

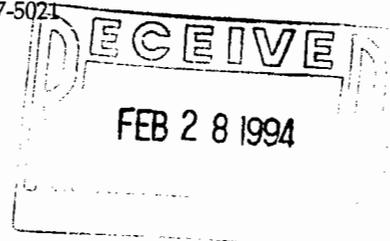
Los Alamos

NATIONAL LABORATORY

Environment, Safety, And Health Group
Los Alamos National Laboratory
Los Alamos, New Mexico 87545



Date: [REDACTED]
In Reply Refer To: ESH-8/HSWS-94-0072
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Mr. Anthony Moreland, Geologist
Remedial Action Section
Underground Storage Tank Bureau
New Mexico Environment Department
1190 St. Francis Drive
Harold Runnels Building
Santa Fe, New Mexico 87502

Dear Mr. Moreland:

SUBJECT: FINAL CLOSURE REPORT ON UST TA-3-MP-3

The purpose of this letter is to fulfill the requirements of Part VIII, § 802, and Part XII, § 1205 C, of the New Mexico Underground Storage Tank Regulations (USTR). On June 1, 1992, Jeff Carmichael of Los Alamos National Laboratory (LANL) notified Anna Richards of the New Mexico Environment Department (NMED), Underground Storage Tank Bureau of a petroleum release at Technical Area (TA) 60. Listed below is a data summary regarding this underground storage tank (UST) and its removal.

UST DATA

- Registered Name of Tank: TA-3-MP-3
- Physical Location of Tank: TA-60, Building 1
Formerly TA-3, Building 382
- Age of Tank: 12 Years
- Tank Capacity: 560 Gallons
- Contents of Tank: Reclaimed Oil
- Date Removed: June 1, 1992
- NMED Inspector Present: Bhanu Ram

UST TA-3-MP-3 was taken out of service and removed because of LANL's efforts to upgrade and replace all USTs with state-of-the-art systems. Visual evidence of soil contamination was discovered beneath the tank after the UST was removed. Inspection of the tank revealed a small hole located in the bottom (south end) of the UST. There was no piping associated with this UST except for a fill stem. The fill stem was also used as a reclaim oil removal port when the UST approached maximum capacity.

During the excavation of the UST approximately thirty cubic yards of contaminated soil were removed. *Enclosure One* contains an explanation on the amount of soil shipped off-site for disposal. The soil was not highly contaminated (soil not saturated with petroleum product) based on field observations. The soil was transported to TA-54 for storage at LANL's Class D industrial landfill. The soil was then shipped to Chemical Waste Management's Kettleman Hills facility in California for disposal during the months of July and August, 1992. *Enclosure One* contains a copy of the waste profile used to characterize the soil and copies of the four uniform hazardous waste manifests used to ship the soil. Please note that the soil was designated as non-regulated waste (non-hazardous) on each manifest.

HSWA LANL 1/11/94/60

TC



ANALYTICAL DATA SUMMARY

On June 1, 1992, three-soil samples were collected and transported to LANL's Environmental Chemistry Group for analyses. Soil Sample TA-60-2, collected in the middle of the bottom of the excavation after the UST had been removed, was analyzed for total petroleum hydrocarbons (TPH) using EPA SW-846, Analytical Method 418.1. The other two soil samples (TA-60-3 & 4) were collected from soil that was excavated from around the UST and stockpiled on-site, before the soil was transported to TA-54 for storage. Soil Samples TA-60-3 & 4 were collected from what appeared to be the most contaminated soil observed during the UST removal. Soil Sample TA-60-3 was analyzed for Toxicity Characteristic Leaching Procedure (TCLP) hazardous waste contaminant metals in compliance with the New Mexico Hazardous Waste Management Regulations, Part II and Part III, and 40 CFR 261.4 (b.)(10.) and 262.11. Soil Sample TA-60-4 was analyzed for only TPH.

On June 3, 1992, another soil sample (TA-60-5) was collected in the bottom of the excavation after a concrete pad that once supported the UST had been removed. Soil Sample TA-60-5 was analyzed for TPH. Below is a summary of the analytical data from these four soil samples. *Enclosure Two* contains a copy of the analytical data and a map of the sample collection points.

SUMMARY RESULTS FOR SOIL SAMPLES COLLECTED JUNE 1 & 3, 1992

Soil Sample Number	Sampling Location	Analytical Results TCLP	Analytical Results TPH µg/g	Soil Sample Collection Depth
TA-60-2	Tank Pit Floor	Not Analyzed	879	8 Feet BLS
TA-60-3	Excavated Soil	⊖	Not Analyzed	Φ
TA-60-4	Excavated Soil	Not Analyzed	3062	Φ
TA-60-5	Tank Pit Floor	Not Analyzed	<5	10 Feet BLS

TCLP = Toxicity Characteristic Leaching Procedure

TPH = Total Petroleum Hydrocarbons

BLS = Below Land Surface

⊖ = This soil sample was analyzed for TCLP metals. All metals were below the regulatory threshold for hazardous waste.

µg/g = Parts per Million

Φ = This soil was excavated from around the UST and stockpiled on-site. The soil sample was collected from what appeared to be the most contaminated area of the stockpile.

Part XII, § 1205 C., of the USTR requires LANL to determine the vertical and lateral extent of the site contamination. Soil Sample TA-60-5 was collected at approximately 10 feet below land surface (bfs) and was found free of any detectable total petroleum hydrocarbons. Therefore, the **vertical extent** of the site contamination has been determined. However, the lateral extent of the petroleum contamination could not be found during the UST removal because the UST site was surrounded by concrete and asphalt.

This UST site lies in Solid Waste Management Unit (SWMU) 60-003, which was scheduled for site characterization by LANL's Environmental Restoration Program in the Fall of 1993. On August 7, 1992, LANL requested a variance from Part XII, § 1205 C.(1) of the USTR. This variance would allow LANL to wait until the Fall of 1993 to determine the lateral extent of the petroleum contamination.

However, based on a December 22, 1992, telephone conversation between Jeff Carmichael of LANL's Environmental Protection Group and yourself, LANL decided to withdraw its variance request. Instead, on January 28, 1993, LANL requested in a letter an extension of time to conduct an on-site investigation into the lateral extent of the petroleum contamination. On February 3, 1993, NMED granted LANL's extension of time request. The extension of time allowed LANL until the end of April, 1993, to collect the required soil samples at this former UST site.

On April 28, 1993, LANL collected 13 subsurface soil samples to find out the lateral extent of the reclaimed oil contamination from the former UST. From each of the 4 soil borings, one soil sample was taken from depths of 5 foot, 10 foot, and 15 foot intervals. From the 13 soil samples, the TPH concentration ranged from non-detectable to 47.9 µg/g, indicating that the lateral extent of the petroleum contamination from this former UST (TA-3-MP-3) had been determined. Below is a summary of the analytical data from these 13 soil samples.

SUMMARY RESULTS FOR SOIL SAMPLES COLLECTED APRIL 28, 1993

Soil Sample Number	Lab Sample Number	Sampling Location	Soil Sample Collection Depth	Analytical Results TPH µg/g
1001-5	AAA2319	Soil Boring 1001	5 Feet BLS	<MDL
1002-5	AAA2320	Soil Boring 1002	5 Feet BLS	<MDL
1003-5	AAA2321	Soil Boring 1003	5 Feet BLS	47.9
1004-5	AAA2322	Soil Boring 1004	5 Feet BLS	7.50
1001-5	AAA2323	Soil Boring 1001	5 Feet BLS Repeat	9.46
1001-10	AAA2324	Soil Boring 1001	10 Feet BLS	<MDL
1001-15	AAA2325	Soil Boring 1001	15 Feet BLS	<MDL
1102-10	AAA2326	Soil Boring 1002	10 Feet BLS	<MDL
1002-15	AAA2327	Soil Boring 1002	15 Feet BLS	<MDL
1003-10	AAA2328	Soil Boring 1003	10 Feet BLS	<MDL
1003-15	AAA2329	Soil Boring 1003	15 Feet BLS	<MDL
1004-10	AAA2330	Soil Boring 1004	10 Feet BLS	<MDL
1004-15	AAA2331	Soil Boring 1004	15 Feet BLS	<MDL

TPH = Total Petroleum Hydrocarbons
 MDL = Minimum Detection Level 4 µg/g
 BLS = Below Land Surface

During the April 28, 1993, soil sampling event, field observations revealed that the soil between 0.6 and 2.5 feet bls in three of the soil boring locations (1001, 1002, 1003) was saturated with liquid and had a strong petroleum odor. The top 2.5 feet of soil from Soil Boring 1004 was also described as having a strong petroleum odor; however, there was no mention of saturated soil in this soil boring. *Enclosure Three* contains the analytical results of this soil sampling event, a site map that shows the location of the soil borings, and copies of the field observations.

On June 8, 1993, LANL conducted a field investigation to find the lateral extent of the near surface petroleum contamination by inspecting 2 nearby drainage ditches. These drainage ditches are located approximately 200 feet to the east and 250 feet north from the former UST TA-3-MP-3. These drainage ditches receive run-off from 2 parking lots used for vehicle parking and equipment storage at TA-60, Building 1. The ditches eventually join northeast of Building 1 and ultimately drain into Sandia Canyon. During the field investigation no soil staining or petroleum odor was observed in the drainage ditches. *Enclosure Four* contains a map of the surface contours around TA-60, Building 1, and the drainage ditches.

In addition to the field investigation of June 8, 1993, LANL collected two soil samples on July 28, 1993, to determine the TPH concentration of the near surface petroleum contamination and to provide information on its lateral extent. Below is a summary of the analytical data from these two soil samples.

SUMMARY RESULTS FOR SOIL SAMPLES COLLECTED JULY 28, 1993

Soil Sample Number	Lab Sample Number	Sampling Location	Soil Sample Collection Depth	Analytical Results TPH $\mu\text{g/g}$
AAA2332	AAA2332	Adjacent to Soil Boring 1003	2 Feet BLS	5381
AAA2333	AAA2333	48 Feet SE of Soil Boring 1003	2 Feet BLS	MDL

TPH = Total Petroleum Hydrocarbons
MDL = Minimum Detection Level 6 $\mu\text{g/g}$
BLS = Below Land Surface

Soil Sample 2332 was collected at approximately 2 feet bls, adjacent to Soil Boring 1003 (the sample hole where the highest TPH value [47.9 $\mu\text{g/g}$] was detected at 5 feet bls). The other soil sample, 2333, was collected 48 feet southeast of Soil Boring 1003 at 2 feet bls. Soil Sample 2333 was used to find the lateral extent of the petroleum contamination in the southeasterly direction. Furthermore, no saturated soil conditions were mentioned in the field logs for Soil Samples 2332 and 2333.

The analytical results of the samples showed a TPH concentration of 5381 $\mu\text{g/g}$ for Soil Sample 2332 and no TPH detected in Soil Sample 2333. *Enclosure Five* contains a copy of a map showing the location of Soil Borings 1003, and the soil sample locations for 2332, and 2333; and copies of the analytical results from these two soil samples.

Based on the field investigation and the analytical data, the extent of the near surface petroleum contamination has been defined. Five soil samples taken on April 28, 1993, at 5 feet bls, near this UST removal site can be used to show that the vertical extent of the near surface soil contamination is below the USTR regulatory contaminant level for TPH (100 $\mu\text{g/g}$). The field investigation of June 8, 1993, showed that the lateral extent of the near surface contamination is no greater than approximately 200 feet to the east and 250 feet to the north. Soil Sample AAA2333 taken on July 28, 1993, indicates that the lateral extent of the near surface contamination is no greater than 48 feet to the southeast from this UST removal site. The lateral extent of the contamination was not investigated to the west, because TA-60, Building 1 lies to the west of this former UST and the surface gradient around Building 1 slopes to the northeast.

To determine whether the soil was saturated with petroleum, LANL conducted a soil moisture test on extra soil from Soil Sample 2332, collected on July 28, 1993. To conduct the soil moisture test, LANL utilized techniques from the book *Methods of Soil Analysis by the American Society of Agronomy*¹. The results of the moisture test were finalized in a report on October 13, 1993. The moisture data showed approximately 20.3 % water and 1.2 % organic matter and oil. *Enclosure Six* contains a copy of the soil moisture report.

After conducting additional research, LANL has determined that the source of the near surface (0.6 and 2.5 feet bls) petroleum contamination is from past heavy equipment and vehicle maintenance

¹ American Society of Agronomy. Methods of Soil Analysis, Part 1 Physical Properties. Madison, WI, American Society of Agronomy, 1965.

wash-down activities. Heavy equipment and vehicles were washed down with water on the concrete surrounding TA-60, Building 1, and next to UST TA-3-MP-3. This wash-down practice was ongoing until April 9, 1992, when it was stopped. A National Pollutant Discharge Elimination System (NPDES) release notification report regarding this wash-down activity was sent to the NMED. The contents of the wash-down water were found to be approximately 98 percent water, and 2 percent dirt and oil. Because the wash-down water contained approximately 2 percent dirt and oil and the petroleum released from UST TA-3-MP-3 was from a small hole located in the bottom of the UST, at 8 feet bls, LANL has determined that the near surface petroleum contamination is not UST related. *Enclosure Seven* contains a copy of the release notification form. NPDS

In addition to the equipment wash-down activities, another source of water that could have contributed to the saturated soil conditions at TA-60, Building 1, is surface water run-off. This wash-down water and surface run-off could have penetrated through cracks in the concrete and asphalt producing the saturated soil conditions. Furthermore, LANL's investigative data shows a high probability that the saturated soil conditions are only found beneath the concrete and asphalted areas. The concrete and asphalt may be acting as a cap to prevent subsurface water evaporation.

Based on the TPH concentration of Soil Sample 2332 (5381 $\mu\text{g/g}$), the high water percent found in the soil, and the dirt and oil concentrations in the equipment wash-down water, LANL has determined that the saturated soil conditions around this former UST site are not UST related.

Finally, LANL has determined that there is no threat to human health and the environment from the petroleum contamination from this UST removal site, based on the TPH concentrations and on the extent of the site contamination. The depth to groundwater beneath TA-60, where UST TA-3-MP-3 was located, is approximately 1,000 feet. There are no municipal water wells within one mile or private water supply wells within 1000 feet of this UST removal site. Additionally, the UST is approximately 200 feet to the west and approximately 250 feet to the south of the beginning of two drainage ditches that merge and eventually drain into the bottom of Sandia Canyon, which is approximately 560 feet northeast of this UST site. The nearest underground utility corridor, a sewer line, near this UST site is approximately 30 feet to the east. However, no petroleum odor has ever been reported emanating from this sewer line. During the UST removal and excavation, LANL's Industrial Hygiene Group monitored air emissions, using a photoionization detector and a combustible gas indicator. No potentially explosive vapors were ever detected in the vicinity of this UST or in the excavation.

Conclusion

LANL has determined the vertical and lateral extent of the petroleum contamination release from UST TA-3-MP-3. In addition, the extent of the near surface petroleum contamination has also been determined. The source of the near surface petroleum contamination was from past heavy equipment and vehicle maintenance wash-down activities conducted at the TA-60, Building 1 motorpool. If you have any questions, please contact Jeff Carmichael of my staff at 665-2505.

Sincerely,



Kenneth M. Hargis, Leader
Environmental Protection Group

Enclosures:

1. Waste Disposal Documents
2. Analytical Data And Site Map For Soil Samples Collected
On June 1 And June 3, 1992
3. Analytical Data And Site Map For Soil Samples Collected
On April 28, 1993
4. Site Map and Contours
5. Analytical Data And Site Map For Soil Samples Collected On
July 28, 1993
6. Soil Moisture Data
7. Release Notification Form

Cy: K. Hargis, ESH-8, w/o enc., MS K490
R. Gonzales, EM/ER, w/o enc., MS M992
J. Bellows, LAAO, ES&H, w/o enc., MS A316
RPF, EM/ER, w/enc., MS M707
ESH-8 Reading File, w/o enc.
J. Carmichael, ESH-8, w/o enc., MS K490 665-2505
G. Allen, CST-6, w/enc., MS E525
J. Vozella, LAAO, ES&H, w/enc., MS A316 665-2505
CRM-4, w/enc., MS A150

Contact