (50) feet and contain the following information: (a) name of the facility, (b) location by section, township and range, and (c) emergency phone number.

9c. An adequate berm will be constructed and maintained to prevent run-off and run-on for that portion of the facility containing contaminated soils."

(c) under TREATMENT ZONE MONITORING, Sub-parts 1, 2, and 4 shall be amended and Sub-part 5 included to read:

"1. A treatment zone not to exceed three (3) feet beneath the landfarm will be monitored. A minimum of one random soil sample will be taken from each individual cell, with no cell being larger than five (5) acres, six (6) months after the first contaminated soils are received and quarterly thereafter. The sample will be taken at two (2) or three (3) feet below the native ground surface.

2. The soil samples will be analyzed for total petroleum hydrocarbons (TPH) using an OCD-approved field method. If TPH is detected, then a laboratory analysis will be conducted for Volatile Aromatic Organics (BTEX) using approved EPA methods. Immediate remedial measures will be taken and no additional contaminated soils will be placed in the cell until testing indicates that the TPH is below 100 ppm, BTEX is below 50 ppm and benzene, if any, is below 10 ppm.

4. Annually, samples obtained from the treatment zones will be collected and a laboratory analysis conducted using approved EPA methods in accordance with the procedures outlined in item 1. The samples will be analyzed for TPH, BTEX, general chemistry, and heavy metals.

(15) The Division should have the authority to modify the conditions of this permit should new information or technologic improvements indicate that changes would improve the operation of the facility and better protect public health and the environment.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Tierra Environmental Company, Inc., is hereby authorized to construct and operate a landfarm facility at the site in the NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico for the purpose of treating and remediating hydrocarbon contaminated soils, which are exempt from RCRA Subtitle C regulations, using an enhanced biodegration process.

PROVIDED HOWEVER THAT, the proposed landfarm shall be constructed in accordance with the engineering plat and topographic map presented as evidence in this case and part of Exhibit No. 1, "The OCD File", containing the original application and subsequent correspondence and in accordance with such additional conditions and requirements as may be directed by the Division Director, and shall be operated and maintained in such a manner as to preclude spills, fires, limit emissions and protect persons, livestock and the environment. Required fencing shall be changed from four (4) strand barbed wire to sheep wire and barbed wire in accordance with the New Mexico Highway and Transportation Department's specifications for highway fencing.

PROVIDED FURTHER THAT, prior to initiating operations, the facility shall be inspected by a representative of the Aztec District Office in order to determine the adequacy of fences, gates and cattle guards necessary to preclude livestock and unauthorized persons from entering and/or utilizing said facility, and also to determine the adequacy of dikes and berms to assure safe facility operations.

(2) The permit conditions with the revised language is contained in Exhibit "B" attached hereto and shall become the permit conditions for the facility.

(3) The Director shall have the authority to revise the permit conditions at any time he determines such changes are in the interest of protecting human health and the environment.

(4) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

Exhibit "A"
Case No. 10539
Order No. R-9772

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

July 21, 1992

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

Mr. Richard P. Cheney, President
Tierra Environmental Company, Inc.
909 West Apache
Farmington, NM 87401

RE: Tierra Environmental Commercial Landfarm Application
San Juan County, NM

Dear Mr. Cheney:

Enclosed is approval of *Tierra Environmental Company, Inc.'s* application for a commercial landfarm under Division Rule 711. Please notice that the approval letter is dated August 11, 1992, and it is not effective until that date.

As you know Arthur and Inez Bichan have filed a protest and request for hearing on your application. Enclosed is a copy of the letter to them advising them of the approval and of their right to file a petition for hearing to rescind the approval. If they do so, the burden will be on them to show why the application should not be approved.

If they do not file their petition before August 10, 1992, your approval will become effective, and you may begin operation. If they do file their petition, your approval will be suspended.

Sincerely,

Roger Anderson,
Environmental Bureau Chief

ATTACHMENT TO OCD 711 PERMIT APPROVAL
TIERRA ENVIRONMENTAL INC.
COMMERCIAL LANDFARM
(August 11, 1992)

LANDFARM OPERATION

1. All contaminated soils received at the facility will be spread and disked within 72 hours of receipt.

2. Soils will be spread on the surface in six inch lifts or less.

3. Soils will be disked a minimum of one time every two weeks (biweekly) to enhance biodegradation of contaminants.

4. Successive lifts of contaminated soils will not be spread until a laboratory measurement of Total Petroleum Hydrocarbons (TPH) in the previous lift is less than 100 parts per million (ppm), and the sum of all aromatic hydrocarbons (BTEX) is less than 50 ppm, and the benzene is less than 10 ppm. Comprehensive records of the laboratory analyses and the sampling locations will be maintained at the facility. Authorization from the OCD will be obtained prior to application of successive lifts.

5. Only solids which are non-hazardous by RCRA Subtitle C exemption or by characteristic testing will be accepted at the facility. Solids from operations not currently exempt under RCRA Subtitle C or mixed exempt/non-exempt solids will be tested for appropriate hazardous constituents. Test results must be submitted to the OCD along with a request to receive the non-exempt solids, and a written OCD approval (case specific) must be obtained prior to disposal. Any non-oilfield wastes which are RCRA Subtitle C exempt or are non-hazardous by characteristic testing will only be accepted on a case-by-case basis and with prior OCD approval.

6. Comprehensive records of all material disposed of at the facility will be maintained at the facility. The records for each load will include: 1) the origin, 2) analysis for hazardous constituents if required, 3) transporter, and 4) exact cell location and method of remediation.

7. Bio-remediation through the application of microbes will only be permitted in the designated 1-acre area. The microbes will be mixed with water and applied to the contaminated soils. There will be no ponding, pooling or run-off of water allowed during the application phase or afterwards. Any change in the compostition (ie. chemical additives), process or location of the bio-remediation program must recieve prior OCD approval.

8. No free liquids or soils with free liquids will be accepted at the facility.

Exhibit "B"
Case No. 10539
Order No. R-9772

ATTACHMENT TO OCD 711 PERMIT APPROVAL
TIERRA ENVIRONMENTAL COMPANY, INC.
COMMERCIAL LANDFARM

LANDFARM OPERATION

1. All contaminated soils received at the facility will be spread and disked within 72 hours of receipt.

2. Soils will be spread on the surface in six inch lifts or less.

3a. Soils will be tilled a minimum of one time every two weeks (bi-weekly) to enhance biodegradation of contaminates. Methods suggested by the U.S. Soil Conservation Service should be utilized in the tilling of the soils which will reduce to the most possible degree the occurrence of natural wind erosion.

3b. Moisture shall be added to all contaminated soils received at the facility. The soils within each individual cell will be characterized using the Soil Survey of San Juan County, New Mexico, prepared by the United States Department of Agriculture, Soil Conservation Service, for the purpose of pre-determining amounts of moisture to be added to those particular soils, to (1) prevent emissions from volatile organic compounds, (2) enhance natural and artificial biodegradation, and (3) suppress erosion of contaminated soils from natural wind action.

3c. There will be no ponding, pooling or run-off of water allowed. Any ponding of precipitation will be removed within seventy-two (72) hours of discovery.

4. Successive lifts of contaminated soils will not be spread until a laboratory measurement of Total Petroleum Hydrocarbons (TPH) in the previous lift is less than 100 parts per million (ppm), and the sum of all aromatic hydrocarbons (BTEX) is less than 50 ppm, and the benzene is less than 10 ppm. Comprehensive records of the laboratory analyses and the sampling locations will be maintained at the facility. Authorization from the OCD will be obtained prior to application of successive lifts.

5. Only solids which are non-hazardous by RCRA Subtitle C exemption or by characteristic testing will be accepted at the facility. Solids from operations not currently exempt under RCRA Subtitle C or mixed exempt/non-exempt solids will be tested for appropriate hazardous constituents. Test results must be

2. The soil samples will be analyzed for total petroleum hydrocarbons (TPH) using an OCD-approved field method. If TPH is detected, then a laboratory analysis will be conducted for Volatile Aromatic Organics (BTEX) using approved EPA methods. Immediate remedial measures will be taken and no additional contaminated soils will be placed in the cell until testing indicates that the TPH is below 100 ppm, BTEX is below 50 ppm and benzene, if any, is below 10 ppm.

3. After obtaining the soil samples, the borehole will be filled with an impermeable material such as bentonite cement.

4. Annually, samples obtained from the treatment zones will be collected and a laboratory analysis conducted using approved EPA methods in accordance with the procedures outlined in item 1. The samples will be analyzed for TPH, BTEX, general chemistry, and heavy metals.

5. One (1) background soil sample will be taken from the center portion of the landfarm two (2) feet below the native ground surface prior to operation. The sample will be analyzed for TPH, BTEX, general chemistry and heavy metals using approved EPA methods and for TPH using an OCD-approved field method.

OTHER MONITORING

1. An OCD-approved device capable of measuring emissions of volatile organic compunds (VOC) will be kept at the facility at all times. A measurement of VOCs will be taken a minimum of four (4) times per working day, which will include one measurement upon opening and one measurement upon closing of the facility. Monitoring of VOCs will be recorded and include the date, time, location, and level measured. Records will be retained at the facility and made available for OCD inspection.

2. A particulate collector or similar device shall be kept in place and operational at the prevailing downwind side of the landfarm facility. The collector shall be examined daily and records will include time, date, location and level of particluate measured. Records will be maintained at the facility and made available for OCD inspection.

NEW MEXICO OIL CONSERVATION DIVISION
OF THE ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
$25,000.00 BOND FOR COMMERCIAL SURFACE WASTE DISPOSAL FACILITY

MB92-RM-10270

BOND NO. _____
(For Use of Surety Company

That TIERRA ENVIRONMENTAL CORPORATION, INC., (an individual) (partnership) (a corporation organized in the State of NEW MEXICO, with its principal office in the City of FARMINGTON, State of NEW MEXICO, and authorized to do business in the State of New Mexico), as PRINCIPAL, and TORTOLA AMERICAN CAPITAL ASSURANCE, a corporation organized and existing under the laws of the BRITISH VIRGIN ISLAND, and authorized to do business in the State of New Mexico to execute this bond on behalf of the surety company, as SURETY, are held firmly bound unto the State of New Mexico, for the use and benefit of the Oil Conservation Division of the Energy, Minerals, and Natural Resources Department pursuant to Chapter 72, Laws of New Mexico, 1935, as amended, and to the State of New Mexico in the sum of Twenty Five Thousand ($25,000.00) Dollars lawful money of the United States for the payment of which, well and truly to be made, said PRINCIPAL and SURETY hereby bind themselves, their successors and assigns, jointly and severally firmly by these presents.

The conditions of this obligatio are such that:

WHEREAS, The above principal has heretofore or may hereafter enter into the collection, disposal or storage of produced water and/or other oil field related waste in Section 2, Township 28 (North) (South), Range 12 (East) (West), N.M.P.M., SAN JUAN County, New Mexico.

NOW THEREFORE, This $25,000 performance bond is conditioned upon substantial compliance with all applicable statues of the State of New Mexico and all rules, regulations, and orders of the Oil Conservation Division of the Energy and Minerals Department, and upon clean-up of the facility site to standards of the Oil Conservation Division; otherwise the principal amount of the bond to be forfeited to the State of New Mexico.

PROVIDED, HOWEVER, That sixty (60) days after receipt by the Oil Conservation Division of written notice of cancellation from the Surety, the obligation of the Surety shall terminate as to activities or operations conducted by PRINCIPAL after said sixty (60) day period but shall continue in effect, notwithstanding said notice, as to such activities or operations conducted or commenced before the expiration of the sixty day period.

Signed and sealed this 3rd day of December, 1992.

TIERRA ENVIRONMENTAL CORPORATION, INC.	AMERICAN CAPITAL ASSURANCE, INC.
PRINCIPAL 909 West Apache Farmington, NM 87401	SURETY 11698 N. Harrells Ferry Dr. Baton Rouge, LA 70816
MAILING ADDRESS	MAILING ADDRESS
By Bill Liddell Chairman	By _____
SIGNATURE TITLE	ATTORNEY-IN-FACT

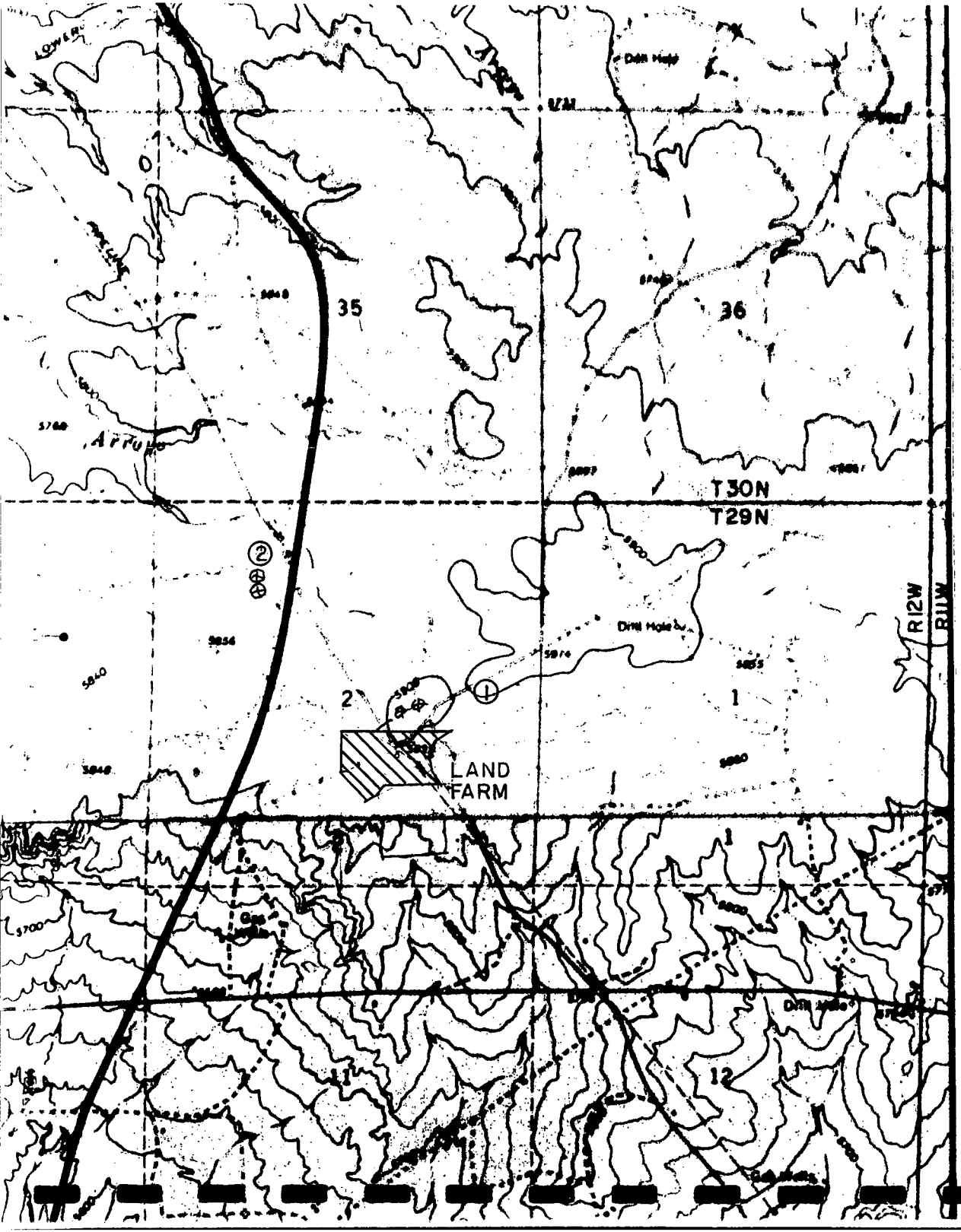
(Note: Principal, if corporation affix corporate seal here.) (Note: Corporate surety affix corporate seal here.)

~~SEE ATTACHED EXHIBIT NO. 1~~

Note: If corporate surety executes this bond by an attorney-in-fact not in New Mexico, the resident New Mexico agent shall countersign here below.)

Countersigned by:

EXHIBIT "B"



TIERRA ENVIRONMENTAL LAND FARM LOCATION & RESIDENCES WITHIN ONE MILE SE 1/4-SEC 2-T29N-R12W

① GLEN VAVERA
STATUS: PURCHASING LAND ON CONTRACT FROM L. WOODARD

② GEORGE COLEMAN
SUNCO INC.
STATUS: MANAGERS QUARTERS

BREWER ASSOC.
9 [illegible] NE [illegible] 99

EXHIBIT "C"

NO. 104 — REAL ESTATE CONTRACT — (SHORT FORM)

REAL ESTATE CONTRACT (Short Form)

This Contract, Made this 10th day of April, 19 92, between undersigned seller and undersigned purchaser,

MORNINGSTAR CORPORATION
P.O. BOX 9
FARMINGTON, NEW MEXICO

TIERRA ENVIRONMENTAL, INC.
909 W. APACHE, FARMINGTON, NEW MEXICO

Witnesseth:

Seller agrees to sell and convey to purchaser and purchaser agrees to buy upon the terms and conditions hereinafter set out, the following described real estate in SAN JUAN County, New Mexico, to-wit:

SEE ATTACHED LEGAL DESCRIPTION 80 ACRES.

The agreed purchase price is the sum of $ 200,000.00, to be paid as follows:

(1) $ 1,000.00 cash, including $ 1,000.00 Earnest Money, the receipt of which Earnest Money is hereby acknowledged by seller to bind this Contract of Sale.

(2) $ 199,000.00 balance as follows:

Cash or equivalent on closing. Seller is aware that buyer is proposing a land farm on the property and stipulates that no work is done until title is taken by buyer. This contract is subject to approval of the Oil Conservation Division for buyers application for a land farm.

Seller shall furnish a title guaranty policy, to be paid for by the buyer, in the usual form and containing the usual terms and conditions, showing a good and merchantable title in seller. Should there be any valid and meritorious objections to the title, seller shall have reasonable time within which to cure same. If seller is unable to cure said objection within a reasonable time, this contract may at the option of purchaser be terminated and seller shall return the earnest money to purchaser. Should purchaser fail or refuse to comply with the terms of this contract, seller may retain the earnest money as liquidated damages or pursue any other remedy afforded him at law, or equity, but the retention of the earnest money shall not prevent the pursuing of any other remedy.

Upon performance by purchaser of the obligations on him herein imposed, seller shall make and deliver to purchaser a good and sufficient warranty deed in accordance with the terms of this contract.

Deed shall be made subject to the usual restrictions and reservations shown of record to

Purchaser declares that he is buying said property upon his own examination and judgment and not through any representation made to purchaser by the seller, or agent for seller, as to its location, value, future value, income therefrom, or as to its production.

In Witness Whereof, both parties have hereunto set their hands the day and year hereinafter written.

TIERRA ENVIRONMENTAL, INC.

Phil Nobis

(Termed purchaser whether one or more)

MORNINGSTAR CORPORATION

Geoff McMahon

(Termed seller whether one or more)

EXHIBIT "D"

CROUCH MESA LANDFARM EXPANSION

DRAINAGE CALCULATIONS

CELL NO.	AREA (AC)	RUNOFF FT^3	TERRACE LENGTH FT	TERRACE VOLUME FT^3
1	7.9	30,110	1550	79,825
2	11.1	42,308	1725	88,838
3	14.0	53,361	1875	96,563
4	13.2	50,312	1600	82,400
5	2.9	11,053	600	30,900
6	1.5	5,717	350	18,000

6 HR. 100 YEAR RAINFALL FROM NOAA
ATLAS 2 VOLUME IV = 2.1 INCHES
ESTIMATE 50% RUNOFF

* RUNOFF FROM EACH AREA = 1.05 INCHES

THE ABOVE CALCULATIONS ASSUME WATER
BACKED UP 15 FEET BEHIND TERRACE


BUILD DIKE TO
ELEV. 5883 FOR
STORM WATER STORAGE
21.9± ACRES
2632.99
CUT AREA FOR
DIKE FILL
8' MAXIMUM
BIO-REMEDIATION
AREA
COUNTY ROAD 5290
EPNG PIPELINE
43" COVER MAY BE
FARMED OVER-NO
CUTS, ONLY FILL
TRAIL TO BE
ABANDONED
GATE
GAS CO. N.M.
PIPELINE ROAD
TO REMAIN OPEN
FOR GAS CO. ONLY
2' LINES
36" COVER
DRAINAGE
DITCH AND
BERM
STAGING
AREA
400 bbl FRESH
WATER STORAGE
LAND FARM
ENTRANCE ROAD
OFFICE
12x50
CELL #1
PROPOSED
TERRACE
NOT INCLUDED
IN PERMIT
MATCH TO SHEET 2
N 01°28'33" E
2646.36
2627.97
HV-2
5889.58
HV-3
5831.52
HV-4
HV-7
HV-8
12'-0"
BERM
4 WIRE FENCE
PROPERTY LINE
0' to 6'-0"
VARIES
12'-0"
ROADWAY
1'-0" MIN.
VARIES
SPILL CONTROL
DITCH & BERM
NOT TO SCALE
NATURAL
GROUND
TYPICAL TERRACE
SCALE: 1" = 10'
N 2,094,500
N 2,094,000
N 2,093,500
N 2,093,000
E 2,654,000
E 2,654,500
E 2,655,000
E 2,655,500
E 2,656,000
E 2,656,500
E 2,657,000

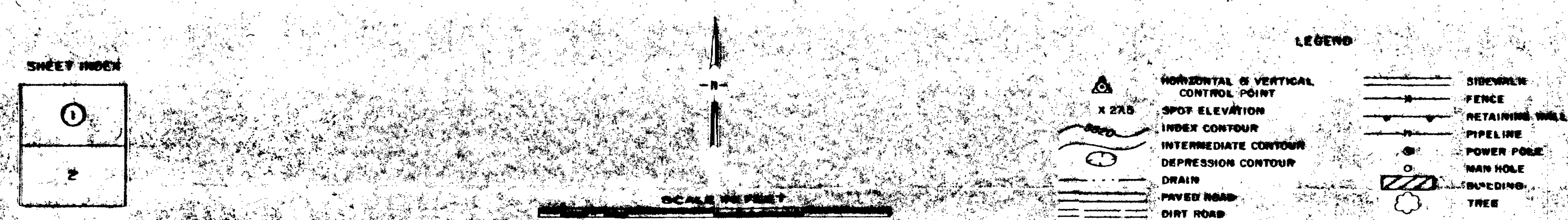
NOTES:

1) This Map Complies with National Map Accuracy Standards Based on Field Surveys Provided by San Juan Engineering of Farmington, New Mexico.

2) Aerial Photography Exposed on April 9, 1991 by New Mexico Aerial Surveys, Inc. of Albuquerque, New Mexico Utilizing a Zeiss RMK A 15/23 Precision Aerial Mapping Camera with a Calibrated Focal Length of 153.506 mm.

3) Topographic/Planimetric Base Mapping, Field Drafting, and Final Reproductions Performed by Thomas R. Mann & Associates, Inc. of Albuquerque, New Mexico.

4) 500' Grid Based on Horizontal Coordinate Survey Data Furnished by San Juan Engineering.

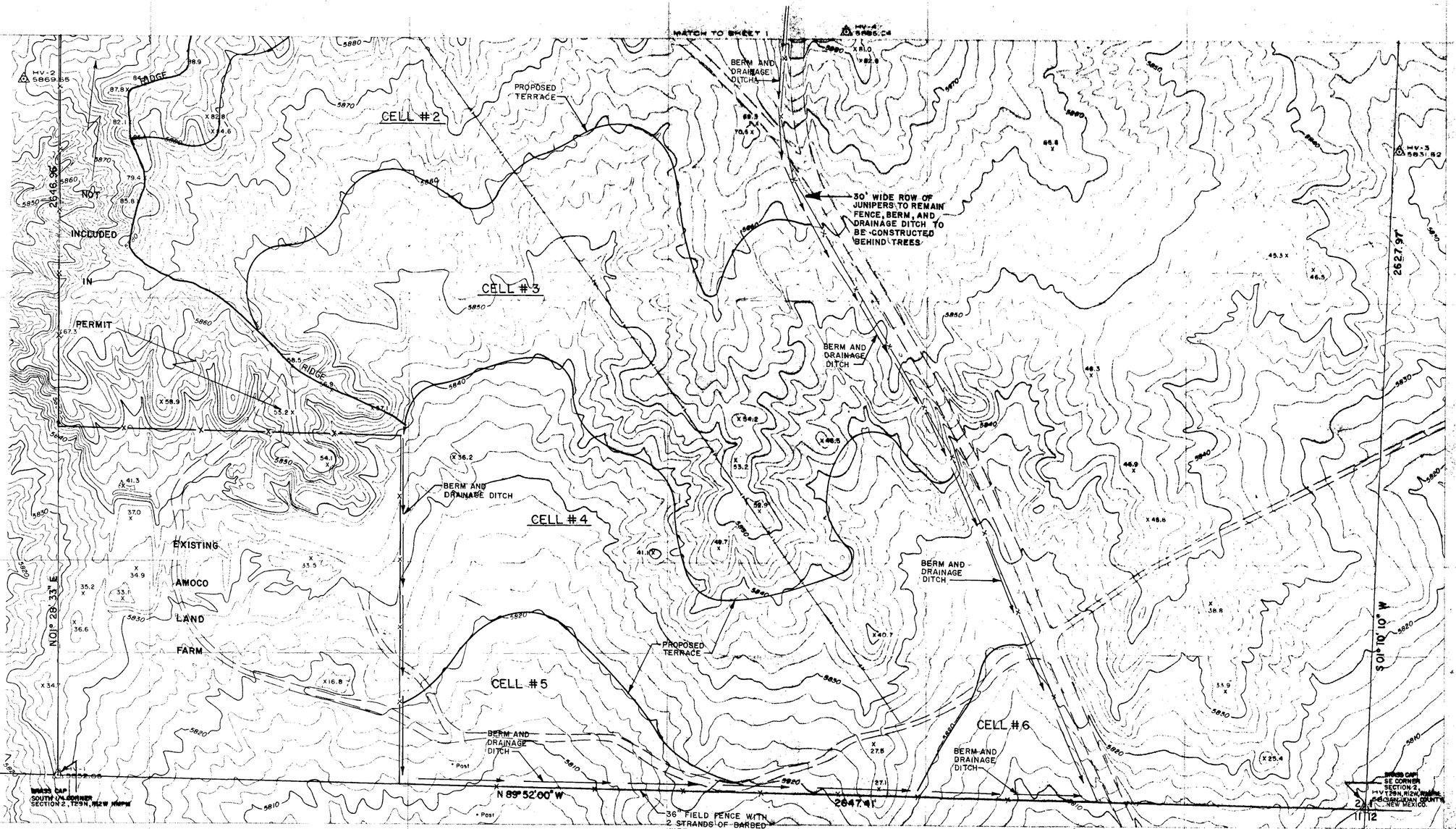

SHEET INDEX
1
2
SCALE IN FEET
100 50 0 100 200 300
LEGEND
HORIZONTAL & VERTICAL CONTROL POINT
SPOT ELEVATION
INDEX CONTOUR
INTERMEDIATE CONTOUR
DEPRESSION CONTOUR
DRAIN
PAVED ROAD
DIRT ROAD
SIDEWALK
FENCE
RETAINING WALL
PIPELINE
POWER POLE
MAN HOLE
BUILDING
TREE

TOPOGRAPHY AND CONTROL
BY SAN JUAN ENGINEERS

DRAINAGE AND OTHER NOTES
BY CHENEY-WALTER-ECHOLS

SCALE 1" = 100' C.I. = 2'	DATE	REVISED	DRAFTED BY	SHEET	OF
PHOTOGRAPHY DATE 4-9-1991	PROJECT NO.		CHECKED BY	1	2

SAN JUAN ENGINEERS
2101 SAN JUAN BLVD. FARMINGTON, N.M. 87401



CELL AREA

CELL No.	AREA
1	7.9 Ac.
2	11.1 Ac.
3	14.0 Ac.
4	13.2 Ac.
5	2.9 Ac.
6	1.5 Ac.

TOTAL USABLE ACREAGE = 50.6

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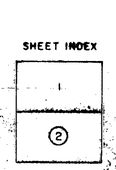
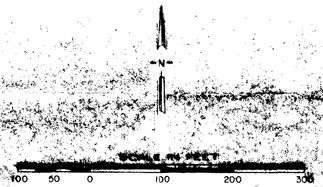
SHEET INDEX





LEGEND

- HORIZONTAL & VERTICAL CONTROL POINT
- X 27.5 SPOT ELEVATION
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- DEPRESSION CONTOUR
- DRAIN
- PAVED ROAD
- DIRT ROAD
- SIDEWALK
- FENCE
- RETAINING WALL
- PIPELINE
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- BUILDING
- TREE

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BY SAN JUAN ENGINEERS

DRAINAGE AND OTHER NOTES
BY CHENEY-WALTERS-ECHOLS

SCALE 1"=100' C.I.=2'	DATE	REVISED	DRAFTED BY	SHEET	OF
PHOTOGRAPHY DATE 4-9-1991	PROJECT NO.		CHECKED BY	2	2

SAN JUAN ENGINEERS
2709 SAN JUAN BLVD. FARMINGTON, N.M. 87401

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 17, 1993

Mr. Roger Anderson, Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

Mr. Frank Chavez, District Supervisor
1000 Rio Brazos Rd.
Aztec, New Mexico 87410

RE: TIERRA ENVIRONMENTAL COMPANY REQUEST FOR CHANGE IN PERMIT TO ALLOW THE USE OF CERTAIN PRODUCED WATERS FOR IRRIGATION OF LANDFARM FACILITY:

Gentlemen:

Tierra Environmental Company, Inc., operates an OCD permitted landfarm facility on Crouch Mesa in San Juan County. The final order from OCD (the permit), authorizes and requires Tierra to keep the facility moist. Currently, we are using Morningstar Water. Its potable and expensive, as well as being chlorinated, ie: not conducive to active natural occurring bacterial life that assists in the degradation of the hydrocarbon contamination.

From our experience treating the impoundment at Basin Disposal in San Juan County, we have learned that some produced waters from coal seam sources is of good quality. We would like to put some of that good quality water to beneficial use on our landfarm.

Therefore, on behalf of Tierra Environmental Company, Inc., I am requesting a change in our permit to allow the storage, treatment (if necessary) and application of select produced waters at the our Crouch Mesa Facility.

Tierra would commit to the following conditions if permitted to accept and use those select waters from coal seam production.

1. Each load would be identified and documented as to source

2. Each load would be screened for hydrogen sulfide, oils, TDS and PH and that information recorded. Water with high TDS, oil or low PH would be rejected. We have the ability to treat H2S.

3. In addition to the now required quarterly subsurface monitoring upon the facility, Tierra would also test for heavy metals, that could accumulate.

4. All records mentioned above would be available to OCD for inspection at any time.

Tierra would of course, also, abide by any other directive required by OCD. Thank you for your cooperation.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President

NOTICE OF PUBLICATION

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

Notice is hereby given that pursuant to New Mexico Oil Conservation Commission Regulations, the following application to modify a commercial surface waste disposal facility have been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

Tierra Environmental Company Inc., Phillip C. Nobis, Vice President, 909 West Apache, Farmington, New Mexico, 87401, has submitted an application to modify their previously approved commercial landfarm facility located in the SE/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. The facility currently remediates RCRA exempt and characteristically non-hazardous hydrocarbon contaminated soils by spreading them on the ground surface in 6 inch lifts or less and periodically disking them to enhance biodegradation of contaminants. The modification proposes to expand the facility to the south an additional 50 acres. The ground water most likely to be affected by any accidental discharges is at a depth of 85 feet and has a total dissolved solids content of approximately 750 mg/l. The permit application addresses the construction, operations, spill/leak prevention and monitoring procedures to be utilized at the site.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing should be held., A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 19th day of May, 1993.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

S E A L

WILLIAM J. LEMAY, Director

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 19, 1993

David George
P.O. Box 1782
Farmington, NM 87499

RE: PERMIT APPLICATION TO THE NEW MEXICO OIL CONSERVATION DIVISION FOR FACILITY EXPANSION OF EXISTING LANDFARM FACILITY:

Tierra Environmental Company, Inc. currently operates a soils remediation landfarm facility located at 430 County Road 3100, in San Juan County, New Mexico. The landfarm has been permitted by the New Mexico Oil Conservation Division (OCD). State Regulations require that all landowners with in one-half mile of the facility be notified by the applicant of the planned expansion.

The area of expansion will include an additional approximately 51 acres south of the existing landfarm, below the mesa top. A thirty (30) foot strip of native trees and vegetation will be left in place on the proposed expansion, bordering County Road 3100. Some of the trees removed from the expansion area will be transplanted around the existing facility on top of the mesa, in order to further limit the possibility of wind erosion and for the purpose of aesthetic quality.

The expansion area will be terraced, bermed and diked in order to prevent runoff of the 100 year storm. The same regulations will govern the expansion that regulate operations at the existing facility and requirements mandated by the OCD in the existing permit will also be applied to the expansion.

The current landfarm facility, farms soils contaminated with oilfield waste as exempted by the Resource Conservation and Recovery Act (RCRA) and are classified as non-hazardous material or are exempt by characteristic laboratory analysis. Farming of the soils, enhances the natural bio-degredation of hydrocarbons and with mother natures help cleans the soils of contamination so that they may then be put to a beneficial use. The permit requires that moisture be added to the soils being farmed in order to prevent volatilization and vaporization of harmful light end hydrocarbon products and also reduces to the greatest possible degree, odor and migration of particulate from wind erosion.

Tierra Environmental Company is further required to monitor soils below the landfarm surface to test for any migration of contamination to the sub-surface. Tierra conducts daily monitoring with an organic vapor meter of the facility in order to detect any volatilization that may be occurring. Tierra is not required by regulation to monitor personnel exposure to hydrocarbon vapors, but by corporate policy does require its personnel to wear exposure meters while working on the facility. Since commencing operations of the existing facility in February of 1993, both the organic vapor meter and the personal exposure meters have not detected a recordable amount of vapors emanating from the soils being farmed. No free liquids are accepted at the facility. There are no pits.

Tierra enforces a strict soils acceptance policy, that exceeds state regulations, prohibiting any material being spread on the facility with out pre-screening and or laboratory analysis in order to insure that no unauthorized or hazardous material is deposited.

If you would like more information or have any questions, please direct them to me at (505) 325-0924 or write Tierra Environmental Company, Inc. 909 West Apache Farmington, New Mexico 87401 or direct any comments to:

The New Mexico Oil Conservation Division
State Land Office Building
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Thank you for your cooperation.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 19, 1993

Fay Greer (Trustee)
2816 Kentucky
Albuquerque, NM 87110

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Phillip C. Nobis
Vice President

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CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 19, 1993

Charles Foutz et al
1550 Stapely #35
Mesa, Arizona 50931

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6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 19, 1993

Raymond Condit
c/o James Hobbs
P.O. Box 3455
Farmington, NM 87499

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Phillip C. Nobis
Vice President

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 19, 1993

Eugene Watson et al
3107 Palomas
Farmington, NM 87401

RE: PERMIT APPLICATION TO THE NEW MEXICO OIL CONSERVATION DIVISION FOR FACILITY EXPANSION OF EXISTING LANDFARM FACILITY:

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Tierra Environmental Company is further required to monitor soils below the landfarm surface to test for any migration of contamination to the sub-surface. Tierra conducts daily monitoring with an organic vapor meter of the facility in order to detect any volatilization that may be occurring. Tierra is not required by regulation to monitor personnel exposure to hydrocarbon vapors, but by corporate policy does require its personnel to wear exposure meters while working on the facility. Since commencing operations of the existing facility in February of 1993, both the organic vapor meter and the personal exposure meters have not detected a recordable amount of vapors emanating from the soils being farmed. No free liquids are accepted at the facility. There are no pits.

Tierra enforces a strict soils acceptance policy, that exceeds state regulations, prohibiting any material being spread on the facility with out pre-screening and or laboratory analysis in order to insure that no unauthorized or hazardous material is deposited.

If you would like more information or have any questions, please direct them to me at (505) 325-0924 or write Tierra Environmental Company, Inc. 909 West Apache Farmington, New Mexico 87401 or direct any comments to:

The New Mexico Oil Conservation Division
State Land Office Building
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Thank you for your cooperation.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 19, 1993

Lawarence Woodard
c/o Richard Patton
P.O. Box 1725
Bloomfield, NM 87413

RE: PERMIT APPLICATION TO THE NEW MEXICO OIL CONSERVATION DIVISION FOR FACILITY EXPANSION OF EXISTING LANDFARM FACILITY:

Tierra Environmental Company, Inc. currently operates a soils remediation landfarm facility located at 430 County Road 3100, in San Juan County, New Mexico. The landfarm has been permitted by the New Mexico Oil Conservation Division (OCD). State Regulations require that all landowners with in one-half mile of the facility be notified by the applicant of the planned expansion.

The area of expansion will include an additional approximately 51 acres south of the existing landfarm, below the mesa top. A thirty (30) foot strip of native trees and vegetation will be left in place on the proposed expansion, bordering County Road 3100. Some of the trees removed from the expansion area will be transplanted around the existing facility on top of the mesa, in order to further limit the possibility of wind erosion and for the purpose of aesthetic quality.

The expansion area will be terraced, bermed and diked in order to prevent runoff of the 100 year storm. The same regulations will govern the expansion that regulate operations at the existing facility and requirements mandated by the OCD in the existing permit will also be applied to the expansion.

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Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

RECEIVED
MAY 21 1993
OIL CONSERVATION DIV.
SANTA FE

May 19, 1993

George Coleman
Box 3337
Farmington, NM 87499

RE: PERMIT APPLICATION TO THE NEW MEXICO OIL CONSERVATION DIVISION FOR FACILITY EXPANSION OF EXISTING LANDFARM FACILITY:

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The New Mexico Oil Conservation Division
State Land Office Building
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Thank you for your cooperation.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 19, 1993

Morning Star Corporation
P.O.Box 9
Farmington, NM 87499

RE: PERMIT APPLICATION TO THE NEW MEXICO OIL CONSERVATION DIVISION FOR FACILITY EXPANSION OF EXISTING LANDFARM FACILITY:

Tierra Environmental Company, Inc. currently operates a soils remediation landfarm facility located at 430 County Road 3100, in San Juan County, New Mexico. The landfarm has been permitted by the New Mexico Oil Conservation Division (OCD). State Regulations require that all landowners with in one-half mile of the facility be notified by the applicant of the planned expansion.

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The New Mexico Oil Conservation Division
State Land Office Building
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Thank you for your cooperation.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 19, 1993

Bruce Davis
U.S. Bureau of Land Management
1235 La Plata Highway
Farmington, NM 87401

RE: PERMIT APPLICATION TO THE NEW MEXICO OIL CONSERVATION DIVISION FOR FACILITY EXPANSION OF EXISTING LANDFARM FACILITY:

Tierra Environmental Company, Inc. currently operates a soils remediation landfarm facility located at 430 County Road 3100, in San Juan County, New Mexico. The landfarm has been permitted by the New Mexico Oil Conservation Division (OCD). State Regulations require that all landowners with in one-half mile of the facility be notified by the applicant of the planned expansion.

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State Land Office Building
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Thank you for your cooperation.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 19, 1993

Nancy Jean Simmons
44 Canyon Place
Mountain Home, Idaho 83647

RE: PERMIT APPLICATION TO THE NEW MEXICO OIL CONSERVATION DIVISION FOR FACILITY EXPANSION OF EXISTING LANDFARM FACILITY:

Tierra Environmental Company, Inc. currently operates a soils remediation landfarm facility located at 430 County Road 3100, in San Juan County, New Mexico. The landfarm has been permitted by the New Mexico Oil Conservation Division (OCD). State Regulations require that all landowners with in one-half mile of the facility be notified by the applicant of the planned expansion.

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The New Mexico Oil Conservation Division
State Land Office Building
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Thank you for your cooperation.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

RECEIVED
MAY 21 1993
OIL CONSERVATION DIV.
SANTA FE

May 18, 1993

Arthur H. and Inez Bichan
6750 Colby Lane
Bloomfield Hills, MI 48301

RE: PROPOSED EXPANSION OF THE EXISTING TIERRA LANDFARM FACILITY:

Dear Mr. and Mrs. Bichan:

Tierra has applied to the New Mexico Oil Conservation Division for expansion of our existing facility on Crouch Mesa. Taking your suggestions into consideration, we have conducted an extensive engineering study of the remaining property we own south and off the mesa top. I have enclosed for your review a plat of the proposed expansion facility, complete with the engineering design of that area. The expansion will include approximately fifty (50) acres of the area south of our current facility. It will be terraced, bermed, diked and fenced. We are proposing to leave about a thirty (30) foot strip of native vegetation and trees along the eastern border, west of County Road 3100, to serve as a natural barrier both for aesthetics and wind protection. There will be a number of native trees, mostly cedar that will have to be removed from the expansion area. Some of those trees we are going to attempt to re-plant on the west and east sides of the existing facility also for aesthetics and further wind protection. I would appreciate any further suggestions you may have relative to the tree placement.

The same rules will apply to the expansion facility, that are currently being applied to the existing landfarm. The addition of moisture has been working quite well. We have purchased a large water truck and are using it daily. The water has been successful in keeping down the dust and has effectively enhanced the bio-degradation process. The OCD requires that we take OVM readings daily to monitor vaporization of the light end hydrocarbons. I have required our personnel working on the facility to wear personal monitoring devices that meter exposure to the light ends also. Since receiving the first material neither the PID nor the personal devices have detected a recordable quantity. Apparently your idea of keeping the soil moist has also worked effectively to reduce vaporization as well.

We didn't receive our first material until March, but during the construction process dust was a problem. Since we have been using the truck however the dust has been controlled.

I understand from Geoff McMahon that about the time we received the first material, there was an odor problem that your were concerned with. The material (soils) were from a used oil pit and did not contain any light end hydrocarbons. There was some odor present. It smelled like motor oil. Further investigation found that the Disposal Facility, west, across Crouch Mesa Road was experiencing Hydrogen Sulfide Odor problems at the same time. It was not our facility that smelled like rotten eggs. The operator of the disposal facility hired Tierra to clean up the odor and we did so successfully. We are continuing to treat and test that facility on a weekly basis, so the problem will be controlled now and in the future.

The OCD has required Tierra to again notify all landowners or occupants of the proposed expansion. We have also written to the other parties involved including Mr. Vavra and a public notice will be forthcoming in the local newspaper.

I hope you will approve of our proposed expansion. Please call me if you have any questions, can offer some advise or require more information. If you wish you can also contact the Oil Conservation Division, same address at P.O. Box 2088, Santa Fe, New Mexico 87504 to offer comments.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 19, 1993

Mr. and Mrs. Glen Vavra
P.O. Box 3656
Farmington, N.M. 87499

RE: APPLICATION FOR EXPANSION OF TIERRA LANDFARM FACILITY:

Dear Mr. and Mrs. Vavra:

Tierra has applied to the New Mexico Oil Conservation Division for approval to expand our existing landfarm facility on Crouch Mesa, located at 430 County Road 3100. Based on the suggestions of Mr. Bichan and yourself, Tierra has conducted an extensive engineering study of the area south of our current facility and off the mesa top. I have enclosed for your review, a copy of the plat and engineering design for the proposed expansion. As you will see all of the new facility will be below the mesa top. I have sent the same information to Mr. Bichan and OCD has required us to again notify all other parties that could be effected. We have done so.

The same regulations that govern the current operation will apply to the new expansion, including the addition of moisture and monitoring.

The addition of moisture has worked well for us. I am sure you have noticed "old yellow" our water truck. The moisture has helped keep the dust down and according to our monitoring has prevented volatilization of the light ends. We use an organic vapor meter daily on the facility and I require our personnel to wear exposure meters while working. Neither device has detected any recordable amount of vapors since we received our first material in March.

I apologize for the dust created during the construction process, but there were no hydrocarbons present during that time. Geoff Mc Mahon has said you expressed concern when that first material arrived because of the odor. The material was taken from an old used oil pit and did not contain any light end hydrocarbons. It did smell a little, like used motor oil. The rotten egg smell you and others were experiencing was not from the landfarm, it was from the disposal facility across the Crouch Mesa Road and to the west. Their surface impoundment had developed hydrogen sulfide because the spray system was broken down. They hired Tierra to treat the odor and we did so successfully. We are continuing to treat and test the disposal facility on a weekly basis in order to prevent a re-occurrence.

During the proposed expansion of our landfarm, we will be removing a number of cedar bushes and trees. I am going to attempt to re-plant some of those trees and bushes on the west and east sides of our existing facility. I would appreciate your input as to where you would like to see them placed. Also along the eastern border of the expansion and on the west side of County Road 3100, we are proposing to leave about a thirty (30) foot strip of native vegetation and trees to act as a natural barrier, for both wind protection and aesthetic quality.

I would appreciate any comments, suggestions or ideas you may have regarding the expansion or you can address comments to the New Mexico Oil Conservation Division at P.O. Box 2088, Santa Fe, New Mexico 87504.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 19, 1993

Eugene Thomas
#14 Rd 5587 NBU 30130
Farmington, NM 87499

RE: PERMIT APPLICATION TO THE NEW MEXICO OIL CONSERVATION DIVISION FOR FACILITY EXPANSION OF EXISTING LANDFARM FACILITY:

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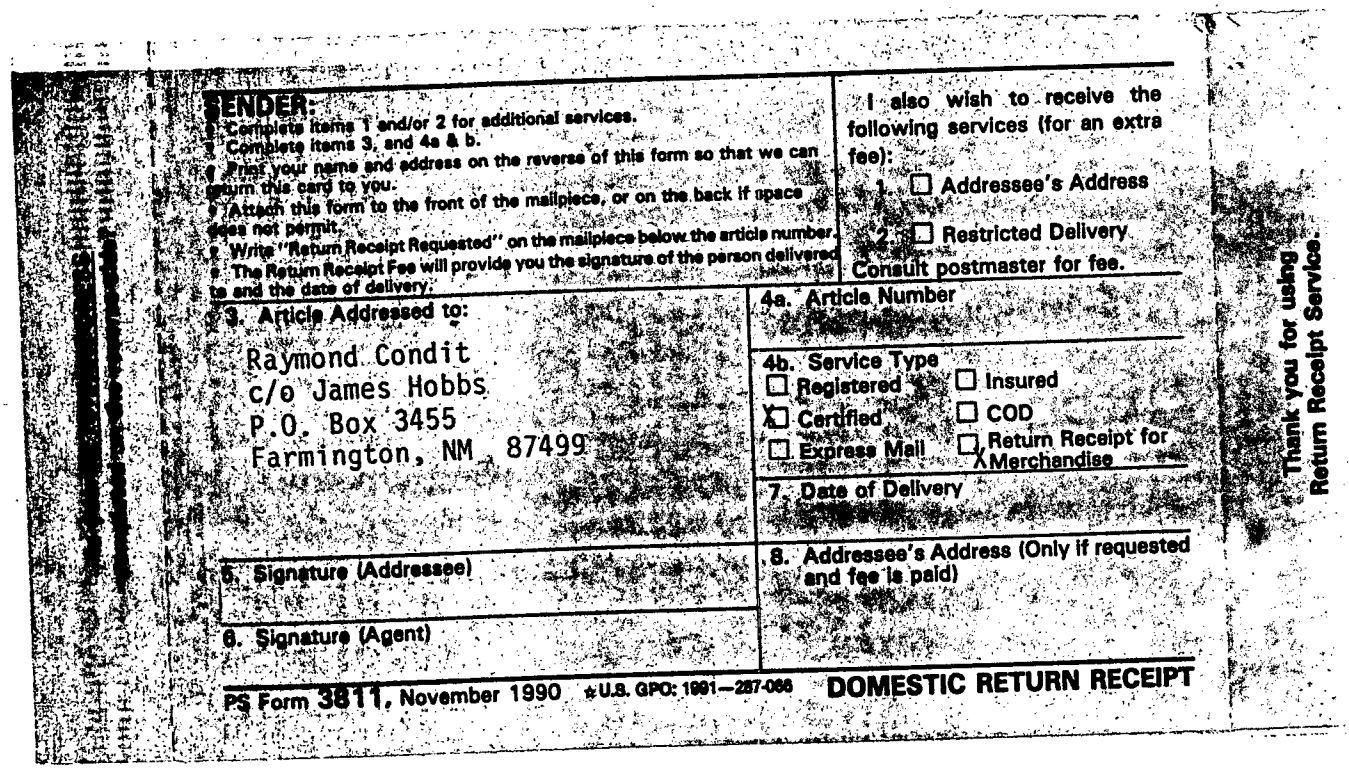
The New Mexico Oil Conservation Division
State Land Office Building
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Thank you for your cooperation.

Sincerely,

TIERRA ENVIRONMENTAL COMPANY, INC.

Phillip C. Nobis
Vice President



SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery
Consult postmaster for fee.

3. Article Addressed to:
Raymond Condit
c/o James Hobbs
P.O. Box 3455
Farmington, NM 87499

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, November 1990 *U.S. GPO: 1991—287-066 DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

SENDER:
- Complete items 1 and/or 2 for additional services.
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Consult postmaster for fee.

3. Article Addressed to:

Arthur H. & Inez Bichan
6750 Colby Lane
Bloomfield Hills, MI 48301

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

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I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Eugene Thomas
#14 Road 5587 NBU 30130
Farmington, NM 87499

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

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I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. & Mrs. Glen Vavra
P.O. Box 3656
Farmington, NM 87499

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

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I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

George Coleman
Box 3337
Farmington, NM 87499

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☑ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)

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I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Lawarence Woodard
c/o Richqrd Patton
P.O. Box 1725
Bloomfield, NM 87413

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

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I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

EUGENE WATSON et al
3107 Palomas
Farmington, NM 87401

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

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I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Nancy Jean Simmons
44 Canyon Place
Mountain Home, Idaho 83647

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

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I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Morning Star Corp.
Box 9
Farmington, NM 87499

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)

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I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Bruce Davis
US BLM
1235 La Plata Highway
Farmington, NM 87401

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

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I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

David George
P.O. Box 1782
Farmington, NM 87499

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

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I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Fay Greer (Trustee)
2816 Kentucky
Albuquerque, NM 87110

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

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I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Charles Foutz et al
1550 Stapley #35
Mesa, Az. 50931

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

Thank you for using

P 144 972 394

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Charles Foutz et al	
Street and No. 1550 Stapley #35	
P.O., State and ZIP Code Mesa Az 60431	
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

PS Form 3800, June 1991

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 144 972 394

MAIL

P 144 972 395

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Raymond Condit c/o James Hobbs	
Street and No. P.O. Box 3455	
P.O., State and ZIP Code Farm. NM. 87499	
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

PS Form 3800, June 1991

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 144 972 395

MAIL

P 144 972 391

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to	Mr/Mrs Glen Vaura
Street and No.	P.O. Box 3656
P.O., State and ZIP Code	Farm 87499
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

PS Form 3800, June 1991

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 144 972 391

MAIL

P 144 972 390

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to	Eugene Thomas
Street and No.	#1 HRd 5587 NBU 30130
P.O., State and ZIP Code	Farm. NM 87499
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

PS Form 3800, June 1991

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 144 972 390

MAIL

P 144 972 389

Receipt for Certified Mail

No Insurance Coverage Provide
Do not use for International Ma
(See Reverse)

Sent to	Arthur H. & Inez B. cha
Street and No.	6250 Colby Lane
P.O., State and ZIP Code	Bloomfield Hills Mi. 4830
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

PS Form 3800, June 1991

Fold at line over top of envelope to th right of the return address

CERTIFIED

P 144 972 389

MAIL

P 144 972 392

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to	David George
Street and No.	P.O. Box 1782
P.O., State and ZIP Code	Farm. 87499
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

PS Form 3800, June 1991

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 144 972 393

MAIL

Fold at line over top of envelope to the right of the return address

PS Form 3800, June 1991

Sent to	Fay Greer Trustee
Street and No.	2816 Kentucky
P.O., State and ZIP Code	Alb. NM 87110
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

P 144 972 393

P 144 972 399

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to	Morning Star Corporation
Street and No.	Box 9
P.O., State and ZIP Code	Farm. NM. 87499
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

PS Form 3800, June 1991

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CERTIFIED

P 144 972 399

MAIL

P 144 972 400

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to	Darcy Jean Simmons
Street and No.	44 Canyon Place
P.O., State and ZIP Code	Mountain Home, Idaho 83647
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

PS Form 3800, June 1991

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CERTIFIED

P 144 972 400

MAIL

P 144 972 401

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to	Bruce Davis BLM
Street and No.	1235 La Plata Hwy
P.O., State and ZIP Code	Farm. NM. 87401
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

PS Form 3800, June 1991

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CERTIFIED

P 144 972 401

MAIL

P 144 972 396

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to	Eugene Watson et al
Street and No.	3107 Paloma S
P.O., State and ZIP Code	Farm. NM 87401
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

PS Form 3800, June 1991

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 144 972 396

MAIL

P 144 972 398

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to	George Coleman
Street and No.	Box 3330
P.O., State and ZIP Code	Farming. NM 87499
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

PS Form 3800, June 1991

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 144 972 398

MAIL

P 144 972 397

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to	Lawrence Woodard Et Ux
Street and No.	P.O. Box 1125
P.O., State and ZIP Code	Bloomfield, NM 87413
Postage	$ .29
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.39
Postmark or Date	

PS Form 3800, June 1991

Fold at line over top of envelope to the right of the return address

CERTIFIED

P 144 972 397

MAIL

Roger Anderson

County discusses landfill improvements

MARK LEWIS
STAFF WRITER

AZTEC — The placement of retention and remediation pits near the Crouch Mesa Landfill is not a problem, the County Commission decided Tuesday.

L.J. Santucci, division president and landfill general manager for Waste Management of New Mexico Landfills Inc., stated in a letter dated March 1 that he was concerned about two oil and gas-related operations located southwest of the landfill.

Sunco Inc. installed lined pits in 1992 to accept waters associated with drilling and Tierra Environmental is constructing pits to accept contaminated soils, Santucci states.

Both operations are upstream to groundwater flow and he does not believe either perform any groundwater monitoring.

Because of groundwater regulations and the difficulty in pinpointing actual sources of pollution, it would be in the best interests of the county and the landfill to require groundwater monitoring and that the soil pits be lined, Santucci states.

Commission Chairman John Dean Jr. said he was present when Sunco went through several days of licensing hearings.

Information he gained from the hearings indicates neither Sunco nor Tierra's operations pose any threat to groundwater, he said.

Because of the type of soil that exists in that area, even if the pits holding the liquid were unlined or if the linings should breach, it would take years before the contamination could travel a short distance, Dean said.

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

DRUG FREE

MEMORANDUM

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

TO: ALL COMMERCIAL SURFACE DISPOSAL FACILITIES

FROM: WILLIAM J. LEMAY, Director
Oil Conservation Division

SUBJECT: DOCUMENTATION REQUIRED FOR ACCEPTANCE OF WASTE

DATE: APRIL 2, 1993

The Oil Conservation Division (OCD) has issued a number of Rule 711 permits for commercial surface disposal facilities which allow the facilities to accept certain types of wastes. The OCD has not previously listed the documentation that should accompany all waste accepted at these facilities. Attached is a list of the documentation to accompany any waste accepted by an OCD-permitted commercial disposal facility. Listed are the certifications and tests required for the various classifications of waste. Also attached is a list of the oil and gas wastes exempted from EPA "hazardous waste" classification.

This documentation provides protection from hazardous waste regulations for the waste generator, transporter and disposal facility and facilitates OCD oversight. Please note that certain types of non-oilfield wastes can also be accepted by a disposal facility under its OCD Rule 711 permit. The OCD is currently in the process of developing an information form to accompany each load of waste received at a disposal facility. Until that form is finalized, each facility may develop and use its own forms and shall retain these records at the facility.

If you have any questions regarding the technical aspects of the documentation needed, please call **Roger Anderson** at **505/827-5812**.

DOCUMENTATION REQUIRED TO ACCEPT WASTES
COMMERCIAL SURFACE DISPOSAL FACILITIES
(April 1, 1993)

1. Exempt Oilfield Waste: A "Certification of Waste Status" signed by a corporate official of the waste generator certifying that the wastes are generated from oil and gas exploration and production operations and are exempt from Resource Conservation and Recovery Act (RCRA) Subtitle C regulations.

2. Exempt, Non-Oilfield Waste: A "Certification of Waste Status" signed by the New Mexico Environment Department (NMED) or the appropriate regulatory agency for non-oilfield wastes which are exempt from RCRA Subtitle C regulations. Acceptance is on a case-by-case basis only after OCD approval from both Santa Fe and the appropriate district office.

3. Non-exempt, Non-hazardous Waste from OCD Permitted Facilities: The analytical results of *Hazardous Waste Characterization. The test for hazardous characteristics for a particular waste may be effective for one year from the date of analysis, if, the subsequent wastes from the same waste stream are accompanied by a statement from a corporate official that there has been no change in the processes employed or the chemicals stored/used at the facility generating the waste. Acceptance is on a case-by-case basis only after OCD approval from both Santa Fe and the appropriate district office.

4. Non-Exempt, Non-hazardous, Non-Oilfield Waste: The analytical results of *Hazardous Waste Characterization **and** a "Certification of Waste Status" certifying the non-hazardous classification of the wastes signed by the NMED or appropriate regulatory agency. Acceptance of waste is on a case-by-case basis only after OCD approval from both Santa Fe and the appropriate district.

5. Hazardous Waste: At no time will wastes which are hazardous by either listing or testing be accepted at an OCD permitted disposal facility.

* Includes corrosivity, reactivity, ignitability, and toxic constituents and a certification that no listed hazardous wastes are contained within the wastes. The samples for these analyses and results will be obtained from the wastes prior to removal from the generator's facility and without dilution in accordance with EPA SW-846 sampling procedures.

EPA WASTE CLASSIFICATION
O & G EXPLORATION AND PRODUCTION WASTES*

Oil and Natural Gas Exploration and Production Materials and Wastes Exempted by EPA from Consideration as "Hazardous Wastes" (provided non-exempt waste which is or may be "hazardous" has not been added):

- Produced water;
- Drilling fluids;
- Drill cuttings;
- Rigwash;
- Drilling fluids and cuttings from offshore operations disposed of onshore;
- Geothermal production fluids;
- Hydrogen sulfide abatement wastes from geothermal energy production;
- Well completion, treatment, and stimulation fluids;
- Basic sediment and water and other tank bottoms from storage facilities that hold product and exempt waste;
- Accumulated materials such as hydrocarbons, solids, sand, and emulsion from production separators, fluid treating vessels, and production impoundments;
- Pit sludges and contaminated bottoms from storage or disposal of exempt wastes;
- Workover wastes;
- Gas plant dehydration wastes, including glycol-based compounds, glycol filters, filter media, backwash, and molecular sieves;
- Gas plant sweetening wastes for sulfur removal, including amines, amine filters, amine filter media, backwash, precipitated amine sludge, iron sponge, and hydrogen sulfide scrubber liquid and sludge;
- Cooling tower blowdown;
- Spent filters, filter media, and backwash (assuming the filter itself is not hazardous and the residue in it is from an exempt waste steam);
- Packing fluids;
- Produced sand;
- Pipe scale, hydrocarbon solids, hydrates, and other deposits removed from piping and equipment prior to transportation;
- Hydrocarbon-bearing soil;
- Pigging wastes from gathering lines;
- Wastes from subsurface gas storage and retrieval, except for nonexempt wastes listed below;
- Constituents removed from produced water before it is injected or otherwise disposed of;
- Liquid hydrocarbons removed from the production stream but not from oil refining;
- Gases from the production stream, such as hydrogen sulfide and carbon dioxide, and volatilized hydrocarbons;
- Materials ejected from a producing well during the process known as blowdown;
- Waste crude oil from primary field operations and production;
- Light organics volatilized from exempt wastes in reserve pits or impoundments or production equipment;
- *Liquid and solid wastes generated by crude oil and crude tank bottom reclaimers****.

Materials and Wastes Not Exempted (may be a "hazardous waste" if tests or EPA listing define as "hazardous") **:

- Unused fracturing fluids or acids;
- Gas plant cooling tower cleaning wastes;
- Painting wastes;
- Oil and gas service company wastes, such as empty drums, drum rinsate, vacuum truck rinsate, sandblast media, painting wastes, spent solvents, spilled chemicals, and waste acids;
- Vacuum truck and drum rinsate from trucks and drums transporting or containing non-exempt waste;
- Refinery wastes;
- *Liquid and solid wastes generated by refined oil and product tank bottom reclaimers****;
- Used equipment lubrication oils;
- Waste compressor oil, filters, and blowdown;
- Used hydraulic fluids;
- Waste solvents;
- Waste in transportation pipeline-related pits;
- Caustic or acid cleaners;
- Boiler cleaning wastes;
- Boiler refractory bricks;
- Boiler scrubber fluids, sludges, and ash;
- Incinerator ash;
- Laboratory wastes;
- Sanitary wastes;
- Pesticide wastes;
- Radioactive tracer wastes;
- Drums, insulation, and miscellaneous solids.

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* Source: Federal Register, Wednesday, July 6, 1988, p.25,446 - 25,459.

** See important note on 1990 disposal restrictions for non-exempt waste on reverse.

*** See reverse side for explanation of oil and tank bottom reclaimer listings.

(rev. NMOCD 9/91)

NOTES:

1. As of September 25, 1990, any facility disposing of 1.1 tons or more of non-exempt waste per month with benzene as a constituent (e.g. oily liquid or solids, or aromatic wastes) is disposing of hazardous waste if, after testing, benzene levels of liquids, and of liquid leachate from solids are above 0.5 milligrams per liter (equivalent to 500 parts per billion). Benzene is a naturally occurring constituent of crude oil and refined product (especially gasoline), and is also used as a cleaning solvent. (Other types of solvents and chemicals have been subject to hazardous waste rules for several years.)

   As of March 29, 1991, facilities disposing of between 0.11 and 1.1 tons of non-exempt waste per month became subject to the same rules. Regulation of such facilities is the responsibility of either the US Environmental Protection Agency or the New Mexico Environment Department (dependent on jurisdiction transfer from USEPA).

   The following OCD regulated facilities, especially, may be subject to hazardous waste rules for disposal of wastes and contaminated soils containing benzene:

   - Oil and gas service companies having wastes such as vacuum truck, tank, and drum rinsate from trucks, tanks and drums transporting or containing non-exempt waste.
   - Crude oil treating plants and crude tank bottom reclaimers using benzene solvent, or liquids containing benzene as cleaning solutions.
   - Transportation pipelines and mainline compressor stations generating waste, including waste deposited in transportation pipeline-related pits.

   Source: Federal Register, Thursday, March 29, 1990, p.11,798 - 11,877.

2. In April, 1991, EPA clarified the status of oil and tank bottom reclamation facilities:

   A. Those wastes that are derived from the processing by reclaimers of only exempt wastes from primary oil and gas field operations are also exempt from the hazardous waste requirements. For example, wastes generated from the process of recovering crude oil from tank bottoms are exempt because the crude storage tanks are exempt.

   B. Those reclaimer wastes derived from non-exempt wastes (eg. reclamation of used motor oil, refined product tank bottoms), or that otherwise contain material which are not uniquely associated with or intrinsic to primary exploration and production field operations would not be exempt. An example of such non-exempt wastes would be waste solvent generated from the solvent cleaning of tank trucks that are used to transport oil field tank bottoms. The use of solvent is neither unique nor intrinsic to the production of crude oil.

   Source: EPA Office of Solid Waste and Emergency Response letter opinion dated April 2, 1991, signed by Don R. Clay Assistant Administrator.

STATE OF NEW MEXICO
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

FAX TRANSMITTAL SHEET

DATE: march 4, 1993

TO: Kathy Brown
OCD Santa Fe

FROM: Denny Foust - OCD, Aztec

FAX: 505-334-6170

COMMENTS: I talked to Roger about this, and ED is required to sign-off. Done verbally now, written to follow.

NUMBER OF PAGES INCLUDING COVER: four

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

February 17, 1993

Mr. D. Foust
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, New Mexico 87410

RE: PERMISSION TO ACCEPT NON-EXEMPT SOILS BY CHARACTERISTIC ANALYSIS FROM PLATEAU ENVIRONMENTAL SERVICES:

Dear Mr. Foust:

Plateau Environmental has proposed to dispose of about twenty-five hundred (2,500) yards of soils contaminated with hydrocarbons at our Crouch Mesa Landfarm Facility.

I had explained to them that special analysis would be required and special OCD approval must be obtained by Tierra prior to acceptance.

Enclosed for your review is a letter from John E.Casey, PE of Plateau Environmental explaining the source of the material and the procedures Plateau plans to use to control the PH factor as well as, complete laboratory analysis of the material.

Their proposal, procedures for PH control and laboratory analysis have been review by Tierra. We feel we can successfully remediate the material and further that it will pose no threat to the environment.

Therefore, on behalf of Tierra we are requesting permission from your office to accept the material, with the condition that the PH is checked and is acceptable on each load of material delivered.

Thank you for your cooperation.

RECEIVED
FEB1 8 1993
OIL CON. DIV.
DIST. 3

Sincerely,

Phillip C. Nobis
Vice President
Risk Management

Subject to
ED water
Quality Approval - as per Roger

PLATEAU ENVIRONMENTAL SERVICES
640 Main Avenue, Suite 202
Durango, Colorado 81301
303/259-3027

February 16, 1993

Mr. Phillip C. Nobis
TIERRA Environmental Company, Inc.
909 West Apache
Farmington, NM 87401

Dear Phillip:

This purpose of this letter is to obtain approval to dispose of soils contaminated with evaporation pond and sludge from a parts cleaning vat. The contaminated soils will be excavated from an old evaporation pond and the sludge from the bottom of a parts cleaning vat located at RUST Tractor 1000 Troy King Road, Farmington, New Mexico.

Approximately 2500 yards of oil contaminated soils and 5 yards of sludge are estimated for disposal at TIERRA's landfill located on Crouch Mesa. The sludge will be mixed with the soils during excavation of the evaporation pond.

Attached are analytical results for the soils and the sludge. Analytical samples of the soils were taken March 12, 1992 and analyzed by Westech Laboratories, Inc. for halogenated volatile organics, aromatic volatiles and total petroleum hydrocarbons. On September 10, 1992, additional samples were taken with analysis performed by Envirotech Labs for disposal at Envirotech's Hilltop, New Mexico land farm. Both sets of samples were taken for phase 1 remedial action at the RUST facility.

Analytical samples for the sludge were taken directly from the vat on January 5, 1993 and analyzed by Inter-Mountain Laboratories, Inc. Sludge samples were analyzed for TCLP Semi-volatiles, TCLP metals, RCRA characteristics. As you will notice the only parameter which is of concern is corrosivity. pH for the sludge sample was 13.0. Corrosivity was high due to the liquids in the vat. Prior to cleaning of the vat, liquids will be evaporated and a mild acid will be added to the sludge. The acid will be thoroughly mixed with the sludge to reduce the pH of the sludge to less than 9, ideally to 7. Upon complete mixing of the mild acid with the sludge, the sludge will then be removed from the vat and placed in the area to be excavated. During excavation the sludge will be mixed with the soils.

Excavation of the evaporation pond is scheduled for early March, depending upon acceptance of this waste and rainy weather. We will notify TIERRA, at least 4 days in advance, prior to the first truck load.

We hope the analysis provided and the mixing procedure proposed will be acceptable for disposal at your facility.

If you have questions or need further clarification please call me at 303-259-3027.

Sincerely,

John E. Casey

John E. Casey, P.E.

cc: Randy Randlemon, RUST

Enclosures

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

February 18, 1993

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

CERTIFIED MAIL
RETURN RECEIPT NO. P-677-241-944

Mr. Phillip C. Nobis
Tierra Environmental Corporation
909 West Apache
Farmington, New Mexico 87401

RE: **Approval to Use Quad 5 Product**
Tierra Environmental Corporation
Crouch Mesa Landfarm, San Juan County

Dear Mr. Nobis:

The New Mexico Oil Conservation Division (OCD) has received your request dated January 26, 1993 to use Quad 5 Product on an experimental basis at the Crouch Mesa Landfarm Facility. The product will be used in the one-acre area designated for bio-remediation using the application of microbes as specified in Order No. R-9772, Exhibit "B", Landfarm Operation, item number 7.

Based on the information supplied in your proposal, the request for the application of Quad 5 Product in the designated area is hereby approved. Please note that OCD approval must be obtained prior to using this product in any other portion of the landfarm.

If you have any questions, please do not hesitate to contact me at (505) 827-5884.

Sincerely,

Kathy M. Brown

Kathy M. Brown
Geologist

xc: Denny Foust, OCD Aztec Office

Roger Anderson

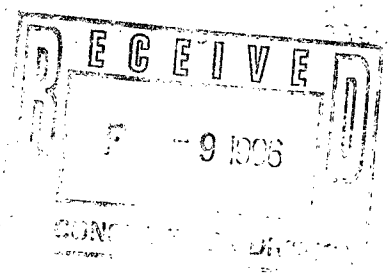
Field trip report for FOUST 02/02/96

Miles travelled 27 Departure time 09:00 Return time 12:00

Inspection results:

TIERRA LANDFARM OFFICE TO MEET WITH PHIL NOBIS FOR A VOLUNTARY COOPERATIVE REVIEW OF DOCUMENTS RECORDING WASTE ENTERING THE LANDFARM. ALL MATERIALS ARE RECORDED ON OCD DESIGNED AND/OR REQUIRED FORMS. WE FOUND ONLY ONE HOLE IN THE DOCUMENTATION WHICH INVOLVED EPNG PIT CLOSURES FOR EXEMPT WASRES. TIERRA WILL WILL DOCUMENT THESE MATERIALS FROM DATA ON FILE--THIS GLITCH HAPPENED DURING MOVING THE OFFICE AND FILES. I HAVE RECOMMENDED TIERRA TO WORK ON KEEPING AN UPDATED CHRONOLOGICAL FILE FOR REFERENCE TO LANDFARM MATERIALS--THIS IS BASICALLY WHAT HAS BEEN DONE IN THE PAST BUT WAS NOT UPDATED AFTER THE MOVE. INSPECTING THE LANDFARM WITH PHIL NOBIS SHOWS WE HAVE A CONTINUING PROBLEM WITH GETTING MATERIALS WHICH ARE SATURATED SPREAD DURING THE PERMITTED TIME PERIOD, THE MAJORITY OF THESE MATERIALS ARE STABILIZED MATERIALS FROM SUNCO AND BASIN DISPOSALS--PHIL NOBIS WILL SUBMIT A LETTER TO SANTA FE OUTLINING THE PROBLEM.

Inspection H Class O Facility M



This is record number 535 from f:\field\fld_trip.dbf.

TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

January 26, 1993

Mr. Roger Anderson, Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
Land Office Building
Santa Fe, New Mexico 87504

RE: REQUEST TO USE QUAD 5 PRODUCT ON AN EXPERIMENTAL BASIS AT THE CROUCH MESA LANDFARM FACILITY, TEST PLOT:

Dear Mr. Anderson:

Pursuant to our phone conversation, I am enclosing some information on the Quad 5 Product, including an Material Safety Data Sheet.

The Quad product line was developed at our facility in Tulsa, Ok and a U.S. Patent is pending. Quad 5 does not contain bacteria. It is an enhancer and modulator that accelerates the activity of naturally occurring bacteria. A variation of Quad 5 does contain a certain amount of bacteria. It is only used in situations where bacterial count of native soil is very low or non-existent.

I have also included laboratory results from three (3) test plots one of our subcontractors did in West Texas. The one report from Wheeler Properties Well # 5 is interesting. You will note the before and after analysis, while there was a dramatic drop in TPH the BTEX wasn't effected to any great degree. If you further examine the analysis report it appears that the levels of toluene and xylene actually increased. The contractor found out that there was a continuing leak at the site. Therefore the Quad 5 actually knocked down the TPH and controlled the BTEX as well as TPH from a continuing leak.

The report on the Meridian Oil Westbrook Well 204, was a situation where the contractor treated the location once on October 28, 1993 and did not return to the location until December 18, 1992. There had been no tilling nor addition of moisture. The average temperature during that period averaged 29 degrees F.

Also to add a little Witch Craft, I included a report of November 2, 1992 on Chloride, before and after treatment at the Ellis A Lease. We know bugs don't eat salt. There is a chemical change that occurs.

Dr. Dan Hoover PHD, our soils expert, would be supervising any test projects at the Crouch Mesa Facility. Of primary concern would be the residual effects of Potassium Permanganate following treatment.
Dr. Hoover is the co-developer of Quad 5 and has done most of the research on it.

With your authorization to proceed in the identified test plot, we would keep you informed of the results as frequently as you may require.

If there are no harmful residual effects, we would at that point seek permission to use the product through out the facility and in the field.

I appreciate your cooperation.

Sincerely,

Phillip C. Nobis
Vice President
Risk Management

THE QUAD PRODUCT SERIES

UNIQUE MICROBIAL ENHANCERS AND MODULATORS FOR USE WITH:

Petroleum Contaminated Soils, Petroleum Wastes, H2S Producing Wells

QUAD Products are unique formulations* of oxidants and microbial nutrients utilized to enhance and modulate the bioremediation of numerous waste products associated with petroleum production and refining.

EXAMPLES:

QUAD-4H2S is spectacular in eliminating the hydrogen sulfide problem in producing sour gas/oil wells and odor from sulfur contaminated water wells. Proper treatment reduces dissolved sulfides to zero.

QUAD-5 dramatically accelerates the bioremediation of petroleum contaminated soils.

QUAD-5 exhibits unmatched versatility in degrading and attenuating refinery wastes.

PRODUCT CHARACTERISTICS:

Brownish-purple color
Free pouring
One year shelf life

TREATMENT LEVELS and APPLICATION:

The nature of contamination problems requires field testing before any treatment can begin. These field tests are critical when initiating and optimizing a treatment program. For this reason, your TIERRA Environmental Company, Inc. Technical Representative will conduct all initial tests at your request.

QUAD-5

The initial technical evaluation will include:

(1) Tests to verify and quantify the contaminants.
(2) Pilot tests to specify, verify and quantify the amount of QUAD product that will eliminate or attenuate the target contaminant(s).
(3) A preliminary recommendation for a continuing treatment program.

PACKAGING:

Liquid: 55 gallon plastic lined drums.

SAFETY:

Please review and follow all safety precautions before using any chemical. The use of safety goggles, rubber gloves and other safety equipment is always recommended.

QUAD-5 contains potassium permanganate, DOT Hazard Class-oxidizer. For contact with eyes, flush with water for 15 minutes and consult a physician if irritation persists. If swallowed, give large amounts of milk or water and consult a physician immediately. Some individuals may be sensitive to the product and direct contact with the skin should be avoided. Contact with organic or readily oxidizable materials should be avoided.

For additional safety information of QUAD-5, request **Form Number Q-2** from your Big Blue Manufacturing Corp. distributor. Read and understand this safety information before using QUAD-5.

TIERRA Environmental Company, Inc.
8848 South Canton Avenue
Suite 100
Tulsa, Ok 74136

Phone (918) 496-3200
FAX (918) 496-3296

SUCCESS TO YOU

B-26495

MATERIAL SAFETY DATA SHEET

This MSDS complies with 29 CFR 1910.1200

Section I - Product Identification

Product name: QUAD-5
Manufacturers: Big Blue Manufacturing
6846 S. Canton Ave.
Tulsa, Oklahoma 74136
HMIS rating: H-2, F-0, R-1, S-none

Issue date 10-01-92
24 hour phone no#
(918) 496-2255

DOT Hazard Class: Oxidizer
UN # 1490

Section II - Hazardous Ingredients

Ingredient	CAS No.	% by weight
Potassium Permanganate	7722647	< 5 %

Section III - Physical Data

Boiling Point (F)..... = water
Vapor density..... unk
Specific gravity..... > 0.99
Ph.....< 7

Vapor Pressure ....unk
Solubility (water)>99%
% volatile .....>99

Section IV - Fire and Explosion Hazard

Flash point ..... N/A
Extinguishing Media .....N/A
Special fire fighting procedures.....N/A
Unusual fire and explosion hazards.....N/A

Flammable limits..N/A

Section V - Health Hazard Data

Threshold limit value .....>2000 ppm
Effects if overexposure ..... none
Emergency and first aid procedures: For contact with eyes, flush with water for 15 minutes and consult with a doctor if irritation persists. If swallowed, give large amount of milk or water and consult doctor immediately.

Section VI = Reactivity Data

Stability ..... stable

Conditions to avoid.....contact with organic or readily oxidizable materials

Incompatibility.....see conditions to avoid

Hazardous polymerization ....will not occur

Steps to be taken in the event of spill or leak..... Flush area with water

Waste disposal method ..... Consult local authorities

Section VIII = Special Protection Information

Respiratory protection ..... None

Ventilation ..... Avoid confined space

Protective gloves..... yes

Eye protection ..... goggles or face shield

Other ..... none

Section IX = Special Precautions

Precautions to be taken in handling and storage ..... none

This information herein provided is believed to be accurate but is not warranteed to be whether originating with the company or not.

Enviro-Tech Laboratories, Inc.

Environmental Consulting and Testing

117 S. A & M Ave.
San Angelo, Texas 76901
Phone: (915)944-1302 Fax: (915)942-9693

DATE RECEIVED: 28-Oct-1992
DATE REPORTED: 30-Oct-1992

LAB NUMBER
92-3110-3

REPORT TO: Bioremediation Contractors & Consult.
606 S. 14th
Brownfield, Texas 79316

PROJECT: Soil Analysis
ID: Unocal Smyer Unit Header #3
MATRIX: Soil

TEST PERFORMED	DETECTION LIMIT	TEST RESULTS
TOTAL PETROLEUM HYDROCARBONS (TPH)	10	16000 mg/Kg
TOTAL BTEX		16 mg/Kg

»» Breakdown of volatile organics from Purge & Trap GC analyses ««			
BTEX	Benzene	2.0	< 2 mg/Kg
	Toluene	2.0	< 2 mg/Kg
	Ethylbenzene	2.0	9 mg/Kg
	Xylene (meta & para xylenes)	2.0	4 mg/Kg
	Xylene (ortho xylene)	2.0	3 mg/Kg

TPH Method : EPA 418.1 (liquids) ; EPA 3550 and 418.1 (soils)
BTEX Method: EPA 5030 and 602 (liquids) ; EPA 5030 and 8020 (soils)
Comment: Higher detection limit due to necessary sample dilution.

ENVIRO-TECH Laboratories, Inc.

Enviro-Tech Laboratories, Inc.

Environmental Consulting and Testing
117 S. A & M Ave.
San Angelo, Texas 76901
Phone: (915)944-1302 Fax: (915)942-9693

DATE RECEIVED: 9-Nov-1992
DATE REPORTED: 10-Nov-1992

LAB NUMBER
92-3145-1

REPORT TO: Bioremediation Contractors & Consult.
606 S. 14th
Brownfield, Texas 79316

PROJECT: Soil Analysis
ID: Unocal Smyer Unit Header #3
MATRIX: Soil

TEST PERFORMED	DETECTION LIMIT	TEST RESULTS
TOTAL PETROLEUM HYDROCARBONS (TPH)	10	360 mg/Kg
TOTAL BTEX		0.04 mg/Kg

»» Breakdown of volatile organics from Purge & Trap GC analyses ««

BTEX	Benzene	0.02	< 0.02 mg/Kg
	Toluene	0.02	< 0.02 mg/Kg
	Ethylbenzene	0.02	0.04 mg/Kg
	Xylene (meta & para xylenes)	0.02	< 0.02 mg/Kg
	Xylene (ortho xylene)	0.02	< 0.02 mg/Kg

TPH Method : EPA 418.1 (liquids) ; EPA 3550 and 418.1 (soils)
BTEX Method: EPA 5030 and 602 (liquids) ; EPA 5030 and 8020 (soils)
Comment: Higher detection limit due to necessary sample dilution.

ENVIRO-TECH Laboratories, Inc.

Tom Conner
Type Operator

Phase I
Beginning sample 0:1

Enviro-Tech Laboratories, Inc.

Environmental Consulting and Testing
117 S. A & M Ave.
San Angelo, Texas 76901
Phone: (915)944-1302 Fax: (915)942-9693

DATE RECEIVED: 28-Oct-1992
DATE REPORTED: 30-Oct-1992

LAB NUMBER
92-3110-1

REPORT TO: Bioremediation Contractors & Consult.
606 S. 14th
Brownfield, Texas 79316

PROJECT: Soil Analysis
ID: Wheeler Properties Ellis ALCS Well #5
MATRIX: Soil

TEST PERFORMED	DETECTION LIMIT	TEST RESULTS
TOTAL PETROLEUM HYDROCARBONS (TPH)	10	105000 mg/Kg
TOTAL BTEX		719 mg/Kg

»» Breakdown of volatile organics from Purge & Trap GC analyses ««

BTEX	Benzene	5.0	27 mg/Kg
	Toluene	5.0	142 mg/Kg
	Ethylbenzene	5.0	365 mg/Kg
	Xylene (meta & para xylenes)	5.0	119 mg/Kg
	Xylene (ortho xylene)	5.0	66 mg/Kg

TPH Method : EPA 418.1 (liquids) ; EPA 3550 and 418.1 (soils)
BTEX Method: EPA 5030 and 602 (liquids) ; EPA 5030 and 8020 (soils)
Comment: Higher detection limit due to necessary sample dilution.

ENVIRO-TECH Laboratories, Inc.

Enviro-Tech Laboratories, Inc.

Environmental Consulting and Testing

117 S. A & M Ave.
San Angelo, Texas 76901
Phone: (915)944-1302 Fax: (915)942-9693

DATE RECEIVED: 9-Nov-1992
DATE REPORTED: 10-Nov-1992

LAB NUMBER
92-3145-2

REPORT TO: Bioremediation Contractors & Consult.
606 S. 14th
Brownfield, Texas 79316

PROJECT: Soil Analysis
ID: Wheeler Properties Ellica #5
MATRIX: Soil

TEST PERFORMED	DETECTION LIMIT	TEST RESULTS
TOTAL PETROLEUM HYDROCARBONS (TPH)	10	33,125 mg/Kg
TOTAL BTEX		525 mg/Kg

»» Breakdown of volatile organics from Purge & Trap GC analyses ««

BTEX	Benzene	2.0	70 mg/Kg
	Toluene	2.0	219 mg/Kg
	Ethylbenzene	2.0	68 mg/Kg
	Xylene (meta & para xylenes)	2.0	93 mg/Kg
	Xylene (ortho xylene)	2.0	75 mg/Kg

TPH Method : EPA 418.1 (liquids) ; EPA 3550 and 418.1 (soils)
BTEX Method: EPA 5030 and 602 (liquids) ; EPA 5030 and 8020 (soils)
Comment: Higher detection limit due to necessary sample dilution.

ENVIRO-TECH Laboratories, Inc.

Before

Enviro-Tech Laboratories, Inc.

Environmental Consulting and Testing

117 S. A & M Ave.
San Angelo, Texas 76901
Phone: (915)944-1302 Fax: (915)942-9693

DATE RECEIVED: 28-Oct-1992
DATE REPORTED: 30-Oct-1992

LAB NUMBER
92-3110-2

REPORT TO: Bioremediation Contractors & Consult.
606 S. 14th
Brownfield, Texas 79316

PROJECT: Soil Analysis
ID: Meridian Oil Westbrook Unit Well #204
MATRIX: Soil

TEST PERFORMED	DETECTION LIMIT	TEST RESULTS
TOTAL PETROLEUM HYDROCARBONS (TPH)	10	65000 mg/Kg
TOTAL BTEX		92 mg/Kg

»» Breakdown of volatile organics from Purge & Trap GC analyses ««

BTEX	Benzene	5.0	< 5 mg/Kg
	Toluene	5.0	18 mg/Kg
	Ethylbenzene	5.0	40 mg/Kg
	Xylene (meta & para xylenes)	5.0	21 mg/Kg
	Xylene (ortho xylene)	5.0	13 mg/Kg

TPH Method : EPA 418.1 (liquids) ; EPA 3550 and 418.1 (soils)
BTEX Method: EPA 5030 and 602 (liquids) ; EPA 5030 and 8020 (soils)
Comment: Higher detection limit due to necessary sample dilution.

ENVIRO-TECH Laboratories, Inc.

Tymn Combest
Laboratory Director

After

Enviro-Tech Laboratories, Inc.

Environmental Consulting and Testing
117 S. A & M Ave.
San Angelo, Texas 76901
Phone: (915)944-1302 Fax: (915)942-9693

DATE RECEIVED: 18-Dec-1992
DATE REPORTED: 22-Dec-1992

LAB NUMBER
92-3283-1

REPORT TO: Bioremediation Contractors & Consult.
606 S. 14th
Brownfield, Texas 79316

PROJECT:
ID: Well #174 Landfarm
MATRIX: Soil

TEST PERFORMED	DETECTION LIMIT	TEST RESULTS
TOTAL PETROLEUM HYDROCARBONS (TPH)	10	790 mg/Kg
TOTAL BTEX		< 0.01 mg/Kg

»» Breakdown of volatile organics from Purge & Trap GC analyses ««			
BTEX	Benzene	0.01	< 0.01 mg/Kg
	Toluene	0.01	< 0.01 mg/Kg
	Ethylbenzene	0.01	< 0.01 mg/Kg
	Xylene (meta & para xylenes)	0.01	< 0.01 mg/Kg
	Xylene (ortho xylene)	0.01	< 0.01 mg/Kg

TPH Method : EPA 418.1 (liquids) ; EPA 3550 and 418.1 (soils)
BTEX Method: EPA 5030 and 602 (liquids) ; EPA 5030 and 8020 (soils)
Comment:

ENVIRO-TECH Laboratories, Inc.

Tom Gonbert

Place I Sample Produced water

A & L PLAINS AGRICULTURAL LABORATORIES, INC.

302 34th St. • P.O. Box 1590 • Lubbock, TX 79408 • (806) 763-4278

IBER L307-04a November 2, 1992 ACCT# 00435

TO: BIOREMEDIATION
BOX 512
BROWNFIELD, TX 79316

WHEELER PROPERTIES
ELLIS A" LEASE

AB NUMBER:		92802
SAMPLE ID:		Well #5
ELECTRICAL CONDUCTIVITY	(mmhos/cm)	92.0
SAR:		59.53
HLORIDE:	(ppm)	122,200

RESPECTFULLY SUBMITTED
E.A. COLEMAN

Phase II sample Produced water

A & L PLAINS AGRICULTURAL LABORATORIES, INC.

302 34th St. • P.O. Box 1590 • Lubbock, TX 79408 • (806) 763-4278

November 11, 1992 ACCT# 004[illegible]

i-01a

TO: BIOREMEDIATION
BOX 512
BROWNFIELD, TX 79316

WHEELER PROPERTIES
ELLIS =A= LEASE
WELL #5

MBER:	90601
ID:	#4
ICAL CONDUCTIVITY (mmhos/cm)	18.1
	37.01
(ppm)	230
DE:	

RESPECTFULLY SUBMITTED
E.A. COLEMAN

TIERRA
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January 27, 1993

Tierra Environmental Company, Inc.
909 W. Apache
Farmington, New Mexico 87401

Attention: Phillip Nobis

Dear Phillip:

This is a brief of our recent discussion on the fate of potassium permanganate (constituent in QUAD-5) after it is mixed into soil. The primary questions are:

(1) Does KmnO4 remain a hazardous oxidizer once applied to soil?
(2) What are the expected effects of potassium and manganese on soils and plants?

QUAD-5 is utilized at rates suggested by type and concentration of hydrocarbon contaminates in soil and results of the soil analyses. A general average treatment might be one gallon of QUAD-5 per 25 cubic yards of contaminated soil. This amount of soil covers 1,350 sq.ft. to a depth of 6 in. - the spread for remediating soils applied to the land farm. The amount of elemental manganese and potassium in this application is 58 gm. and 41 gm. respectively. This equates to 4.2 lbs. of manganese and 3.0 lbs. of potassium per acre. The moment KMnO4 is added to soils (under ambient environmental conditions of the countryside) it begins to oxidize many of the organics and some inorganics present. The permanganate ion MnOu4 may be reduced to a manganous (Mn++) product in acidic conditions or to relatively insoluble manganese dioxide (MnO2) in neutral or alkaline conditions (Pauling, General Chemistry, 1970, Dover).

Both manganese and potassium are constituents of fertilizer preparations. For growing crops in organic soils with manganese unavailable or deficient, the recommended application rate may be 5-7 lbs./acre. Potassium is added at rates of several hundred lbs. per/acre to soils deficient or requiring the element to optimize crop yield. (Ankerman & Large, Soil & Plant Analysis, A&L Agri. Labs.)

Manganese, long recognized as an essential plant nutrient, has been included in fertilizer formulations since the 1930's (Science in Farming, The Yearbook of Agriculture 1943-1947, U.S. Department of Agriculture). The element functions with enzyme systems involving carbohydrate, nitrogen and other metabolic pathways.

Manganese becomes more available (soluble) to plants as the pH decreases. The element may even become toxic to plants @ pH of 4.0. However, low pH soils are often deficit in manganese because of loss due to leaching. Conversely, soils with excess lime, high organic content or high pH often have sufficient, but unavailable levels of manganese.

Potassium, a major plant nutrient, is the most active of the principal bases that occur in plants - potassium, magnesium, calcium. The element is usually present in larger amounts in soils with higher pH values. Potassium is usually added to soil in the form of KCl, expressed as K2O.

In summary, $KMnO_4$ immediately reacts with the organic and some inorganic constituents of soil liberating oxygen and organic/ inorganic salts and oxides, e.g.:, manganese dioxide - depending on the soil and conditions.

The potassium may form salts or adsorb as a cation in exchangable positions on clay minerals and organic fractions of the soil. Both manganese and potassium are vital plant nutrients and are generally non-toxic to plants @ relatively high concentrations in the high pH soils (>7.5) found in most Western states.

Phil, I hope this brief is sufficient for the information you need in your operations. Please call me anytime and I will be happy to provide any additional information at my disposal.

Sincerely,

Dan Hoover

L. Daniel Hoover, Ph.D.
Director of Research

334-6170 Denny

State of New Mexico
ENVIRONMENT DEPARTMENT
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BRUCE KING
GOVERNOR

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

Steeve Tanker - JP4 Jet Fuel

April 6, 1993

Mr. Phil Nobis, Landfarm Operator
Tierra Environmental
Farmington, NM

827-5741
Roger Anderson

Dear Mr. Nobis:

SUBJECT: Letter of Authorization

The New Mexico Environment Department hereby authorizes transport and temporary storage of contaminated soil at Tierra Environmental. The Hazardous and Radioactive Materials Bureau allows the shipment of the material to the landfarm providing the following conditions are met:

1. The contaminated soil will be stored in an isolated area on the landfarm.

2. The contaminated soil will be stored on plastic (10 ml liner), and bermed (18 inches).

3. The contaminated soil will be kept slightly moist to keep the soil from blowing.

4. The landfarm facility will run a TCLP analysis for characterization of hazardous waste contaminants.

5. The operator will dispose of the waste as soon as possible in an appropriate manner based on the analytical results.

If you have any questions, please feel free to contact me at (505)827-4358 or Michael Le Scouarnec at (505) 827-4308.

Sincerely,

Benito J. Garcia, Chief
Hazardous and Radioactive Materials Bureau

cc: Roger Anderson, OCD
John Geddie, Office of the Secretary
Edward Horst, RCRA Enforcement

DISCHARGE PLAN INSPECTION REPORT FOR
REFINERIES, GAS PLANTS AND COMPRESSOR STATIONS

rev. 12/93

OPERATOR: Tierra

FACILITY NAME: Crouch Mesa Landfarm

GW-#:

TYPE: commercial landfarm

LOCATION:

COUNTY: San Juan

INSPECTION DATE: March 22, 1994

INSPECTOR(S): R. Anderson, D. Foust, B. Myers

BELOW GRADE

Tanks:

Sumps:

Piping:

CONTAINMENT

Berms: Berm installed at northwest corner of facility to capture stormwater runoff.

WASTE STREAM

Solid: soils well tended. despite high winds, no blowing dust. Site lab has IR and PID for checking samples. Cell and meteorological data recorded daily.

Miscellaneous: Illegal spill (by outside party) at south end of facility has been cleaned up by Tierra. Geese found dead at this site have been reported to and cleared with USF&W.

signature Robert J. Myers

date 4/7/94