NM2 - 10

RELEASE RESPONSE PLAN

2010

New Mexico Energy, Minerals and Natural Resources Department

Bill Richardson
Governor

Jon Goldstein
Cabinet Secretary

Jim Noel
Deputy Cabinet Secretary

Mark Fesmire
Division Director
Oil Conservation Division

February 1, 2010

Ron Copple
Western Refining Company, LP
11 County Road 4990
Bloomfield, New Mexico 87413

RE: Release Response Plan
Western Refining's Centralized Surface Waste Management Facility
Bisti Landfarm: NM-2-0010
Location: Unit I, Section 16, Township 25 North, Range 12 West, NMPM
San Juan County, New Mexico

Dear Mr. Copple:

The Oil Conservation Division (OCD) has reviewed Western Refining Company, LP's (Western) release response plan, dated January 4, 2010, regarding the investigation and assessment of the downward migration of contaminants into the vadose zone at Western's Bisti Landfarm (NM-2-010). The basis of the submittal is to investigate the validity of historical monitoring data that demonstrate the presence of TPH, toluene, ethyl-benzene, xylenes, and elevated concentrations of chlorides within the vadose zone of the active landfarm cells and to comply with the transitional provisions of 19.15.36 NMAC. Western proposes to verify previous vadose sampling results by testing the vadose zone of the active cells for TPH, BTEX and chlorides.

Based upon the information provided in the release response plan, the OCD hereby approves Western's proposal with the following conditions:

- Western shall verify and confirm previous vadose sampling results by testing the vadose zone of the active cells for TPH, BTEX and chlorides using EPA methods 8015M, 8021B, and 300.1, respectively.

- If the verification sampling results demonstrate the presence of contaminants in the vadose zone, Western shall submit a revised release response plan that proposes a defined protocol for delineating the extent of the contamination in compliance with the testing protocols and parameters of Paragraph (5) of Subsection E of 19.15.36.15 NMAC for OCD review and consideration of approval.

The OCD also wishes to clarify a few issues regarding the Bisti Landfarm. In regards to Cell 1, Western is required to sample for chlorides and obtain OCD approval prior to adding a subsequent lift. Western shall comply with the requirements of 19.15.36 NMAC in regards to new landfarm cells constructed at an existing surface waste management facility. Western shall comply with the closure requirements in effect at the time of a closure request. OCD records indicate that no closure requests are on record or have been submitted to OCD for consideration.

Please be advised that approval of this request does not relieve Western of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve Western of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact me at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Brad A. Jones
Environmental Engineer

BAJ/baj

cc: OCD District III Office, Aztec

Western Refining

RECEIVED

2010 JAN 7 AM 11 55

WNR LISTED NYSE

January 4, 2010

Mr. Brad Jones
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

CERTIFIED MAIL: 7009 0820 0000 0482 9375

RE: Release Response Plan
Western Refining's Centralized Surface Waste Management Facility
Bisti Landfarm: NM-02-0010

Dear Mr. Jones,

Western Refining (Western) submits the following Release Response Plan in reply to recent concerns from the New Mexico Oil Conservation Division (NMOCD) regarding downward migration of contaminants into the vadose zone at Western's Bisti Landfarm (NM-02-0010). The Bisti Landfarm was originally permitted in 1998 and is located in Unit I of Section 16 of Township 25N, Range 12W in San Juan County, New Mexico. Western will confirm that a release has occurred by properly sampling the vadose zone to validate historical monitoring data. Western will delineate areas of concern and propose additional corrective actions as necessary.

Western strives towards industry and government cooperation and is committed to achieving full compliance as required by NMOCD. Your consideration in this matter is greatly appreciated. Western wishes to resolve this issue as quickly as possible and will implement the proposed actions as soon as approval from NMOCD is received.

Please contact me at (505) 632-4044 or at ron.copple@wnr.com with any questions that may arise.

Sincerely,
Western Refining

Ron Copple

CC: Bill Robertson, Western Refining
Allen Hains, Western Refining
Ashley Ager, Lodestar Services
File

Attachments: Bisti Landfarm Release Response Plan

Release Response Plan:

For Western Refining's Centralized Surface Waste Management Facility: Bisti Landfarm, NM-02-0010

December 31, 2009

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Background Information

The New Mexico Oil Conservation Division (NMOCD) requested that Western Refining (Western) submit a Release Response Plan for their Surface Waste Management Facility, referred to as the Bisti Landfarm, to address concerns of downward migration of soil contaminants into the vadose zone.

The Bisti Landfarm was permitted in February 1998 under 711 Permit NM-02-0010 to Giant Industries, Arizona (Giant). It is located in Unit I of Section 16 of Township 25N, Range 12W in San Juan County, New Mexico. The application and NMOCD permit are attached as Appendix A. One background sample was collected in the middle of the proposed landfarm from two feet below ground surface as part of the application requirements (see results in Appendix B). Giant disposed of impacted soils at the landfarm from its opening in April 1998 through July 2003, resulting in three cells: the API Cell (containing material originating from API and Pettigrew), the Crude Cell (containing material originating from East Line, Bisti and West Line) and Cell 1, which was operational from 1998 until 2004 and is currently inactive (Figure 1). No new cells or lifts have been added to the landfarm since 2003. Western procured the landfarm from Giant during the first quarter of 2008.

The original permit outlines landfarm construction, operation and monitoring parameters. The approved monitoring plan of the treatment zone states the following:

> "A treatment zone not to exceed three (3) feet beneath the landfarm native ground surface will be monitored. A minimum of one random soil sample from each individual cell, with no cell being larger than five (5) acres, six (6) months after the first contaminated soils were received in the cell and then quarterly thereafter. The samples will be taken two (2) to three (3) feet below native ground surface.
>
> The soil samples will be analyzed using EPA methods for TPH and BTEX quarterly and major cations/anions and heavy metals annually..."

Results of API and Crude Cell monitoring from 2004 to present are shown in Appendix B and are representative of the vadose zone. Records of sampling events prior to 2004 are available upon request. The NMOCD has noted that recent sampling results suggest downward migration of soil contaminants. Specifically, elevated chloride concentrations were measured in API and Crude cell samples over the last two years. Traces of TPH and BTEX were detected in the 2008 annual sample from the API Cell, and TPH was detected in the 2009 annual sample from the Crude Cell (Appendix B).

Release Response Plan

As requested by the NMOCD, Western prepared this Release Response Plan to address downward migration of soil contaminants at the Bisti Landfarm. This document explains how Western will delineate impacts to subsurface soil and address potential problems in the vadose zone. The Release Response Plan has been divided into three separate tasks, all of which are described below.

Task 1: Update the Facility Diagram

Task One will begin by updating the current site map used for reporting. There is some concern about the current map's accuracy, and a detailed map is necessary to accurately delineate potential problems. The mapping project will include marking the boundaries of the different cells in the field so that all samples are gathered from the appropriate locations. A new map will be presented to the NMOCD and used in all future reporting.

Task 2: Confirm Previous Vadose Zone Sampling Results and Delineate Areas of Concern

Task 2 will consist of a soil sampling program from within the vadose zone. Results of this event will allow Western to confirm that previous samples were, in fact, representative of the vadose zone. Should previous results be validated, the soil sampling results will also identify areas of concern.

Discrete vadose zone samples will be taken from each of the two (2) active cells (API and Crude Cells). Samples will be taken 3 to 4 feet below the original ground surface. The number of vadose zone samples taken within each cell will be dependent on the size of the cell. See Figure 2 for proposed sampling locations. All samples will be analyzed for TPH, BTEX and chlorides using EPA Methods 8015M, 8021B and 300.1, respectively.

All samples will be placed on ice and sent to a laboratory for analysis. Samples will be labeled with the date and time of collection, sample name, collector's name and parameters to be analyzed. The samples will be shipped to a laboratory in a sealed cooler via bus before designated holding times expired. Proper chain-of-custody (COC) procedures will be followed, with logs documenting the date and time sampled, sample number, type of sample, sampler's name, preservative used, analyses required and sampler's signatures.

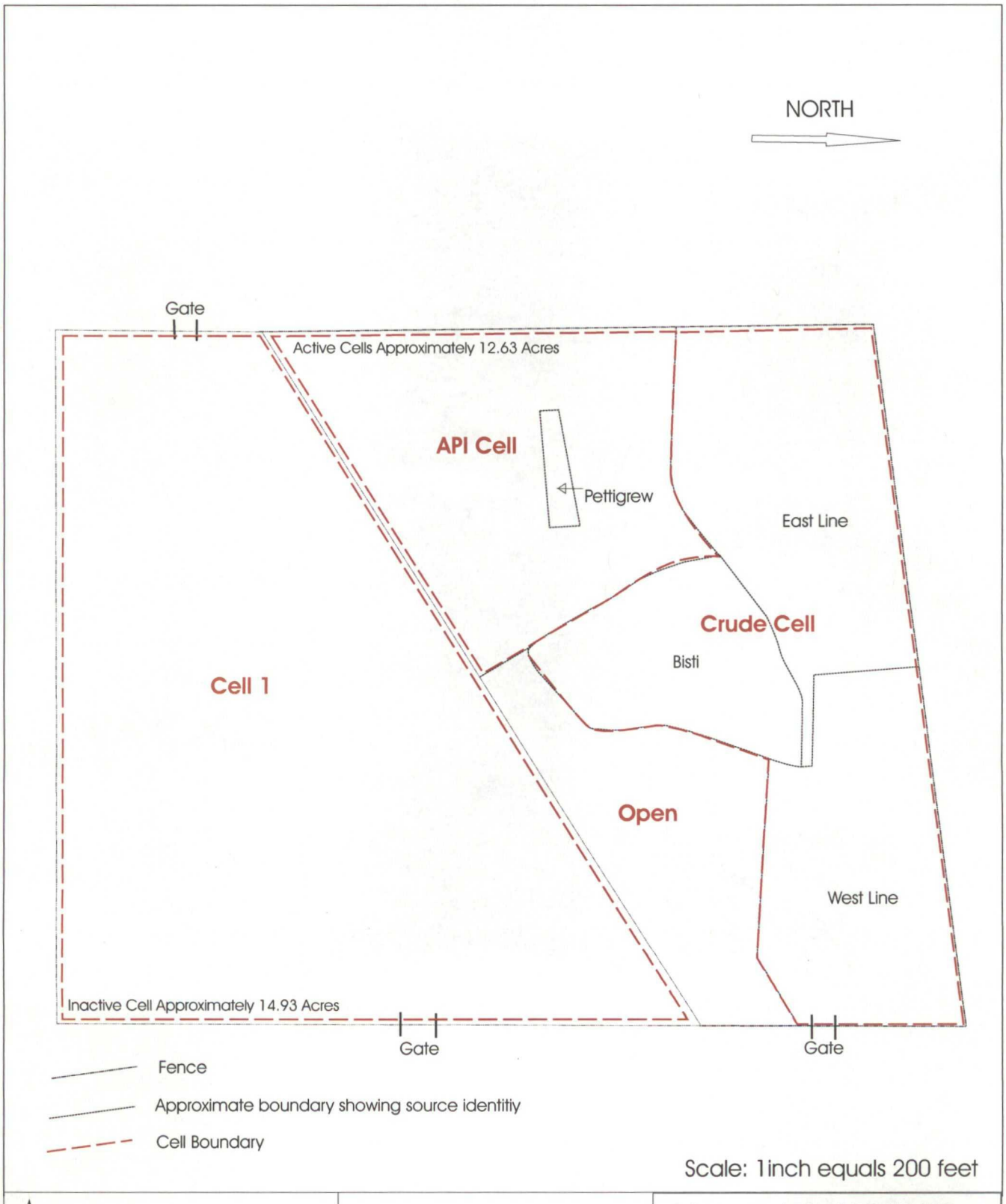
Task 3: Review Results and Address Downward Migration

Western will review the sample data and submit a summary report of activities and results to the NMOCD. The report will list vadose zone soil concentrations for BTEX, TPH and chlorides. It will also identify and delineate impacts to the vadose zone, if any. Results will be compared with the higher of the Practical Quantitation Limit (PQL) and the background soil concentrations to determine if downward migration has occurred. Once sampling procedures are refined, results may indicate otherwise. The report will include, but not be limited to, vicinity and site diagrams, summary tables of analytical results, laboratory analytical reports, data interpretation with associated maps and diagrams and recommendations for further action based on reported results.

Any urgent issues will be reported to the NMOCD immediately. If downward migration is confirmed, further vadose zone sampling, and possibly treatment zone sampling, will be initiated as necessary. Western will work with the NMOCD to change the landfarm's operation to prevent further contamination, and Western will develop a plan for appropriate remediation of targeted soils.

Conclusions

This Release Response Plan will allow Western to accurately define vadose zone conditions at the Bisti Landfarm and appropriately address any problem of downward migration.



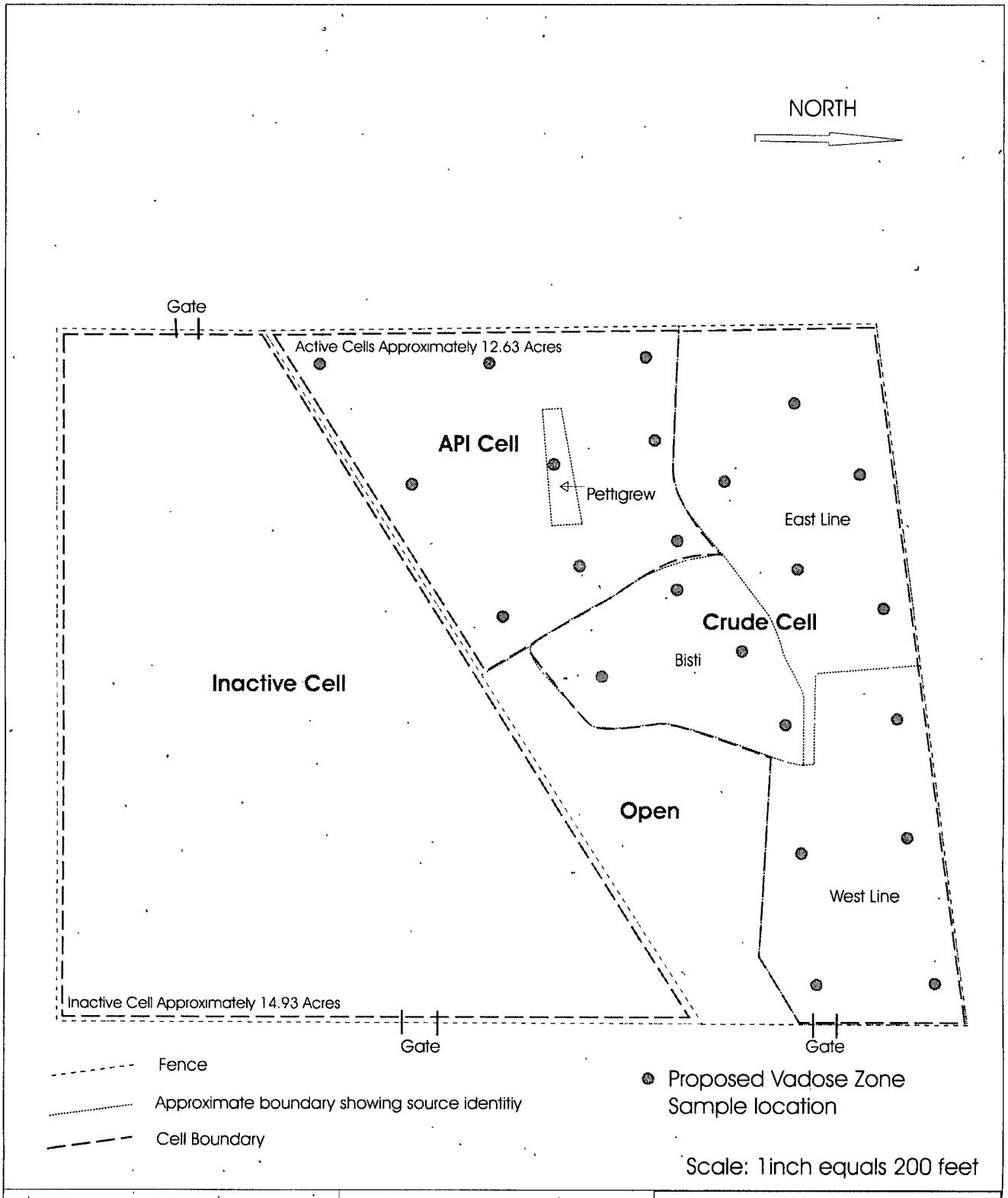
Scale: 1inch equals 200 feet

Lodestar Services, Inc
PO Box 4465
Durango, CO 81302

Western Refining
Bisti Landfarm
NM-02-0010

Map updated 10/21/09

Cell dimensions are based on Philip Services Figure 1A dated 9/30/97



Lodestar Services, Inc
PO Box 4465
Durango, CO 81302

Proposed Sampling for Vadose Zone Delineation

Figure 2

Cell dimensions are based on Philip Services Figure 1A dated 9/30/97

Appendix A: Original Landfarm Permit and Landfarm Application

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

February 23, 1998

CERTIFIED MAIL
RETURN RECEIPT NO. P-326-936-400

Mr. Timothy Kinney
Giant Industries Arizona, Inc.
5764 Highway 64
Farmington, NM 87401

RE: Giant Industries Arizona, Inc.
OCD Rule 711 Permit Approval NM-02-0010
NW/4 SE/4 of Section 16, Township 25 North, Range 12 West, NMPM,
San Juan County, New Mexico.

Dear Mr. Kinney:

The **permit application for the Giant Industries Arizona, Inc. (Giant) centralized surface waste management landfarm facility** located in the NW/4 SE/4 of Section 16, Township 25 North, Range 12 West, NMPM, San Juan County, New Mexico, **is hereby approved** in accordance with the New Mexico Oil Conservation Division (OCD) Rule 711 under the conditions contained in the enclosed attachment. **This permit approval is conditional upon the receipt and approval of a $25,000 bond**. Construction of the facility and/or receipt of contaminated soil shall not commence until the $25,000 bond has been approved by the Director. The application consists of the original application dated October 8, 1997, and the materials dated November 3, 1997, December 10, 1997, January 8, 1998, and February 11, 1998, submitted as supplements to the application.

The operation, monitoring and reporting shall be as specified in the enclosed attachment. All modifications and alternatives to the approved landfarming methods must receive prior OCD approval. Giant is required to notify the Director of any facility expansion or process modification and to file the appropriate materials with the Division.

Please be advised approval of this facility does not relieve Giant Industries Arizona, Inc. of liability should your operation result in actual pollution of surface water, ground water, or the environment. In addition, OCD approval does not relieve Giant Industries Arizona, Inc of responsibility for compliance with other federal, state or local laws and/or regulations.

Please be advised that all tanks exceeding 16 feet in diameter and exposed pits, ponds or lagoons must be screened, netted or otherwise rendered nonhazardous to migratory birds. In addition, OCD Rule 310 prohibits oil from being stored or retained in earthen reservoirs, or open receptacles.

The facility is subject to periodic inspections by the OCD. The conditions of this permit and the facility will be inspected and reviewed by the OCD no later than five (5) years from the date of this approval.

Enclosed are two copies of the conditions of approval. **Please sign and return one copy to the OCD Santa Fe Office with in five working days of receipt of this letter.**

If you have any questions please do not hesitate to contact Martyne J. Kieling at (505) 827-7153.

Sincerely,

Lori Wrotenbery

Lori Wrotenbery
Director

LR/mjk

xc with attachments:
Aztec OCD Office

ATTACHMENT TO OCD 711 PERMIT APPROVAL
PERMIT NM-02-0010
GIANT INDUSTRIES ARIZONA, INC.
(February 23, 1998)

LANDFARM CONSTRUCTION

1. The facility will be fenced and 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.

2. Contaminated soils will not be placed within twenty-five (25) feet of the boundary of the facility and the landfarm facility will not be constructed within one hundred (100) feet of adjacent landowners' property.

3. Contaminated soils will not be placed within twenty (20) feet of any pipelines crossing the landfarm. In addition, no equipment will be operated within ten (10) feet of a pipeline. All pipelines crossing the facility will have surface markers identifying the location of the pipelines.

4. The portion of the facility containing contaminated soils will be bermed to prevent runoff and runon. A berm will be constructed and maintained such that it is capable of containing precipitation from a one-hundred year flood for that specific region.

5. All above ground tanks located at the facility and containing materials other than fresh water will be bermed to contain one and one-third the volume of the largest tank or all interconnected tanks.

LANDFARM OPERATION

1. Disposal will only occur when an attendant is on duty. The facility will be secured when no attendant is present.

2. All contaminated soils received at the facility will be spread and disked within 72 hours of receipt.

3. Soils will be spread on the surface in six inch lifts or less.

4. Soils will be disked a minimum of one time every two weeks (biweekly) to enhance biodegradation of contaminants.

5. Exempt contaminated soils will be placed in the landfarm so that they are physically

separate (ie. bermed) from non-exempt contaminated soils. There will be no mixing of exempt and nonexempt soils.

6. 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 and/or removal of the remediated soils.

7. The facility is authorized to accept only:

   a. Oilfield contaminated solids which are exempt from RCRA Subtitle C regulations. These wastes should be accompanied by a OCD Form C-144 "Generator Certificate of Waste Status" from the generator.

   b. "Non-hazardous" non-exempt oilfield contaminated solids from OCD permitted facilities on a case-by-case basis after conducting an analysis for hazardous characteristics and receiving OCD approval. 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 the generator that there has been no change in the processes employed or the chemicals stored/used at the facility generating the waste.

   c. Other non-oilfield contaminated solids which are RCRA Subtitle C exempt or non-hazardous by characteristic testing, if ordered by the Department of Public Safety on an emergency basis as the waste poses an eminent danger to public health. The wastes should be accompanied by a "Verification of Waste Status" demonstrating the exempt or non-hazardous classification of the solids and signed by the appropriate regulatory agency. OCD approval will be obtained prior to accepting the wastes.

8. At no time will any OCD permitted landfarms accept wastes which are hazardous by either testing or listing.

9. All loads received at the facility will be accompanied by the following:

   a. A OCD Form C-144 "Generator Certificate of Waste Status" signed by the waste generator or "Verification of Waste Status" issued by the New Mexico Environment Department (NMED) or the appropriate agency from another state for wastes regulated by that agency. The state agency verification is based on specific information on the subject waste submitted by the generator and

demonstrating the exempt or non-hazardous classification of the waste.

b. The analytical results of Hazardous Waste Characterization for non-exempt waste including 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.

c. All generators submitting waste to a OCD Permitted 711 Waste Management Facility must include a Naturally Occurring Radioactive Material (NORM) status declaration which is included in the OCD Form C-144 "Generator Certificate of Waste Status". The generator must declare that the waste if not exempted pursuant to 20 NMAC 3.1 subpart 1403, was surveyed for NORM and does not contain a maximum radiation exposure reading or NORM concentrations do not exceed that listed in 20 NMAC 3.1 Subpart 1403.C and D.

10. The transporter of all wastes to the facility will supply a certification that wastes delivered are those wastes received from the generator and that no additional materials have been added.

11. Moisture will be added as necessary to enhance bioremediation and to control blowing dust. 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.

12. Enhanced bio-remediation through the application of microbes (bugs) and/or fertilizers will only be permitted after prior approval from the OCD. Request for application of microbes will include the location of the area designated for the bio-remediation program, composition of additives, and the method, amount and frequency of application.

13. No free liquids or soils with free liquids will be accepted at the facility.

14. 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 generator, 2) the origin, 3) date received, 4) quantity, 5) certification of exempt status or analysis for hazardous constituents if non-exempt, 6) transporter, and 7) exact cell location and any addition of microbes, moisture, fertilizers, etc.

TREATMENT ZONE MONITORING

1. 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 total petroleum hydrocarbons (TPH), major cations/anions, volatile aromatic organics (BTEX), and heavy metals using approved EPA methods.

2. A treatment zone not to exceed three (3) feet beneath the landfarm native ground surface 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 in the cell and then quarterly thereafter. The sample will be taken at two (2) to three (3) feet below the native ground surface.

3. The soil samples will be analyzed using approved EPA methods for TPH and BTEX quarterly, and for major cations/anions and heavy metals annually.

4. After obtaining the soil samples the boreholes will be filled with an impermeable material such as cement or bentonite.

REPORTING

1. Analytical results from the treatment zone monitoring will be submitted to the OCD Santa Fe office for annual review **by February 23, of each year.**

2. The applicant will notify the **OCD Aztec District office within 24 hours** of any break, spill, blow out, or fire or any other circumstance that could constitute a hazard or contamination in accordance with OCD Rule 116.

3. Authorization from the OCD Santa Fe office will be obtained prior to application of successive lifts and/or removal of the remediated soils.

4. The OCD will be notified prior to the installation of any pipelines or wells within the boundaries of the facility.

5. The OCD Santa Fe and Aztec District office will be notified when operation of the facility is discontinued for a period in excess of six (6) months or when the facility is to be dismantled. A closure plan for the facility will be provided.

BOND

1. Pursuant to OCD Rule 711 a surety or cash bond in the amount of $25,000, in a form approved by the Division, is required prior to commencing construction of the centralized surface waste management facility.

CLOSURE

1. The OCD Santa Fe and Aztec District office will be notified when operation of the facility is discontinued for a period in excess of six (6) months or when the facility is to be dismantled. Upon cessation of landfarming operations for six (6) consecutive months, the operator shall complete cleanup of constructed facilities and restoration of the facility site within the following six (6) months, unless an extension of time is granted by the Director.

2. A closure plan for the facility will be provided including the following OCD closure procedures:

   a. When the facility is to be closed no new material will be accepted;

   b. Existing landfarm soils will be remediated until they meet the OCD standards in effect at the time of closure;

   c. The area will be reseeded with natural grasses and allowed to return to its natural state;

   d. Closure will be pursuant to all OCD requirements in effect at the time of closure, and any other applicable local, state and/or federal regulations.

CERTIFICATION

Giant Industries Arizona, Inc., by the officer whose signature appears below, accepts this permit and agrees to comply with all terms and conditions contained herein. Giant Industries Arizona, Inc. further acknowledges that these conditions and requirements of this permit may be changed administratively by the Division for good cause shown as necessary to protect fresh water, human health and the environment.

Accepted:

GIANT INDUSTRIES ARIZONA, INC.

by_____
Title

RECEIVED
OCT 9 1997
Environmental Bureau
Oil Conservation Division

APPLICATION

for

WASTE MANAGEMENT FACILITY

T25N, R12W, Sec. 16

Giant Industries Arizona, Inc.
5764 Highway 64
Farmington, New Mexico 87401

October 8, 1997

PHILIP SERVICES CORP.
4000 Monroe Road
Farmington, New Mexico 87401
(800) 326-2262

District I - (505) 393-6161
P. O. Box 1980
Hobbs, NM 88241-1980
District II - (505) 748-1283
811 S. First
Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Road
Aztec, NM 87410
District IV - (505) 827-7131

New Mexico
Energy Minerals and Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

RECEIVED
NOV 04 1997
Environmental Bureau
Oil Conservation Division

Form C-137
Originated 8/8/95
Revised 6/25/97

Submit Original
Plus 1 Copy
to Santa Fe
1 Copy to appropriate
District Office

APPLICATION FOR WASTE MANAGEMENT FACILITY

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

☐ Commercial ☒ Centralized

1. Type: ☐ Evaporation ☐ Injection ☐ Other _____
   ☒ Solids/Landfarm ☐ Treating Plant
2. Operator: Giant Industries Arizona, Inc.
   Address: 5764 Hwy. 64, Farmington, NM 87401
   Contact Person: Timothy Kinney Phone: 505/632-4001
3. Location: NW 1/4 SE 1/4 Section 16 Township 25N Range 12W
   Submit large scale topographic map showing exact location
4. Is this a modification of an existing facility? ☐ Yes ☒ No
5. Attach the name and address of the landowner of the facility site and landowners of record within one mile of the site.
   See "Application for Waste Management Facility T25N, R12W, Sec. 16" dated October 8, 1997
6. Attach description of the facility with a diagram indicating location of fences, pits, dikes, and tanks on the facility.
   See "Application for Waste Management Facility T25N, R12W, Sec. 16" dated October 8, 1997
7. Attach designs prepared in accordance with Division guidelines for the construction/installation of the following: pits or ponds, leak-detection systems, aerations systems, enhanced evaporation (spray) systems, waste treating systems, security systems, and landfarm facilities.
   See "Application for Waste Management Facility T25N, R12W, Sec. 16" dated October 8, 1997
8. Attach a contingency plan for reporting and clean-up for spills or releases.
   See "Application for Waste Management Facility T25N, R12W, Sec. 16" dated October 8, 1997
9. Attach a routine inspection and maintenance plan to ensure permit compliance.
   See "Application for Waste Management Facility T25N, R12W, Sec. 16" dated October 8, 1997
10. Attach a closure plan.
    See "Application for Waste Management Facility T25N, R12W, Sec. 16" dated October 8, 1997
11. Attach geological/hydrological evidence demonstrating that disposal of oil field wastes will not adversely impact groundwater. Depth to and quality of ground water must be included.
    See "Application for Waste Management Facility T25N, R12W, Sec. 16" dated October 8, 1997
12. Attach proof that the notice requirements of OCD Rule 711 have been met.
    See "Application for Waste Management Facility T25N, R12W, Sec. 16" dated October 8, 1997
13. Attach a contingency plan in the event of a release of H_2S.
    See "Application for Waste Management Facility T25N, R12W, Sec. 16" dated October 8, 1997
14. Attach such other information as necessary to demonstrate compliance with any other OCD rules, regulations and orders. NONE ATTACHED
15. CERTIFICATION

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

Name: Timothy Kinney Title: General Manager

Signature: Timothy Kinney Date: 11/3/97

APPLICATION

for

WASTE MANAGEMENT FACILITY

T25N, R12W, Sec. 16

Giant Industries Arizona, Inc.
5764 Highway 64
Farmington, New Mexico 87401

October 8, 1997

PHILIP SERVICES CORP.
4000 Monroe Road
Farmington, New Mexico 87401
(800) 326-2262

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APPLICATION FOR WASTE MANAGEMENT FACILITY

☐ **Commercial** ☒ **Centralized**

1. Type: ☐ Evaporation ☐ Injection ☐ Other
☒ Solids/Landfarm ☐ Treating Plant

This facility will be used for the landfarming of hydrocarbon impacted soil produced by Giant Industries Arizona's San Juan Basin Operations.

2. Operator: Giant Industries Arizona, Inc.
Address: 5764 Highway 64, Farmington, New Mexico 87401
Contact Person: Timothy Kinney Phone: 505-632-4001

3. Location: NW 1/4, SE 1/4, Section 16, Township 25 North, Range 12 West.

A large scale topographic map showing the exact location of the facility is included as attachment A.

4. Is this a modification of an existing facility? ☐ Yes ☒ No

5. Attach the name and address of the landowner of the facility site and landowners of record within one mile of the site.

Giant Industries Arizona Inc. owns all 640 acres of Section 16. The 40-acre land farm is located in the center of the Section. Giant's address is as follows:

Giant Industries Arizona, Inc.
5764 Highway 64
Farmington, New Mexico 87401

The following are the owners of record of the sections of land adjacent to Section 16 according to the San Juan County Assessor. The landowner names and addresses are included in Appendix A.

- **Section 8: Indian Allotments**
- **Section 9: Indian Allotments**

- **Section 10: Federal**
- **Section 15: Federal**
- **Section 17: Private**
- **Section 20: Trust for Navajo Indians *(BIA)***
- **Section 21: Federal**
- **Section 22: Federal**

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

The proposed 40 acre facility is located in the center of section 16 owned by Giant. Of the 40 acres included herein, 15 acres will be fenced and active. The facility will be used for landfarming hydrocarbon impacted soil from releases associated with Giant's San Juan Basin Operations. The facility will not receive liquid wastes, therefore pits or tanks are not proposed at this time. The entire facility will be bermed to prevent precipitation run-off and run-on. In addition, the entire facility will be fenced with three-strand barbed wire to prevent the ingress of livestock. There will be two access gates as shown on Figure 1a.

7. Attach designs prepared in accordance with Division guidelines for the construction/installation of the following: pits or ponds, leak-detection systems, aeration systems, enhanced evaporation (spray) systems, waste treating systems, security systems, and land farm facilities.

See Figures 1a, b, and c. In addition, the facility will be constructed and operated in accordance with the New Mexico Oil Conservation Division's (NMOCD) "Guidelines for Permit Application, Design and Operation of Centralized & Commercial Land Farms," Section VII Facility Construction/Operation & Waste Classification, as appropriate, Appendix B.

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

Because liquids will not be brought to the facility, Giant does not anticipate spills or releases. It is possible that a catastrophic precipitation event (500 yr. frequency or greater) could cause a release. If such an event occurs, Giant will within 24 hours from discovery, initiate an oral report and initiate assessment of the impact to the environment.

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

Routine inspection and maintenance will be conducted on a monthly basis to the extent that soils above 100 parts per million (PPM), total petroleum hydrocarbons (TPH) remain on-site or following consequential rainstorms or windstorms. Routine maintenance and inspection will consist of inspection of the integrity of the berms, fences and gates. In the event that damage or degradation of the facility is evident, the facility manager will be notified and arrangements will be made to repair or replace damaged structures.

Quarterly Sampled For?

Routine inspection and maintenance will include annual sampling of the soils beneath the land farm to ensure that contaminant migration has not occurred.

Quarterly

A letter report will be submitted to the NMOCD annually. The letter report will transmit analytical results, NMOCD forms and a summary of the previous year's operations.

10. Attach a closure plan.

To close the facility, Giant will notify the NMOCD of the anticipated closure date, cease acceptance of materials and complete the following within one year of closure:

- **Collect representative soil samples of materials that have been landfarmed to verify TPH concentrations are less than 100 PPM**
- **Collect final representative samples of the natural soil beneath the land farm to demonstrate lack of impact**
- **Remove all fencing and structures**
- **Grade the location to approximate pre-land farm conditions**
- **Complete reseeding with natural grasses**
- **Submit final closure report to the NMOCD for approval of closure**

Estimated costs for closure are as follows:

Remove Fencing and Building	**$ 2,500**
Grade and Reseed Location	**$ 5,500**
Soil Sampling and Analysis	**$ 1,200**
Closure Report	**$ 850**

11. Attach geological / hydrological evidence demonstrating that disposal of oil field wastes will not adversely impact groundwater. Depth to and quality of ground water must be included.

Hydrologic Features

A. A tributary arm to the ephemeral West Fork of the Gallegos Canyon is located approximately 2,000 horizontal feet to the northeast of the proposed facility. The land farm location is approximately 160 vertical feet above the flowline of the West Fork of Gallegos Canyon. No other watercourses or groundwater discharge sites have been found within one mile of the facility.

B. Based on Stone et al. in "Hydrogeology and Water Resources of San Juan Basin, New Mexico" (1983); the aquifer most likely to be impacted by vertical migration of hydrocarbons is contained within the Ojo Alamo Sandstone. Comparing the elevation of the potentiometric surface (Stone et al., Figure 28, sheet 5) to the site elevation as indicated on the United States Geological Survey Quadrangle Carson Trading Post, New Mexico, the depth to groundwater is estimated at approximately 200 feet beneath land surface.

According to Thorn et al. in "Hydrogeology of the Ojo Alamo Sandstone in the San Juan Structural Basin, New Mexico, Colorado, Arizona, and Utah" (1990), of water sample analyses from 32 locations, the high total dissolved solids (TDS) concentration was 7,300 milligrams per liter (mg/L); the low was 56 mg/L, with a median value of 640 mg/L.

C. Based on Stone, et al. (Figure 28, sheet 5), groundwater in the Ojo Alamo flows to the north in the vicinity of the proposed site.

D. At this time no wells exist within one mile of the facility and no chemical analysis is available. New Mexico State Engineers Office records were searched and two well permits were on record in T25N, R12W Sections 1 and 13. Copies of these records are included in Appendix C.

Geologic Description of the Land farm Site

A. According to "Soil Survey of San Juan County New Mexico, Eastern Part", United States Soil Conservation Service, the surficial soils at the site are identified as the Shiprock-Sheppard-Doak soils; deep, nearly level to moderately steep, well drained to somewhat excessively drained soils that formed in alluvial and eolian material on uplands.

Stone, et al.'s hydrogeologic map indicates the Tertiary Nacimiento Formation immediately beneath the soil throughout section 16 where the land farm is to be located. Stone. et al. describe the lower part of the Nacimiento formation as being characterized by interbedded black, carbonaceous mudstones and white, coarse-grained sandstones; and the upper part of the Formation as somber beds of mudstone and sandstone. Immediately beneath the Nacimiento Formation, less than 200 feet, is the Tertiary Ojo Alamo Sandstone. Stone et al. describe the Ojo Alamo sandstone as a sequence of sandstone, conglomeratic sandstone and shale.

B. The Ojo Alamo is the first aquifer located beneath the site. The top of the Ojo Alamo may be less than 200 feet beneath ground surface at the facility. According to Stone, et al., the Ojo Alamo ranges in thickness from 72 to 313 feet.

12. Attach proof that the notice requirements of NMOCD Rule 711 have been met.

Once the receipts from the certified mailings have been received they will be forwarded to the NMOCD

13. Attach a contingency plan in the event of a release of H2S.

Because no liquids will be stored at the facility, Giant does not anticipate the release of hydrogen sulfide (H_2S). There are no enclosures that would serve to collect and concentrate H_2S produced from materials being landfarmed. During unloading and landfarming operations, a H_2S alarm will be used to ensure personnel protection. A site health and safety plan will be prepared in compliance with Occupational Health and Safety Act (OSHA) to protect site workers.

14. Attach such other information as necessary to demonstrate compliance with any other NMOCD rules, regulations and orders. ***NONE ATTACHED.***

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

Name: Jim Kenney Title: General Manager

Date: October 8, 1997

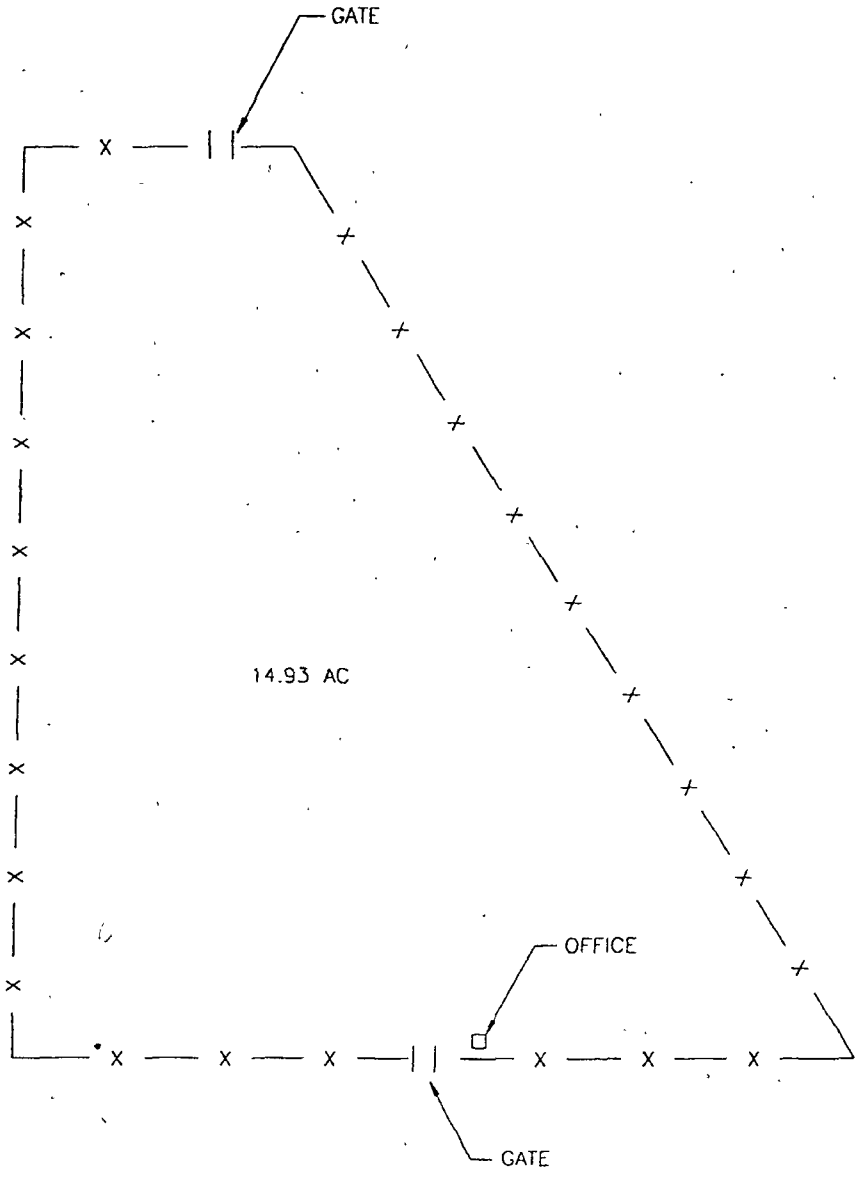
J:\16958\GIAAPP.DOC

ATTACHMENT A: LARGE SCALE TOPOGRAPHIC MAP

ATTACHMENT A: LARGE SCALE TOPOGRAPHIC MAP

ATTACHMENT A: LARGE SCALE TOPOGRAPHIC MAP

FIGURE 1A: GIANT LAND FARM



N

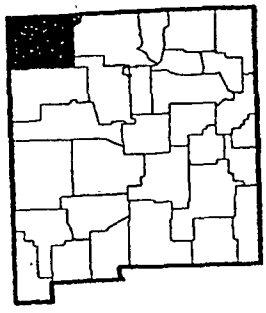
0 100 200
FEET

PHILIP SERVICES CORP	TITLE: T25N, R12W SECTION 16 GIANT LAND FARM 15 ACRE FENCED PORTION	DWN: CDJ	DES: MN	PROJECT NO: 16955 GIANT LAND FARM CARSON TRADING POST
		CHKD: MN	APPD:	
		DATE: 9/30/97	REV: A	FIGURE 1A

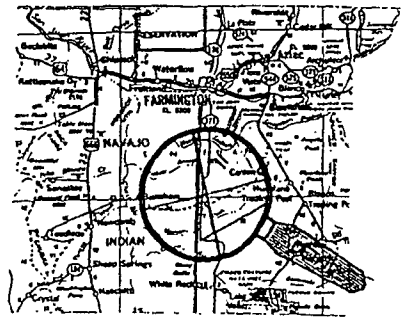
COL 169588-001

FIGURE 1B: PROPOSED LAND FARM LOCATION

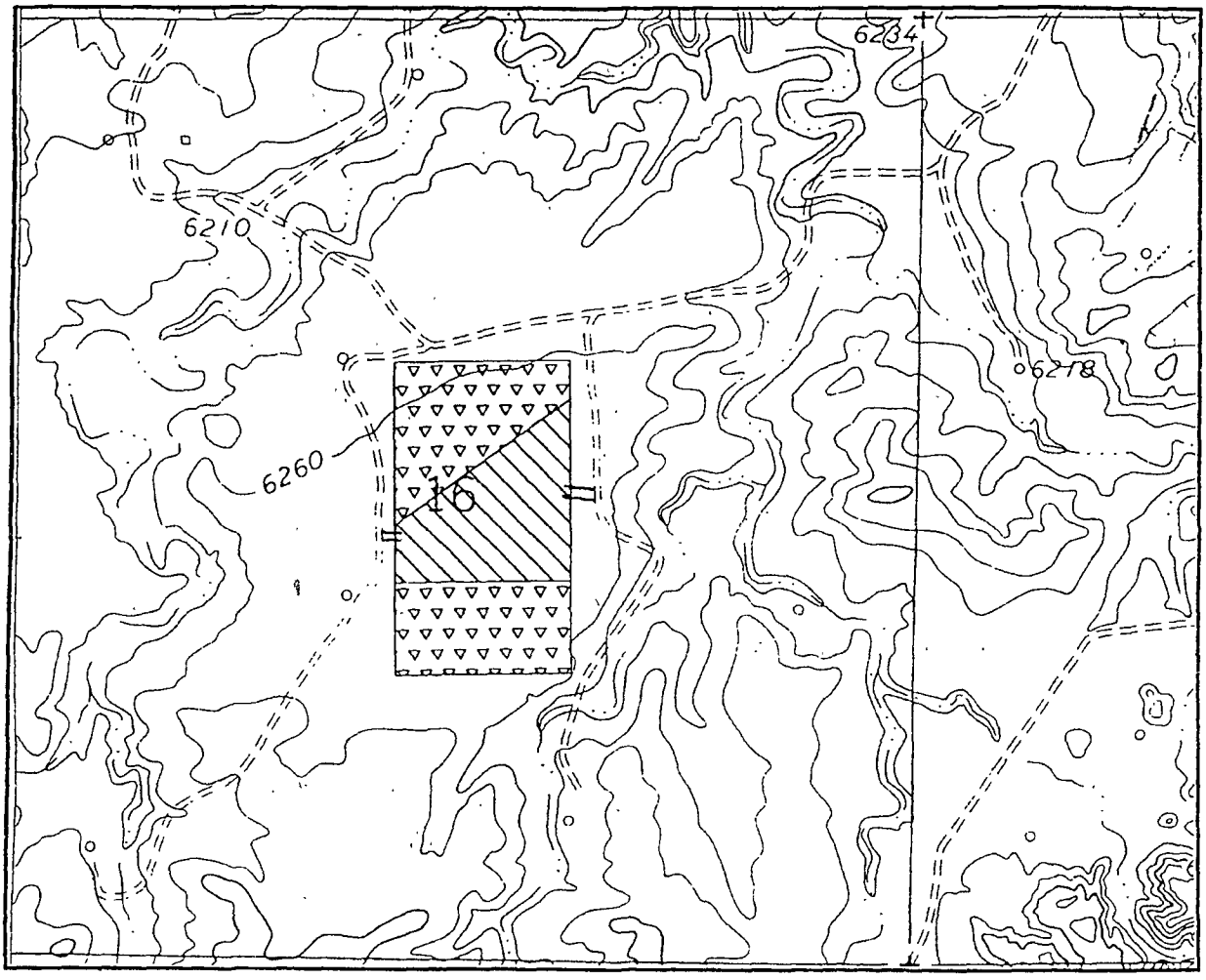
NEW MEXICO



SAN JUAN COUNTY



AREA OF DETAIL



Modified from U.S. Geological Survey. Carson Trading Post. New Mexico quadrangle Photorevised 1978

LEGEND

15 ACRES FENCED, ACTIVE

25 ACRES NOT FENCED, NOT ACTIVE

SCALE IS VARIABLE

PHILIP SERVICES CORP

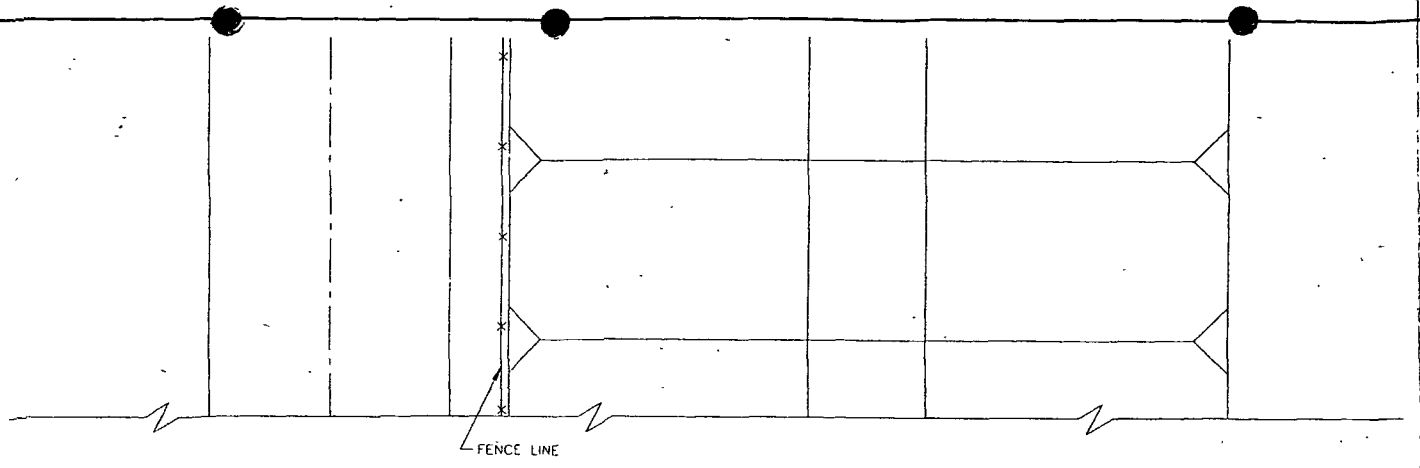
TITLE:

SITE LOCATION MAP
LAND FARM LOCATION

DWN.	DES.	PROJECT NO: 16958
TMM	MN	CARSON TRADING POST NEW MEXICO
CHKD.	APPD	
MN	MN	
DATE:	REV.	FIGURE 1B
10/1/97	0	

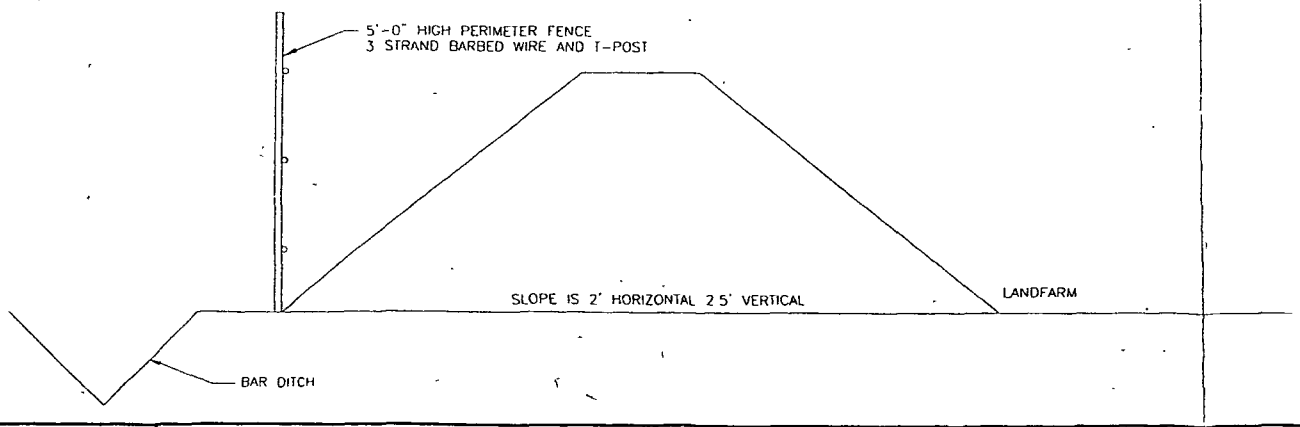
COL. 16958C-001

FIGURE 1C: BERM DETAILS



TOP

SIDE



NOT TO SCALE

PHILIP SERVICES CORP

TITLE

BERM DETAILS
GIANT LAND FARM

DWN: COJ	DES: MN	PROJECT NO: 16958	GIANT LAND FARM CARSON TRADING POST
CHKD: MN	APPD:		
DATE: 9/30/97	REV: A		FIGURE 1C

COL: 16958A-001

APPENDIX A: LANDOWNERS WITHIN ONE MILE

Landowners of Record within One Mile of Landfarm Site

Indian Allotted Land

Gleason, Allen
4715 Gila
Farmington NM 87401

George, Sam
General Delivery
Bloomfield NM 87413

Begay, Imogene
P. O. Box 981
Kirtland NM 87417

Begay, Lavena
P. O. Box 981
Kirtland NM 87417

Begay, Alroy Roger
C/o Minnie Low Begay
P. O. Box 981
Kirtland NM 87417

Begay, Evelyn
C/o Minnie Low Begay
P. O. Box 981
Kirtland NM 87417

Begay, Melissa
C/o Minnie Low Begay
P. O. Box 981
Kirtland NM 87417

George, Melvin
P. O. Box 1262
Cuba NM 8701

I Ni Pah, Joan
Box 2154
Bloomfield NM 87413

Jackson, Anthony Dal-Roy
C/o Frank Jackson (guardian)
817 Nicklaus Dr.
Rio Rancho NM 87124

Jackson, Everett Michael
C/o Frank Jackson (guardian)
817 Nicklaus Dr.
Rio Rancho NM 87124

Charley, Dorothy Ann
2435 19th Ave.
San Francisco CA 94116

Charley, Dorothy Anna
2435 19th Ave.
San Francisco CA 94116

Valdez, Dorothy Ann
2435 19th Ave.
San Francisco CA 94116

Charley, Kenneth B.
2435 19th Ave.
San Francisco CA 94116

Charley, Kenneth
2435 19th Ave.
San Francisco CA 94116

Federal Land
Bureau of Land Management
1235 La Plata Highway
Farmington, New Mexico 87401

Bureau of Indian Affairs Trust Land
Bureau of Indian Affairs
Shiprock Agency
PO Box 966
Shiprock, New Mexico 87420

Private Land
C.L. Crowder Investment Co.
508 Wellesley SE
Albuquerque, NM 87106

APPENDIX B:

FACILITY CONSTRUCTION/OPERATION & WASTE CLASSIFICATION

coordinates or latitude/longitude on unsurveyed land. Submit a large scale topographic map, site plan, or detailed aerial photograph for use in conjunction with the written material. Include on the map the appropriate highways or roads giving access to the facility.

IV. EXPANSION REQUEST
If the application is for an expansion of an existing facility, include the original OCD order or approval authorization for the facility.

V. LAND & OWNERSHIP
List the name and address of the landowner of the landfarm and all landowners of record within one-half mile of the site. Include a topographic map, plot map or aerial photograph delineating ownership boundaries. Include on the map all private residences within one mile of the proposed facility.

Note: see Part XII. of application for Proof of Notice.

VI. FACILITY DESCRIPTION
Attach a description of the facility with a diagram indicating the location of the following:
1. Roads, fences, gates, berms, ditches, and proposed cells.

2. All pipelines crossing the facility, including owner, contents, depth and size of the pipeline(s).
3. Actual or proposed offices and/or storage buildings.

4. Chemical storage areas indicating the type of storage containers (ie. drums, sacks, tanks, etc.).

5. All tanks indicating whether they are above ground or below ground and saddle or vertical.

6. Any on-site storage/disposal facilities for wastes other than contaminated soils to be landfarmed (ie. waste oil, washbay sumps, etc.).

VII. FACILITY CONSTRUCTION/OPERATION & WASTE CLASSIFICATION

A. Facility Construction - The following items should be addressed when designing the facility:

1. Location: A landfarm facility shall not be located in any watercourse, lakebed, sink-hole, or other depression. Facilities located adjacent to any such watercourses or depression shall be located safely above the high water level of such watercourse or depression. In addition, facilities located adjacent to any watercourses shall include a storm water runoff plan.

2. Fences & Signs: The facility shall be fenced and have a sign at the entrance. The sign shall 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.

3. Facility Buffer Zone: No contaminated soils should be placed within one hundred (100) feet of the boundary of the facility unless it can be demonstrated that a smaller buffer zone will not adversely impact the adjacent properties.

4. Pipeline Buffer Zone: No contaminated soils should be placed within twenty (20) feet of any pipelines crossing the landfarm. In addition, no

equipment should be operated within ten (10) feet of a pipeline. All pipelines crossing the facility should have surface markers identifying the location of the pipelines.

5. Facility Berming: The portion of the facility containing contaminated soils shall be bermed to prevent runoff and runon. A berm should be constructed and maintained such that it capable of containing precipitation from a one-hundred year flood for that specific region.
6. Treatment Zone Monitoring: Because a landfarm is designed to remediate contaminated soils and not transfer contaminants into the underlying native soil and/or groundwater, the applicant shall submit a plan to detect leaching of contaminants. If the native ground surface has a minimum of three feet of uncemented material (ie. soil) then a treatment zone monitoring program may be incorporated into the facility design to ensure contaminants are not leaching into the native soil/groundwater. The following procedures should be used to monitor a treatment zone not to exceed three (3) feet beneath the landfarm:

a. One (1) background soil sample should be taken from the center portion of the landfarm two (2) feet below the native ground surface prior to operation. The sample should be analyzed for total petroleum hydrocarbons (TPH), major cations/anions, volatile aromatic organics (BTEX), and heavy metals using approved EPA methods.

b. A treatment zone not to exceed three (3) feet beneath the land farm should be monitored. A minimum of one random soil sample should 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 in the cell and then quarterly thereafter. The sample should be taken at two to three (2-3) feet below the native ground surface.

c. The soil samples should be analyzed using approved EPA methods for TPH and BTEX quarterly, and for major cations/anions and heavy metals annually.

d. After obtaining the soil samples the boreholes should be filled with an impermeable material such as cement.

e. Analytical results from the treatment zone monitoring should be submitted to the OCD Santa Fe Office for review on a regular schedule to be proposed by the applicant.

7. Double-Lined System: If the native ground surface is composed of resistant cemented materials which make it infeasible to sample a treatment zone then another method shall be proposed to guarantee that contaminants do not leach into the underlying soils and/or groundwater. This may be accomplished by installing a double-lined system with leak detection in accordance with the OCD "Engineering Design Guidelines for Construction of Waste Storage/Disposal Ponds (10/90)H. In addition, the facility shall be constructed so that the primary liner will not be ripped or punctured when the contaminated soils are disked.
B. Facility Operation - The Director shall consider, but is not limited to, the following operating procedures for commercial and centralized landfarms. The purpose of specific operating requirements is so that operation of a landfarm will not adversely impact ground water, surface water, public health or the environment.

1. Disposal shall only occur when an attendant is on duty. The facility shall be secured when no attendant is present.

2. All contaminated soils received at the facility should be spread and disked within 72 hours of receipt.

3. Soils should be spread on the surface in six inch lifts or less unless the applicant can demonstrate that the equipment will adequately disk a thicker lift.

4. Soils should be disked a minimum of one time every two weeks (biweekly) to enhance biodegradation of contaminants.

5. Exempt contaminated soils should be placed in the landfarm so that they are physically separate (ie. bermed) from nonexempt contaminated soils. There should be no mixing of exempt and nonexempt soils.

6. Successive lifts of contaminated soils should 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 shall be maintained at the facility. Authorization from the OCD shall be obtained prior to application of successive lifts.

7. Moisture should be added as necessary to enhance bioremediation and to control blowing dust. There shall be no ponding, pooling or run-off of water allowed. Any ponding of precipitation should be removed within seventy-two (72) hours of discovery.

8. Enhanced bio-remediation through the application of microbes (bugs) and/or fertilizers shall only be permitted after prior approval from the OCD. Request for application of microbes should include the location of the area designated for the bio-remediation program, composition of additives, and the method, amount and frequency of application.

9. No free liquids or soils with free liquids shall be accepted at the facility.

10. Comprehensive records of all material disposed of at the facility shall be maintained at the facility. The records for each load will include: 1) the generator, 2) the origin, 3) date received, 4) quantity, 5) Certification of exempt status or analysis for hazardous constituents if non-exempt, 6) transporter, and 7) exact cell location and any addition of microbes, moisture, fertilizers, etc.

C. Characterization & Tracking of Wastes - The operator of a landfarm must be able to distinguish between those oilfield contaminated solids which are exempt from RCRA Subtitle C (hazardous waste) regulations and those which are subject to the RCRA Subtitle C regulations. To aid the landfarm applicant in making those determinations and therefore prohibiting hazardous waste from entering the facility, all OCD permitted landfarms should operate under the following conditions:

1. The facility should be authorized to accept only:

a. Oilfield contaminated solids which are exempt from RCRA Subtitle C regulations. These wastes should be accompanied by a "Certification of Waste Status" from the generator.

b. "Non-hazardous" non-exempt oilfield contaminated solids from OCD permitted facilities on a case-by-case basis after conducting an analysis tor hazardous characteristics and receiving OCD approval. 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 the generator that there has been no change in the processes employed or the chemicals stored/used at the facility generating the waste.

C. Other non-oilfield contaminated solids which are RCRA Subtitle C exempt or non-hazardous by characteristic testing, if requested by another regulatory agency on an emergency basis as the waste poses an eminent danger to public health. The wastes should be accompanied by a "Verification of Waste Status" demonstrating the exempt or non-hazardous classification of the solids and signed by the appropriate regulatory agency. OCD approval shall be obtained prior to accepting the wastes.

2. At no time will any OCD permitted landfarms accept wastes which are hazardous by either testing or listing.
3. All loads received at the facility will be accompanied by the following:

a. A "Certification of Waste Status" signed by the waste generator or a "Verification of Waste Status" issued by the New Mexico Environment Department (NMED) or the appropriate agency from antoher state tor wastes regulated by that agency. The state agency verification is based on specific information on the subject waste submitted by the generator and demonstrating the exempt or non-hazardous classification of the waste.

b. The analytical results of Hazardous Waste Characterization for non-exempt waste including 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.

4. The transporter of all wastes to the facility will supply a certification that wastes delivered are those wastes received from the generator and that no additional materials have been added.

VIII. SPILL/LEAK PREVENTION & REPORTING (CONTINGENCY PLANS)

A. The disposal application shall contain a contingency plan that anticipates where any leaks/spill might occur. It should describe how the applicant proposes to guard against such accidents and detect them when they have occurred.

B. The contingency plan shall describe the steps proposed to contain and remove the spilled substance or mitigate the damage caused by the discharge such that ground water is protected, or movement into surface waters is prevented.

C. The disposal application shall describe how any ponding, pooling or runon of precipitation will be removed from the landfarm and where itS final disposition will be.

APPENDIX C: STATE ENGINEER'S WELL RECORDS

IMPORTANT — READ INSTRUCTIONS ON BACK BEFORE FILLING OUT THIS FORM

Declaration of Owner of Underground Water Right

HC-7B6-A

~~25247~~ SJ-79

Declaration No. ~~Misc. 1-NJ-47~~ Book _____ Date received 7/18/57

I, _____ being first duly sworn upon my oath, depose and say that the following is a full and complete statement prepared in accordance with the instructions on the reverse side of this form and submitted in evidence of ownership of a valid underground water right, that I have carefully read each and all of the items contained therein and that the same are true to the best of my knowledge and belief.

R. R. Robison, declarant.

R. R. Robison, Division Production Manager, Shell Oil Company

Subscribed and sworn to before me this 12th day of July, A.D. 1957

My commission expires 6-12-60

Notary Public

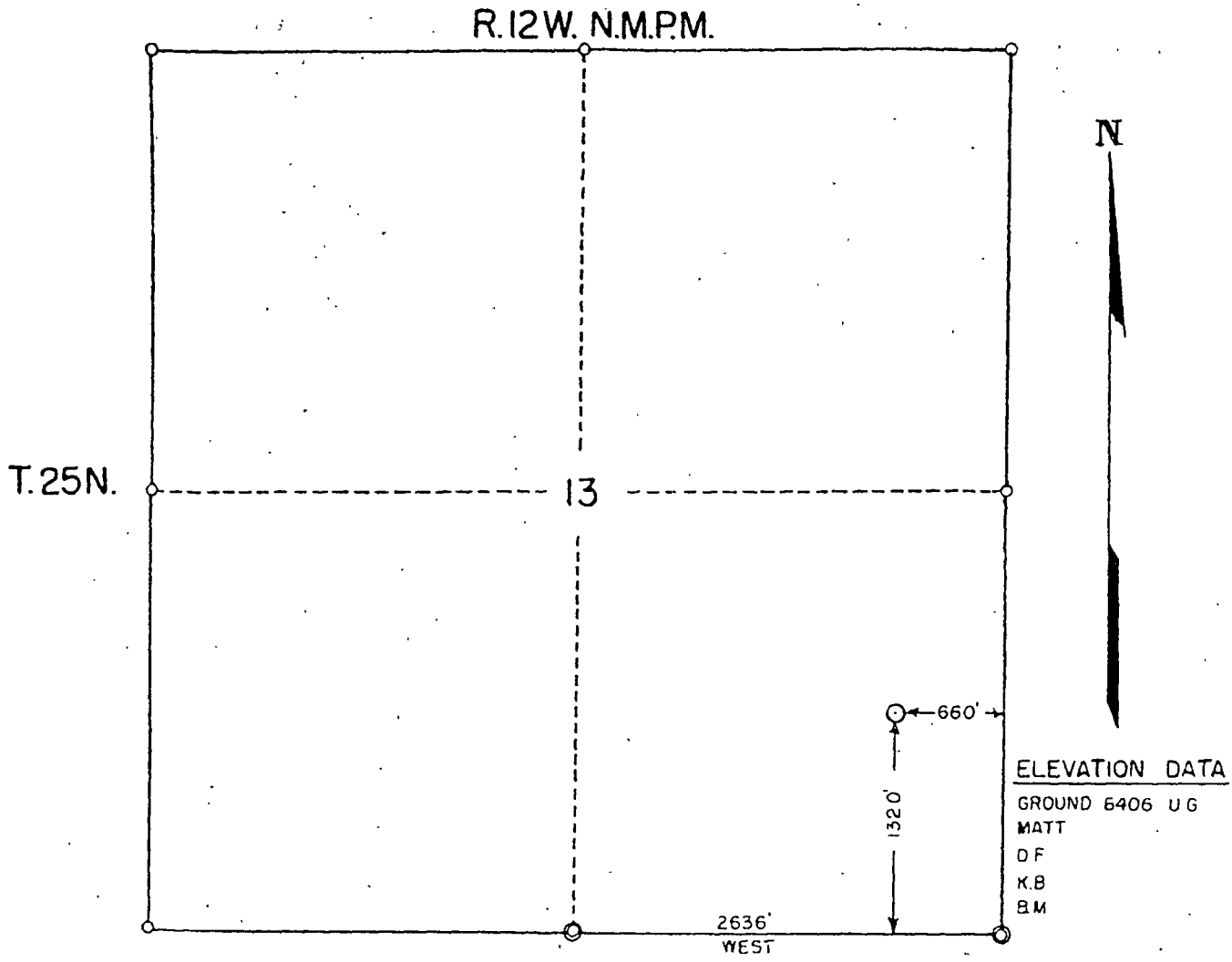
STATEMENT

1. Name of water right owner Shell Oil Company
   of 1008 W. 6th St., Los Angeles, California
   County of Los Angeles, State of California
2. Source of water supply Shallow water basin
   (state whether artesian or shallow water basin)
   located in Cliff House and Allison - Menefee - San Juan Basin
   (name of underground stream, valley, artesian basin, etc.)
3. The well is located in the (See attached plat) ¼, SE ¼
   of section 13, Township 25N, Range 12W, N.M.P.M.
   on land owned by U.S. Government
4. Description of well: date drilled 3-27-57 driller New Drilling Co. depth 2550 feet.
   diameter (outside) of casing 8-5/8" inches; original ~~flow~~ pump 30 gal. per min.;
   present ~~flow~~ pump 30 gal. per min.; maximum pumping lift - feet;
   make and type of pump Lufkin Mdl C-114 DA-54-14
   make, type, horsepower, etc., of power plant Le Roi, A 288, Single cylinder 18.6 HP, RPM 770
   Fractional or percentage interest claimed in well 100%
5. Quantity of water appropriated and beneficially used _____ (feet depth or acre feet per acre)
   for the drilling and production operations of oil wells purposes.
6. Acreage actually irrigated and with water right _____ acres,
   located and described as follows (describe only lands actually irrigated):

Subdivision	Sec.	Twp.	Range	Acres Irrigated	Owner

(Note: location of well and acreage actually irrigated must be shown on plat on reverse side.)

7. Water was first applied to beneficial use 4-1-57 and since that time has been used fully and continuously on all of the above described lands or for the above described purposes except as follows: _____
8. Additional statements or explanations 8-5/8" casing (combination string) set at 2541', slotted intervals 2541-2267, 2187-2096, 2001-1956. Cemented at 1927' with 50 sacks pozzo mix. Tubing (3") set at 1908'. Producing interval 1927-2550.



ELEVATION DATA

GROUND 6406 U G
MATT
D F
K.B
B.M

REFERENCE POINT DATUM—

◎ = G.L.O. BRASS CAP FOUND

1"x2" hub and 4' flag set at Loc. being 1320' N. & 660' W. of the SE. Cor. of Sec. 13, T.25N., R.12W. N.M.P.M. Contractor grading at time of staking and no check angle was observed.

This is to certify that the above plat was prepared from field notes of an actual survey made by me on March 21, 1957, and that the same is true and correct to the best of my knowledge and belief.

April 2, 1957

John A. Kroeger

John A. Kroeger / Reg. L.S.
N.M. Reg. No. 1941

Drawn By: A.C.T.	SHELL OIL COMPANY	Scale 1" = 1000'
Checked By: JAK		
Date: 4-2-57		

LOCATION OF CARSON UNIT WATER WELL NO. 1

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

SCHLUMBERGER

Electrical Log

COUNTY SAN JUAN, N.M.
FIELD or LOCATION BISTI GALLUP
WELL BISTI WATER WELL #1
COMPANY SHELL OIL COMPANY

COMPANY SHELL OIL COMPANY

WELL BISTI WATER WELL #1

FIELD BISTI GALLUP

LOCATION SEC. 13-25N-12W

COUNTY SAN JUAN

STATE NEW MEXICO

Other Surveys
NONE

Location of Well
1320' N & 660' W of SE CORNER SEC. 13-25N-12W

Elevation: D.F.: 6412'
K.B.:
or G.L.: 6400'

FILING No. S20-020

RUN No.	ONE				
Date	3-31-57				
First Reading	2542				
Last Reading	92				
Feet Measured	2450				
Csg. Schlum.	--				
Csg. Driller	56				
Depth Reached	2543				
Bottom Driller	2550				
Depth Datum	KB				
Mud Nat.	GEL				
Dens. | Visc.	9.7 | 37				
Mud Resist.	3.0 @ 70 °F	@ °F	@ °F	@ °F	@ °F
" Res. BHT	2.2 @ 96 °F	@ °F	@ °F	@ °F	@ °F
Rmf	-- @ °F	@ °F	@ °F	@ °F	@ °F
Rmc	-- @ °F	@ °F	@ °F	@ °F	@ °F
" pH	-- @ °F	@ °F	@ °F	@ °F	@ °F
" Wtr. Loss	-- CC 30 min.	CC 30 min.	CC 30 min	CC 30 min.	CC 30 min.
Bit Size	10 5/8"				
Spcgs.—AM	16"				
A M	64"				
AO	18' 8"				
Opr. Rig Time	1 HR				
Truck No.	1786FARM				
Recorded By	NEVITT				
Witness	AUBERT				

FOLD HERE

REMARKS MUD FROM FLOW LINE

FLUID LEVEL AT 92'

SJ-1716

25N.12W.1.320

Form 4–1209
(August 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PROJECT COMPLETION REPORT

CODE	NAME	CODE	NAME
1–2	State	7–8	County
30	New Mexico	24	San Juan
3–4	District	9–10	Sub-basin
07	Farmington	64	San Juan River
5–6	Fiscal Year	11–12	Community Watershed
64	1964	03	West San Juan

16 Project No.	17 CTI RM	19 Program	23 Practice	29 Units	Project Expenditures: 36 Soil & Moisture	41 Weed Control	46 Range Improvements
3 2 4	1	3 3	4 1 0 0	1	5 0		8 1 4 0

Project Expenditures: 50 Other BLM	56 Watershed Protection	60 Contribution	Seeding: 61 Plant Contl	62 Appn.	63 Spp.	65 Gully Contl	Water Development: 67 Stockwater Reservoir	69 New Water	Flood Control Dam: 72 Permanent Storage	75 Sediment Storage	79 Flood Storage
								3			

Project Name	Permittee Name		
Carson No. 1 Well	N.A.		
Program	**Plant Control Method**	**SEEDING**	**Unit of Measurement**
Range Improvement A,P,W.	N.A.	APPLICATION: N.A. / SPECIES: N.A.	Each

DATE				Name of Owner
PERMIT ISSUED	STARTED	COMPLETED	OF EASEMENT	
N.A.	6-20-63	2-5-64	N.A.	N.A.

Land Status [X] BLM [ ] Other Federal [ ] State [ ] County [ ] Private

Cooperative Agreement	Date	Maintenance Responsibility of	Date sent to W.O. for recording
[ ] Yes [X] No	N.A.	Bureau of Land Management	8-6-64

State Water Certificate No.	DATE: RECORDED	PROJECT MARKER PLACED	ABANDONED	ABANDONMENT REPORTED TO W.O.
N.A.	N.A.	2-7-64		

STATUS 8-12-64
4-1210 8-16-64
MAP 9-8-64

Completed Project Description

a. Drilled depth - 403 ft.
b. Normal static water level - 210 ft.
c. Casing length - 405 ft. diameter of casing 6-5/8 inch o.d.
d. Flow during baling - 40 g.p.m., drawdown 165 ft.
e. Pump - plunger type, power - 14 ft. aermotor, discharge 110 g.p.h., diam. of cylinder - 1-7/8 ", depth to cylinder - 273 ft.
f. Storage - round, galvanized steel, open top tank, with a concrete base, height 8 ft., diameter 12'4", capacity 6,838 gal.
g. Troughs - 3 round, painted steel rim, with concrete base, 6 ft. diameter, 15 inches high, capacity 69 gal. each.

orm 9-1475
(Aug. 1961)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

State New Mexico County San Juan

xxx Driller's log

Location NE¼Sa¼ sec. 1 T. 25 N R. 13W

☐ Sample log

Name of well Carson #1

W. R. West Drilling Company

LOG OF WELL San Juan Co. Unit #4

14-11-0003-1279

Depth (feet) From	Depth (feet) To	Cuttings sample number	Description of materials drilled: Type of rock	Color	Other characteristics (Grain size, hardness, etc.)	Water yield (gpm)	Remarks (Quality of water, ease of drilling, caving, loss of drilling fluid, etc.)
0	52		Overburden	Brown			
	100		Shale	Gray			
100	105		"	Gray-Brown			
105	110		Sdy Shale	Dark Gray			Jumped box odd stem 6ed. 6-27-63
110	115		"	"			recovered bit Thurs. 6-2 -63
115	125		"	Light gray	Bent. Type		
125	170		Shale	Gray			
170	175		Shale	Light gray	Bantonite		Mon. 7-1-63 lost bit
175	200		Shale	Gray			Tues. 7-2-63 recovered bit
200	225		Shale	Light Gray	Bantonite		Start including sand at 225 ft
225	250		Sand	White	coarse grained		Encountered water at 225 ft
250	260		"	"	thin grained		
260	280		"	"	coarse grained		
280	300		"	"	Sandy shale		
300	310		Shale	Dark			
310	330		Shale	Blue			
330	340		Shale	White			
340	350		Shale	Blue			
350	360		Shale	Dark			

Appendix B: Historical Sampling Results

Bisti Land Farm Analytical Data

API Cell

	Baseline Sample	2004 Annual	2004 2nd Quarter	2004 3rd Quarter	2004 4th Quarter
	27-Mar-98	30-Mar-04	15-Jun-04	30-Sep-04	14-Dec-04
TPH (mg/kg)				47	
GRO		<10	<10	<10	
DRO	<50	<10	<10	23	
MRO		<10	<10	24	
BTEX (mg/kg)					
Benzene	<0.05	<0.025	<0.050	<0.025	<0.025
Toluene	<0.05	<0.025	<0.050	<0.025	<0.025
Ethyl-Benzene	<0.05	<0.025	<0.050	<0.025	<0.025
Xylenes	<0.05	<0.050	<0.10	<0.050	<0.050
Metals (mg/kg)					
Arsenic	2.8				
Barium	180				
Cadmium	<1.3				
Calcium	2500				
Chromium	<5.0				
Lead	6.8				
Magnesium	1300				
Potassium	810				
Selenium	<2.5				
Silver	<1.3				
Sodium	90				
Mercury	<0.50				
Gen Chem					
Alkalinity (meq/l)		1900			
Bicarbonate (meq/l)	110	<21			
Carbonate (meq/l)	26	100			
Sulfate (mg/kg)	140	830			
Chloride (mg/kg)	<50	570			

Bisti Land Farm Analytical Data

API Cell

	Baseline Sample	2005 Annual	2005 2nd Quarter	2005 3rd Quarter	2005 4th Quarter	2006 Annual	2006 2nd Quarter	2006 3rd Quarter	2006 4th Quarter
	27-Mar-98	29-Mar-05	27-Jun-05	30-Sep-05	20-Dec-05	31-Mar-06	18-Jul-06	29-Sep-06	21-Dec-06
TPH (mg/kg)								13	
GRO		<10	<10	<10		<10		<10	<10
DRO	<50	<10	<10	<10		<10		13	<10
MRO		<10	<10	<10		<10		<20	<10
BTEX (mg/kg)									
Benzene	<0.05	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Toluene	<0.05	<0.025	<0.025	<0.025	<0.025	<0.050	<0.025	<0.025	<0.025
Ethyl-Benzene	<0.05	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Xylenes	<0.05	<0.050	<0.050	<0.050	<0.050	<0.10	<0.010	<0.010	<0.10
Metals (mg/kg)									
Arsenic	2.8	1.8				0.956			
Barium	180	90				63.9			
Cadmium	<1.3	<0.50				0.100U			
Calcium	2500	4300				731			
Chromium	<5.0	2.6				1.98			
Lead	6.8	3.4				3.51			
Magnesium	1300	1000				734			
Potassium	810	630				460			
Selenium	<2.5	<1.0				0.200U			
Silver	<1.3	<0.50				0.0500U			
Sodium	90	<100				207			
Mercury	<0.50	<0.0084				0.0391			
Gen Chem									
Alkalinity (meq/l)		600				451			
Bicarbonate (meq/l)	110	580				441			
Carbonate (meq/l)	26	23				299			
Sulfate (mg/kg)	140	<110				20.8I			
Chloride (mg/kg)	<50	120				143			

Bisti Land Farm Analytical Data

API Cell

	Baseline Sample	2007 Annual	2007 2nd Quarter	2007 3rd Quarter	2007 4th Quarter	2008 Annual	2008 2nd Quarter	2008 3rd Quarter	2008 4th Quarter
	27-Mar-98	30-Mar-07	28-Jun-07	28-Sep-07	29-Dec-07	11-Mar-08	16-Jun-08	29-Sep-08	30-Dec-08
TPH (mg/kg)		nd				31			
GRO		nd	<10	<10	<10	31	<2.5	<5.0	<5.0
DRO	<50	nd	<10	<10		<10		<10	<10
MRO		nd	<10	<10		<10		<50	<50
BTEX (mg/kg)		nd				0.686			
Benzene	<0.05	nd	<0.025	<0.025	<0.025	<0.025	<0.025	<0.050	<0.050
Toluene	<0.05	nd	<0.025	<0.025	<0.025	0.064	<0.025	<0.050	<0.050
Ethyl-Benzene	<0.05	nd	<0.025	<0.025	<0.025	0.082	<0.025	<0.050	<0.050
Xylenes	<0.05	nd	<0.10	<0.10	<0.10	0.54	<0.10	<0.10	<0.10
Metals (mg/kg)									
Arsenic	2.8	0.187				2.5			
Barium	180	47.1				130			
Cadmium	<1.3	nd				<0.44			
Calcium	2500	2690				7300			
Chromium	<5.0	0.305				4.4			
Lead	6.8	0.477				4.1			
Magnesium	1300	863				1800			
Potassium	810	729				1300			
Selenium	<2.5	nd				<0.88			
Silver	<1.3	nd				<0.44			
Sodium	90	66.2				150			
Mercury	<0.50	nd				<0.0083			
Gen Chem									
Alkalinity (meq/l)		54.4				3500			
Bicarbonate (meq/l)	110	49.4				2900			
Carbonate (meq/l)	26	4.52				540			
Sulfate (mg/kg)	140	81.7				<100			
Chloride (mg/kg)	<50	nd				660	180	37	68

Bisti Land Farm Analytical Data

API Cell

	Baseline Sample	2009 Annual	2009 2nd Quarter	2009 3rd Quarter	2009 4th Quarter
	27-Mar-98	6-Mar-09	17-Jun-09	29-Sep-09	4-Dec-09
TPH (mg/kg)					
GRO		<5.0	<5.0	<5.0	<10
DRO	<50	<10	<10	<10	<50
MRO		<50	<50	<50	<5.0
BTEX (mg/kg)					
Benzene	<0.05	<0.050	<0.050	<0.050	<0.050
Toluene	<0.05	<0.050	<0.050	<0.050	<0.050
Ethyl-Benzene	<0.05	<0.050	<0.050	<0.050	<0.050
Xylenes	<0.05	<0.10	<0.10	<0.10	<0.10
Metals (mg/kg)					
Arsenic	2.8	<13			
Barium	180	81			
Cadmium	<1.3	<0.50			
Calcium	2500	740			
Chromium	<5.0	2.9			
Lead	6.8	3.5			
Magnesium	1300	830			
Potassium	810	680			
Selenium	<2.5	<13			
Silver	<1.3	<1.3			
Sodium	90	3600			
Mercury	<0.50	<0.033			
Gen Chem					
Alkalinity (meq/l)		1.9			
Bicarbonate (meq/l)	110	1.9			
Carbonate (meq/l)	26	<0.10			
Sulfate (mg/kg)	140	1600			
Chloride (mg/kg)	<50	4100	67	95	20

Bisti Landfarm Analytical Data

Crude Cell

	Baseline Sample	2004 Annual	2004 2nd Quarter	2004 3rd Quarter	2004 4th Quarter	2005 Annual	2005 2nd Quarter	2005 3rd Quarter	2005 4th Quarter
	27-Mar-98	30-Mar-04	15-Jun-04	30-Sep-04	14-Dec-04	29-Mar-05	27-Jun-05	30-Sep-05	20-Dec-05
		West Line	West Line	West Line	West Line	West Line	West Line	West Line	West Line
TPH (mg/kg)									
GRO		<10	<10	<10		<10	<10	<10	
DRO	<50	<10	<10	<10		<10	<10	<10	
MRO		<10	<10	<10		<10	<10	<10	
BTEX (mg/kg)									
Benzene	<0.05	<0.025	<0.050	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Toluene	<0.05	<0.025	<0.050	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Ethyl-Benzene	<0.05	<0.025	<0.050	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Xylenes	<0.05	<0.050	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Metals (mg/kg)									
Arsenic	2.8	2.6				1.8			
Barium	180	78				200			
Cadmium	<1.3	<0.51				<.034			
Calcium	2500	2500				5100			
Chromium	<5.0	3.5				2.5			
Lead	6.8	4.3				3.3			
Magnesium	1300	1100				1100			
Potassium	810	690				630			
Selenium	<2.5	<1.0				<0.69			
Silver	<1.3	<0.51				<0.34			
Sodium	90	180				<69			
Mercury (mg/kg)	<0.50	<0.0085				<0.0080			
Gen Chem									
Alkalinity (mg/kg)		870				620			
Bicarbonate (meq/l)	110	820				600			
Carbonate (meq/l)	26	48				<20			
Sulfate (mg/kg)	140	860				<100			
Chloride (mg/kg)	<50	310				<41			

Bisti Landfarm Analytical Data

Crude Cell

	Baseline Sample	2006 Annual		2006 2nd Quarter	2006 3rd Quarter	2006 4th Quarter	2007 Annual	2007 2nd Quarter	2007 3rd Quarter	2007 4th Quarter
	27-Mar-98	31-Mar-06	31-Mar-06	18-Jul-06	29-Sep-06	29-Dec-06	30-Mar-07	28-Jun-07	28-Sep-07	29-Dec-07
		West Line	Pettigrew	West Line	Crude	West Line		West Line	West Line	West Line
TPH (mg/kg)							nd			
GRO		<10	<10		<10	<10	nd	<10	<10	<10
DRO	<50	<10	<10		<10	<10	nd	<10	<10	
MRO		<10	<10		<20	<10	nd	<10	<10	
BTEX (mg/kg)							nd			
Benzene	<0.05	<0.025	<0.025	<0.025	<0.025	<0.025	nd	<0.025	<0.025	<0.025
Toluene	<0.05	0.1	<0.05	<0.025	<0.025	<0.025	nd	<0.025	<0.025	<0.025
Ethyl-Benzene	<0.05	0.062	<0.025	<0.025	<0.025	<0.025	nd	<0.025	<0.025	<0.025
Xylenes	<0.05	0.35	<0.10	<0.010	<0.010	<0.10	nd	<0.10	<0.10	<0.10
Metals (mg/kg)										
Arsenic	2.8	1.71	1.57				0.173			
Barium	180	78.1	105				14.8			
Cadmium	<1.3	0.100U	0.100U				nd			
Calcium	2500	2330	3240				3530			
Chromium	<5.0	2.12	1.75				0.248			
Lead	6.8	3.05	3.37				0.479			
Magnesium	1300	721	762				957			
Potassium	810	348	480				806			
Selenium	<2.5	0.200U	0.200U				nd			
Silver	<1.3	0.0500U	0.0500U				nd			
Sodium	90	50.0U	430				69.7			
Mercury (mg/kg)	<0.50	0.0528	0.0388				nd			
Gen Chem										
Alkalinity (mg/kg)		821	1500				791			
Bicarbonate (meq/l)	110	771	1430				731			
Carbonate (meq/l)	26	1860	2920				56.3			
Sulfate (mg/kg)	140	20.0U	163				68			
Chloride (mg/kg)	<50	43.4 I	2700				nd			

Bisti Landfarm Analytical Data

Crude Cell

	Baseline Sample	2008 Annual	2008 2nd Quarter	2008 3rd Quarter	2008 4th Quarter	2009 Annual	2009 2nd Quarter	2009 3rd Quarter	2009 4th Quarter
	27-Mar-98	11-Mar-08	16-Jun-08	29-Sep-08	30-Dec-08	6-Mar-09	17-Jun-09	29-Sep-09	4-Dec-09
		Crude	Crude	Crude	Crude	Crude	Crude	Crude	Crude
TPH (mg/kg)						520			
GRO		<10	<2.5	<5.0	<5.0	<5.0	<5.0	<10	<10
DRO	<50	<10		<10	<10	250	<10	<50	<50
MRO		<10		<50	<50	270	<50	<5.0	<5.0
BTEX (mg/kg)									
Benzene	<0.05	<0.025	<0.025	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	<0.05	<0.025	<0.025	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Ethyl-Benzene	<0.05	<0.025	<0.025	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Xylenes	<0.05	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Metals (mg/kg)									
Arsenic	2.8	1.9				<12			
Barium	180	140				96			
Cadmium	<1.3	<0.48				<0.50			
Calcium	2500	2800				4500			
Chromium	<5.0	3.7				4			
Lead	6.8	3.8				5.3			
Magnesium	1300	1200				1100			
Potassium	810	1100				640			
Selenium	<2.5	<0.96				<12			
Silver	<1.3	<0.48				<1.2			
Sodium	90	<96				<120			
Mercury (mg/kg)	<0.50	<0.0085				<0.033			
Gen Chem									
Alkalinity (mg/kg)		1200				1.8			
Bicarbonate (meq/l)	110	880				1.8			
Carbonate (meq/l)	26	280				<0.10			
Sulfate (mg/kg)	140	690				860			
Chloride (mg/kg)	<50	110	540	2.1	35	4.3	5.4	14	18

Bisti Land Farm Analytical Data

Inactive Cell

Sampled 9 Feb 04 - a 5 pt composite sample in the current "inactive area" in order to discontinue disking and possibly add subsequent lifts

	9-Feb-04
TPH (mg/kg)	
GRO	1.1
DRO	7
MRO	8.1
BTEX (mg/kg)	
Benzene	<.0018
Toluene	0.0305
Ethyl-Benzene	0.0187
Xylenes	0.287

Bisti Land Farm Analytical Data

Treatment Zone Sampling

10-Dec-08, Discrete samples from API and Crude Cells

	API Cell	Crude Cell (East Line)	Crude Cell (Bisti)	Crude Cell (West Line)
TPH (mg/kg)	59	700	4200	69
GRO				
DRO				
MRO				
BTEX (mg/kg)				
Benzene	<0.05	<0.05	<0.05	<0.05
Toluene	<0.05	<0.05	<0.05	<0.05
Ethyl-Benzene	<0.05	<0.05	<0.05	<0.05
Xylenes	<0.1	<0.1	<0.1	<0.1
Chloride (mg/kg)	820	7.9	15	3.4