

NM1 - 8

**GENERAL  
CORRESPONDENCE**

**YEAR(S):**

2007 - 2003

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

State of New Mexico  
Energy Minerals and Natural Resources

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

RECEIVED

NM-1-0008

Form C-141  
Revised October 10, 2003

Submit 2 Copies to appropriate  
District Office in accordance  
with Rule 116 on back  
side of form

MAR 16 2007

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

|                 |                                |               |                                  |
|-----------------|--------------------------------|---------------|----------------------------------|
| Name of Company | T-N-T ENVIRONMENTAL INC.       | Contact       | CRAIG SCHMITZ                    |
| Address         | 70 E. 4th St. LINCOLN NM 87029 | Telephone No. | 505-320-2130                     |
| Facility Name   | T-N-T DISPOSAL                 | Facility Type | PRODUCED WATER DISPOSAL FACILITY |
| Surface Owner   | T-N-T ENVIRO INC.              | Mineral Owner |                                  |
|                 |                                | Lease No.     |                                  |

LOCATION OF RELEASE

|             |         |          |       |               |                  |               |                |            |
|-------------|---------|----------|-------|---------------|------------------|---------------|----------------|------------|
| Unit Letter | Section | Township | Range | Feet from the | North/South Line | Feet from the | East/West Line | County     |
|             | 7       | 25-N     | 3-W   |               |                  |               |                | RIO ARriba |

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

NATURE OF RELEASE

|                             |                                                                                                           |                                           |             |                            |       |
|-----------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------|----------------------------|-------|
| Type of Release             | PRODUCED WATER SPILL                                                                                      | Volume of Release                         | 200-400 bbl | Volume Recovered           | 560   |
| Source of Release           | EVAPORATION POND #3                                                                                       | Date and Hour of Occurrence               | 7:00        | Date and Hour of Discovery | 7:30  |
| Was Immediate Notice Given? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required | If YES, To Whom?                          | 3-7-07      |                            | 38-07 |
| By Whom?                    | CRAIG SCHMITZ                                                                                             | Date and Hour                             |             |                            |       |
| Was a Watercourse Reached?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                                       | If YES, Volume Impacting the Watercourse. |             |                            |       |

If a Watercourse was Impacted, Describe Fully.\* A SMALL DRAINAGE LEADING TO OJITO ARRAYO  
APPROX. 1/4 MILE LONG W/ TWO PONDS A OJITO ARRAYO.

Describe Cause of Problem and Remedial Action Taken.\* AN OVERSIGHT BETWEEN THE TWO FACILITY OPERATORS  
DUE TO MISCOMMUNICATION, A TRANSFER LINE BETWEEN PIT #2 & #3 HAD BACK SIGNAGE  
AFTER DISCONNECTING LINE AT PIT #2 WITH A FREE VALVE LEFT OPEN.  
ISOLATED POND AND DRAINAGE AND TRANSPORT WATER BACK TO DISPOSAL FACILITY.

Describe Area Affected and Cleanup Action Taken.\* A SMALL DRAINAGE DOWN STREAM OF POND #3  
W/ A CATCH POND THAT DRAINS INTO THE OJITO ARRAYO DRAINAGE. ISOLATED  
WATER WAY TO OJITO ARRAYO, AND TRANSPORT CAUGHT WATER BACK TO FACILITY.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

|                 |                           |                                   |  |
|-----------------|---------------------------|-----------------------------------|--|
| Signature:      | OIL CONSERVATION DIVISION |                                   |  |
| Printed Name:   | Craig Schmitz             |                                   |  |
| Title:          | V.P.                      |                                   |  |
| E-mail Address: | Approval Date:            | Expiration Date:                  |  |
| Date:           | Conditions of Approval:   | Attached <input type="checkbox"/> |  |
| 3-13-07         | Phone: 320-2130           |                                   |  |

\* Attach Additional Sheets If Necessary



# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

**BILL RICHARDSON**

Governor

**Joanna Prukop**  
Cabinet Secretary

**Mark E. Fesmire, P.E.**

Director

**Oil Conservation Division**

June 17, 2005

Mr. Tony Lee Schmitz  
T-N-T Environmental, Inc.  
HCR 74, Box 113  
Lindrieth, NM 87029

Dear Mr. Schmitz:

*NM-1-008*

The New Mexico Oil Conservation Division (NMOCD) has received your letter dated May 2, 2005 which requests that T-N-T Environmental, Inc. (TNT) be allowed to sample the monitoring zone in the landfarm annually instead of quarterly. This request is denied.

As an alternative, TNT will be allowed to sample according to the following schedule:

|                         |                                                |
|-------------------------|------------------------------------------------|
| April 30 of each year   | Sample for TPH and BTEX                        |
| July 31 of each year    | Sample for TPH and BTEX                        |
| October 31 of each year | Sample for TPH, BTEX, major cations and anions |

The sampling reports are to be submitted to the NMOCD Santa Fe office not later than the dates shown below:

|                              |                           |
|------------------------------|---------------------------|
| Four months ended April 30   | Report due by May 31      |
| Four months ended July 31    | Report due by August 31   |
| Four months ended October 31 | Report due by November 30 |

If you have any questions, contact me at (505) 476-3492 or [ed.martin@state.nm.us](mailto:ed.martin@state.nm.us)

NEW MEXICO OIL CONSERVATION DIVISION

Edwin E. Martin  
Environmental Bureau

Cc: NMOCD, Aztec

**T-N-T Environmental, Inc.**

HCR 74 Box 113  
Lindrieth, NM 87029

May 2, 2005

OCD  
1220 South St. Francis  
Santa Fe, NM 87505

Dear Ed:

I am writing this request for permit testing changes.

The permit now requires quarterly testing. I would like to change this to annual due to weather conditions in the winter, the ground is froze to a depth of 3' and we can not get a accurate sample.

I.E April

I would like to delete the P.H testing. It has no relevance to the H2S and is not a source of information to detect on coming H2S problem. The system we use detects any H2S problem before the P.H shows.

Sincerely,

Tony Lee Schmitz

  
President

RECEIVED  
MAY 6 - 2005  
OIL CONSERVATION  
DIVISION

NM-1-008



# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

**BILL RICHARDSON**

Governor

**Joanna Prukop**

Cabinet Secretary

7001 1940 0004 7920 7621

March 4, 2005

**Mark E. Fesmire, P.E.**

Director

**Oil Conservation Division**

T-N-T Environmental, Inc.  
HCR 74 P.O. Box 115  
Lindrith, NM 87029

Permit Number: NM-1-0008

Re: Administrative Modification of Landfarm Permits

The Oil Conservation Division (OCD) issued the landfarm permit identified above under OCD Rule 711. As explained in the public notice given prior to the issuance of the permit, the permit was for landfarming to remediate hydrocarbon-contaminated soils. The language of the permit, however, is broader, allowing the facility to accept oilfield contaminated solids which are either exempt from the Federal RCRA Subtitle C (hazardous waste) regulations or are "nonhazardous" by characteristic testing. If this language were interpreted to allow the landfarm to accept oilfield waste contaminated with salts, the salts could compromise the biodegradation capacity of the landfarm. And because salts leach more easily than hydrocarbons, the landfarm may pose a greater threat to groundwater.

According to the terms of the permit identified above, the OCD may change the permit conditions administratively for good cause shown as necessary to protect fresh water, human health and the environment. The OCD has determined that it is necessary to protect fresh water, human health and the environment to modify the permit as follows:

**Effective immediately, the NMOCD permitted landfarm identified above is prohibited from accepting oilfield waste contaminated with salts.**

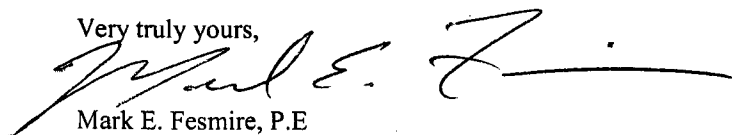
If the landfarm identified above wishes to accept oilfield waste contaminated with salts, you will need to file an application to modify the permit pursuant to OCD Rule 711.B(1) and follow the notice requirements of OCD Rule 711.B(2). If you have already filed a complete application for permit modification with this office and complied with the notice requirements, the OCD will process the application promptly.

Landfarms that wish to accept oilfield wastes contaminated with salts while their application for permit modification is pending may apply to the Division Director for an emergency order under OCD Rule 1202. Applications for emergency orders will be considered on a case-by-case basis.

This notice is being sent to all entities operating landfarm facilities in New Mexico permitted pursuant to OCD Rule 711, as shown on the attached list.

If you have any questions, please contact Ed Martin at (505) 476-3492 or [emartin@state.nm.us](mailto:emartin@state.nm.us).

Very truly yours,



Mark E. Fesmire, P.E.

U.S. Postal Service  
**CERTIFIED MAIL RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

OFFICIAL USE

|                                                   |           |                                        |
|---------------------------------------------------|-----------|----------------------------------------|
| Postage                                           | \$        | Postmark<br>Here<br>MAY 25<br>NM-1-008 |
| Certified Fee                                     |           |                                        |
| Return Receipt Fee<br>(Endorsement Required)      |           |                                        |
| Restricted Delivery Fee<br>(Endorsement Required) |           |                                        |
| Total Postage & Fees                              | \$ 41.412 |                                        |

|                                                        |  |
|--------------------------------------------------------|--|
| Sent To                                                |  |
| TNT ENVIRONMENTAL, INC.                                |  |
| Street, Apt. No.,<br>or PO Box No. HCR 74 P.O. Box 115 |  |
| City, State, ZIP+4 LINDRITH, NM 87029                  |  |

PS Form 3800, January 2001

See Reverse for Instructions



# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

**BILL RICHARDSON**

Governor

**Joanna Prukop**

Cabinet Secretary

September 17, 2004

**Mark E. Fesmire, P.E.**

Director

**Oil Conservation Division**

Mr. Tony Schmitz  
T-n-T Environmental, Inc.  
HCR 74 P.O. Box 115  
Lindrith, NM 87029

## RECEIVED

SEP 23 2004

NM-1-8

Dear Mr. Schmitz:

Oil Conservation Division  
1220 S. Saint Francis Drive

Santa Fe, NM 87505

Since the New Mexico Oil Conservation Division (NMOCD) promulgated Rule 50 covering pits and below-grade tanks, there has arisen a need, in certain circumstances, for operators to transport their drill cuttings off-site and dispose of them.

NMOCD Rule 711, as it pertains to landfarms, does not specifically address the issue of exempt oilfield wastes that may be contaminated with salts. Your landfarm application and permit were written with only hydrocarbon-contaminated soils in mind. Salt-contaminated wastes cause the following problems:

1. Lessening the effectiveness of the biodegradation capacity of your landfarm
2. Rapid leachability causing adverse effects on groundwater

If you want to accept salt-contaminated cuttings or any other salt-contaminated wastes, your 711 permit must be modified to ensure that your acceptance of those wastes will not adversely affect public health or the environment.

Please check one of the following:

☐ I have accepted or intend to accept salt-contaminated wastes in my landfarm. An OCD form C-137, applying for a modification to my 711 permit is attached. Included, as an attachment, is a demonstration that the accepted salt-contaminated soils will not adversely affect groundwater in the foreseeable future. (Closure requirements will also require modification to ensure the protection of groundwater. Should your acceptance of salt-contaminated wastes prove detrimental to groundwater, future liability for such damage rests with the landfarm operator).

☒ I do not intend to accept salt-contaminated wastes in my landfarm. Should this condition change, I will submit an OCD Form C-137 for a modification to my 711 permit at that time.

New Mexico Oil Conservation Division

Attn: Ed Martin

1220 S. St. Francis

Santa Fe, NM 87505

This letter must be returned to the above address no later than October 31, 2004. An extension of time may be granted if you contact this office no later than that date.

If you have any questions, contact Ed Martin (505) 476-3492 or [emartin@state.nm.us](mailto:emartin@state.nm.us)

Signed

Date 9/23/04



# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

**BILL RICHARDSON**

Governor

**Joanna Prukop**

Cabinet Secretary

September 17, 2004

**Mark E. Fesmire, P.E.**

Director

**Oil Conservation Division**

Mr. Tony Schmitz  
T-n-T Environmental, Inc.  
HCR 74 P.O. Box 115  
Lindrieth, NM 87029

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New Mexico Oil Conservation Division

Attn: Ed Martin

1220 S. St. Francis

Santa Fe, NM 87505

This letter must be returned to the above address no later than October 31, 2004. An extension of time may be granted if you contact this office no later than that date.

If you have any questions, contact Ed Martin (505) 476-3492 or [emartin@state.nm.us](mailto:emartin@state.nm.us)

Signed

Date



# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

**BILL RICHARDSON**

Governor

**Joanna Prukop**

Cabinet Secretary

**Lori Wrotenbery**

Director

**Oil Conservation Division**

April 2, 2003

Mr. Tony Schmitz  
T-n-T Environmental, Inc.  
HCR 74 P.O. Box 115  
Lyndrith, New Mexico 87029

**RE: T-n-T Environmental, Inc.  
Commercial Surface Waste Management Facility Permit WM-1-008  
SE/4 Section 7 and SW/4 Section 8 (evaporation ponds), and the  
SW/4 SE/4 and SE/4 SW/4 Section 5 and the NE/4 NW/4 Section 8 (landfarm),  
Township 25 North, Range 3 West, NMPM, Rio Arriba County, New Mexico**

Dear Mr. Schmitz:

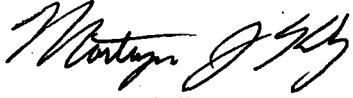
The New Mexico Oil Conservation Division (OCD) inspected T-n-T Environmental, Inc. (T-n-T) on March 10, 2003 and has reviewed T-n-T's file. According to Permit NM-01-0008 issued on May 11, 2001, T-n-T is required to take fluid measurements, analyze landfarm soil and monitor well fluid, keep records and submit reports to the OCD.

Please review Permit NM-01-0008 Page 7, "Reporting and Record Keeping". The OCD has not received any annual reports for Item 2 or Item 4 or any quarterly results for Item 5. T-n-T must submit annual reports for Items 2 and 4 for the years 2001 and 2002, by April 30, 2003. T-n-T must also submit all quarterly results for the treatment zone monitoring of the landfarm cells for all of 2001, 2002 and the first quarter of 2003, by April 30, 2003.

Because of OCD budget shortfalls I am unable at this time to perform any inspections. Therefore I am requesting that T-n-T submit copies of the daily logs recording test results at the evaporation pond for H<sub>2</sub>S, pH, dissolved sulfides and dissolved oxygen for 2001, 2002 and the first quarter of 2003 (See Permit NM-01-0008, Page 8, "Reporting and Record Keeping", Item 7). I am also requesting the results of the annual inspections on below-grade sumps, below grade tanks and sludge thickness in each of the three ponds (See Permit NM-01-0008, Page 8, "Reporting and Record Keeping", Item 8).

According to the OCD file review T-n-T currently has the full financial assurance amount on file totaling \$148,690. Thank you in advance for your attention to this matter. If you have any questions please do not hesitate to contact me at (505) 476-3488.

Sincerely,

A handwritten signature in black ink, appearing to read "Martyne J. Kielling". The signature is fluid and cursive, with a large initial "M" and a stylized "K" at the end.

Martyne J. Kielling  
Environmental Geologist

Xc: Aztec OCD Office



*Risk Reduction & Environmental Stewardship Division*  
*Water Quality & Hydrology Group (RRES-WQH)*  
PO Box 1663, MS K497  
Los Alamos, New Mexico 87545  
(505) 667-7969 / Fax: (505) 665-9344

Date: February 7, 2003  
Refer to: RRES-WQH: 03-031

Mr. Wayne Price  
Petroleum Engineering Specialist  
Oil Conservation Division  
New Mexico Energy, Minerals and Natural Resources Department  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

RECEIVED  
FFR 1 2 2003  
Environmental Bureau  
Oil Conservation Division

**SUBJECT: PROGRESS REPORT AND PROPOSED BACKFILL PLAN, 1-MG SERVICE POND, FENTON HILL GEOTHERMAL FACILITY**

Dear Mr. Price:

As you are aware, since October 2002, Los Alamos National Laboratory has been in the process of closing the Fenton Hill Hot Dry Rock Geothermal Facility's 1-million gallon (MG) service pond. After making significant progress, the Laboratory is entering the final stages of closure. I would like to provide you with a progress report on the work completed to-date. In addition, this letter presents the Laboratory's proposed plan for backfilling the pond for your review and approval. Progress report information is contained within Section I while the proposed backfill plan is presented in Section II.

**Section I-Progress Report**

In accordance with the requirements of the Laboratory's Closure Plan for the Fenton Hill 1-MG Service Pond (LA-UR-02-5009, August 2002), closure activities to-date have generated the following documents:

1. Analytical results from sampling the 1-MG pond sludge;
2. Disposal records for the 1-MG pond geothermal fluids and sludge;
3. Disposal records for the liners, geofiber matting, and gravel;
4. Photographs of the site during closure activities;
5. NORM survey results of the leak collection piping;
6. Forest Service letter requesting sampling of the soil beneath the liners;
7. Sampling and Analysis Plan for characterizing the soil beneath the liners;
8. Total metals and SVOA analytical results from sampling the soil beneath the liners;
9. TCLP analytical results from sampling the soil beneath the liners;
10. Geodetic survey of the 1-MG pond and associated structures;
11. LANL response to the Forest Service's request for additional information; and
12. Forest Service letter approving the Laboratory's proposed backfill plan.

A brief discussion of each of the above documents is presented below.

**1. Sludge Sampling Analytical Results**

In accordance with Section 2.1.2 of the Closure Plan, a representative sample of sludge from the 1-MG service pond was collected on October 21, 2002, and submitted to General Engineering Laboratories, Charleston, SC, for the following analyses: volatile organics analysis (VOA), semi-volatile organics analysis (SVOA), total metals, and TCLP metals. Attachment 1 contains copies of the analytical reports.

**2. Geothermal Fluids and Sludge Disposal Records**

Key Energy Services, Inc., Farmington, NM, (OCD Permit No. NM-01-0011) transported 201,600 gallons or 4,800 barrels (60 truckloads @ 80 bbls/load) of geothermal fluids to a commercial evaporation pit at TNT Environmental, Inc., Lindrith, NM (OCD Permit No. NM-01-0008). Attachment 2 contains copies of the disposal tickets for the geothermal fluids.

In addition, Key Energy transported 43,680 gallons or 1,040 barrels of liquefied sludge to TNT's commercial land farm in Lindrith, NM. Attachment 2 contains copies of the disposal tickets for the sludge.

**3. Liner Disposal Records**

L&R Oilfield Services, a subcontractor to Key Energy Services, removed the primary and secondary liners and associated geofiber matting from the 1-MG service pond (see pictures of liner removal in Attachment 4). The liner was steam-cleaned prior to removal. The primary and secondary liners were recycled by L&R while the geofiber matting was disposed of at Waste Management's Rio Rancho landfill. Attachment 3 contains a copy of the disposal ticket for the geofiber matting.

Approximately 25 cubic yards of gravel from the 1-MG service pond's leak collection system was removed by L&R and disposed of at Envirotech, Inc., Farmington, NM. Attachment 3 contains a copy of the disposal ticket for the leak collection system gravel.

**4. Photographs of Closure Activities**

Attachment 4 contains photographs of closure activities conducted at the 1-MG service pond.

**5. NORM Survey Results**

In accordance with Section 7.3 of the Closure Plan, the leak collection system piping (4" perforated PVC pipe) was surveyed by Laboratory radiological technicians for Naturally Occurring Radioactive Material (NORM). Attachment 5 contains the survey results from the 100 readings taken from the 200 feet of pipe. The maximum reading of 1.54 micro R per hour is well below the 50 micro R per hour limit established by regulation (20.3.1.14 NMAC).

**6. Forest Service Request for Confirmation Sampling**

In a September 27, 2002, letter (Attachment 6) to Los Alamos National Laboratory, Mr. Leonard Atencio, Forest Supervisor, Santa Fe National Forest, requested that a minimum of two confirmation samples be collected from the soils beneath the 1-MG service pond's secondary liner. In addition, Mr. Atencio requested that if there is any visual evidence of leakage then the suspected material should also be sampled.



In response to the elevated concentrations of total arsenic in the crusher fines, the Laboratory initiated the following:

1. Three surface samples (RC57-03-49714, RC57-03-49718, and RC57-03-49720) were submitted to General Engineering Laboratories, Charleston, SC, for TCLP metals analysis. Attachment 9 contains a copy of General Engineering Laboratories' analytical report;
2. Two new surface samples of the crusher fines (FH#1 and FH#2) were collected from the 1-MG service pond at locations above the pond's overflow and submitted to the EES analytical laboratory for total arsenic analysis; and
3. A tuff sample from outside of the 1-MG service pond was collected and submitted to the EES analytical laboratory for total arsenic analysis.

Analytical results from the above sampling are presented in Table 1.0 below.

**Table 1.0. Underliner Soil Sampling Results for Fenton Hill 1-MG Service Pond**

| Sample ID#                                                   | Sample Date | Location (Depth) | Sample Type   | Total Arsenic <sup>1</sup> (ppm) | TCLP Arsenic <sup>2,3</sup> (mg/L) |
|--------------------------------------------------------------|-------------|------------------|---------------|----------------------------------|------------------------------------|
| <b>Samples Collected From The Bottom of the Pond</b>         |             |                  |               |                                  |                                    |
| RC57-03-49714                                                | 11/18/02    | surface 0"-6"    | crusher fines | 272                              | 0.120                              |
| RC57-03-49715                                                | 11/18/02    | depth 18"-24"    | tuff          | 23.7                             |                                    |
| RC57-03-49716                                                | 11/18/02    | surface 0"-6"    | crusher fines | 197                              |                                    |
| RC57-03-49717                                                | 11/18/02    | depth 10"-16"    | tuff          | 52.5                             |                                    |
| RC57-03-49718                                                | 11/18/02    | surface 0"-6"    | crusher fines | 232                              | 0.104                              |
| RC57-03-49719                                                | 11/18/02    | depth 18"-24"    | tuff          | 8.84                             |                                    |
| RC57-03-49720                                                | 11/18/02    | surface 0"-6"    | crusher fines | 254                              | 0.130                              |
| RC57-03-49721                                                | 11/18/02    | depth 18"-24"    | tuff          | 26.6                             |                                    |
| RC57-03-49722                                                | 11/18/02    | surface 0"-6"    | crusher fines | 204                              |                                    |
| RC57-03-49723                                                | 11/18/02    | depth 18"-24"    | tuff          | 8.85                             |                                    |
| <b>Samples Collected From Above the Pond's Overflow Pipe</b> |             |                  |               |                                  |                                    |
| FH#1                                                         | 11/24/02    | surface 0"-6"    | crusher fines | 232                              |                                    |
| FH#2                                                         | 11/24/02    | surface 0"-6"    | crusher fines | 332                              |                                    |
| <b>Samples Collected Outside of the Pond</b>                 |             |                  |               |                                  |                                    |
| FH#3                                                         | 11/24/02    | surface 0"-6"    | tuff          | 2.57                             |                                    |

<sup>1</sup>Analysis by the Laboratory's EES analytical laboratory.

<sup>2</sup>Analysis by General Engineering Laboratories, Charleston, SC.

<sup>3</sup>Per 40CFR 261.24, the TCLP concentration limit for arsenic is 5.0 mg/L.

The elevated concentrations of total arsenic (232 ppm and 332 ppm) in the two surface samples collected above the 1-MG service pond's overflow suggest that the arsenic in the crusher fines is naturally occurring and not due to contamination from leaking geothermal fluids. Further, the TCLP concentration of arsenic in the crusher fines (0.120 mg/L, 0.104 mg/L, 0.130 mg/L) is well below the regulatory level (5.0 mg/L) to be a characteristic hazardous waste (40CFR 261.24).



Visual inspection of the soils beneath the liners by Laboratory personnel did not show any evidence of leakage. The crusher fines lining the pond did not display any staining, discoloration, or areas of saturation (see photographs in Attachment 4). The low moisture content of the core samples collected from the bottom of the pond support the visual record; the moisture content of the ten samples collected ranged from 5.6% to 12.48% with an average moisture content of 6.9% (see Attachment 8).

#### 7. Sampling and Analysis Plan for Underliner Soils

In response to the Forest Service's request, a Sampling and Analysis Plan (SAP) was prepared by the Laboratory to characterize the soils beneath the 1-MG service pond liners prior to backfilling. Attachment 7 contains a copy of the SAP. This SAP should be considered an addendum to the August 2002 Closure Plan.

The objectives of the SAP were to collect a sufficient number of samples to (1) perform a human health screening assessment, and (2) define the nature and extent of any potential contamination encountered. Based upon prior sampling activities conducted at the site, the minimum number of samples required to meet these objectives was determined to be five sets of inorganic and one set of organic samples. Each set consist of two samples collected from two depths.

#### 8. and 9. Underliner Soil Sampling Analytical Results

In accordance with the Sampling and Analysis Plan referenced above, on November 18, 2002, the Laboratory collected ten inorganic samples from five locations in the bottom of the 1-MG service pond using a Simco coring rig. Attachment 4 contains photographs of the sampling activities. The core barrel was drilled to a depth of approximately two feet at each location; a surface sample (0"-6") and a depth sample (18"-24") were prepared at each of the locations. Samples were submitted to the Laboratory's Earth and Environmental Sciences (EES) analytical laboratory for total metals analysis. The surface samples (0"-6") consisted of crusher fines that were imported from a crusher pit near Jemez Pueblo, NM, during the construction of the pond to "bed" the liner. The depth samples (18"-24") consisted of native tuff. In one location (RC57-03-49717), due to the hardness of the tuff the core was unable to penetrate to the target depth of 24". As a result, the depth sample at this location was collected from the 10"-16" interval.

Analytical results from the November 18<sup>th</sup> sampling are presented in Attachment 8. All results were below the Environmental Protection Agency's Preliminary Remediation Goals (PRGs) for soil with the exception of arsenic (As). Table 1.0 below presents a summary of the arsenic results.

Total arsenic concentrations in the crusher fines (surface samples) ranged from 204 ppm to 272 ppm with an average concentration of 232 ppm. In contrast, total arsenic concentrations in the tuff (depth samples) ranged from 8.8 ppm to 52.5 ppm with an average concentration of 24 ppm. On average, the data shows a ten-fold reduction (232 ppm to 24 ppm) in the concentration of total arsenic from the surface (0"-6") to depth (10"-24").

In addition to the ten inorganic samples collected, two organic samples were submitted to General Engineering Laboratories, Charleston, SC, for semi-volatile organics analysis (SVOA). Sample results are presented in Attachment 8. No target compounds were detected in either of the samples at concentrations greater than the analytical laboratory's reporting limit.



In response to the elevated concentrations of total arsenic in the crusher fines, the Laboratory initiated the following:

1. Three surface samples (RC57-03-49714, RC57-03-49718, and RC57-03-49720) were submitted to General Engineering Laboratories, Charleston, SC, for TCLP metals analysis. Attachment 9 contains a copy of General Engineering Laboratories' analytical report;
2. Two new surface samples of the crusher fines (FH#1 and FH#2) were collected from the 1-MG service pond at locations above the pond's overflow and submitted to the EES analytical laboratory for total arsenic analysis; and
3. A tuff sample from outside of the 1-MG service pond was collected and submitted to the EES analytical laboratory for total arsenic analysis.

Analytical results from the above sampling are presented in Table 1.0 below.

**Table 1.0. Underliner Soil Sampling Results for Fenton Hill 1-MG Service Pond**

| <b>Sample ID#</b>                                            | <b>Sample Date</b> | <b>Location (Depth)</b> | <b>Sample Type</b> | <b>Total Arsenic<sup>1</sup> (ppm)</b> | <b>TCLP Arsenic<sup>2,3</sup> (mg/L)</b> |
|--------------------------------------------------------------|--------------------|-------------------------|--------------------|----------------------------------------|------------------------------------------|
| <b>Samples Collected From The Bottom of the Pond</b>         |                    |                         |                    |                                        |                                          |
| RC57-03-49714                                                | 11/18/02           | surface 0"-6"           | crusher fines      | 272                                    | 0.120                                    |
| RC57-03-49715                                                | 11/18/02           | depth 18"-24"           | tuff               | 23.7                                   |                                          |
| RC57-03-49716                                                | 11/18/02           | surface 0"-6"           | crusher fines      | 197                                    |                                          |
| RC57-03-49717                                                | 11/18/02           | depth 10"-16"           | tuff               | 52.5                                   |                                          |
| RC57-03-49718                                                | 11/18/02           | surface 0"-6"           | crusher fines      | 232                                    | 0.104                                    |
| RC57-03-49719                                                | 11/18/02           | depth 18"-24"           | tuff               | 8.84                                   |                                          |
| RC57-03-49720                                                | 11/18/02           | surface 0"-6"           | crusher fines      | 254                                    | 0.130                                    |
| RC57-03-49721                                                | 11/18/02           | depth 18"-24"           | tuff               | 26.6                                   |                                          |
| RC57-03-49722                                                | 11/18/02           | surface 0"-6"           | crusher fines      | 204                                    |                                          |
| RC57-03-49723                                                | 11/18/02           | depth 18"-24"           | tuff               | 8.85                                   |                                          |
| <b>Samples Collected From Above the Pond's Overflow Pipe</b> |                    |                         |                    |                                        |                                          |
| FH#1                                                         | 11/24/02           | surface 0"-6"           | crusher fines      | 232                                    |                                          |
| FH#2                                                         | 11/24/02           | surface 0"-6"           | crusher fines      | 332                                    |                                          |
| <b>Samples Collected Outside of the Pond</b>                 |                    |                         |                    |                                        |                                          |
| FH#3                                                         | 11/24/02           | surface 0"-6"           | tuff               | 2.57                                   |                                          |

<sup>1</sup>Analysis by the Laboratory's EES analytical laboratory.

<sup>2</sup>Analysis by General Engineering Laboratories, Charleston, SC.

<sup>3</sup>Per 40CRF 261.24, the TCLP concentration limit for arsenic is 5.0 mg/L.

The elevated concentrations of total arsenic (232 ppm and 332 ppm) in the two surface samples collected above the 1-MG service pond's overflow suggest that the arsenic in the crusher fines is naturally occurring and not due to contamination from leaking geothermal fluids. Further, the TCLP concentration of arsenic in the crusher fines (0.120 mg/L, 0.104 mg/L, 0.130 mg/L) is well below the regulatory level (5.0 mg/L) to be a characteristic hazardous waste (40CFR 261.24).



In summary, the data strongly suggest that the crusher fines imported to construct the 1-MG service pond contain elevated concentrations of naturally occurring arsenic. Further, the data suggest that the arsenic in the crusher fines is tightly bound and not highly mobile under the extraction conditions of the TCLP method (EPA Method 1311). And finally, the data confirms that the arsenic in the crusher fines is below the regulatory level to be a characteristic hazardous waste.

**10. Geodetic Survey of the 1-MG Service Pond**

In accordance with Section 6.2 of the Closure Plan, the Laboratory conducted a geodetic survey of the 1-MG service pond and associated structures. Attachment 10 contains a copy of the survey results.

**11. LANL Response to the Forest Service's Request for Additional Information**

On January 16, 2003, the Laboratory submitted a Progress Report and Proposed Backfill Plan (essentially a mirror of this report) to Mr. John Peterson, Jemez District Ranger. On January 27, 2003, the Forest Service verbally requested additional information on the Laboratory's Progress Report and Proposed Backfill Plan. Attachment 11 contains a copy of the Laboratory's February 3, 2003, response to the Forest Service's request.

**12. Forest Service Letter Approving the Laboratory's Proposed Backfill Plan**

Attachment 12 contains a fax copy of a February 3, 2003, letter from Mr. John Peterson, Jemez District Ranger, approving the Laboratory's proposed plan to bury the crusher fines in the bottom of the 1-MG service pond.

**Section II-Proposed Backfill Plan**

The information collected under the Closure Plan and presented above indicate the following:

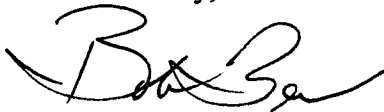
- The data suggest that the crusher fines in the 1-MG service pond contain elevated concentrations of naturally occurring arsenic.
- The data confirms that the arsenic in the crusher fines is below the regulatory level to be a characteristic hazardous waste.
- The data suggest that the arsenic in the crusher fines does not pose a significant threat to ground water. This is supported by the low mobility of the arsenic, as demonstrated by the TCLP results, and the depth to ground water at the site. Depth to ground water beneath the 1-MG service pond is approximately 380 feet.

Based upon the above, the Laboratory proposes to consolidate the crusher fines into the bottom of the 1-MG service pond and backfill over them. Backfill material will come from the earthen berm that forms the southern boundary of the 1-MG service pond. This berm will provide approximately 1000 yd<sup>3</sup> of backfill material. Additional material will be imported, if necessary. A minimum of 6 feet of cover will be maintained over the buried crusher fines. As specified in Section 8.0 of the Closure Plan, all disturbed areas will be re-seeded according to Laboratory and Forest Service requirements.



Please contact me at (505) 667-7969 should you have any questions regarding this progress report and proposed plan for completing closure of the 1-MG service pond.

Sincerely,



Bob Beers  
Water Quality & Hydrology Group

BB/yg

Attachments: a/s

Cy: M. Kieling, NM OCD, Santa Fe, New Mexico, w/att.  
J. Peterson, Forest Service, Jemez Ranger District, Jemez Springs, New Mexico, w/o att.  
A. Ferrell, Forest Service, Jemez Ranger District, Jemez Springs, New Mexico, w/o att.  
C. Linn, Forest Service, Santa Fe National Forest, Santa Fe, New Mexico, w/o att.  
J. Vozella, DOE/OLASO, w/o att., MS A316  
G. Turner, DOE/OLASO, w/att., MS A316  
J. Holt, ADO, w/o att., MS A104  
C. Webster, ADSR, w/o att., MS A127  
P. Weber, EES-DO, w/o att., MS D446  
J. Hansen, EES-DO, w/ att., MS D446  
J. Thomson, EES-11, w/ att., MS D443  
S. Archuleta, P-FM, w/o att., MS D410  
B. Ramsey, RRES-DO w/o att., MS J591  
K. Hargis, RRES-DO, w/o att., MS J591  
D. Stavert, RRES-EP, w/o att., MS J591  
S. Rae, RRES-WQH, w/att., MS K497  
D. Rogers, RRES-WQH, w/o att., MS K497  
D. McInroy, RRES-R, w/o att., MS M992  
T. Rust, RRES-R, w/att., MS M992  
T. Grieggs, RRES-SWRC, w/o att., MS K490  
B. Kopp, RRES-SWRC, w/o att., MS M992  
H. Wheeler-Benson, RRES-SWRC, w/att., MS K490  
E. Louderbough, LC-ESH, w/att., MS A187  
RRES-WQH File, w/att., MS K497  
IM-5, w/att., MS A150



# **ATTACHMENT 1**

## **Analytical Results**

### **1-MG Service Pond Sludge**

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0210FHSLDG

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 69376

Matrix: (soil/water) WATER Lab Sample ID: 69376001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 2H421

Level: (low/med) LOW Date Received: 10/24/02

% Moisture: not dec. Date Analyzed: 10/31/02

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) MG/L Q

|               |                      |       |   |
|---------------|----------------------|-------|---|
| 75-01-4-----  | Vinyl chloride       | 0.010 | U |
| 75-35-4-----  | 1,1-Dichloroethylene | 0.010 | U |
| 78-93-3-----  | 2-Butanone           | 0.050 | U |
| 67-66-3-----  | Chloroform           | 0.010 | U |
| 56-23-5-----  | Carbon tetrachloride | 0.010 | U |
| 107-06-2----- | 1,2-Dichloroethane   | 0.010 | U |
| 71-43-2-----  | Benzene              | 0.010 | U |
| 79-01-6-----  | Trichloroethylene    | 0.010 | U |
| 127-18-4----- | Tetrachloroethylene  | 0.010 | U |
| 108-90-7----- | Chlorobenzene        | 0.010 | U |
| 106-46-7----- | 1,4-Dichlorobenzene  | 0.010 | U |

FORM I VOA

OLM03.0

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0210FHSLDG

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 69376

Matrix: (soil/water) WATER Lab Sample ID: 69376001

Sample wt/vol: 200.0 (g/mL) ML Lab File ID: S5K0610

Level: (low/med) LOW Date Received: 10/24/02

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: 11/01/02

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 11/06/02

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

| CAS NO.  | COMPOUND              | CONCENTRATION UNITS: |      |
|----------|-----------------------|----------------------|------|
|          |                       | (ug/L or ug/Kg)      | MG/L |
| 110-86-1 | Pyridine              | 0.050                | U    |
| 106-46-7 | 1,4-Dichlorobenzene   | 0.050                | U    |
| 95-48-7  | o-Cresol              | 0.0038               | J    |
| 106-44-5 | m,p-Cresols           | 0.0059               | J    |
| 67-72-1  | Hexachloroethane      | 0.050                | U    |
| 98-95-3  | Nitrobenzene          | 0.050                | U    |
| 87-68-3  | Hexachlorobutadiene   | 0.050                | U    |
| 88-06-2  | 2,4,6-Trichlorophenol | 0.050                | U    |
| 95-95-4  | 2,4,5-Trichlorophenol | 0.050                | U    |
| 121-14-2 | 2,4-Dinitrotoluene    | 0.050                | U    |
| 118-74-1 | Hexachlorobenzene     | 0.050                | U    |
| 87-86-5  | Pentachlorophenol     | 0.050                | U    |

## TOTAL METALS

- 1 -

## INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 69376

Method Type: SW846

Sample ID: 69376001

Client ID: 0210FHsdg

Contract: ESHL00501

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: TCLP

Date Received: 10/24/2002

Level: LOW

% Solids: 0.00

| CAS No.   | Analyte  | Concentration | Units | C | Qual | M | DL    | Instrument ID    | Analytical Run |
|-----------|----------|---------------|-------|---|------|---|-------|------------------|----------------|
| 7440-38-2 | Arsenic  | 6.270         | mg/L  |   |      | P | 0.024 | TJA61 Trace ICP2 | 110102         |
| 7440-39-3 | Barium   | 0.685         | mg/L  |   |      | P | 0.004 | TJA61 Trace ICP2 | 110102         |
| 7440-43-9 | Cadmium  | 0.004         | mg/L  | U |      | P | 0.004 | TJA61 Trace ICP2 | 110102         |
| 7440-47-3 | Chromium | 0.019         | mg/L  | B |      | P | 0.007 | TJA61 Trace ICP2 | 110102         |
| 7439-92-1 | Lead     | 0.027         | mg/L  | U |      | P | 0.027 | TJA61 Trace ICP2 | 110102         |
| 7782-49-2 | Selenium | 0.034         | mg/L  | U |      | P | 0.034 | TJA61 Trace ICP2 | 110102         |
| 7440-22-4 | Silver   | 0.012         | mg/L  | U |      | P | 0.012 | TJA61 Trace ICP2 | 110102         |

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

## TOTAL METALS

- 1 -

## INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 69376-1

Method Type: SW846

Sample ID: 69377001

Client ID: 0210FHsldg

Contract: ESHL00501

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: SOIL

Date Received: 10/24/2002

Level: LOW

% Solids: 11.70

| CAS No.   | Analyte    | Concentration | Units | C | Qual | M  | DL    | Instrument ID    | Analytical Run |
|-----------|------------|---------------|-------|---|------|----|-------|------------------|----------------|
| 7429-90-5 | Aluminum   | 11110000      | µg/kg |   | E    | P  | 6280  | TJA61 Trace ICP2 | 102802         |
| 7440-36-0 | Antimony   | 15900         | µg/kg |   | *    | MS | 421   | PE ICPMS3        | 021026         |
| 7440-38-2 | Arsenic    | 2940000       | µg/kg |   | E    | P  | 1630  | TJA61 Trace ICP2 | 102802         |
| 7440-39-3 | Barium     | 634000        | µg/kg |   | E    | P  | 528   | TJA61 Trace ICP2 | 102802         |
| 7440-41-7 | Beryllium  | 1290          | µg/kg | B |      | P  | 396   | TJA61 Trace ICP2 | 102802         |
| 7440-42-8 | Boron      | 2670000       | µg/kg |   | E    | P  | 3790  | TJA61 Trace ICP2 | 102802         |
| 7440-43-9 | Cadmium    | 1140          | µg/kg | B |      | P  | 378   | TJA61 Trace ICP2 | 102802         |
| 7440-47-3 | Chromium   | 208000        | µg/kg |   | E    | P  | 1270  | TJA61 Trace ICP2 | 102802         |
| 7440-48-4 | Cobalt     | 2690          | µg/kg | B |      | P  | 632   | TJA61 Trace ICP2 | 102802         |
| 7440-50-8 | Copper     | 81100         | µg/kg |   |      | P  | 1610  | TJA61 Trace ICP2 | 102802         |
| 7439-89-6 | Iron       | 43970000      | µg/kg |   | E    | P  | 12400 | TJA61 Trace ICP2 | 102802         |
| 7439-92-1 | Lead       | 69000         | µg/kg |   |      | P  | 2250  | TJA61 Trace ICP2 | 102802         |
| 7439-96-5 | Manganese  | 612000        | µg/kg |   | EN   | P  | 1040  | TJA61 Trace ICP2 | 102802         |
| 7439-97-6 | Mercury    | 8210          | ug/kg |   |      | AV | 82.9  | PE CVAA          | 103002S2Hg     |
| 7439-98-7 | Molybdenum | 320000        | µg/kg |   | EN   | P  | 1000  | TJA61 Trace ICP2 | 102802         |
| 7440-02-0 | Nickel     | 25500         | µg/kg |   |      | P  | 676   | TJA61 Trace ICP2 | 102802         |
| 7782-49-2 | Selenium   | 3900          | µg/kg | B |      | P  | 1280  | TJA61 Trace ICP2 | 102802         |
| 7440-22-4 | Silver     | 1500          | µg/kg | B |      | P  | 714   | TJA61 Trace ICP2 | 102802         |
| 7440-28-0 | Thallium   | 2090          | µg/kg |   |      | MS | 168   | PE ICPMS3        | 021026         |
| 7440-61-1 | Uranium    | 18700         | µg/kg | U |      | P  | 18700 | TJA61 Trace ICP2 | 102802         |
| 7440-62-2 | Vanadium   | 59700         | µg/kg |   | N    | MS | 6280  | PE ICPMS3        | 021026         |
| 7440-66-6 | Zinc       | 658000        | µg/kg |   |      | MS | 1030  | PE ICPMS3        | 021026         |

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

## TOTAL METALS

- 1 -

## INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 69376-2

Method Type: SW-846

Sample ID: 70833001

Client ID: 0210FHsldg

Contract: ESHL00501

Lab Code: GEL

Case No.: GEL

SAS No.:

Matrix: TCLP

Date Received: 10/24/2002

Level: LOW

% Solids: 0.00

| CAS No.   | Analyte | Concentration | Units | C | Qual | M  | DL     | Instrument ID | Analytical Run |
|-----------|---------|---------------|-------|---|------|----|--------|---------------|----------------|
| 7439-97-6 | Mercury | 0.0005        | mg/L  | U |      | AV | 0.0005 | PE CVAA2      | 120302W1Hg     |

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

AME 12/15/03

## Certificate of Analysis

Company : Los Alamos National Labs  
Address : MS K497 ESH-18  
Water Quality & Hydrology  
Los Alamos, New Mexico 87545  
Contact: Billy Turney  
Project: Sediments/Soils

Report Date: December 5, 2002

Page 1 of 2

Client Sample ID: 0210FHsldg  
Sample ID: 70833001  
Matrix: Sludge  
Collect Date: 21-OCT-02 16:00  
Receive Date: 24-OCT-02  
Collector: Client

Project: ESHL00501  
Client ID: ESHL001

| Parameter                       | Qualifier | Result | DL       | RL    | Units | DF | Analyst | Date     | Time | Batch  | Method |
|---------------------------------|-----------|--------|----------|-------|-------|----|---------|----------|------|--------|--------|
| <b>Mercury Analysis Federal</b> |           |        |          |       |       |    |         |          |      |        |        |
| <i>TCLP Hg in Solid</i>         |           |        |          |       |       |    |         |          |      |        |        |
| Mercury                         | HU        | ND     | 0.000472 | 0.002 | mg/L  | 1  | NOR1    | 12/03/02 | 1928 | 218985 | 1      |

### The following Prep Methods were performed

| Method           | Description                        | Analyst | Date     | Time | Prep Batch |
|------------------|------------------------------------|---------|----------|------|------------|
| SW846 7470A Prep | EPA 7470A Mercury Prep TCLP Liquid | KHN     | 11/21/02 | 1400 | 217447     |
| SW846 7470A Prep | EPA 7470A Mercury Prep TCLP Liquid | KHN     | 12/02/02 | 1230 | 218983     |
| SW846 1311       | SW846 1311 TCLP Leaching -FEDERAL  | COB1    | 11/19/02 | 1737 | 217101     |
| SW846 1311       | SW846 1311 TCLP Leaching -FEDERAL  | COB1    | 11/26/02 | 2010 | 218190     |

### The following Analytical Methods were performed

| Method | Description | Analyst Comments |
|--------|-------------|------------------|
| 1      | SW846 7470A |                  |

#### Notes:

The Qualifiers in this report are defined as follows :

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

## Certificate of Analysis

Company : Los Alamos National Labs  
Address : MS K497 ESH-18  
Water Quality & Hydrology  
Los Alamos, New Mexico 87545  
Contact: Billy Turney  
Project: Sediments/Soils

Report Date: December 5, 2002

Page 2 of 2

Client Sample ID: 0210FHsldg  
Sample ID: 70833001

Project: ESHL00501  
Client ID: ESHL001

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | Method |
|-----------|-----------|--------|----|----|-------|----|---------|------|------|-------|--------|
|-----------|-----------|--------|----|----|-------|----|---------|------|------|-------|--------|

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

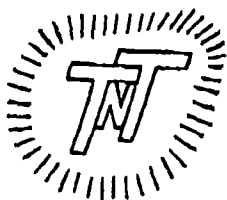
This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Stacy Griffin.

Reviewed by \_\_\_\_\_

# **ATTACHMENT 2**

## **Disposal Records**

### **1-MG Service Pond Geothermal Fluids and Sludge**

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504

1211

DATE 10-23-02 CUSTOMER Los Alamos National Lab  
 WELL NAME & NUMBER Geo Thermo Res. pit  
 TRUCKING CO. Key Energy UNIT NO. 850  
 DRIVER MC ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

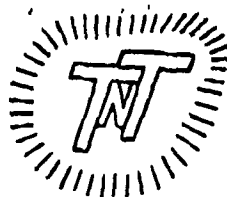
| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    |     |     |               |                    |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00

ATTENDANT'S SIGNATURE

2.1

Reprographics 0499261

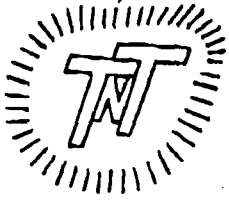
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504

1180

DATE 10/23/02 CUSTOMER Los Alamos National Lab  
 WELL NAME & NUMBER Geo Thermo Well site  
 TRUCKING CO. Key UNIT NO. 840  
 DRIVER S. B. 19605 ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY S. F. 19605 DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    |     |     |               |                    |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00

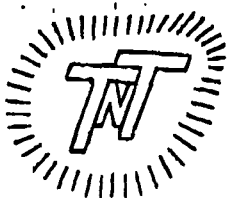
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1179**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 10/23/02 CUSTOMER LOS ALAMOS NATIONAL LABORATORY  
WELL NAME & NUMBER GEO THERMO WELL SITE  
TRUCKING CO. Key UNIT NO 841  
DRIVER Scott ARRIVAL TIME \_\_\_\_\_  
ORDERED BY JEFFERY DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H.  | H2S   | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-------|-------|---------------|--------------------|
| 80    | _____ | _____ | _____         | SCOTT              |
| 80    | _____ | _____ | _____         | SCOTT              |
|       |       |       |               |                    |

☐ 60 BARREL ☐ 100 BARREL160<sup>00</sup>  
140ATTENDANT'S SIGNATURE T.J.

Reprographics 049928T

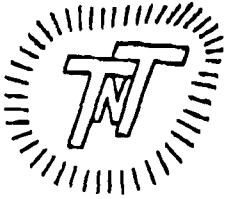
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1200**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 10/24/02 CUSTOMER Los Alamos National Lab  
WELL NAME & NUMBER GEO THERMO PIT  
TRUCKING CO. Key UNIT NO 841  
DRIVER Scott ARRIVAL TIME \_\_\_\_\_  
ORDERED BY JEFFERY DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H.  | H2S   | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-------|-------|---------------|--------------------|
| 80    | _____ | _____ | _____         | SCOTT              |
|       |       |       |               |                    |

☐ 60 BARREL ☐ 100 BARREL

80.00

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1199**

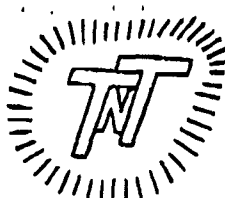
HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 10-24-02 CUSTOMER LOS ALAMOS NATIONAL Laboratory  
WELL NAME & NUMBER GEO thermo pit  
TRUCKING CO. Key Energy UNIT NO. 830  
DRIVER MC ARRIVAL TIME \_\_\_\_\_  
ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | <i>[Signature]</i> |
|       |      |     |               |                    |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00ATTENDANT'S SIGNATURE *[Signature]*

Reprographics 049926T

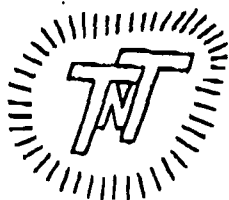
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1194**

HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 10/24/02 CUSTOMER LOS ALAMOS NAT LABS  
WELL NAME & NUMBER GEO THERMO PIT  
TRUCKING CO. KEY UNIT NO. 840  
DRIVER J. GARCIA ARRIVAL TIME \_\_\_\_\_  
ORDERED BY J. F. GARCIA DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | <i>[Signature]</i> |
|       |      |     |               |                    |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1192**

HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 10-24-02 CUSTOMER Los Alamos Nat. Lab.

WELL NAME &amp; NUMBER

Geo Thermo Pit

TRUCKING CO.

KEY ENERGY

UNIT NO

826

DRIVER

R. School

ARRIVAL TIME

ORDERED BY

Jeffery

DEL. TICKET NO.

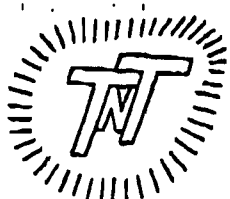
| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | <u>R. School</u>   |
|       |      |     |               |                    |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00

ATTENDANT'S SIGNATURE

J. A.

Reprographics 0498267

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1193**

HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 10-24-02 CUSTOMER Los Alamos National Lab

WELL NAME &amp; NUMBER

Geo Thermo Res. Pit

TRUCKING CO.

Key Energy

UNIT NO

842

DRIVER

R. Toledo

ARRIVAL TIME

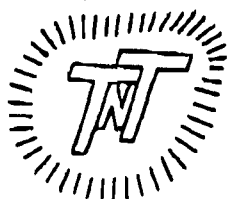
ORDERED BY

Jeffery

DEL. TICKET NO.

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | <u>R. Toledo</u>   |
|       |      |     |               |                    |
|       |      |     |               |                    |

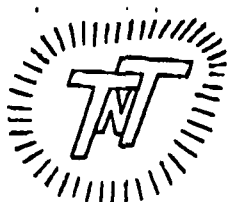
☐ 60 ARREL ☐ 100 BARREL
80.00

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504
**1240**
 DATE 10/27/02 CUSTOMER Los Alamos  
 WELL NAME & NUMBER GEO THERMO  
 TRUCKING CO. Key UNIT NO 841  
 DRIVER C. Scott ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY JEFFERY DEL. TICKET NO. \_\_\_\_\_

| WATER | RH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | C. Scott           |
|       |     |     |               |                    |
|       |     |     |               |                    |

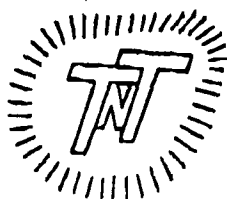
☐ 60 BARREL ☐ 100 BARREL
80, 80ATTENDANT'S SIGNATURE 2.1

Reprographics 049928

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504
**1218**
 DATE 10/25/02 CUSTOMER Los Alamos NATIONAL LAB  
 WELL NAME & NUMBER GEO THERMO SITE  
 TRUCKING CO. Key UNIT NO 841  
 DRIVER C. Scott ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY JEFF DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | C. Scott           |
| 80    | —   | —   | —             | C. Scott           |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
1600 5

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

1241

DATE 10-28-02 CUSTOMER Los Alamos Nct. LABSWELL NAME & NUMBER Geo Thermo SiteTRUCKING CO. Key EnergyUNIT NO 842DRIVER R. Toledo

ARRIVAL TIME \_\_\_\_\_

ORDERED BY Jeffery

DEL. TICKET NO. \_\_\_\_\_

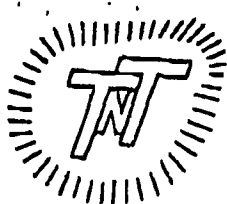
| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | R. Toledo          |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL80.00

ATTENDANT'S SIGNATURE \_\_\_\_\_

J. A.

Reprographics 048826

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

1219

DATE 10-25-02 CUSTOMER Los Alamos LABSWELL NAME & NUMBER Geo Thermo Res. PitTRUCKING CO. Key EnergyUNIT NO 842DRIVER R. Toledo

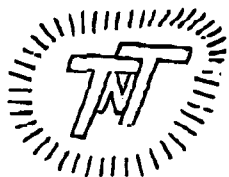
ARRIVAL TIME \_\_\_\_\_

ORDERED BY Jeffery

DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | R. Toledo          |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL80.00 6

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

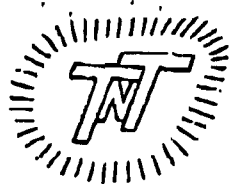
1216

DATE 10-25-02 CUSTOMER Los Alamos Nat. Lab.  
 WELL NAME & NUMBER Geo Thermo Pit  
 TRUCKING CO. KEY ENERGY UNIT NO 826  
 DRIVER R. S. S. S. ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | R. S. S. S.        |
|       |      |     |               |                    |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00ATTENDANT'S SIGNATURE T. A.

Reprographics 049920

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

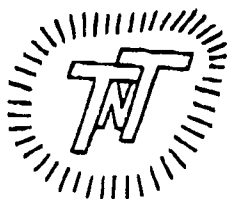
1230

DATE 10/25/02 CUSTOMER LOS ALAMOS NAT LAB  
 WELL NAME & NUMBER Geo Thermo Well Site  
 TRUCKING CO. Key UNIT NO 840  
 DRIVER J. C. ALLEGOS ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | J. C. ALLEGOS      |
|       |      |     |               |                    |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00ATTENDANT'S SIGNATURE T. A.

Reprographics 049920

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

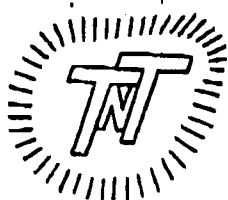
1231

DATE 10/25/02 CUSTOMER LOS ALAMOS NAT LAB  
 WELL NAME & NUMBER Geo Thermo Well Site  
 TRUCKING CO. Key Energy UNIT NO 840  
 DRIVER J. Collegos ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE  |
|-------|-----|-----|---------------|---------------------|
| 80    | —   | —   | —             | <i>Jon Collegos</i> |
|       |     |     |               |                     |
|       |     |     |               |                     |

☐ 60 BARREL ☐ 100 BARREL 80. <sup>002</sup>
ATTENDANT'S SIGNATURE J. A.

Reprographics 048926

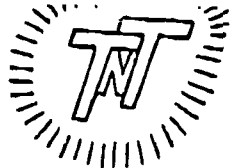
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

1258

DATE 10-28-02 CUSTOMER Los Alamos Nat. Lab.  
 WELL NAME & NUMBER Geo Thermo pit  
 TRUCKING CO. KEY ENERGY UNIT NO 826  
 DRIVER R. L. Lora ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | <i>R. L. Lora</i>  |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL 80. <sup>002</sup>



## T-N-T Environmental, Inc.

HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

1251

DATE \_\_\_\_\_ CUSTOMER Los Alamos National Labs  
WELL NAME & NUMBER Geo Thermo Site  
TRUCKING CO. Key UNIT NO. 841  
DRIVER Scott ARRIVAL TIME \_\_\_\_\_  
ORDERED BY Jeff DEL. TICKET NO. \_\_\_\_\_

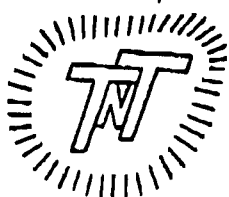
| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | Scott              |
|       |      |     |               |                    |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL

80.00

ATTENDANT'S SIGNATURE T. J.

Reprographics 049925



## "COMMERCIAL EVAPORATION PIT"

T-N-T Environmental, Inc.

HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

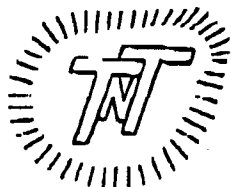
1250

DATE 10-28-02 CUSTOMER Los Alamos National Labs  
WELL NAME & NUMBER Geo Thermo site  
TRUCKING CO. Key Energy UNIT NO. 842  
DRIVER R. Toledo ARRIVAL TIME \_\_\_\_\_  
ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | R. Toledo          |
|       |      |     |               |                    |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL

80.00

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

1249

DATE 10-28-02 CUSTOMER Las Alamos Nat. LabsWELL NAME & NUMBER Geo Thermo Res pitTRUCKING CO. Key EnergyUNIT NO 830DRIVER MC

ARRIVAL TIME \_\_\_\_\_

ORDERED BY Jeffrey

DEL. TICKET NO. \_\_\_\_\_

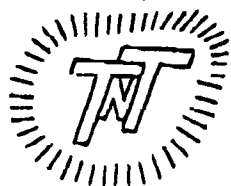
| WATER | P.H.  | H2S   | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-------|-------|---------------|--------------------|
| 80    | _____ | _____ | _____         | <u>MC</u>          |
|       |       |       |               |                    |
|       |       |       |               |                    |

☐ 60 BARREL ☐ 100 BARREL80.00

ATTENDANT'S SIGNATURE \_\_\_\_\_

Z. A.

Reprographics 048926

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

1242

DATE 10-28-02 CUSTOMER Las Alamos Nat. LabsWELL NAME & NUMBER Geo Thermo siteTRUCKING CO. Key EnergyUNIT NO 830DRIVER MC

ARRIVAL TIME \_\_\_\_\_

ORDERED BY Jeffrey

DEL. TICKET NO. \_\_\_\_\_

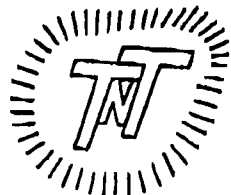
| WATER | P.H.  | H2S   | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-------|-------|---------------|--------------------|
| 80    | _____ | _____ | _____         | <u>MC</u>          |
|       |       |       |               |                    |
|       |       |       |               |                    |

☐ 60 BARREL ☐ 100 BARREL80.00

ATTENDANT'S SIGNATURE \_\_\_\_\_

Z. A.

Reprographics 048926

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1255**

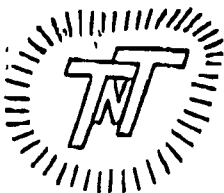
HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 10-28-02 CUSTOMER Los Alamos Nat. Lab.  
WELL NAME & NUMBER Geo Thermo pit  
TRUCKING CO. Key Energy UNIT NO. 826  
DRIVER R. S. S. S. S. ARRIVAL TIME \_\_\_\_\_  
ORDERED BY J. L. H. H. DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | <i>R. S. S. S.</i> |
|       |      |     |               |                    |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00ATTENDANT'S SIGNATURE J. L. H. H.

Reprographics 049828T

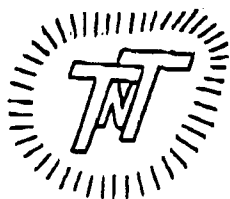
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1259**

HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 10/29/02 CUSTOMER Los Alamos National Lab  
WELL NAME & NUMBER Geo Thermo Site  
TRUCKING CO. Key UNIT NO. 841  
DRIVER Cameron Scott ARRIVAL TIME \_\_\_\_\_  
ORDERED BY \_\_\_\_\_ DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE   |
|-------|------|-----|---------------|----------------------|
| 80    | —    | —   | —             | <i>Cameron Scott</i> |
| 80    | —    | —   | —             | <i>Cameron Scott</i> |
|       |      |     |               |                      |

☐ 60 BARREL ☐ 100 BARREL
160.00

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1272**

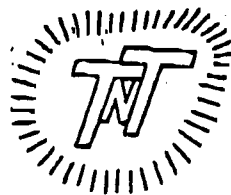
HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 10/30/02 CUSTOMER Los Alamos National Labs  
WELL NAME & NUMBER Geo Thermo Site  
TRUCKING CO. Key UNIT NO 841  
DRIVER Scott ARRIVAL TIME \_\_\_\_\_  
ORDERED BY Jeff DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | <u>Scott</u>       |
| 80    | —   | —   | —             |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
100.00ATTENDANT'S SIGNATURE 7.01

Reprographics 049926

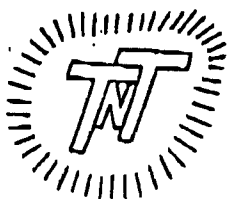
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1281**

HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 10-30-02 CUSTOMER Los Alamos National Labs  
WELL NAME & NUMBER Geo Thermo Site  
TRUCKING CO. Key Energy UNIT NO 842  
DRIVER R. Toledo ARRIVAL TIME \_\_\_\_\_  
ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | <u>R. Toledo</u>   |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00

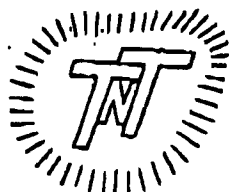
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1282**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504

 DATE 10/30/02 CUSTOMER LOS ALAMOS NAT LAB  
 WELL NAME & NUMBER Geo THERMO Well Site  
 TRUCKING CO. Key UNIT NO 840  
 DRIVER S. P. 29605 ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY S. P. 29605 DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    |      |     |               | <i>[Signature]</i> |
| 80    |      |     |               |                    |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
100.00ATTENDANT'S SIGNATURE *[Signature]*

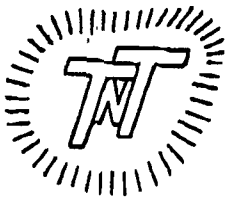
Reprographics 049928

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1288**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504

 DATE 10-30-02 CUSTOMER LOS ALAMOS Nat. Lab.  
 WELL NAME & NUMBER Geo THERMO Site  
 TRUCKING CO. Key Energy UNIT NO 830  
 DRIVER MC ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Je. Alamy DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    |      |     |               | <i>[Signature]</i> |
|       |      |     |               |                    |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1289**

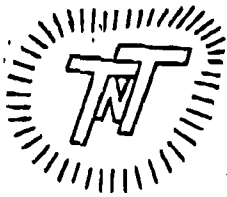
HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 10/31/02 CUSTOMER Los Alamos LABS  
WELL NAME & NUMBER Geo Thermo SITE  
TRUCKING CO. Key UNIT NO. 841  
DRIVER C. Scott ARRIVAL TIME \_\_\_\_\_  
ORDERED BY JEFF DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | <u>C. Scott</u>    |
| 80    | —   | —   | —             | <u>C. Scott</u>    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
100.00ATTENDANT'S SIGNATURE 7. J.

Reprographics 049826

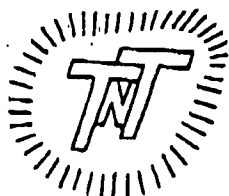
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1290**

HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 10-31-02 CUSTOMER Los Alamos Nat. Lab.  
WELL NAME & NUMBER Geo Thermo pit  
TRUCKING CO. Key Energy UNIT NO. 1540  
DRIVER R. Schwal ARRIVAL TIME \_\_\_\_\_  
ORDERED BY Jeff Perry DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | <u>R. Schwal</u>   |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00

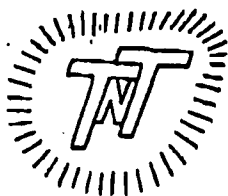
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504**1313**

DATE 11-1-02 CUSTOMER Los Alamos Nat. Labs.  
 WELL NAME & NUMBER Geo Thermo Site  
 TRUCKING CO. Key Energy UNIT NO 820  
 DRIVER MC ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | <i>MC</i>          |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL 80.00
ATTENDANT'S SIGNATURE T. A.

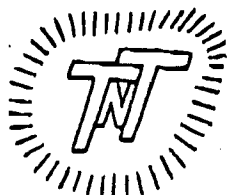
Reprographics 048928

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504**1312**

DATE 11/1/02 CUSTOMER Los Alamos Labs  
 WELL NAME & NUMBER Geo Thermo Site  
 TRUCKING CO. Key UNIT NO 841  
 DRIVER C. Scott ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeff DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | <i>C. Scott</i>    |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL 80.00

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1311**

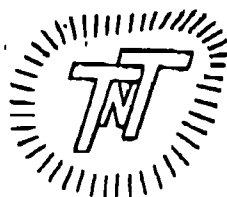
HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 11-1-02 CUSTOMER Los Alamos Nat. Lab.  
WELL NAME & NUMBER Geo Thermo pit  
TRUCKING CO. Key Energy UNIT NO 1540  
DRIVER R. S. S. S. S. ARRIVAL TIME \_\_\_\_\_  
ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | R. S. S. S. S.     |
| 80    | —    | —   | —             | R. S. S. S. S.     |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
160.00ATTENDANT'S SIGNATURE J. S.

Reprographics 048928

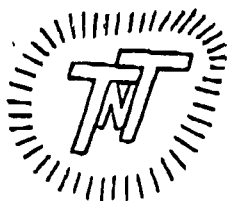
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1310**

HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE \_\_\_\_\_ CUSTOMER Los Alamos NAT LAB  
WELL NAME & NUMBER Geo Thermo Well Site  
TRUCKING CO. Key Energy UNIT NO 8477  
DRIVER J. S. S. S. S. ARRIVAL TIME \_\_\_\_\_  
ORDERED BY S. S. S. S. DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | J. S. S. S. S.     |
| 80    | —    | —   | —             | J. S. S. S. S.     |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
160.00

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504
**1346**DATE 11-4-02CUSTOMER Los Alamos Nat. LABSWELL NAME & NUMBER Geo Thermo SiteTRUCKING CO. KeyUNIT NO 842DRIVER R. Toledo

ARRIVAL TIME \_\_\_\_\_

ORDERED BY Jeffery

DEL. TICKET NO. \_\_\_\_\_

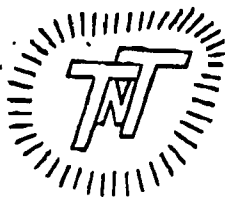
| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | Richy Toledo       |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL    ☐ 100 BARREL
80.00

ATTENDANT'S SIGNATURE \_\_\_\_\_

J. C.

Reprographics 0499267

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504
**1343**DATE 11/4/02CUSTOMER LOS ALAMOS NAT LABWELL NAME & NUMBER Geo Thermo Well SiteTRUCKING CO. KEY ENERGYUNIT NO 840DRIVER J. GONZALEZ

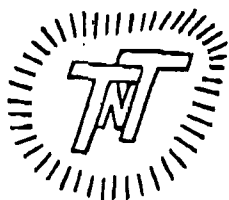
ARRIVAL TIME \_\_\_\_\_

ORDERED BY Jeffery

DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TRE T FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | John Gonzalez      |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL    ☐ 100 BARREL
80.00

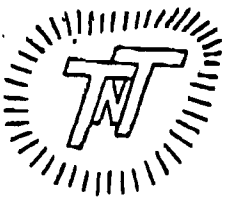
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504**1337**

DATE 11/4/02 CUSTOMER LOS ALAMOS NAT LAB  
 WELL NAME & NUMBER Geo Thermo Well Site  
 TRUCKING CO. KEY ENERGY UNIT NO 840  
 DRIVER J. COLLINGS ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY J. F. FAY DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H.  | H2S   | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-------|-------|---------------|--------------------|
| 80    | _____ | _____ | _____         | <i>[Signature]</i> |
|       |       |       |               |                    |
|       |       |       |               |                    |

☐ 60 BARREL ☐ 100 BARREL 80.00
ATTENDANT'S SIGNATURE *[Signature]*

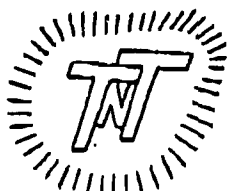
Reprographics 049026

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504**1344**

DATE 11/4/02 CUSTOMER LOS ALAMOS NAT LAB  
 WELL NAME & NUMBER Geo Thermo Well Site  
 TRUCKING CO. KEY UNIT NO 840  
 DRIVER J. COLLINGS ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY J. F. FAY DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H.  | H2S   | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-------|-------|---------------|--------------------|
| 80    | _____ | _____ | _____         | <i>[Signature]</i> |
|       |       |       |               |                    |
|       |       |       |               |                    |

☐ 60 BARREL ☐ 100 BARREL 80.00

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1345**

HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 11-4-02 CUSTOMER Los Alamos Nat. Lab  
WELL NAME & NUMBER Geo Thermo pit  
TRUCKING CO. Key Energy UNIT NO 1540  
DRIVER R. Schraf ARRIVAL TIME \_\_\_\_\_  
ORDERED BY Jet Perry DEL. TICKET NO. \_\_\_\_\_

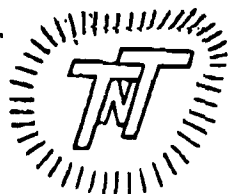
| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | -   | -   | -             | <i>R. Schraf</i>   |
| 80    | -   | -   | -             | <i>R. Schraf</i>   |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL 1130.00

ATTENDANT'S SIGNATURE \_\_\_\_\_

7, J.

Reprographics 049926

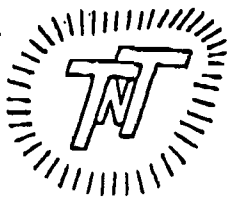
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1354**

HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

DATE 11/5/02 CUSTOMER Los Alamos Nat. Lab  
WELL NAME & NUMBER Geo Thermo Well Site  
TRUCKING CO. Key UNIT NO ~~826~~ 826  
DRIVER Scott ARRIVAL TIME \_\_\_\_\_  
ORDERED BY Jeffrey DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | -   | -   | -             | <i>Scott</i>       |
| 80    | -   | -   | -             | <i>Scott</i>       |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL 1130.00

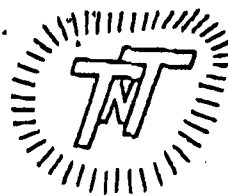
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504
**1374**

DATE 11-6-02 CUSTOMER Los Alamos National LABS  
 WELL NAME & NUMBER Geo Thermo Site  
 TRUCKING CO. Key Energy UNIT NO 842  
 DRIVER R. Toledo ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | R. Toledo          |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00ATTENDANT'S SIGNATURE J. A.

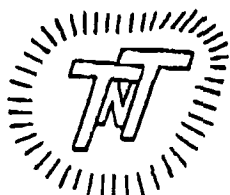
Reprographics 049926

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504
**1410**

DATE 11/7/02 CUSTOMER Los Alamos NAT LABS  
 WELL NAME & NUMBER Geo Thermo Well Site  
 TRUCKING CO. Key Energy UNIT NO 840  
 DRIVER J. Challegos ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | J. Challegos       |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

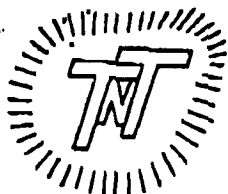
1391

DATE 11-7-02 CUSTOMER Las Alamos Nat. Lab.  
 WELL NAME & NUMBER Geo Thermo pit  
 TRUCKING CO. Key Energy UNIT NO. 1540  
 DRIVER R. S. Loral ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | R. S. Loral        |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00ATTENDANT'S SIGNATURE J. A.

Reprographics 0499287

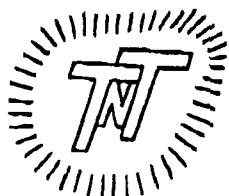
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

1411

DATE 11/8/02 CUSTOMER LOS ALAMOS NAT LAB  
 WELL NAME & NUMBER Geo Thermo Well Site  
 TRUCKING CO. Key Energy UNIT NO. 840  
 DRIVER J. P. ALLEGOS ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | J. P. Allegos      |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1458**

HCR 74 BOX 113

LINDRITH, NEW MEXICO 87029

PHONE: (505) 774-6504

DATE 11/12/02 CUSTOMER Los Alamos NAT LAB  
 WELL NAME & NUMBER GEO THERMO WELL SITE  
 TRUCKING CO. KEY ENERGY UNIT NO 840  
 DRIVER J. CALLEGOS ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY J. P. F. 924 DEL. TICKET NO. \_\_\_\_\_

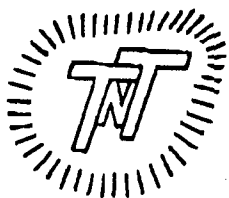
| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | <i>[Signature]</i> |
|       |      |     |               |                    |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80. <sup>80</sup>

ATTENDANT'S SIGNATURE \_\_\_\_\_

*[Signature]*

Reprographics 0499267

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.****1461**

HCR 74 BOX 113

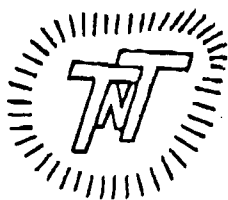
LINDRITH, NEW MEXICO 87029

PHONE: (505) 774-6504

DATE 11/12/02 CUSTOMER Los Alamos Labs  
 WELL NAME & NUMBER GEO THERMO SITE  
 TRUCKING CO. KEY UNIT NO 841  
 DRIVER SCOTT ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY JEFF DEL. TICKET NO. \_\_\_\_\_

| WATER | P.H. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|------|-----|---------------|--------------------|
| 80    | —    | —   | —             | <i>[Signature]</i> |
|       |      |     |               |                    |
|       |      |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80. <sup>80</sup>

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504
**1446**

DATE 11/12/02 CUSTOMER Los Alamos NAT LAB  
 WELL NAME & NUMBER Geo Thermo Well Site  
 TRUCKING CO. K9K UNIT NO 840  
 DRIVER CDL 9605 ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY SP Fagan DEL. TICKET NO. \_\_\_\_\_

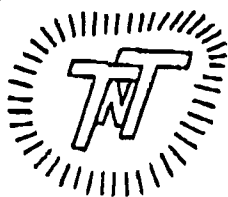
| WATER     | P.H.  | H2S   | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-----------|-------|-------|---------------|--------------------|
| <u>20</u> | _____ | _____ | _____         | <u>[Signature]</u> |
|           |       |       |               |                    |
|           |       |       |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00

ATTENDANT'S SIGNATURE \_\_\_\_\_

7.0

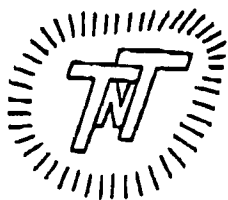
Reprographics 049920

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504
**1467**

DATE 11/13/02 CUSTOMER Los Alamos Labs  
 WELL NAME & NUMBER Geo Site  
 TRUCKING CO. Key UNIT NO 841  
 DRIVER CEOT ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY JEFF DEL. TICKET NO. \_\_\_\_\_

| WATER     | P.H.  | H2S   | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-----------|-------|-------|---------------|--------------------|
| <u>80</u> | _____ | _____ | _____         | <u>[Signature]</u> |
|           |       |       |               |                    |
|           |       |       |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00

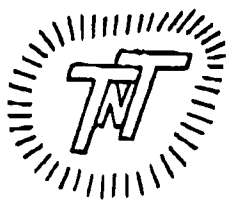
**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504
**1464**

DATE 11-13-02 CUSTOMER LOS ALAMOS Nat. Lab.  
 WELL NAME & NUMBER Geo Thermo site pit  
 TRUCKING CO. Key Energy UNIT NO 830  
 DRIVER MJC ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | <i>[Signature]</i> |
|       |     |     |               |                    |
|       |     |     |               |                    |

☐ 60 BARREL ☐ 100 BARREL
80.00ATTENDANT'S SIGNATURE T. J.

Reprographics 048926T

**"COMMERCIAL EVAPORATION PIT"****T-N-T Environmental, Inc.**
 HCR 74 BOX 113  
 LINDRITH, NEW MEXICO 87029  
 PHONE: (505) 774-6504
**1482**

DATE 11-14-02 CUSTOMER LOS ALAMOS NAT. LAB.  
 WELL NAME & NUMBER Geo Thermo pit  
 TRUCKING CO. Key Energy UNIT NO 1540  
 DRIVER R. Schuch ARRIVAL TIME \_\_\_\_\_  
 ORDERED BY Jeffery DEL. TICKET NO. \_\_\_\_\_

| WATER | PH. | H2S | TR AT FOR H2S | DRIVER'S SIGNATURE |
|-------|-----|-----|---------------|--------------------|
| 80    | —   | —   | —             | <i>[Signature]</i> |
| 80    | —   | —   | —             | <i>[Signature]</i> |
|       |     |     |               |                    |

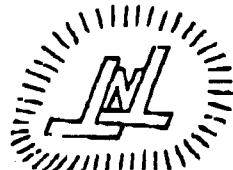
☐ 60 BARREL ☐ 100 BARREL
1100.00

# "COMMERCIAL EVAPORATION PIT"

T-N-T Environmental, Inc.

HCR 74 BOX 113  
LINDRITH, NEW MEXICO 87029  
PHONE: (505) 774-6504

1543



DATE 11/20/02 CUSTOMER Los Alamos Nat 208  
WELL NAME & NUMBER Los Alamos WEL. SITE  
TRUCKING CO. Key Energy  
DRIVER 50043605  
ORDERED BY 50043605  
ARRIVAL TIME 840  
DEL. TICKET NO. 840

| WATER     | PH. | H2S | TREAT FOR H2S | DRIVER'S SIGNATURE |
|-----------|-----|-----|---------------|--------------------|
| <u>80</u> |     |     |               | <u>[Signature]</u> |

☐ 60 BARREL ☐ 100 BARREL

ATTENDANT'S SIGNATURE

70

Photographs 04020T



## COMMERCIAL LANDFARM TICKET

T-N-T Environmental, Inc.

HCR 74 - Box 113  
Lindrith, NM 87029  
(505) 774-3504

Ticket No.

2387

### ORIGIN:

Operator Los Alamos Labs/Key Date: 11/14/02

Address \_\_\_\_\_ Phone \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Well Name & No. Cro Thomas Site

Location (Sec., T. & R.) \_\_\_\_\_

### ANALYSIS:

Chemical Analysis by T-N-T: Yes / No Analysis Attached: Yes / No

Laboratory \_\_\_\_\_

Analysis \_\_\_\_\_

### TRANSPORTER:

Trucking Co. Key Unit No. 841

Delivery Ticket No. 25

Driver C. Scott

| Yards           | Weight       | Drivers Signature | Cell     |
|-----------------|--------------|-------------------|----------|
| <u>80</u>       | <u>133's</u> | <u>C. Scott</u>   | <u>2</u> |
| <u>X #1.0</u>   |              |                   |          |
|                 |              |                   |          |
| <u>500, etc</u> |              |                   |          |

CORIES: White - Landfarm, Yellow - Tractor, Pink & Gold - Operator/Customer

11-14-02

Date

TNT Attendant



COMMERCIAL LANDFARM TICKET  
T-N-T Environmental, Inc.

HCR 74 - Box 113  
Lindrieth, NM 87029  
(505) 774-6504

Ticket No.

2386

ORIGIN:

Date: 11-14-02

Operator Walter R. George Los Alamos National Lab  
Address Key

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Well Name & No. Geo Thomas well site

Location (Sec., T. & R.) \_\_\_\_\_

ANALYSIS:

Chemical Analysis by T-N-T: Yes / No Analysis Attached: Yes / No

Laboratory \_\_\_\_\_

Analysis \_\_\_\_\_

TRANSPORTER:

Trucking Co. Key George Unit No. 822

Delivery Ticket No. \_\_\_\_\_

Driver Walter R. George

| Yards   | Weight | Drivers Signature | Cell |
|---------|--------|-------------------|------|
| 50 bbls |        | <u>W. George</u>  | 2    |
| X 7.00  |        |                   |      |
|         |        |                   |      |
| 500.00  |        |                   |      |

COPIES: White - Landfarm, Yellow - Transporter, Pink & Gold - Operator/Customer

Date

TNT Attendant



COMMERCIAL LANDFARM TICKET  
T-N-T Environmental, Inc.

HCR 74 - Box 113  
Lindrieth, NM 87029  
(505) 774-6504

Ticket No.

238

ORIGIN:

Date: 11/13/02

Operator Labs / Key  
Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Well Name & No. Geo Thomas well

Location (Sec., T. & R.) \_\_\_\_\_

ANALYSIS:

Chemical Analysis by T-N-T: Yes / No Analysis Attached: Yes /

Laboratory \_\_\_\_\_

Analysis \_\_\_\_\_

TRANSPORTER:

Trucking Co. Key George Unit No. 840

Delivery Ticket No. \_\_\_\_\_

Driver CALLIGAS

| Yards  | Weight  | Drivers Signature   | Cell |
|--------|---------|---------------------|------|
| 30     | 155 lbs | <u>James Valley</u> |      |
| X 7.00 |         |                     |      |
|        |         |                     |      |
| 500.00 |         |                     |      |

COPIES: White - Landfarm, Yellow - Transporter, Pink & Gold - Operator/Customer

Date

TNT Attendant

11-13-02 Walter R. George



COMMERCIAL LANDFARM TICKET  
T-N-T Environmental, Inc.

HCR 74 - Box 113  
Lindrieth, NM 87029  
(505) 774-6504

Ticket No.

2384

ORIGIN:

Operator Labs/Key Date: 11/12/02  
Address \_\_\_\_\_ Phone \_\_\_\_\_  
City Los Alamos State NM Zip \_\_\_\_\_  
Well Name & No. Cito Thermo Site  
Location (Sec., T. & R.) \_\_\_\_\_

ANALYSIS:

Chemical Analysis by T-N-T: Yes / No Analysis Attached: Yes / No  
Laboratory \_\_\_\_\_  
Analysis \_\_\_\_\_

TRANSPORTER:

Trucking Co. Key Unit No. 841  
Delivery Ticket No. C Scott  
Driver \_\_\_\_\_

| Yards      | Weight         | Drivers Signature | Cell     |
|------------|----------------|-------------------|----------|
| <u>500</u> | <u>300 lbs</u> | <u>C Scott</u>    | <u>2</u> |
|            |                |                   |          |
|            |                |                   |          |
|            |                |                   |          |
|            |                |                   |          |

COPIES: White - Landfarm, Yellow - Transporter, Pink & Gold - Operator/Customer

11-12-02 Vincent Enriquez

Date TNT Attendant



COMMERCIAL LANDFARM TICKET  
T-N-T Environmental, Inc.

HCR 74 - Box 113  
Lindrieth, NM 87029  
(505) 774-6504

Ticket No.

238

ORIGIN:

Operator Labs/Key Date: 11/12/02  
Address \_\_\_\_\_ Phone \_\_\_\_\_  
City Los Alamos State NM Zip \_\_\_\_\_  
Well Name & No. Cito Thermo Site  
Location (Sec., T. & R.) \_\_\_\_\_

ANALYSIS:

Chemical Analysis by T-N-T: Yes / No Analysis Attached: Yes  
Laboratory \_\_\_\_\_  
Analysis \_\_\_\_\_

TRANSPORTER:

Trucking Co. Key Unit No. 841  
Delivery Ticket No. C Scott  
Driver \_\_\_\_\_

| Yards | Weight        | Drivers Signature |
|-------|---------------|-------------------|
|       |               | <u>C Scott</u>    |
|       | <u>X 7.00</u> |                   |
|       |               |                   |
|       |               |                   |
|       |               |                   |

COPIES: White - Landfarm, Yellow - Transporter, Pink & Gold - Operator/Customer

11-11-02 Vincent Enriquez

Date TNT Attendant


**COMMERCIAL LANDFARM TICKET**  
**T-N-T Environmental, Inc.**

 HCR 74 - Box 113  
 Lindirrh, NM 87029  
 (505) 774-6504

Ticket No.

2383

**ORIGIN:**Operator Labs / KeyDate: 10/11/02

Address

Phone

City

State NM ZipWell Name & No. Geo Thermo Well Site

Location (Sec., T. &amp; R.)

**ANALYSIS:**

Chemical Analysis by T-N-T: Yes / No Analysis Attached: Yes / No

Laboratory

Analysis

**TRANSPORTER:**Trucking Co. KeyUnit No. 840

Delivery Ticket No.

Driver Ricky Toledo

| Yards  | Weight | Drivers Signature | Cell |
|--------|--------|-------------------|------|
| 80     | BBS    | <u>R. Toledo</u>  | 2    |
| X7.00  |        |                   |      |
|        |        |                   |      |
| 500.00 |        |                   |      |

COPIES: White - Landfarm, Yellow - Transporter, Pink &amp; Gold - Operator/Customer

10-11-02 Vicente Enriquez

Date

TNT Attendant


**COMMERCIAL LANDFARM TICKET**  
**T-N-T Environmental, Inc.**

 HCR 74 - Box 113  
 Lindirrh, NM 87029  
 (505) 774-6504

Ticket No.

2375

**ORIGIN:**Operator Labs / KeyDate: 11-8-02

Address

Phone

City Los Alamos National Lab State NM ZipWell Name & No. Geo Thermo SiteLocation (Sec., T. & R.) N/A**ANALYSIS:**

Chemical Analysis by T-N-T: Yes / No Analysis Attached: Yes / No

Laboratory

Analysis

**TRANSPORTER:**Trucking Co. Key EnergyUnit No. 842

Delivery Ticket No.

Driver Ricky Toledo

| Yards  | Weight | Drivers Signature | Cell |
|--------|--------|-------------------|------|
| 80     | BBS    | <u>R. Toledo</u>  | 2    |
| X7.00  |        |                   |      |
|        |        |                   |      |
| 500.00 |        |                   |      |

COPIES: White - Landfarm, Yellow - Transporter, Pink &amp; Gold - Operator/Customer

11-8-02 Vicente Enriquez

Date

TNT Attendant

**COMMERCIAL LANDFARM TICKET**  
**T-N-T Environmental, Inc.**

HCR 74 - Box 113  
Lindrieth, NM 87029  
(505) 774-6504

Ticket No.

**2373**

**ORIGIN:** Labs / Key Date: 11/8/02

Operator Labs / Key Address Los Alamos Phone State NM Zip

City Los Alamos State NM Zip

Well Name & No. C200 Thermo Site

Location (Sec., T. & R.)

**ANALYSIS:**

Chemical Analysis by T-N-T: Yes / No Analysis Attached: Yes / No

Laboratory

Analysis

**TRANSPORTER:**

Trucking Co. Key Unit No. 840

Delivery Ticket No. C Scott

Driver C Scott

| Yards    | Weight | Drivers Signature | Cell |
|----------|--------|-------------------|------|
| 80 BRL's |        | C Scott           | 2    |
| X 47.00  |        |                   |      |
|          |        |                   |      |
|          |        |                   |      |
| 560.00   |        |                   |      |

COPIES: White - Landfarm, Yellow - Transporter, Pink & Gold - Operator/Customer

11-8-02 Vicente Enayez

Date TNT Attendant

**COMMERCIAL LANDFARM TICKET**  
**T-N-T Environmental, Inc.**

HCR 74 - Box 113  
Lindrieth, NM 87029  
(505) 774-6504

Ticket No.

**2374**

**GIN:** Labs / Key Date: 11/8/02

Operator Labs / Key Address Los Alamos Phone State NM Zip

City Los Alamos State NM Zip

Well Name & No. C200 Thermo Site

Location (Sec., T. & R.)

**ANALYSIS:**

Chemical Analysis by T-N-T: Yes / No Analysis Attached: Yes / No

Laboratory

Analysis

**TRANSPORTER:**

Trucking Co. Key Unit No. 840

Delivery Ticket No. C200

Driver C200

| Yards    | Weight | Drivers Signature | Cell |
|----------|--------|-------------------|------|
| 80 BRL's |        | C Scott           | 2    |
| X 47.00  |        |                   |      |
|          |        |                   |      |
|          |        |                   |      |
| 560.00   |        |                   |      |

COPIES: White - Landfarm, Yellow - Transporter, Pink & Gold - Operator/Customer

11/8/02 Vicente Enayez

Date TNT Attendant



**COMMERCIAL LANDFARM TICKET**  
T-N-T Environmental, Inc.

HCR 74 - Box 113  
Lindrieth, NM 87029  
(505) 774-6504

Ticket No.

2372

**ORIGIN:**

Operator Labs / Key

Date: 11/7/02

Address \_\_\_\_\_

Phone \_\_\_\_\_

City \_\_\_\_\_ State NM Zip \_\_\_\_\_

Well Name & No. Geo Thermal Well Site

Location (Sec., T. & R.) \_\_\_\_\_

**ANALYSIS:**

Chemical Analysis by T-N-T: Yes / No Analysis Attached: Yes / No

Laboratory \_\_\_\_\_

Analysis \_\_\_\_\_

**TRANSPORTER:**

Trucking Co. Key Unit No. 840

Delivery Ticket No. 2372

Driver 50619605

| Yards          | Weight      | Drivers Signature  | Cell     |
|----------------|-------------|--------------------|----------|
| <u>83</u>      | <u>BBLS</u> | <u>[Signature]</u> | <u>2</u> |
| <u>X 17.00</u> |             |                    |          |
|                |             |                    |          |
| <u>540.1</u>   |             |                    |          |

COPIES: White - Landfarm, Yellow - Transporter, Pink & Gold - Operator/Customer

Date 11-7-02 Vicente Enriquez  
TNT Attendant



**COMMERCIAL LANDFARM TICKET**  
T-N-T Environmental, Inc.

HCR 74 - Box 113  
Lindrieth, NM 87029  
(505) 774-6504

Ticket No.

2388

**GIN:**

Operator Labs / Nat Labs

Date: 11/15/02

Address \_\_\_\_\_

Phone \_\_\_\_\_

City \_\_\_\_\_ State NM Zip \_\_\_\_\_

Well Name & No. Geo Thermal Well Site

Location (Sec., T. & R.) \_\_\_\_\_

**ANALYSIS:**

Chemical Analysis by T-N-T: Yes / No Analysis Attached: Yes / No

Laboratory \_\_\_\_\_

Analysis \_\_\_\_\_

**TRANSPORTER:**

Trucking Co. Key Energy Unit No. 840

Delivery Ticket No. \_\_\_\_\_

Driver 50619605

| Yards            | Weight      | Drivers Signature  | Cell     |
|------------------|-------------|--------------------|----------|
| <u>83</u>        | <u>BBLS</u> | <u>[Signature]</u> | <u>2</u> |
| <u>MUD WATER</u> |             |                    |          |
| <u>83</u>        | <u>BBLS</u> | <u>[Signature]</u> | <u>2</u> |
| <u>MUD WATER</u> |             |                    |          |
| <u>83</u>        | <u>BBLS</u> | <u>[Signature]</u> | <u>2</u> |

COPIES: White - Landfarm, Yellow - Transporter, Pink & Gold - Operator/Customer

Date 11/15/02 [Signature]  
TNT Attendant

# **ATTACHMENT 3**

## **Disposal Records**

**1-MG Service Pond Liners, Geofiber  
Matting, and Leak Collection Gravel**

DRIVER: PLEASE SIGN HERE

RIO RANCHO SANITARY LANDFILL  
 PO BOX 15700  
 RIO RANCHO, NM 87174

check 1173

TICKET NBR  
 89803

| HAULER NAME                       | TRUCK #  | OPERATOR | TIME IN | TIME OUT         | DATE |
|-----------------------------------|----------|----------|---------|------------------|------|
| OUTCASH / OUTSIDE TR CASH ACCOUNT | OUTCASH2 | IN: c1   | 16:16   | 16:16 11/19/2002 |      |

ACT: 00000000

OUT: c1

ORIGIN: RIO / ALBUQUERQUE  
 LICENSE: COMMERCIAL  
 ROUTE: NM / Non App  
 MANIFEST:  
 COMMENT:  
 P.O.:

Fenton Lake



SOURCES

OTHER INFORMATION

Weight  
 TRUCK # OUTCASH2  
 Box ID

GROSS: 0 LBS  
 TARE: 0 LBS  
 NET: 0 LBS

Sale Term

MANAGEMENT

| MATERIAL CODE/DESCRIPTION       | QUANTITY | MEASURE | RATE    | AMOUNT   |
|---------------------------------|----------|---------|---------|----------|
| WASTE                           | QUANTITY | UNIT    | RATE    | AMOUNT   |
| RIO / COMMERCIAL WASTE BY YARDS | 7.00     | Y       | \$ 4.24 | \$ 29.68 |
| CASH IN: 31.52 CHARGE: \$       | 0.00     |         |         |          |
|                                 |          |         | \$      | 31.52    |

B. RDLE

Envirotech, Inc.

5796 Hwy 64

Farmington, NM 87401

505-632-0615 Phone Number

505-632-1865 Fax Number

Invoice Number:

7589

November 30, 2002

**Invoice**

To: Key Energy  
PO Box 900  
Farmington, NM 87499-0900

Job: 95065-008

Acceptance of sludge/water from LANL's geothermal project

Job Manager: Harlan Brown

Professional Services for the Period: 11/01/02 to 11/30/02

*OPSD 11/6/02*

Billing Group: 001

Cost Plus

November 30, 2002

Invoice: 7589

Attn: Randy Blackman

**Landfarm Services**

| <u>Expense Code</u>                                | <u>Date</u> | <u>Bill Units</u> | <u>Unit Bill Rate</u> | <u>Bill Unit Charge</u> |
|----------------------------------------------------|-------------|-------------------|-----------------------|-------------------------|
| Contaminated Soil Acceptance                       | 11/18/02    | 25.00 CY          | \$18.00               | \$450.00                |
| BOL # 20262 ~ Pond sediment ~ via L&R Oil Services |             |                   |                       |                         |

**Landfarm Services Totals:** \$450.00

Billing Group Subtotal: \$450.00

Billing Group Fees 0.00

New Mexico Gross Receipts Tax: \$25.88

**Billing Group Total:** \$475.88

**Project Totals:**

Project Subtotal: \$450.00

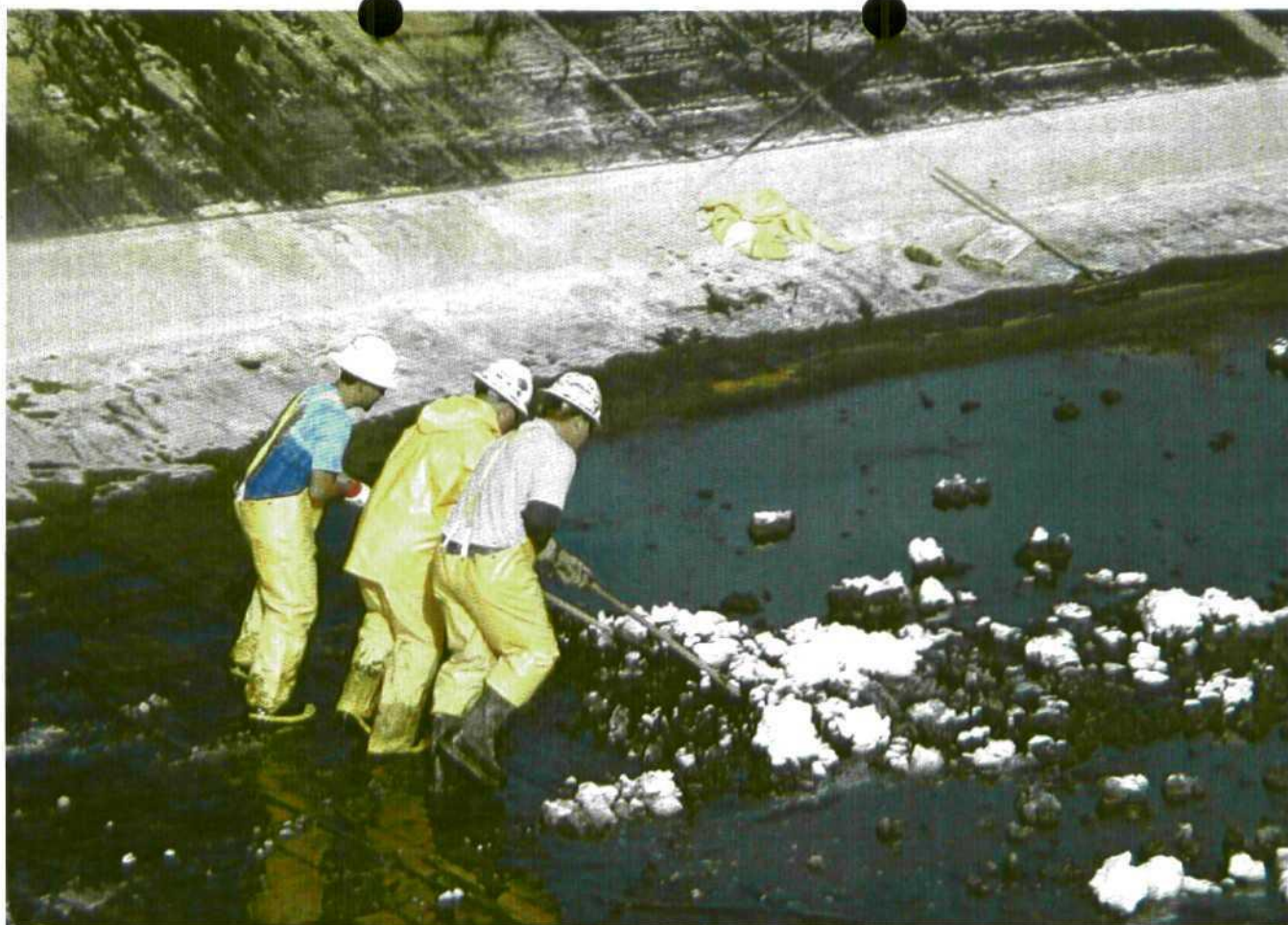
NM Gross Receipts Tax: \$25.88

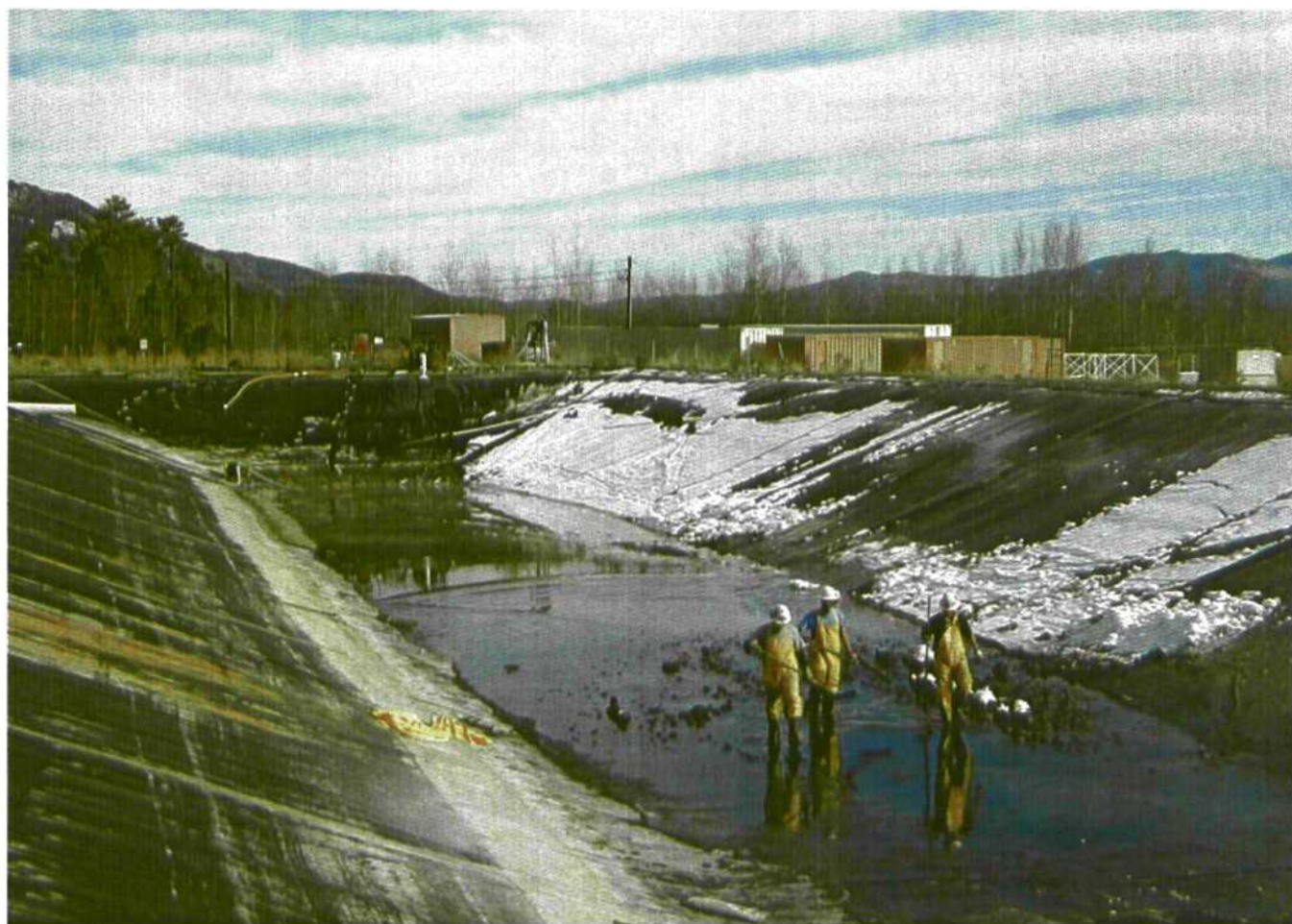
**Billing Total:** \$475.88

# **ATTACHMENT 4**

## **Photographs**

### **1-MG Service Pond Closure Activities**













# **ATTACHMENT 5**

## **NORM Survey Results**

### **1-MG Service Pond Leak Collection Piping**

**Radioactivity Screening Results**  
**1-MG Pond Leak Collection Piping**

12/19/2002

| Survey   |            | Channel   |           |       |          |           |       |           |          |
|----------|------------|-----------|-----------|-------|----------|-----------|-------|-----------|----------|
| Location | Log Date   | Probe S/N | Log Mode  | Type  | Reading  | Gross/Net | Units | E-600 S/N | uR/h     |
| 1        | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.03E-05 | Gross     | R/hr  | 12066     | 1.03E+01 |
| 2        | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.12E-05 | Gross     | R/hr  | 12066     | 1.12E+01 |
| 3        | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.18E-05 | Gross     | R/hr  | 12066     | 1.18E+01 |
| 4        | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.48E-05 | Gross     | R/hr  | 12066     | 1.48E+01 |
| 5        | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 6        | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.24E-05 | Gross     | R/hr  | 12066     | 1.24E+01 |
| 7        | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.22E-05 | Gross     | R/hr  | 12066     | 1.22E+01 |
| 8        | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 9        | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.17E-05 | Gross     | R/hr  | 12066     | 1.17E+01 |
| 10       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.17E-05 | Gross     | R/hr  | 12066     | 1.17E+01 |
| 11       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.17E-05 | Gross     | R/hr  | 12066     | 1.17E+01 |
| 12       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.23E-05 | Gross     | R/hr  | 12066     | 1.23E+01 |
| 13       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.26E-05 | Gross     | R/hr  | 12066     | 1.26E+01 |
| 14       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.27E-05 | Gross     | R/hr  | 12066     | 1.27E+01 |
| 15       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.18E-05 | Gross     | R/hr  | 12066     | 1.18E+01 |
| 16       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.21E-05 | Gross     | R/hr  | 12066     | 1.21E+01 |
| 17       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.18E-05 | Gross     | R/hr  | 12066     | 1.18E+01 |
| 18       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.16E-05 | Gross     | R/hr  | 12066     | 1.16E+01 |
| 19       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.15E-05 | Gross     | R/hr  | 12066     | 1.15E+01 |
| 20       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.15E-05 | Gross     | R/hr  | 12066     | 1.15E+01 |
| 21       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.15E-05 | Gross     | R/hr  | 12066     | 1.15E+01 |
| 22       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.14E-05 | Gross     | R/hr  | 12066     | 1.14E+01 |
| 23       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 24       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.22E-05 | Gross     | R/hr  | 12066     | 1.22E+01 |
| 25       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.23E-05 | Gross     | R/hr  | 12066     | 1.23E+01 |
| 26       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.24E-05 | Gross     | R/hr  | 12066     | 1.24E+01 |
| 27       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.26E-05 | Gross     | R/hr  | 12066     | 1.26E+01 |
| 28       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.24E-05 | Gross     | R/hr  | 12066     | 1.24E+01 |
| 29       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.21E-05 | Gross     | R/hr  | 12066     | 1.21E+01 |
| 30       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.17E-05 | Gross     | R/hr  | 12066     | 1.17E+01 |
| 31       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.15E-05 | Gross     | R/hr  | 12066     | 1.15E+01 |
| 32       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.15E-05 | Gross     | R/hr  | 12066     | 1.15E+01 |
| 33       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.12E-05 | Gross     | R/hr  | 12066     | 1.12E+01 |
| 34       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.38E-05 | Gross     | R/hr  | 12066     | 1.38E+01 |
| 35       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.10E-05 | Gross     | R/hr  | 12066     | 1.10E+01 |
| 36       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.11E-05 | Gross     | R/hr  | 12066     | 1.11E+01 |
| 37       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.11E-05 | Gross     | R/hr  | 12066     | 1.11E+01 |
| 38       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.14E-05 | Gross     | R/hr  | 12066     | 1.14E+01 |
| 39       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.13E-05 | Gross     | R/hr  | 12066     | 1.13E+01 |
| 40       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.12E-05 | Gross     | R/hr  | 12066     | 1.12E+01 |
| 41       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.15E-05 | Gross     | R/hr  | 12066     | 1.15E+01 |
| 42       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 43       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.54E-05 | Gross     | R/hr  | 12066     | 1.54E+01 |
| 44       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.46E-05 | Gross     | R/hr  | 12066     | 1.46E+01 |
| 45       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.21E-05 | Gross     | R/hr  | 12066     | 1.21E+01 |
| 46       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 47       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.18E-05 | Gross     | R/hr  | 12066     | 1.18E+01 |
| 48       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.17E-05 | Gross     | R/hr  | 12066     | 1.17E+01 |
| 49       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.15E-05 | Gross     | R/hr  | 12066     | 1.15E+01 |
| 50       | 11/20/2002 | 13085     | Ratemeter | Gamma | 1.15E-05 | Gross     | R/hr  | 12066     | 1.15E+01 |

| Survey   |            |           |           | Channel |          |           |       |           |          |
|----------|------------|-----------|-----------|---------|----------|-----------|-------|-----------|----------|
| Location | Log Date   | Probe S/N | Log Mode  | Type    | Reading  | Gross/Net | Units | E-600 S/N | uR/h     |
| 51       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.14E-05 | Gross     | R/hr  | 12066     | 1.14E+01 |
| 52       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.17E-05 | Gross     | R/hr  | 12066     | 1.17E+01 |
| 53       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.16E-05 | Gross     | R/hr  | 12066     | 1.16E+01 |
| 54       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.13E-05 | Gross     | R/hr  | 12066     | 1.13E+01 |
| 55       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.13E-05 | Gross     | R/hr  | 12066     | 1.13E+01 |
| 56       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.13E-05 | Gross     | R/hr  | 12066     | 1.13E+01 |
| 57       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.14E-05 | Gross     | R/hr  | 12066     | 1.14E+01 |
| 58       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.16E-05 | Gross     | R/hr  | 12066     | 1.16E+01 |
| 59       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.41E-05 | Gross     | R/hr  | 12066     | 1.41E+01 |
| 60       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.29E-05 | Gross     | R/hr  | 12066     | 1.29E+01 |
| 61       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.26E-05 | Gross     | R/hr  | 12066     | 1.26E+01 |
| 62       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.23E-05 | Gross     | R/hr  | 12066     | 1.23E+01 |
| 63       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.21E-05 | Gross     | R/hr  | 12066     | 1.21E+01 |
| 64       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.16E-05 | Gross     | R/hr  | 12066     | 1.16E+01 |
| 65       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.14E-05 | Gross     | R/hr  | 12066     | 1.14E+01 |
| 66       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.15E-05 | Gross     | R/hr  | 12066     | 1.15E+01 |
| 67       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.17E-05 | Gross     | R/hr  | 12066     | 1.17E+01 |
| 68       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.16E-05 | Gross     | R/hr  | 12066     | 1.16E+01 |
| 69       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.16E-05 | Gross     | R/hr  | 12066     | 1.16E+01 |
| 70       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 71       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 72       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 73       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.14E-05 | Gross     | R/hr  | 12066     | 1.14E+01 |
| 74       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.14E-05 | Gross     | R/hr  | 12066     | 1.14E+01 |
| 75       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.17E-05 | Gross     | R/hr  | 12066     | 1.17E+01 |
| 76       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.17E-05 | Gross     | R/hr  | 12066     | 1.17E+01 |
| 77       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 78       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.20E-05 | Gross     | R/hr  | 12066     | 1.20E+01 |
| 79       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.26E-05 | Gross     | R/hr  | 12066     | 1.26E+01 |
| 80       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.26E-05 | Gross     | R/hr  | 12066     | 1.26E+01 |
| 81       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.26E-05 | Gross     | R/hr  | 12066     | 1.26E+01 |
| 82       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.27E-05 | Gross     | R/hr  | 12066     | 1.27E+01 |
| 83       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.28E-05 | Gross     | R/hr  | 12066     | 1.28E+01 |
| 84       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.27E-05 | Gross     | R/hr  | 12066     | 1.27E+01 |
| 85       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.27E-05 | Gross     | R/hr  | 12066     | 1.27E+01 |
| 86       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.25E-05 | Gross     | R/hr  | 12066     | 1.25E+01 |
| 87       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.26E-05 | Gross     | R/hr  | 12066     | 1.26E+01 |
| 88       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.24E-05 | Gross     | R/hr  | 12066     | 1.24E+01 |
| 89       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.22E-05 | Gross     | R/hr  | 12066     | 1.22E+01 |
| 90       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.22E-05 | Gross     | R/hr  | 12066     | 1.22E+01 |
| 91       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 92       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 93       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 94       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.18E-05 | Gross     | R/hr  | 12066     | 1.18E+01 |
| 95       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.19E-05 | Gross     | R/hr  | 12066     | 1.19E+01 |
| 96       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.22E-05 | Gross     | R/hr  | 12066     | 1.22E+01 |
| 97       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.25E-05 | Gross     | R/hr  | 12066     | 1.25E+01 |
| 98       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.27E-05 | Gross     | R/hr  | 12066     | 1.27E+01 |
| 99       | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.26E-05 | Gross     | R/hr  | 12066     | 1.26E+01 |
| 100      | 11/20/2002 | 13085     | Ratometer | Gamma   | 1.12E-05 | Gross     | R/hr  | 12066     | 1.12E+01 |
| Avg      |            |           |           |         |          |           |       |           | 1.20E+01 |
| Max      |            |           |           |         |          |           |       |           | 1.54E+01 |

# **ATTACHMENT 6**

**U.S. Forest Service Letter**

**Request for Soil Sampling**



United States  
Department of  
Agriculture

Forest  
Service

Santa Fe National Forest

1474 Rodeo Road  
P.O. Box 1689  
Santa Fe, New Mexico 87504-1689  
505-438-7840 FAX 505-438-7834

File Code: 6740

Date: September 27, 2002

Bob Beers  
Water Quality & Hydrology Group  
Los Alamos National Laboratory  
P.O. Box 1663  
Los Alamos, NM 87545

Dear Mr. Beers,

Thank you for forwarding us the *Closure Plan for the Fenton Hill Geothermal 1-mg Service Pond and the EE-2A Production Well*, document LA-UR-02-5009 of August 2002, for our review. We would like to comment on sections 9.0, 5.1, 5.2, 5.3.2 and 6.1.

The Santa Fe National Forest requests copies of the manifests associated with the disposal of the service pond waste water and sludge. The DOT manifests, signed by the disposal facility upon receipt of the transport, should be submitted to Carol Linn, Forest Hazardous Materials Coordinator.

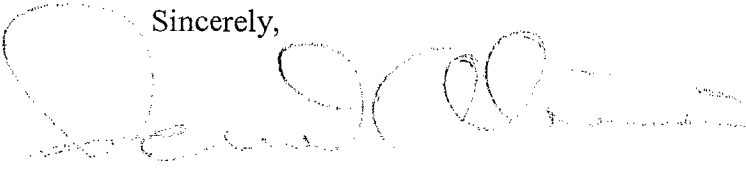
The Forest Service requests that confirmation samples be taken to assure that contamination has not occurred in the gravel material that serves as the leak detection system and the soils beneath the secondary liner. A minimum of two samples shall be taken of each layer. If there is any visual evidence of leakage, as stated in Section 6.1, the suspect material shall also be sampled.

The analysis shall be for those contaminants identified in 40 CFR Chapter 1, Section 261.24, as tested in March 2002.

The Santa Fe National Forest staff would like to be present when the actual excavation, grading and re-contouring of the area is performed. Any areas that will remain at the existing ground elevations shall be scarified to enhance germination of the seed, prior to the top soiling operations. Please contact Anne Ferrell (505-829-3535) of the Jemez Ranger District with your schedule of operations.

Thank you for your cooperation.

Sincerely,



LEONARD ATENCIO  
Forest Supervisor

cc: Anne Ferrell, Marcia Miolano, Carol Linn, John F Peterson, Patrick Leyba



# **ATTACHMENT 7**

## **Sampling and Analysis Plan for Soil Sampling Beneath the Pond's Liners**

**Sampling and Analysis Plan**  
**for Closure of the 1.0 Million Gallon Service Pond,**  
**AOC 57-004(a),**  
**at the Fenton Hill Geothermal Site**

## **1.0 Introduction**

Los Alamos National Laboratory intends to close the 1-million gallon (1-MG) service pond and the EE-2A geothermal production well associated with the Hot Dry Rock (HDR) Geothermal Project at the Technical Area (TA) -57 Fenton Hill Site. A requisite part of this closure is sampling the soils beneath the 1-MG pond to confirm that any potential contamination that may have leaked through the pond liners was removed, and that the remaining soil poses no significant threat to human health or the environment.

## **2.0 Background**

### **2.1 Sample Collection and Analyses**

On August 15-16, 1994, surface and shallow subsurface soil samples were collected from the Fenton Hill geothermal site. Specifically, two subsurface samples were collected from depths of 5.25-6.0 ft and 6.0-7.0 ft approximately 40 ft east of the eastern berm of the 1MG pond. (Historically, this location was part of the 1 MG Pond.) These samples were field screened for radioactivity using an ESP-1beta/gamma meter with an HP 260 pancake probe and for volatile organics using an Hnu photo-ionization detector. In addition, gross alpha and gross beta activities of these samples were determined by gas proportional counting on a Berthold Counter at the LANL ESH-19 Counting Facility. Additionally, these two samples were analyzed for inorganics (using EPA-SW 846 Method 3010) and semi-volatile organic chemicals..

### **2.2 Analytical Results**

All radioactivity counts yielded results at background levels. No volatile organics were detected during field screening. Inorganic analyses yielded metals concentrations above background; however, all concentrations were bounded vertically, ie diminishing with depth, and no metals were detected above background at the 7.0 ft depth.

No organic chemicals were detected in the two samples. Organic content of the two samples was high. The samples were collected from a soil horizon obviously contaminated with dark gray drilling muds and fluid. Because of high organic content in these samples, it was necessary to dilute the samples before analysis, resulting in elevated detection limits. A similar service pond, GTP-2 was sampled and no organic chemicals were detected.

## **2.3 Regulatory Framework**

Drilling fluids, produced waters, and other wastes associated with exploration, development, or production of geothermal energy are not hazardous wastes as defined in the Resource Conservation and Recovery Act (RCRA). For this reason, the IMG Pond is not listed in the Laboratory Hazardous and Solid Waste Amendments (HSWA) Permit. The investigation conducted in 1994 followed the requirements of HSWA Module VIII of the RCRA Permit to ensure that all environmental problems are investigated in a consistent manner. It should be emphasized that no RCRA hazardous constituents were found at levels above screening action levels in samples collected from the IMG Pond and that the site was recommended for No Further Action (NFA) at that time.

The geothermal exploration and development activities at Fenton Hill are regulated by the Oil Conservation Division of the Energy, Minerals, and Natural Resources Department of the State of New Mexico.

## **3.0 Approach and Implementation**

A sufficient number of samples will be collected 1) to perform a human health screening assessment, and 2) to define the nature and extent of any potential contamination encountered. Based on the previous characterization and sampling activities at the IMG Pond, a minimum of five sets of inorganic and one set of organic chemical samples will be analyzed.

Samples will be collected for two purposes; 1) screening and 2) confirmation.

A combination of biased and random sampling will be performed. After the primary liner, leak detection system, and secondary pond liners are removed, a visual inspection of the berms and bottom of the pond will be made, with emphasis on those locations where influent and effluent lines penetrated the secondary liner and along those lines where the pond liner was lapped and seams in the liner were welded. If indications of leakage are observed, ie staining, odors, erosion from flowing fluids, etc, the location will be marked with pin flags for subsequent sampling. A "biased" set of samples will be collected from each flagged location, up to six locations.

If no evidence of leakage is observed, five sets of samples will be collected from the pond, one set at the center of the pond, 2 sets taken 10 ft from the center on either side of the center point along a N-S transect of the pond, and 2 sets taken 90 ft from the center on either side of the center along an E-W transect of the pond. A diagram showing the approximate location of

sample points is attached (See Figure 1). If fewer than six "stained" areas are identified, a mix of biased and random samples will be collected totaling six samples.

A set of two samples will be collected from each location selected for sampling. The set will consist of samples taken at two depths, to enable determining a trend of increasing or decreasing contamination with depth. One soil sample will be taken from the surface and a second sample will be taken 2 ft beneath the surface sample. Surface samples will be collected using a stainless-steel scoop and digging the soil to a depth of 0 to six inches. The soil will be placed in a clean stainless-steel bowl, homogenized, and the two sample aliquots will be prepared. Subsurface samples will be collected using the Simco trailer mounted sampling rig. The core barrel will be drilled to a depth of two feet below-ground-surface and the core will be collected. The sampling team will open the core barrel, place the core collected from 18 to 24 inch depth in a clean stainless-steel bowl, homogenize the sample and prepare two sample aliquots for analysis.

### **3.1 Samples for Inorganic Chemical Analysis**

As each location is sampled, a sufficient volume (approximately 0.5 liters) of soil will be collected and homogenized in a clean stainless steel bowl to permit splitting and filling two 125 ml Nalgene sample bottles for inorganic chemical analysis. One of the sample bottles will be analyzed for screening purposes by the EES-6, Hydrology, Geochemistry and Geology Laboratory, and will be used to direct cleanup of the 1 MG Pond; the split will be submitted to the ER Project Sample Management Office for storage up to a six-month period, when it may be shipped to a contract laboratory for analyses.

### **3.2 Samples for Organic Chemical Analysis**

One set of samples for organic chemical analysis will be collected. If an indication of leakage is noted, the organic samples will be collected from that location. In the absence of evidence of leakage, the area sampled for organic chemical analysis will be randomly selected from the five locations in Figure 1. The set will consist of samples taken at two depths, to enable determining a trend of increasing or decreasing contamination with depth. One soil sample will be taken from the surface and a second sample will be taken 2 ft beneath the surface sample. Surface samples will be collected using a stainless-steel scoop and digging the soil to a depth of 0 to six inches. The soil will be placed in a clean stainless-steel bowl, homogenized, and the two 125 ml sample aliquots will be placed in clean, clear glass sample bottles.. Subsurface samples will be collected using the Simco trailer mounted sampling rig. The core barrel will be drilled to a depth of two feet below-ground-surface and the

core will be collected. The sampling team will open the core barrel, place the core collected from 18 to 24 inch depth in a clean stainless-steel bowl, homogenize the sample and prepare two 125 ml sample aliquots in clean, clear glass bottles for analysis.

#### **4.0 Interpretation of Analytical Results**

The data collected from this campaign will be used by EES Division for purposes of site characterization and assessment of any additional cleanup activities at the 1.0 MG Pond.

# **ATTACHMENT 8**

## **Analytical Screening Results**

**Total Metals Analysis**  
**Semi-Volatile Organics Analysis**

SOIL SAMPLES

| SAMPLE #      | DESCRIPTION   | H2O % | Ag ppm | Al ppm | As ppm | Ba ppm | Be ppm | B ppm | Cd ppm | Co ppm | Cr ppm | Cu ppm | Fe ppm | Hg ppm | K ppm |
|---------------|---------------|-------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|-------|
| RC57-03-49714 | surface 0'-6" | 6.07  | 0.20   | 38626  | 272    | 583    | 2.36   | 36.4  | 0.29   | 9.13   | 8.05   | 12.3   | 15008  | 1.78   | 21408 |
| RC57-03-49715 | depth 18"-24" | 6.05  | 0.38   | 57121  | 23.7   | 118    | 2.77   | 61.1  | 0.19   | 1.62   | 7.07   | 3.63   | 10796  | 1.06   | 33697 |
| RC57-03-49716 | surface 0'-6" | 6.25  | 0.19   | 34288  | 197    | 359    | 2.14   | 43.8  | 0.29   | 6.72   | 4.96   | 9.34   | 11779  | 1.08   | 19357 |
| RC57-03-49717 | depth 10"-16" | 5.60  | 0.63   | 51471  | 52.5   | 223    | 2.50   | 28.1  | 0.36   | 3.75   | 8.94   | 6.26   | 10294  | 1.97   | 28617 |
| RC57-03-49718 | surface 0'-6" | 6.44  | 0.20   | 29470  | 232    | 354    | 2.32   | 33.6  | 0.30   | 10.1   | 8.26   | 14.1   | 11392  | 0.28   | 20723 |
| RC57-03-49719 | depth 18"-24" | 5.78  | 0.20   | 63868  | 8.84   | 91.5   | 2.51   | 26.3  | 0.30   | 1.71   | 2.81   | 3.12   | 12296  | 0.29   | 31064 |
| RC57-03-49720 | surface 0'-6" | 5.74  | 0.19   | 25457  | 254    | 287    | 2.24   | 67.0  | 0.19   | 9.33   | 7.46   | 12.1   | 8462   | 0.08   | 20247 |
| RC57-03-49721 | depth 18"-24" | 6.38  | 0.40   | 56837  | 26.6   | 492    | 2.49   | 52.0  | 0.00   | 1.69   | 4.27   | 6.16   | 11759  | 2.00   | 27449 |
| RC57-03-49722 | surface 0'-6" | 8.29  | 0.20   | 38856  | 204    | 588    | 2.10   | 45.7  | 0.40   | 7.89   | 6.39   | 11.0   | 12505  | 0.71   | 19291 |
| RC57-03-49723 | depth 18"-24" | 12.48 | 0.21   | 60919  | 8.85   | 1209   | 2.19   | 66.7  | 0.00   | 2.19   | 5.62   | 16.7   | 14753  | 3.45   | 27925 |
| Soil PRGs     |               |       | 380    | 74000  | 0.39   | 5200   | 150    |       | 70     | 4500   | 210    | 2800   |        | 6.5    |       |

Notes:

Method of Preparation:

EPA 3052, 9mL HNO3 + 3mL HF

NaKCO3 fusion @ 850°C

Fenton Hill  
1-MG Pond  
Underliner Soil Sampling Results

1/7/2003

| SAMPLE #      | DESCRIPTION   | Li<br>ppm | Mg<br>ppm | Mn<br>ppm | Mo<br>ppm | Na<br>ppm | Ni<br>ppm | Pb<br>ppm | Sb<br>ppm | Se<br>ppm | Sn<br>ppm | Th<br>ppm | Tl<br>ppm | U<br>ppm | V<br>ppm | Zn<br>ppm |
|---------------|---------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|----------|-----------|
| RC57-03-49714 | surface 0'-6" | 40.4      | 5760      | 2254      | 6.09      | 12567     | 7.86      | 19.6      | 15.1      | <0.1      | 1.67      | 3.14      | 2.36      | 1.87     | 44.2     | 52.1      |
| RC57-03-49715 | depth 18"-24" | 38.2      | 434       | 503       | 4.11      | 22799     | 2.87      | 21.0      | 0.57      | <0.1      | 2.58      | 2.10      | 0.48      | 3.15     | 8.7      | 64.0      |
| RC57-03-49716 | surface 0'-6" | 32.4      | 4456      | 1226      | 4.38      | 11743     | 6.52      | 17.5      | 0.88      | <0.1      | 1.95      | 1.27      | 2.04      | 1.75     | 33.1     | 63.3      |
| RC57-03-49717 | depth 10"-16" | 29.8      | 1574      | 616       | 5.27      | 18942     | 5.54      | 22.3      | 0.80      | <0.1      | 2.41      | 1.34      | 0.71      | 2.59     | 10.7     | 63.4      |
| RC57-03-49718 | surface 0'-6" | 34.7      | 4729      | 1108      | 5.85      | 11740     | 8.87      | 19.1      | 0.81      | <0.1      | 1.71      | 3.33      | 2.52      | 1.71     | 40.3     | 53.1      |
| RC57-03-49719 | depth 18"-24" | 32.4      | 367       | 561       | 3.62      | 18996     | 3.32      | 18.1      | 0.40      | <0.1      | 2.71      | 1.71      | 0.20      | 2.71     | 6.4      | 51.3      |
| RC57-03-49720 | surface 0'-6" | 36.0      | 3520      | 783       | 5.41      | 11920     | 8.49      | 18.7      | 0.56      | <0.1      | 1.59      | 3.17      | 2.24      | 1.77     | 40.1     | 54.1      |
| RC57-03-49721 | depth 18"-24" | 28.2      | 925       | 587       | 3.78      | 15463     | 4.57      | 23.9      | 0.40      | <0.1      | 2.58      | 1.49      | 0.50      | 2.49     | 11.9     | 60.6      |
| RC57-03-49722 | surface 0'-6" | 27.2      | 3568      | 1204      | 4.49      | 12342     | 7.29      | 17.0      | 0.50      | <0.1      | 1.50      | 1.50      | 1.50      | 1.70     | 31.0     | 47.9      |
| RC57-03-49723 | depth 18"-24" | 36.7      | 1822      | 402       | 3.75      | 22230     | 4.48      | 38.5      | 1.04      | <0.1      | 2.60      | 1.25      | 0.31      | 2.71     | 15.6     | 106       |
|               |               |           |           | 7800      |           |           | 1500      | 400       | 30        | 380       |           |           | 6.1       | 23       | 530      | 23000     |

1B  
SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RC57-03-49726

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 1387S

Matrix: (soil/water) SOIL Lab Sample ID: 70947001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S8L0228

Level: (low/med) LOW Date Received: 11/20/02

% Moisture: 9 decanted: (Y/N) N Date Extracted: 11/27/02

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 12/02/02

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

|          |                              |      |   |
|----------|------------------------------|------|---|
| 62-75-9  | N-Methyl-N-nitrosomethylamin | 366  | U |
| 110-86-1 | Pyridine                     | 366  | U |
| 62-53-3  | Aniline                      | 366  | U |
| 108-95-2 | Phenol                       | 366  | U |
| 111-44-4 | bis(2-Chloroethyl) ether     | 366  | U |
| 95-57-8  | 2-Chlorophenol               | 366  | U |
| 541-73-1 | 1,3-Dichlorobenzene          | 366  | U |
| 106-46-7 | 1,4-Dichlorobenzene          | 366  | U |
| 100-51-6 | Benzyl alcohol               | 366  | U |
| 95-50-1  | 1,2-Dichlorobenzene          | 366  | U |
| 108-60-1 | bis(2-Chloroisopropyl) ether | 366  | U |
| 95-48-7  | o-Cresol                     | 366  | U |
| 621-64-7 | N-Nitrosodipropylamine       | 366  | U |
| 106-44-5 | m,p-Cresols                  | 366  | U |
| 67-72-1  | Hexachloroethane             | 366  | U |
| 78-59-1  | Isophorone                   | 366  | U |
| 88-75-5  | 2-Nitrophenol                | 366  | U |
| 105-67-9 | 2,4-Dimethylphenol           | 366  | U |
| 111-91-1 | bis(2-Chloroethoxy) methane  | 366  | U |
| 120-83-2 | 2,4-Dichlorophenol           | 366  | U |
| 65-85-0  | Benzoic acid                 | 733  | U |
| 120-82-1 | 1,2,4-Trichlorobenzene       | 366  | U |
| 91-20-3  | Naphthalene                  | 36.6 | U |
| 106-47-8 | 4-Chloroaniline              | 366  | U |
| 87-68-3  | Hexachlorobutadiene          | 366  | U |
| 59-50-7  | 4-Chloro-3-methylphenol      | 366  | U |
| 91-57-6  | 2-Methylnaphthalene          | 36.6 | U |
| 77-47-4  | Hexachlorocyclopentadiene    | 366  | U |
| 88-06-2  | 2,4,6-Trichlorophenol        | 366  | U |
| 95-95-4  | 2,4,5-Trichlorophenol        | 366  | U |
| 91-58-7  | 2-Chloronaphthalene          | 36.6 | U |
| 88-74-4  | o-Nitroaniline               | 366  | U |
| 99-09-2  | m-Nitroaniline               | 366  | U |

FORM I SV-1

OLM03.0

1C  
SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RC57-03-49726

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 1387S

Matrix: (soil/water) SOIL Lab Sample ID: 70947001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S8L0228

Level: (low/med) LOW Date Received: 11/20/02

% Moisture: 9 decanted: (Y/N) N Date Extracted: 11/27/02

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 12/02/02

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

|           |                                 |      |   |
|-----------|---------------------------------|------|---|
| 131-11-3  | -----Dimethylphthalate          | 366  | U |
| 606-20-2  | -----2,6-Dinitrotoluene         | 366  | U |
| 208-96-8  | -----Acenaphthylene             | 36.6 | U |
| 83-32-9   | -----Acenaphthene               | 36.6 | U |
| 51-28-5   | -----2,4-Dinitrophenol          | 733  | U |
| 132-64-9  | -----Dibenzofuran               | 366  | U |
| 121-14-2  | -----2,4-Dinitrotoluene         | 366  | U |
| 84-66-2   | -----Diethylphthalate           | 366  | U |
| 100-02-7  | -----4-Nitrophenol              | 366  | U |
| 86-73-7   | -----Fluorene                   | 36.6 | U |
| 7005-72-3 | -----4-Chlorophenylphenylether  | 366  | U |
| 534-52-1  | -----2-Methyl-4,6-dinitrophenol | 366  | U |
| 100-01-6  | -----p-Nitroaniline             | 366  | U |
| 122-39-4  | -----Diphenylamine              | 366  | U |
| 122-66-7  | -----Azobenzene                 | 366  | U |
| 101-55-3  | -----4-Bromophenylphenylether   | 366  | U |
| 118-74-1  | -----Hexachlorobenzene          | 366  | U |
| 87-86-5   | -----Pentachlorophenol          | 366  | U |
| 85-01-8   | -----Phenanthrene               | 36.6 | U |
| 120-12-7  | -----Anthracene                 | 36.6 | U |
| 84-74-2   | -----Di-n-butylphthalate        | 366  | U |
| 206-44-0  | -----Fluoranthene               | 36.6 | U |
| 129-00-0  | -----Pyrene                     | 36.6 | U |
| 85-68-7   | -----Butylbenzylphthalate       | 366  | U |
| 56-55-3   | -----Benzo(a)anthracene         | 36.6 | U |
| 91-94-1   | -----3,3'-Dichlorobenzidine     | 366  | U |
| 218-01-9  | -----Chrysene                   | 36.6 | U |
| 117-81-7  | -----bis(2-Ethylhexyl)phthalate | 189  | J |
| 117-84-0  | -----Di-n-octylphthalate        | 202  | J |
| 205-99-2  | -----Benzo(b)fluoranthene       | 36.6 | U |
| 207-08-9  | -----Benzo(k)fluoranthene       | 36.6 | U |
| 50-32-8   | -----Benzo(a)pyrene             | 36.6 | U |
| 193-39-5  | -----Indeno(1,2,3-cd)pyrene     | 36.6 | U |

FORM I SV-2

OLM03.0

1C  
SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RC57-03-49726

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 13875

Matrix: (soil/water) SOIL Lab Sample ID: 70947001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S8L0228

Level: (low/med) LOW Date Received: 11/20/02

% Moisture: 9 decanted: (Y/N) N Date Extracted: 11/27/02

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 12/02/02

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

|               |                        |      |   |
|---------------|------------------------|------|---|
| 53-70-3-----  | Dibenzo(a,h)anthracene | 36.6 | U |
| 191-24-2----- | Benzo(ghi)perylene     | 36.6 | U |

1F  
SVOA ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RC57-03-49726

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 1387S

Matrix: (soil/water) SOIL Lab Sample ID: 70947001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S8L0228

Level: (low/med) LOW Date Received: 11/20/02

% Moisture: 9 decanted: (Y/N) N Date Extracted: 11/27/02

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 12/02/02

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

Number TICs found: 24 CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/Kg

| CAS NUMBER   | COMPOUND NAME                | RT   | EST. CONC. | Q   |
|--------------|------------------------------|------|------------|-----|
| 1.           | UNKNOWN                      | 1.71 | 622        | JB  |
| 2. 110-82-7  | CYCLOHEXANE                  | 1.99 | 1200       | NJB |
| 3.           | UNKNOWN                      | 2.78 | 365        | JB  |
| 4.           | UNKNOWN ALDOL CONDENSATE     | 2.92 | 3650       | JBA |
| 5.           | UNKNOWN                      | 3.32 | 173        | JB  |
| 6. 1921-70-6 | PENTADECANE, 2,6,10,14-TETRA | 6.58 | 434        | NJ  |
| 7. 593-45-3  | OCTADECANE                   | 6.85 | 256        | NJ  |
| 8. 629-92-5  | NONADECANE                   | 7.11 | 228        | NJ  |
| 9. 112-95-8  | EICOSANE                     | 7.35 | 158        | NJ  |
| 10.          | UNKNOWN                      | 7.98 | 306        | J   |
| 11.          | UNKNOWN                      | 7.99 | 286        | J   |
| 12.          | UNKNOWN                      | 8.02 | 404        | J   |
| 13.          | UNKNOWN                      | 8.03 | 301        | J   |
| 14.          | UNKNOWN                      | 8.06 | 496        | J   |
| 15.          | UNKNOWN                      | 8.11 | 222        | J   |
| 16.          | UNKNOWN                      | 8.13 | 280        | J   |
| 17.          | UNKNOWN                      | 8.15 | 316        | J   |
| 18.          | UNKNOWN                      | 8.19 | 758        | J   |
| 19.          | UNKNOWN                      | 8.24 | 232        | J   |
| 20.          | UNKNOWN                      | 8.28 | 338        | J   |
| 21.          | UNKNOWN                      | 8.30 | 360        | J   |
| 22.          | UNKNOWN                      | 8.36 | 310        | J   |
| 23.          | UNKNOWN                      | 8.43 | 391        | J   |
| 24.          | UNKNOWN                      | 8.49 | 295        | J   |
| 25.          |                              |      |            |     |
| 26.          |                              |      |            |     |
| 27.          |                              |      |            |     |
| 28.          |                              |      |            |     |
| 29.          |                              |      |            |     |
| 30.          |                              |      |            |     |

FORM I SV-TIC

OLM03.0

1B  
SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RC57-03-49727

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 1387S

Matrix: (soil/water) SOIL Lab Sample ID: 70947002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S8L0229

Level: (low/med) LOW Date Received: 11/20/02

% Moisture: 11 decanted: (Y/N) N Date Extracted: 11/27/02

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 12/02/02

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

|               |                              |      |   |
|---------------|------------------------------|------|---|
| 62-75-9-----  | N-Methyl-N-nitrosomethylamin | 373  | U |
| 110-86-1----- | Pyridine                     | 373  | U |
| 62-53-3-----  | Aniline                      | 373  | U |
| 108-95-2----- | Phenol                       | 373  | U |
| 111-44-4----- | bis(2-Chloroethyl) ether     | 373  | U |
| 95-57-8-----  | 2-Chlorophenol               | 373  | U |
| 541-73-1----- | 1,3-Dichlorobenzene          | 373  | U |
| 106-46-7----- | 1,4-Dichlorobenzene          | 373  | U |
| 100-51-6----- | Benzyl alcohol               | 373  | U |
| 95-50-1-----  | 1,2-Dichlorobenzene          | 373  | U |
| 108-60-1----- | bis(2-Chloroisopropyl) ether | 373  | U |
| 95-48-7-----  | o-Cresol                     | 373  | U |
| 621-64-7----- | N-Nitrosodipropylamine       | 373  | U |
| 106-44-5----- | m,p-Cresols                  | 373  | U |
| 67-72-1-----  | Hexachloroethane             | 373  | U |
| 78-59-1-----  | Isophorone                   | 373  | U |
| 88-75-5-----  | 2-Nitrophenol                | 373  | U |
| 105-67-9----- | 2,4-Dimethylphenol           | 373  | U |
| 111-91-1----- | bis(2-Chloroethoxy) methane  | 373  | U |
| 120-83-2----- | 2,4-Dichlorophenol           | 373  | U |
| 65-85-0-----  | Benzoic acid                 | 747  | U |
| 120-82-1----- | 1,2,4-Trichlorobenzene       | 373  | U |
| 91-20-3-----  | Naphthalene                  | 37.3 | U |
| 106-47-8----- | 4-Chloroaniline              | 373  | U |
| 87-68-3-----  | Hexachlorobutadiene          | 373  | U |
| 59-50-7-----  | 4-Chloro-3-methylphenol      | 373  | U |
| 91-57-6-----  | 2-Methylnaphthalene          | 37.3 | U |
| 77-47-4-----  | Hexachlorocyclopentadiene    | 373  | U |
| 88-06-2-----  | 2,4,6-Trichlorophenol        | 373  | U |
| 95-95-4-----  | 2,4,5-Trichlorophenol        | 373  | U |
| 91-58-7-----  | 2-Chloronaphthalene          | 37.3 | U |
| 88-74-4-----  | o-Nitroaniline               | 373  | U |
| 99-09-2-----  | m-Nitroaniline               | 373  | U |

FORM I SV-1

OLM03.0

1C  
SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RC57-03-49727

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 1387S

Matrix: (soil/water) SOIL Lab Sample ID: 70947002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S8L0229

Level: (low/med) LOW Date Received: 11/20/02

% Moisture: 11 decanted: (Y/N) N Date Extracted: 11/27/02

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 12/02/02

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

|           |                            |      |   |
|-----------|----------------------------|------|---|
| 131-11-3  | Dimethylphthalate          | 373  | U |
| 606-20-2  | 2,6-Dinitrotoluene         | 373  | U |
| 208-96-8  | Acenaphthylene             | 37.3 | U |
| 83-32-9   | Acenaphthene               | 37.3 | U |
| 51-28-5   | 2,4-Dinitrophenol          | 747  | U |
| 132-64-9  | Dibenzofuran               | 373  | U |
| 121-14-2  | 2,4-Dinitrotoluene         | 373  | U |
| 84-66-2   | Diethylphthalate           | 373  | U |
| 100-02-7  | 4-Nitrophenol              | 373  | U |
| 86-73-7   | Fluorene                   | 37.3 | U |
| 7005-72-3 | 4-Chlorophenylphenylether  | 373  | U |
| 534-52-1  | 2-Methyl-4,6-dinitrophenol | 373  | U |
| 100-01-6  | p-Nitroaniline             | 373  | U |
| 122-39-4  | Diphenylamine              | 373  | U |
| 122-66-7  | Azobenzene                 | 373  | U |
| 101-55-3  | 4-Bromophenylphenylether   | 373  | U |
| 118-74-1  | Hexachlorobenzene          | 373  | U |
| 87-86-5   | Pentachlorophenol          | 373  | U |
| 85-01-8   | Phenanthrene               | 37.3 | U |
| 120-12-7  | Anthracene                 | 37.3 | U |
| 84-74-2   | Di-n-butylphthalate        | 373  | U |
| 206-44-0  | Fluoranthene               | 37.3 | U |
| 129-00-0  | Pyrene                     | 37.3 | U |
| 85-68-7   | Butylbenzylphthalate       | 373  | U |
| 56-55-3   | Benzo(a)anthracene         | 37.3 | U |
| 91-94-1   | 3,3'-Dichlorobenzidine     | 373  | U |
| 218-01-9  | Chrysene                   | 37.3 | U |
| 117-81-7  | bis(2-Ethylhexyl)phthalate | 250  | J |
| 117-84-0  | Di-n-octylphthalate        | 373  | U |
| 205-99-2  | Benzo(b)fluoranthene       | 37.3 | U |
| 207-08-9  | Benzo(k)fluoranthene       | 37.3 | U |
| 50-32-8   | Benzo(a)pyrene             | 37.3 | U |
| 193-39-5  | Indeno(1,2,3-cd)pyrene     | 37.3 | U |

FORM I SV-2

OLM03.0

1C  
SVOA ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RC57-03-49727

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 1387S

Matrix: (soil/water) SOIL Lab Sample ID: 70947002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S8L0229

Level: (low/med) LOW Date Received: 11/20/02

% Moisture: 11 decanted: (Y/N) N Date Extracted: 11/27/02

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 12/02/02

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG Q

|                                    |      |   |
|------------------------------------|------|---|
| 53-70-3-----Dibenzo(a,h)anthracene | 37.3 | U |
| 191-24-2-----Benzo(ghi)perylene    | 37.3 | U |

1F  
SVOA ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RC57-03-49727

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: 13875

Matrix: (soil/water) SOIL Lab Sample ID: 70947002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S8L0229

Level: (low/med) LOW Date Received: 11/20/02

% Moisture: 11 decanted: (Y/N) N Date Extracted: 11/27/02

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 12/02/02

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/Kg

Number TICs found: 30

| CAS NUMBER     | COMPOUND NAME                | RT   | EST. CONC. | Q   |
|----------------|------------------------------|------|------------|-----|
| 1.             | UNKNOWN ALDOL CONDENSATE     | 2.92 | 4380       | JBA |
| 2. 544-76-3    | HEXADECANE                   | 6.26 | 1320       | NJ  |
| 3. 593-45-3    | OCTADECANE                   | 6.86 | 1190       | NJ  |
| 4.             | UNKNOWN                      | 6.96 | 831        | J   |
| 5. 6418-44-6   | HEPTADECANE, 3-METHYL-       | 7.04 | 706        | NJ  |
| 6.             | UNKNOWN ALKANE               | 7.08 | 969        | J   |
| 7. 629-92-5    | NONADECANE                   | 7.11 | 1270       | NJ  |
| 8. 1786-12-5   | CYCLOTETRADECANE, 1,7,11-TRI | 7.18 | 659        | NJ  |
| 9.             | UNKNOWN ALKANE               | 7.21 | 935        | J   |
| 10.            | UNKNOWN ALKANE               | 7.31 | 667        | J   |
| 11.            | UNKNOWN                      | 7.34 | 657        | J   |
| 12. 112-95-8   | EICOSANE                     | 7.35 | 982        | NJ  |
| 13.            | UNKNOWN                      | 7.39 | 718        | J   |
| 14.            | UNKNOWN ALKANE               | 7.44 | 1050       | J   |
| 15.            | UNKNOWN ALKANE               | 7.50 | 754        | J   |
| 16.            | UNKNOWN ALKANE               | 7.51 | 685        | J   |
| 17. 629-94-7   | HENEICOSANE                  | 7.58 | 1060       | NJ  |
| 18.            | UNKNOWN ALKANE               | 7.60 | 669        | J   |
| 19.            | UNKNOWN ALKANE               | 7.64 | 717        | J   |
| 20.            | UNKNOWN                      | 7.71 | 827        | J   |
| 21. 629-97-0   | DOCOSANE                     | 7.79 | 808        | NJ  |
| 22. 638-36-8   | HEXADECANE, 2,6,10,14-TETRAM | 7.85 | 1460       | NJ  |
| 23. 3386-33-2  | OCTADECANE, 1-CHLORO-        | 8.02 | 898        | NJ  |
| 24.            | UNKNOWN ALKANE               | 8.07 | 1300       | J   |
| 25.            | UNKNOWN ALKANE               | 8.15 | 905        | J   |
| 26.            | UNKNOWN                      | 8.28 | 1150       | J   |
| 27. 20175-84-2 | [1,2'-BINAPHTHALENE]-5,5',8, | 8.34 | 1500       | NJ  |
| 28.            | UNKNOWN                      | 8.42 | 1300       | J   |
| 29.            | UNKNOWN                      | 8.51 | 1070       | J   |
| 30.            | UNKNOWN ALKANE               | 8.81 | 1020       | J   |

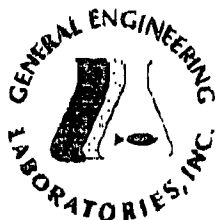
FORM I SV-TIC

OLM03.0

# **ATTACHMENT 9**

## **Analytical Results**

### **TCLP Metals Analysis**



# GENERAL ENGINEERING LABORATORIES

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## Certificate of Analysis

Company: Los Alamos National Lab  
Address: PO Box 1663  
TA-3, Bldg. 271, Drop Pl. 01U  
Los Alamos, New Mexico 87545  
Contact: Keith Greene  
Project: LANL HR Contract

Report Date: December 13, 2002

Page 1 of 2

Client Sample ID: RC57.03.49714  
Sample ID: 71764(X)1  
Matrix: Soil  
Collect Date: 18-NOV-02 00:00  
Receive Date: 06-DEC-02  
Collector: Client

Project: LANL00101  
Client ID: LANL004

| Parameter                     | Qualifier | Result | DL     | RL    | Units | DF | Analyst | Date     | Time | Batch  | Method |
|-------------------------------|-----------|--------|--------|-------|-------|----|---------|----------|------|--------|--------|
| Mercury Analysis Federal      |           |        |        |       |       |    |         |          |      |        |        |
| TCCLP Hg in Solid             |           |        |        |       |       |    |         |          |      |        |        |
| Metals Analysis-ICPMS Federal |           |        |        |       |       |    |         |          |      |        |        |
| ICP-MS Metals for Soil        |           |        |        |       |       |    |         |          |      |        |        |
| Arsenic                       |           | 0.120  | 0.0183 | 0.030 | mg/L  | 10 | PRB     | 12/11/02 | 1555 | 220737 | 2      |
| Barium                        |           | 0.824  | 0.0018 | 0.020 | mg/L  | 10 |         |          |      |        |        |
| Cadmium                       | U         | ND     | 0.0009 | 0.010 | mg/L  | 10 |         |          |      |        |        |
| Chromium                      | U         | ND     | 0.0103 | 0.030 | mg/L  | 10 |         |          |      |        |        |
| Lead                          | U         | ND     | 0.0007 | 0.020 | mg/L  | 10 |         |          |      |        |        |
| Selenium                      | J         | 0.0393 | 0.010  | 0.030 | mg/L  | 10 |         |          |      |        |        |
| Silver                        | U         | ND     | 0.0008 | 0.010 | mg/L  | 10 |         |          |      |        |        |

### The following Prep Methods were performed

| Method           | Description                         | Analyst | Date     | Time | Prep Batch |
|------------------|-------------------------------------|---------|----------|------|------------|
| SWB46 7470A Prep | RPA 7470A Mercury Prep TCCLP Liquid | KHN     | 12/11/02 | 1230 | 220759     |
| SWB46 1311       | SWB46 1311 TCCLP Leaching FEDERAL   | ETL     | 12/09/02 | 1527 | 219956     |
| SWB46 1311       | SWB46 1311 TCCLP Leaching FEDERAL   | ETL     | 12/09/02 | 1527 | 219957     |
| SWB46 3010A      | TCCLP SW 046 3010 Acid Digestion    | CWS1    | 12/10/02 | 1519 | 220736     |

### The following Analytical Methods were performed

| Method | Description     | Analyst Comments |
|--------|-----------------|------------------|
| 1      | SWB46 7470A     |                  |
| 2      | SWB46 3010/6020 |                  |

### Notes:

The Qualifiers in this report are defined as follows:

- A Actual result is less than amount reported
- \* Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40% D
- U Indicates the compound was analyzed for but not detected above the detection limit





# GENERAL ENGINEERING LABORATORIES

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## Certificate of Analysis

Company: Los Alamos National Lab  
 Address: PO Box 1663  
 TA-3, Bldg. 271, Drop Pt. D111  
 Los Alamos, New Mexico 87543  
 Contact: Keith Greene  
 Project: LANL RR Contract

Report Date: December 13, 2002

Page 2 of 2

Client Sample ID: RC57-03-49714  
 Sample ID: 11/04001

Project: LANL00101  
 Client ID: LANL004

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | Method |
|-----------|-----------|--------|----|----|-------|----|---------|------|------|-------|--------|
|-----------|-----------|--------|----|----|-------|----|---------|------|------|-------|--------|

- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

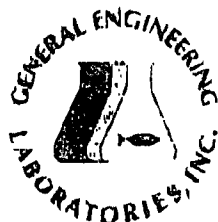
The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Stacy Griffin.

Reviewed by





# GENERAL ENGINEERING LABORATORIES

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## Certificate of Analysis

Company: Los Alamos National Lab  
Address: PO Box 1663  
TA-3, Bldg. 271, Drop Pt. 011  
Los Alamos, New Mexico 87545  
Contact: Keith Greene  
Project: LANL ER Contract

Report Date: December 13, 2002

Page 1 of 2

Client Sample ID: RC57-03-49720  
Sample ID: 71764003  
Matrix: Soil  
Collect Date: 18-NOV-02 00:00  
Receive Date: 06-DEC-02  
Collector: Client

Project: LANL00101  
Client ID: LANL004

| Parameter                            | Qualifier | Result | DL     | RL    | Units | DT | Analyst | Date     | Time | Batch  | Method |
|--------------------------------------|-----------|--------|--------|-------|-------|----|---------|----------|------|--------|--------|
| <b>Mercury Analysis Federal</b>      |           |        |        |       |       |    |         |          |      |        |        |
| <i>TCLP Hg in Solid</i>              |           |        |        |       |       |    |         |          |      |        |        |
| <b>Metals Analysis-ICPMS Federal</b> |           |        |        |       |       |    |         |          |      |        |        |
| <i>TCLP ICP-MS Metals for Soil</i>   |           |        |        |       |       |    |         |          |      |        |        |
| Arsenic                              |           | 0.130  | 0.0183 | 0.030 | mg/L  | 10 | PRB     | 12/11/02 | 1325 | 220737 | 2      |
| Barium                               |           | 0.749  | 0.0018 | 0.020 | mg/L  | 10 |         |          |      |        |        |
| Cadmium                              | U         | ND     | 0.0009 | 0.010 | mg/L  | 10 |         |          |      |        |        |
| Chromium                             | U         | ND     | 0.0103 | 0.030 | mg/L  | 10 |         |          |      |        |        |
| Cobalt                               | U         | ND     | 0.0007 | 0.020 | mg/L  | 10 |         |          |      |        |        |
| Selenium                             | J         | 0.0475 | 0.010  | 0.030 | mg/L  | 10 |         |          |      |        |        |
| Silver                               | U         | ND     | 0.0008 | 0.010 | mg/L  | 10 |         |          |      |        |        |

### The following Prep Methods were performed

| Method           | Description                        | Analyst | Date     | Time | Prep Batch |
|------------------|------------------------------------|---------|----------|------|------------|
| SW846 7470A Prep | BPA 7470A Mercury Prep TCLP Liquid | KIIN    | 12/11/02 | 1230 | 220759     |
| SW846 1311       | SW846 1311 TCLP Leaching -FEDERAL  | ETL     | 12/09/02 | 1527 | 219956     |
| SW846 1311       | SW846 1311 TCLP Leaching -FEDERAL  | ETL     | 12/09/02 | 1527 | 219957     |
| SW846 3010A      | TCLP SW 846 3010 Acid Digestion    | CWSI    | 12/10/02 | 1510 | 220736     |

### The following Analytical Methods were performed

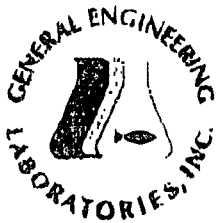
| Method | Description     | Analyst Comments |
|--------|-----------------|------------------|
| 1      | SW846 7470A     |                  |
| 2      | SW846 3010/6020 |                  |

### Notes:

The Qualifiers in this report are defined as follows:

- < Actual result is less than amount reported
- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- H Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40% D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.





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## Certificate of Analysis

Company : Los Alamos National Lab  
 Address : PO Box 1663  
 TA-3, Bldg. 271, Drop Pl. 01U  
 Los Alamos, New Mexico 87545  
 Contact: Keith Greene  
 Project: LANL ER Contract

Report Date: December 13, 2002

Page 2 of 2

Client Sample ID: RC57-03-49720  
 Sample ID: 71764003

Project: LANL00101  
 Client ID: LANL004

| Parameter | Qualifier | Result | DL | RL | Units | DP | Analyst | Date | Time | Batch | Method |
|-----------|-----------|--------|----|----|-------|----|---------|------|------|-------|--------|
|-----------|-----------|--------|----|----|-------|----|---------|------|------|-------|--------|

- X Lab-specific qualifier - must be fully described in case narrative and data summary package  
 Y QC Samples were not spiked with this compound.

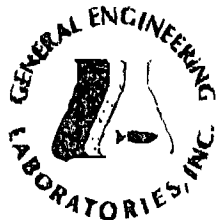
The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAP standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Stacy Griffin.

Reviewed by





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TA-3, Bldg. 271, Drop Pt. 0111  
Los Alamos, New Mexico 87545  
Contact: Keith Greene  
Project: LANL RR Contract

Report Date: December 13, 2002

Page 1 of 2

Client Sample ID: RC57-03-49718  
Sample ID: 71764002  
Matrix: Soil  
Collect Date: 18-NOV-02 (X)(X)  
Receive Date: 06-DEC-02  
Collector: Client

Project: LANL00101  
Client ID: LANL004

| Parameter                     | Qualifier | Result | DL     | RL    | Units | DF | Analyst | Date     | Time | Batch  | Method |
|-------------------------------|-----------|--------|--------|-------|-------|----|---------|----------|------|--------|--------|
| Mercury Analysis Federal      |           |        |        |       |       |    |         |          |      |        |        |
| TCLP Hg in Solid              |           |        |        |       |       |    |         |          |      |        |        |
| Metals Analysis-ICPMS Federal |           |        |        |       |       |    |         |          |      |        |        |
| TCLP ICP-MS Metals for Soil   |           |        |        |       |       |    |         |          |      |        |        |
| Arsenic                       |           | 0.104  | 0.0183 | 0.030 | mg/L  | 10 | PRB     | 12/11/02 | 1319 | 220737 | 2      |
| Barium                        |           | 0.667  | 0.0018 | 0.030 | mg/L  | 10 |         |          |      |        |        |
| Cadmium                       | U         | ND     | 0.0009 | 0.010 | mg/L  | 10 |         |          |      |        |        |
| Chromium                      | U         | ND     | 0.0103 | 0.030 | mg/L  | 10 |         |          |      |        |        |
| Lead                          | U         | ND     | 0.0007 | 0.020 | mg/L  | 10 |         |          |      |        |        |
| Selenium                      | J         | 0.0401 | 0.010  | 0.050 | mg/L  | 10 |         |          |      |        |        |
| Silver                        | U         | ND     | 0.0008 | 0.010 | mg/L  | 10 |         |          |      |        |        |

### The following Prep Methods were performed

| Method           | Description                        | Analyst | Date     | Time | Prep Batch |
|------------------|------------------------------------|---------|----------|------|------------|
| SW846 7470A Prep | EPA 7470A Mercury Prep TCLP Liquid | KIIN    | 12/11/02 | 1230 | 220739     |
| SW846 1311       | SW846 1311 TCLP Leaching -FEDERAL  | BTI     | 12/09/02 | 1527 | 219936     |
| SW846 1311       | SW846 1311 TCLP Leaching -FEDERAL  | ETL     | 12/09/02 | 1527 | 219937     |
| SW846 3010A      | TCLP SW 846 3010 Acid Digestion    | CWSI    | 12/10/02 | 1519 | 220736     |

### The following Analytical Methods were performed

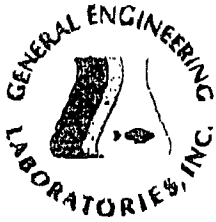
| Method | Description     | Analyst Comments |
|--------|-----------------|------------------|
| 1      | SW846 7470A     |                  |
| 2      | SW846 3010/6020 |                  |

### Notes:

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- > Actual result is greater than amount reported
- B Analyte found in the sample as well as the associated blank.
- BD Flag for results below the MDC or a flag for low tracer recovery.
- E Concentration exceeds instrument calibration range
- II Holding time exceeded
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
- P The response between the confirmation column and the primary column is >40%P
- U Indicates the compound was analyzed for but not detected above the detection limit
- UJ Uncertain identification for gamma spectroscopy.





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Los Alamos, New Mexico 87545  
Contact: Keith Greene  
Project: LANL BR Contract

Report Date: December 13, 2002

Page 2 of 2

Client Sample ID: RC57-03-49718  
Sample ID: 71764002

Project: LANL00101  
Client ID: LANL004

| Parameter | Qualifier | Result | DL | RI | Units | DP | Analyst | Date | Time | Batch | Method |
|-----------|-----------|--------|----|----|-------|----|---------|------|------|-------|--------|
|-----------|-----------|--------|----|----|-------|----|---------|------|------|-------|--------|

- X Lab-specific qualifier - must be fully described in case narrative and data summary package  
Y QC Samples were not spiked with this compound.

The above sample is reported on an "as received" basis.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Stacy Griffin.

Reviewed by



QC Summary

Report Date: December 13, 2002

Page 1 of 2

Client: Los Alamos National Lab  
 PO Box 1663  
 TA-3, Bldg. 271, Drop Pt. 01U  
 Los Alamos, New Mexico

Contact: Keith Greene

Workorder: 71764

| Parameter                       | NOM    | Sample | Qual | QC     | Units | RPD%  | REC% | Range      | Anal | Date     | Time  |
|---------------------------------|--------|--------|------|--------|-------|-------|------|------------|------|----------|-------|
| Metals Analysis - ICPMS Federal |        |        |      |        |       |       |      |            |      |          |       |
| Batch                           | 220737 |        |      |        |       |       |      |            |      |          |       |
| QC1200348856 71764001 DUP       |        |        |      |        |       |       |      |            |      |          |       |
| Arsenic                         |        | 0.120  |      | 0.117  | mg/L  | 3 ^   |      | (+/-0.030) | PRB  | 12/11/02 | 13:01 |
| Barium                          |        | 0.824  |      | 0.809  | mg/L  | 2     |      | (0%-20%)   |      |          |       |
| Cadmium                         | U      | ND     | U    | ND     | mg/L  | N/A   |      | (+/-0.010) |      |          |       |
| Chromium                        | U      | ND     | U    | ND     | mg/L  | N/A   |      | (+/-0.030) |      |          |       |
| Lead                            | U      | ND     | U    | ND     | mg/L  | N/A   |      | (+/-0.020) |      |          |       |
| Selenium                        | J      | 0.0393 | J    | 0.0444 | mg/L  | N/A ^ |      | (+/-0.050) |      |          |       |
| Silver                          | U      | ND     | U    | ND     | mg/L  | N/A   |      | (+/-0.010) |      |          |       |
| QC1200348855 LCS                |        |        |      |        |       |       |      |            |      |          |       |
| Arsenic                         | 5.00   |        |      | 5.21   | mg/L  |       | 104  | (80%-120%) |      | 12/11/02 | 12:40 |
| Barium                          | 10.0   |        |      | 10.5   | mg/L  |       | 105  | (80%-120%) |      |          |       |
| Cadmium                         | 1.00   |        |      | 1.04   | mg/L  |       | 104  | (80%-120%) |      |          |       |
| Chromium                        | 5.00   |        |      | 5.03   | mg/L  |       | 101  | (80%-120%) |      |          |       |
| Lead                            | 5.00   |        |      | 5.52   | mg/L  |       | 110  | (80%-120%) |      |          |       |
| Selenium                        | 1.00   |        |      | 1.15   | mg/L  |       | 115  | (80%-120%) |      |          |       |
| Silver                          | 0.500  |        |      | 0.560  | mg/L  |       | 112  | (80%-120%) |      |          |       |
| QC1200348854 MB                 |        |        |      |        |       |       |      |            |      |          |       |
| Arsenic                         |        |        | U    | 0.030  | mg/L  |       |      |            |      | 12/11/02 | 12:43 |
| Barium                          |        |        | U    | 0.020  | mg/L  |       |      |            |      |          |       |
| Cadmium                         |        |        | U    | 0.010  | mg/L  |       |      |            |      |          |       |
| Chromium                        |        |        | U    | 0.030  | mg/L  |       |      |            |      |          |       |
| Lead                            |        |        | U    | 0.020  | mg/L  |       |      |            |      |          |       |
| Selenium                        |        |        | J    | 0.0352 | mg/L  |       |      |            |      |          |       |
| Silver                          |        |        | U    | 0.010  | mg/L  |       |      |            |      |          |       |
| QC1200346781 71764001 MS        |        |        |      |        |       |       |      |            |      |          |       |
| Arsenic                         | 5.26   | 0.120  |      | 5.25   | mg/L  |       | 98   | (75%-125%) |      | 12/11/02 | 13:07 |
| Barium                          | 10.5   | 0.824  |      | 10.5   | mg/L  |       | 92   | (75%-125%) |      |          |       |
| Cadmium                         | 1.05   | ND     | U    | 1.00   | mg/L  |       | 95   | (75%-125%) |      |          |       |
| Chromium                        | 5.26   | ND     | U    | 4.75   | mg/L  |       | 90   | (75%-125%) |      |          |       |
| Lead                            | 5.26   | ND     | U    | 5.13   | mg/L  |       | 98   | (75%-125%) |      |          |       |
| Selenium                        | 1.05   | 0.0393 | J    | 1.11   | mg/L  |       | 101  | (75%-125%) |      |          |       |
| Silver                          | 0.526  | ND     | U    | 0.512  | mg/L  |       | 97   | (75%-125%) |      |          |       |
| QC1200348858 71764001 SDILT     |        |        |      |        |       |       |      |            |      |          |       |
| Arsenic                         |        | 12.0   | J    | 2.80   | ug/L  | 16.1  |      |            |      | 12/11/02 | 13:13 |
| Barium                          |        | 82.4   |      | 16.9   | ug/L  | 2.34  |      |            |      |          |       |
| Cadmium                         | U      | ND     | U    | ND     | ug/L  | N/A   |      |            |      |          |       |
| Chromium                        | U      | ND     | U    | ND     | ug/L  | N/A   |      |            |      |          |       |
| Lead                            | U      | ND     | U    | ND     | ug/L  | N/A   |      |            |      |          |       |
| Selenium                        | J      | 1.92   | J    | 1.40   | ug/L  | 77.5  |      |            |      |          |       |
| Silver                          | U      | ND     | U    | ND     | ug/L  | N/A   |      |            |      |          |       |
| QC1200346783 TB                 |        |        |      |        |       |       |      |            |      |          |       |
| Arsenic                         |        |        |      | 0.0123 | mg/L  |       |      |            |      | 12/11/02 | 12:37 |
| Barium                          |        |        |      | 0.0163 | mg/L  |       |      |            |      |          |       |

**QC Summary**

Workorder: 71764

Page 2 of 2

| Parameter                       | NOM | Sample | Qual | QC       | Units | RPD% | RRC% | Range | Amount | Date | Time |
|---------------------------------|-----|--------|------|----------|-------|------|------|-------|--------|------|------|
| Metals Analysis - ICPMS Federal |     |        |      |          |       |      |      |       |        |      |      |
| Batch 220737                    |     |        |      |          |       |      |      |       |        |      |      |
| Cadmium                         |     |        |      | -0.00149 | mg/L  |      |      |       |        |      |      |
| Chromium                        |     |        |      | 0.00555  | mg/L  |      |      |       |        |      |      |
| Cobalt                          |     |        |      | 0.0005   | mg/L  |      |      |       |        |      |      |
| Selenium                        |     |        |      | 0.0432   | mg/L  |      |      |       |        |      |      |
| Silver                          |     |        |      | 0.00005  | mg/L  |      |      |       |        |      |      |

## Notes:

RER is calculated at the 95% confidence level (2-sigma).

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- P The response between the confirmation column and the primary column is >40% D
- U Indicates the compound was analyzed for but not detected above the detection limit
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier - must be fully described in case narrative and data summary package
- Y QC Samples were not spiked with this compound.

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

# **ATTACHMENT 10**

## **Geodetic Survey Results**

### **1-MG Service Pond**

# Points

## Project : Fenton Hill

|                          |                                   |                        |                             |
|--------------------------|-----------------------------------|------------------------|-----------------------------|
| <b>User name</b>         | 102698                            | <b>Date &amp; Time</b> | 11:16:41 AM<br>1/16/2003    |
| <b>Coordinate System</b> | Projection from data<br>collector | <b>Zone</b>            | Zone from data<br>collector |
| <b>Project Datum</b>     | (WGS 84)                          | <b>Geoid Model</b>     | GEOID99 (Conus)             |
| <b>Vertical Datum</b>    |                                   |                        |                             |
| <b>Coordinate Units</b>  | US survey feet                    |                        |                             |
| <b>Distance Units</b>    | US survey feet                    |                        |                             |
| <b>Height Units</b>      | US survey feet                    |                        |                             |

### Point listing

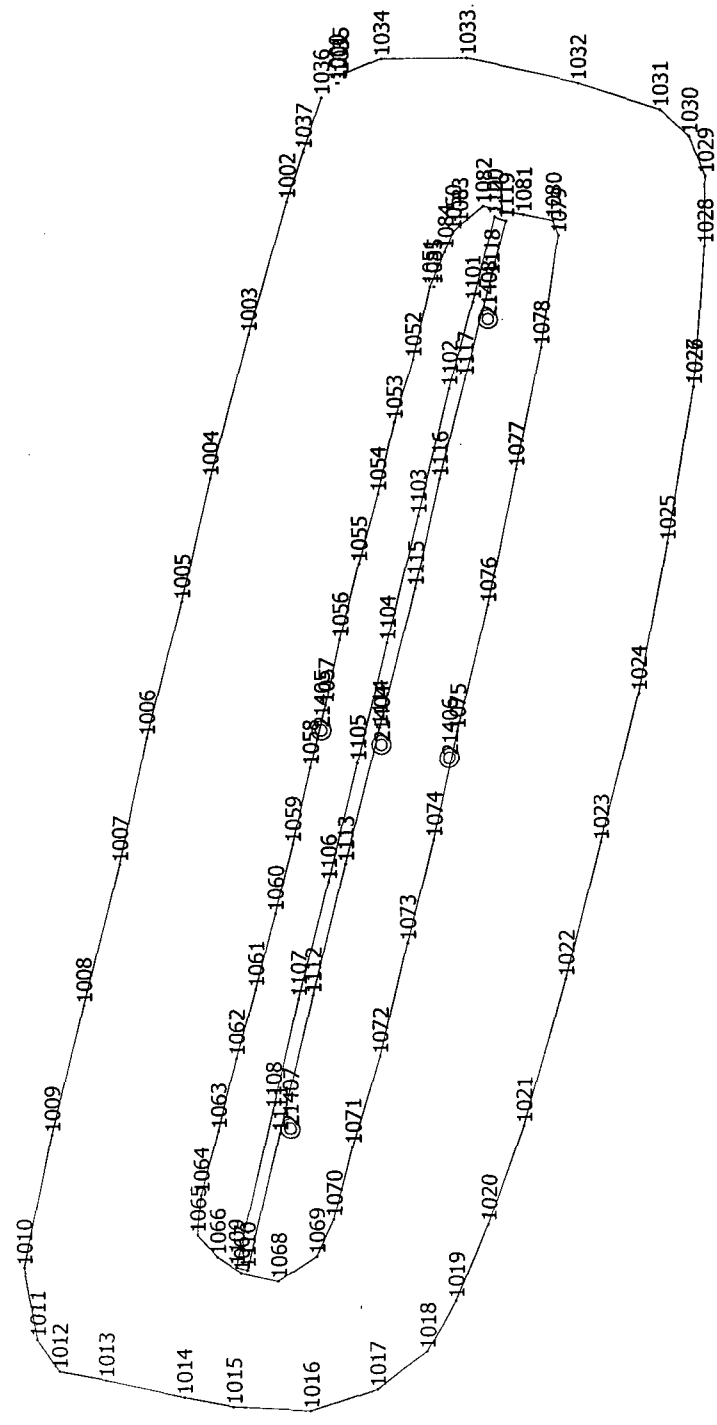
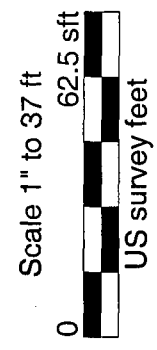
| Name | Northing    | Easting     | Elevation | Feature Code |
|------|-------------|-------------|-----------|--------------|
| COT8 | 1776177.546 | 1514774.746 | 8691.918  |              |
| 1000 | 1776202.125 | 1514654.711 | 8690.722  | POND         |
| 1001 | 1776201.750 | 1514654.705 | 8690.693  | POND         |
| 1002 | 1776211.568 | 1514631.861 | 8690.134  | POND         |
| 1003 | 1776218.838 | 1514605.921 | 8690.255  | POND         |
| 1004 | 1776226.215 | 1514577.909 | 8690.278  | POND         |
| 1005 | 1776231.850 | 1514553.892 | 8690.272  | POND         |
| 1006 | 1776238.588 | 1514527.357 | 8690.345  | POND         |
| 1007 | 1776243.944 | 1514503.033 | 8690.322  | POND         |
| 1008 | 1776250.966 | 1514475.737 | 8690.530  | POND         |
| 1009 | 1776257.156 | 1514451.173 | 8690.713  | POND         |
| 1010 | 1776262.606 | 1514425.698 | 8690.992  | POND         |
| 1011 | 1776260.052 | 1514412.217 | 8688.685  | POND         |
| 1012 | 1776255.768 | 1514405.916 | 8690.777  | POND         |
| 1013 | 1776246.684 | 1514404.255 | 8690.855  | POND         |
| 1014 | 1776231.565 | 1514401.013 | 8690.697  | POND         |
| 1015 | 1776221.955 | 1514399.148 | 8690.638  | POND         |
| 1016 | 1776207.119 | 1514398.319 | 8690.151  | POND         |
| 1017 | 1776194.551 | 1514402.395 | 8689.830  | POND         |
| 1018 | 1776184.990 | 1514409.681 | 8689.983  | POND         |
| 1019 | 1776179.550 | 1514419.194 | 8689.943  | POND         |
| 1020 | 1776173.274 | 1514433.936 | 8689.904  | POND         |
| 1021 | 1776166.417 | 1514452.654 | 8690.085  | POND         |
| 1022 | 1776158.286 | 1514480.842 | 8690.011  | POND         |
| 1023 | 1776151.573 | 1514507.001 | 8689.828  | TOP          |
| 1024 | 1776144.270 | 1514535.911 | 8690.379  | TOP          |
| 1025 | 1776138.773 | 1514565.049 | 8690.429  | TOP          |
| 1026 | 1776133.679 | 1514595.627 | 8690.365  | POND         |
| 1027 | 1776133.636 | 1514595.593 | 8690.314  | POND         |
| 1028 | 1776131.623 | 1514623.102 | 8690.230  | POND         |
| 1029 | 1776131.539 | 1514636.720 | 8690.187  | POND         |
| 1030 | 1776134.613 | 1514644.368 | 8690.218  | POND         |
| 1031 | 1776140.227 | 1514649.474 | 8689.926  | POND         |
| 1032 | 1776155.987 | 1514654.669 | 8689.991  | POND         |
| 1033 | 1776177.464 | 1514659.395 | 8690.415  | POND         |
| 1034 | 1776193.765 | 1514659.424 | 8690.709  | POND         |
| 1035 | 1776201.435 | 1514656.166 | 8690.371  | POND         |

|       |             |             |          |           |
|-------|-------------|-------------|----------|-----------|
| 1036  | 1776205.011 | 1514651.930 | 8690.499 | POND      |
| 1037  | 1776208.398 | 1514641.522 | 8690.217 | POND      |
| 1050  | 1776180.079 | 1514625.728 | 8678.649 | POND      |
| 1051  | 1776184.483 | 1514615.240 | 8679.021 | POND      |
| 1052  | 1776187.697 | 1514600.904 | 8679.066 | POND      |
| 1053  | 1776191.174 | 1514588.755 | 8679.193 | POND      |
| 1054  | 1776194.369 | 1514574.821 | 8679.122 | POND      |
| 1055  | 1776198.048 | 1514561.034 | 8679.107 | POND      |
| 1056  | 1776201.550 | 1514546.286 | 8679.179 | POND      |
| 1057  | 1776204.181 | 1514533.638 | 8679.065 | POND      |
| 1058  | 1776207.150 | 1514521.563 | 8679.187 | POND      |
| 1059  | 1776210.522 | 1514506.662 | 8679.157 | POND      |
| 1060  | 1776213.847 | 1514493.334 | 8679.246 | POND      |
| 1061  | 1776217.596 | 1514478.834 | 8679.303 | POND      |
| 1062  | 1776221.362 | 1514465.731 | 8679.374 | POND      |
| 1063  | 1776224.886 | 1514451.716 | 8679.593 | POND      |
| 1064  | 1776228.220 | 1514439.527 | 8679.939 | POND      |
| 1065  | 1776228.863 | 1514431.998 | 8680.120 | POND      |
| 1066  | 1776225.062 | 1514427.694 | 8680.133 | POND      |
| 1067  | 1776220.489 | 1514424.667 | 8680.203 | POND      |
| 1068  | 1776213.284 | 1514423.011 | 8680.231 | POND      |
| 1069  | 1776205.931 | 1514427.764 | 8680.165 | POND      |
| 1070  | 1776202.637 | 1514434.869 | 8679.685 | POND      |
| 1071  | 1776199.154 | 1514448.696 | 8679.315 | POND      |
| 1072  | 1776193.963 | 1514466.030 | 8679.302 | POND      |
| 1073  | 1776188.724 | 1514487.658 | 8679.194 | POND      |
| 1074  | 1776183.753 | 1514507.565 | 8679.085 | POND      |
| 1075  | 1776179.310 | 1514528.428 | 8678.881 | POND      |
| 1076  | 1776173.436 | 1514552.975 | 8678.708 | POND      |
| 1077  | 1776167.860 | 1514579.472 | 8678.635 | POND      |
| 1078  | 1776163.094 | 1514603.097 | 8678.763 | POND      |
| 1079  | 1776159.739 | 1514625.161 | 8678.600 | POND      |
| 1080  | 1776160.811 | 1514628.021 | 8678.348 | POND      |
| 1081  | 1776166.530 | 1514629.181 | 8677.992 | POND      |
| 1082  | 1776174.292 | 1514630.811 | 8678.249 | POND      |
| 1083  | 1776178.784 | 1514627.181 | 8678.553 | POND      |
| 1084  | 1776181.602 | 1514622.037 | 8678.762 | POND      |
| 1085  | 1776183.713 | 1514615.226 | 8678.884 | POND      |
| 1100  | 1776172.082 | 1514628.705 | 8677.865 | TRENCH    |
| 1101  | 1776176.307 | 1514612.060 | 8678.229 | TRENCH    |
| 1102  | 1776180.767 | 1514595.324 | 8678.754 | TRENCH    |
| 1103  | 1776186.770 | 1514570.355 | 8678.664 | TRENCH    |
| 1104  | 1776192.623 | 1514545.750 | 8678.693 | TRENCH    |
| 1105  | 1776198.206 | 1514522.413 | 8678.758 | TRENCH    |
| 1106  | 1776203.738 | 1514499.404 | 8679.011 | TRENCH    |
| 1107  | 1776209.468 | 1514476.950 | 8679.094 | TRENCH    |
| 1108  | 1776214.287 | 1514455.662 | 8679.248 | TRENCH    |
| 1109  | 1776221.398 | 1514425.746 | 8679.828 | TRENCH    |
| 1110  | 1776219.274 | 1514425.144 | 8679.867 | TRENCH    |
| 1111  | 1776213.049 | 1514451.133 | 8679.122 | TRENCH    |
| 1112  | 1776206.668 | 1514477.631 | 8679.066 | TRENCH    |
| 1113  | 1776200.537 | 1514502.901 | 8678.934 | TRENCH    |
| 1114  | 1776194.003 | 1514529.283 | 8678.844 | TRENCH    |
| 1115  | 1776187.284 | 1514556.333 | 8678.337 | TRENCH    |
| 1116  | 1776182.639 | 1514577.615 | 8678.504 | TRENCH    |
| 1117  | 1776177.749 | 1514597.137 | 8678.502 | TRENCH    |
| 1118  | 1776172.672 | 1514617.098 | 8678.199 | TRENCH    |
| 1119  | 1776169.921 | 1514628.045 | 8677.737 | TRENCH    |
| 1120  | 1776172.056 | 1514628.687 | 8677.929 | TRENCH    |
| 21404 | 1776193.687 | 1514526.021 | 8678.614 | SAMPLE PT |

|       |             |             |          |             |
|-------|-------------|-------------|----------|-------------|
| 21405 | 1776205.010 | 1514528.787 | 8678.948 | SAMPLE PT   |
| 21406 | 1776180.799 | 1514523.394 | 8678.789 | SAMPLE PT   |
| 21407 | 1776210.964 | 1514452.232 | 8679.002 | SAMPLE PT   |
| 21408 | 1776173.280 | 1514608.726 | 8678.098 | SAMPLE PT   |
| 100   | 1776142.544 | 1514601.570 | 8686.572 | PIPE        |
| 101   | 1776142.222 | 1514602.282 | 8686.462 | PIPE        |
| 102   | 1776142.236 | 1514601.752 | 8686.544 | PIPE        |
| 103   | 1776147.949 | 1514601.216 | 8684.129 | PIPE        |
| 104   | 1776158.522 | 1514669.139 | 8689.731 | PIPE        |
| 105   | 1776158.402 | 1514669.038 | 8689.788 | PIPE        |
| 106   | 1776159.717 | 1514669.657 | 8690.109 | PIPE        |
| 107   | 1776205.148 | 1514632.803 | 8688.419 | PIPE        |
| 108   | 1776205.149 | 1514632.850 | 8688.499 | PIPE        |
| 109   | 1776205.386 | 1514631.689 | 8688.336 | PIPE        |
| 110   | 1776199.683 | 1514630.484 | 8686.223 | PIPE        |
| 111   | 1776235.770 | 1514519.019 | 8688.893 | PIPE        |
| 112   | 1776235.780 | 1514519.000 | 8688.835 | PIPE        |
| 113   | 1776235.998 | 1514517.884 | 8688.788 | PIPE        |
| 114   | 1776231.499 | 1514517.596 | 8687.164 | PIPE        |
| 115   | 1776228.345 | 1514396.224 | 8690.999 | PIPE        |
| 116   | 1776228.346 | 1514396.211 | 8691.013 | PIPE        |
| 117   | 1776227.715 | 1514396.190 | 8690.989 | PIPE        |
| 120   | 1776188.298 | 1514415.040 | 8687.630 | CULVERT     |
| 121   | 1776188.294 | 1514415.044 | 8687.661 | CULVERT     |
| 122   | 1776188.031 | 1514416.850 | 8687.249 | CULVERT     |
| FH-1  | 1776175.300 | 1514452.100 | ?        |             |
| FH-2  | 1776241.000 | 1514411.600 | ?        |             |
| 123   | 1776192.698 | 1514417.196 | 8685.574 | CULVERT     |
| 150   | 1776410.397 | 1514462.114 | 8692.569 | XMAS TREE   |
| 151   | 1776410.374 | 1514462.059 | 8692.628 | XMAS TREE   |
| 160   | 1776314.767 | 1514513.477 | 8693.883 | GOLD BIT    |
| 161   | 1776314.756 | 1514513.486 | 8693.887 | GOLD BIT    |
| 162   | 1776314.744 | 1514513.497 | 8693.904 | GOLD BIT    |
| 170   | 1776303.898 | 1514664.801 | 8694.613 | XMAS TREE 2 |
| 171   | 1776304.003 | 1514664.769 | 8694.664 | XMAS TREE 2 |
| 172   | 1776304.028 | 1514664.773 | 8694.605 | XMAS TREE 2 |
| 200   | 1776281.011 | 1514413.175 | 8691.312 | RAMPCUT     |
| 201   | 1776280.997 | 1514413.254 | 8691.346 | RAMPCUT     |
| 202   | 1776262.873 | 1514419.200 | 8688.540 | RAMPCUT     |
| 203   | 1776246.475 | 1514425.712 | 8684.998 | RAMPCUT     |
| 204   | 1776232.004 | 1514434.057 | 8680.727 | RAMPCUT     |
| 205   | 1776226.864 | 1514439.718 | 8679.655 | RAMPCUT     |
| 206   | 1776221.734 | 1514427.440 | 8679.715 | RAMPCUT     |
| 207   | 1776234.623 | 1514419.744 | 8683.233 | RAMPCUT     |
| 208   | 1776248.436 | 1514412.862 | 8687.152 | RAMPCUT     |
| 209   | 1776261.797 | 1514406.858 | 8689.395 | RAMPCUT     |
| 210   | 1776273.427 | 1514401.313 | 8691.118 | RAMPCUT     |
| 500   | 1776153.258 | 1514672.221 | 8689.649 | SUMP        |
| 501   | 1776153.288 | 1514672.195 | 8689.651 | SUMP        |
| 502   | 1776147.415 | 1514674.889 | 8689.883 | SUMP        |
| 503   | 1776145.566 | 1514669.671 | 8690.107 | SUMP        |
| 504   | 1776150.690 | 1514667.330 | 8689.901 | SUMP        |

[Back to top](#)

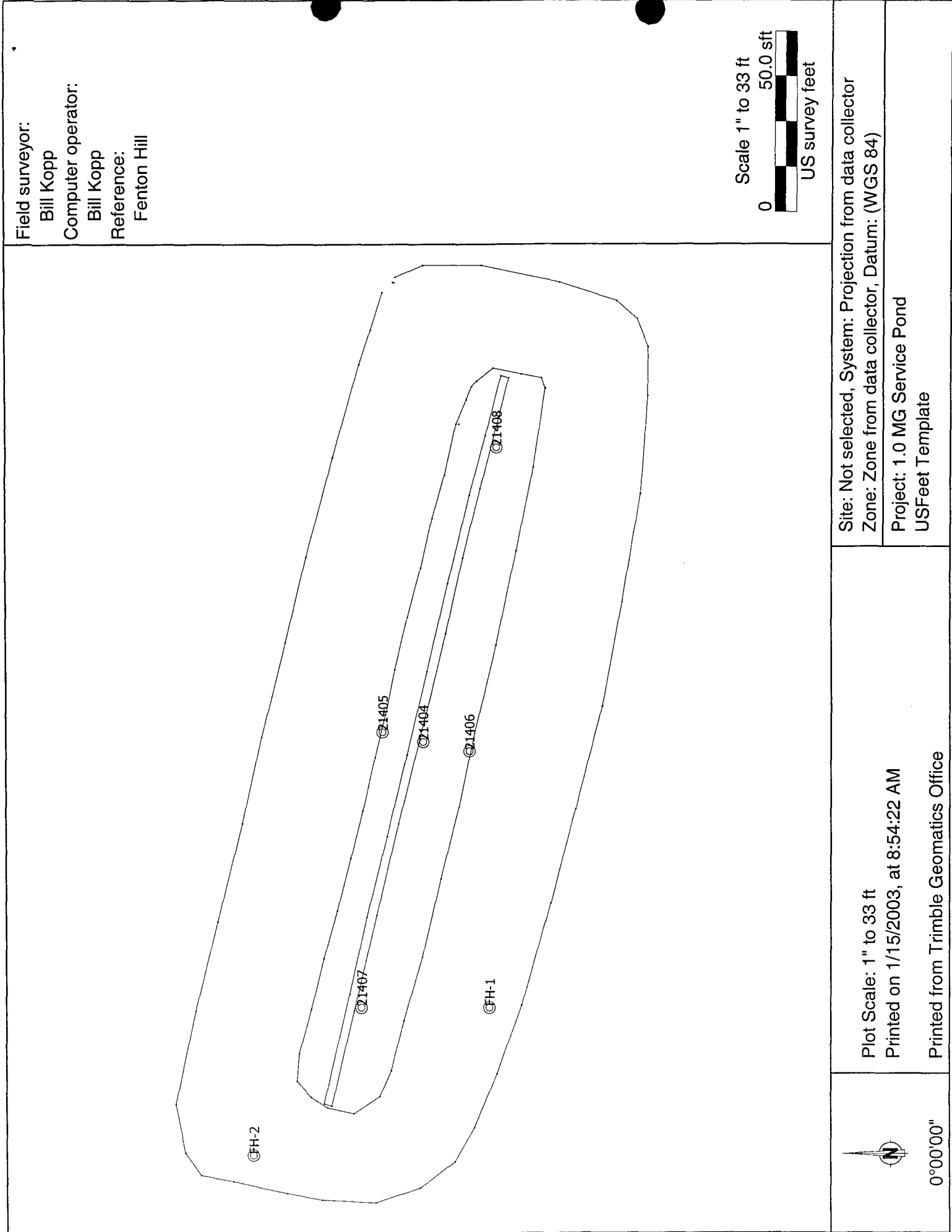
Field surveyor:  
 Bill Kopp  
 Computer operator:  
 Bill Kopp  
 Reference:  
 Fenton Hill



Site: Not selected, System: Projection from data collector  
 Zone: Zone from data collector, Datum: (WGS 84)  
 Project: 1.0 MG Service Pond  
 USFeet Template

Plot Scale: 1" to 37 ft  
 Printed on 1/6/2003, at 8:42:24 AM  
 Printed from Trimble Geomatics Office





# **ATTACHMENT 11**

**LANL Letter RE:**

**Response to U.S. Forest Service's  
Request for Additional Information**

**Progress Report and Proposed Backfill  
Plan**



*Risk Reduction & Environmental Stewardship Division  
Water Quality & Hydrology Group (RRES-WQH)*

PO Box 1663, MS K497

Los Alamos, New Mexico 87545

(505) 667-7969/Fax: (505) 665-9344

Date: February 3, 2003

Refer to: RRES-WQH: 03-028

Mr. John F. Peterson  
Jemez District Ranger  
U.S. Forest Service  
Jemez Ranger District  
P.O. Box 150  
Jemez Springs, NM 87025

**SUBJECT: REQUEST FOR ADDITIONAL INFORMATION, PROGRESS REPORT AND  
PROPOSED BACKFILL PLAN, 1-MG SERVICE POND, FENTON HILL  
GEOTHERMAL FACILITY**

Dear Mr. Peterson:

On January 27, 2003, Ms. Carol Linn, Santa Fe National Forest, telephoned me to request additional information on the Progress Report and Proposed Backfill Plan submitted to you on January 16, 2003 (RRES-WQH: 03-008). Specifically, Ms. Linn requested the following:

1. Confirmation that the crusher fines located in the 1-MG service pond are not native to the Fenton Hill site;
2. Clarification of statements made by the Laboratory regarding the mobility of the arsenic in the crusher fines;
3. A drawing (cross-section) of the 1-MG service pond showing the proposed location of the buried crusher fines following backfill and final grading; and
4. The quantity of crusher fines in the 1-MG service pond.

Below are the Laboratory's responses to your agency's request:

1. The crusher fines currently lining the 1-MG service pond at Fenton Hill are not native to the site. All of the crusher fines were imported from a crusher pit located on Jemez Pueblo approximately ¼ mile northeast of the intersection of State Roads 4 and 290.

2. In the Progress Report and Proposed Backfill Plan referenced above, the Laboratory stated the following:

*In conclusion, the data strongly indicates that the crusher fines imported from near Jemez Pueblo to construct the 1-MG service pond contained elevated concentrations of naturally occurring arsenic. Further, the data suggests that the arsenic in the crusher fines is tightly bound and not highly mobile. And finally, the data confirms that the arsenic in the crusher fines is not present at hazardous concentrations.*

The above statement regarding the mobility of arsenic in the crusher fines was based upon a comparison of total arsenic and TCLP arsenic analytical results. The Toxicity Characteristic Leaching Procedure (TCLP) is the most widely accepted leaching procedure for assessing the long-term impact of waste burial. The TCLP method (EPA Method 1311) was designed to determine the mobility of both organic and inorganic analytes present in a solid following extraction with an acetic acid buffer solution.

As presented in the Progress Report and Proposed Backfill Plan, the average TCLP arsenic concentration in three crusher fine samples is less than 0.1% of the total arsenic concentration (samples RC57-03-49714, -49718, -49720: avg. TCLP arsenic result=0.12 ppm; avg. total arsenic result=253 ppm). These results strongly suggest that the arsenic in the crusher fines is tightly bound and not highly mobile under the extraction conditions of the TCLP method (EPA Method 1311). The Laboratory has no information about the extraction conditions that the crusher fines would be exposed to if buried at the Fenton Hill site.

3. Attachment 1.0 is a cross-section of the 1-MG service pond at Fenton Hill showing the approximate location of the crusher fines following backfill and final grading. It is Laboratory's objective to position the crusher fines in the bottom of the 1-MG service pond in such a manner as to maximize the distance to the land surface. As indicated in the Progress Report and Backfill Plan, a minimum of 6 ft. of cover will be maintained over the buried crusher fines.
4. The Laboratory estimates that there are approximately 482 cubic yards of crusher fines in the 1-MG service pond. This estimate is based upon the following construction specifications obtained from the pond's original design documents (November 20, 1989):
- a. Total area of liner: 2,890 square yards
  - b. Depth of crusher fines: 0.5 ft.

Please contact me at (505) 667-7969 should you have any questions regarding this response to your agency's request for additional information.

Sincerely,



Bob Beers

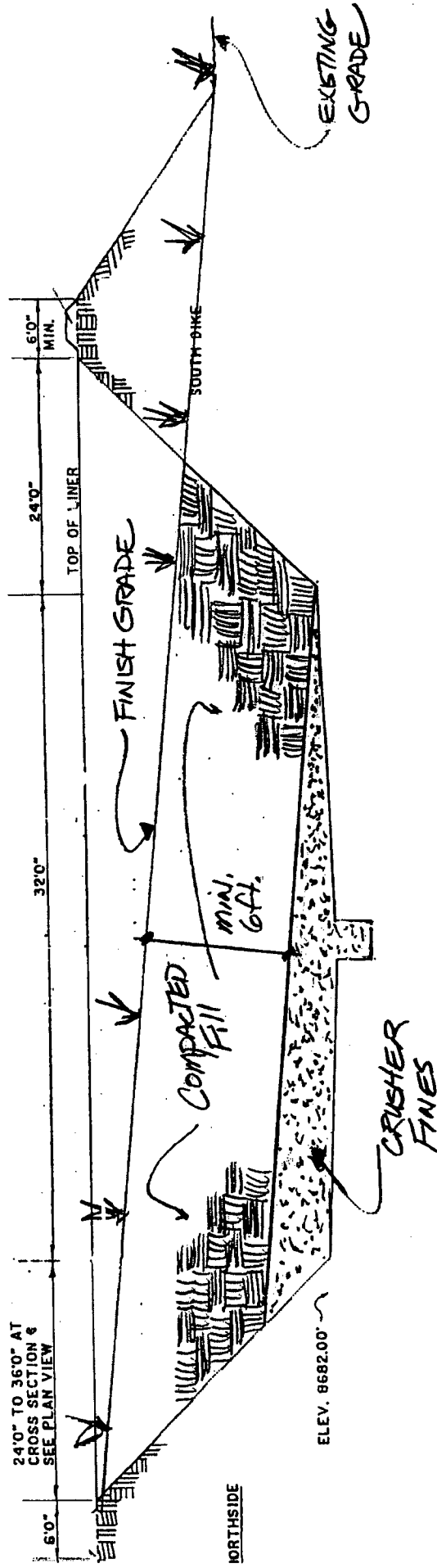
Water Quality & Hydrology Group

BB/tml

Attachments: a/s

Cy: A. Ferrell, Forest Service, Jemez Ranger District, Jemez Springs, NM, w/att.  
C. Linn, Forest Service, Santa Fe National Forest, Santa Fe, NM, w/att.  
M. Miolano, Forest Service, New Mexico National Forests, Albuquerque, NM, w/att.  
J. Vozella, DOE/OLASO, w/att., MS A316  
G. Turner, DOE/OLASO, w/att., MS A316  
J. Holt, ADO, w/att., MS A104  
C. Webster, ADSR, w/att., MS A127  
P. Weber, EES-DO, w/att., MS D446  
J. Hansen, EES-DO, w/att., MS D446  
J. Thomson, EES-11, w/att., MS D443  
S. Archuleta, P-FM, w/att., MS D410  
B. Ramsey, RRES-DO w/att., MS J591  
K. Hargis, RRES-DO, w/att., MS J591  
D. Stavert, RRES-EP, w/att., MS J591  
S. Rae, RRES-WQH, w/att., MS K497  
D. Rogers, RRES-WQH, w/att., MS K497  
D. McInroy, RRES-R, w/att., MS M992  
T. Rust, RRES-R, w/att., MS M992  
T. Grieggs, RRES-SWRC, w/att., MS K490  
B. Kopp, RRES-SWRC, w/att., MS M992  
E. Louderbough, LC-ESH, w/att., MS A187  
RRES-WQH File, w/enc., MS K497  
IM-5, w/enc., MS A150

# ATTACHMENT 1.0 FENTON HILL 1-MG SERVICE POND PROPOSED BACKFILL PLAN



CROSS SECTION B-B  
NTS

- CRUSHER FINES VOLUME  $\approx 482 \text{ yd}^3$
- CRUSHER FINES PILE  $\approx 223' \times 24' \times 2.5' (\text{AVG})$

1/29/03

RES-6204

## **ATTACHMENT 12**

**U.S. Forest Service Approval Letter RE:**

**1-MG Service Pond  
Proposed Backfill Plan**



United States  
Department of  
Agriculture

Forest  
Service

Santa Fe  
National Forest  
(505) 438-7840

1474 Rodeo Road  
P.O. Box 1689  
Santa Fe, NM 87505

File Code: 2160/1580

Date: February 3, 2003

Route To: Interagency Agreement # DE-A132-98AL78589

Subject: Proposed Backfill Plan - 1 MG Service Pond:  
Fenton Geothermal Facility (RRES-WQH: 03-008)

To: Los Alamos National Laboratory  
Risk Reduction & Environmental Stewardship Division  
Water Quality & Hydrology Group (RRES-WQH)  
P.O. 1663, MSK497  
Los Alamos, NM 87545

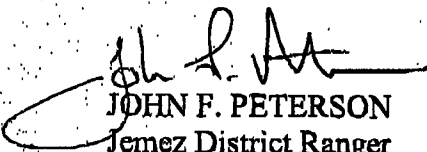
Dear Mr. Beers,

Thank you for your correspondence of January 16, 2003 and the additional information supplied in correspondence of January 30, 2003. The request to backfill the 1 MG service pond is approved.

Positive drainage shall be maintained and the soils shall be compacted up to one foot from the finished grade. Please include the location of the obliterated pond on your Fenton Hill (TA-57) Facility Site Plan.

We appreciate the supporting analysis and documentation for the demolition and closure of the 1 MG service pond and the information provided on the drinking water well.

Sincerely,

  
JOHN F. PETERSON  
Jemez District Ranger  
Santa Fe National Forest  
USDA Forest Service

cc: Anne Ferrell, Michael Frazier, Pat Leyba, Reuben Montes, Carol J. Linn, Sarah H. Baker, Marcia Miolano, Ben Martinez

File: Interagency Agreement, Fenton Hill



**Kielling, Martyne**

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**From:** Robert Beers [bbeers@lanl.gov]  
**Sent:** Wednesday, October 23, 2002 7:47 AM  
**To:** WPrice@state.nm.us  
**Cc:** mkielling@state.nm.us; dkthomas@lanl.gov; stevenrae@lanl.gov; slug@lanl.gov; jchansen@lanl.gov; aferrell@fs.fed.us; clinn@fs.fed.us; kmullen@lanl.gov; A. Albert Dye  
**Subject:** Fenton Hill 1-MG Pond Closure

Dear Wayne,

This morning (Wednesday, 10/23/02) Key Energy Services, Inc., Farmington, NM, will begin transporting geothermal fluids from the Fenton Hill Geothermal Facility's 1-MG pond to TNT Construction's evaporation basins for disposal. TNT Construction is an OCD-permitted surface waste management facility in Lindrith, NM (OCD Permit No. NM-01-0008). Key Energy estimates that it will take approximately 10 days to complete this work.

Following disposal of the geothermal fluids, Key Energy will transport the sludge in the 1-MG pond to Envirotech's land farm for disposal. Envirotech, Inc., is an OCD-permitted surface waste management facility in Farmington, NM (OCD Permit No. NM-01-0011). Once the sludge has been removed, Key Energy will remove the primary and secondary liners and the pond's leak collection system. The liners and leak collection piping will be disposed of at Waste Management's Solid Waste Facility in Rio Rancho, NM. Gravel from the leak collection system will be disposed of at Envirotech's land farm. Key Energy estimates that it will take approximately 4 days to complete this work.

All of the above work will be conducted in accordance with Los Alamos National Laboratory's Closure Plan for the Fenton Hill 1-MG Service Pond (LA-UR-02-5009, August 2002).

Disposal tickets documenting waste disposal will be submitted to your office following completion of this work.

Please contact me if you have any questions regarding these activities.

Sincerely,

Bob Beers

Bob Beers  
Environmental Surveillance Team  
Water Quality & Hydrology Group  
Los Alamos National Laboratory  
MS K497  
Los Alamos, NM 87545

email: bbeers@lanl.gov  
office: 505-667-7969  
fax: 505-665-9344

10/23/2002