

COPY

RAPID RESPONSE INITIATIVE

COPY

CLOSURE ASSESSMENT REPORT

**152nd Tactical Reconnaissance Group
Nevada Air National Guard Base
Reno, Nevada**

Prepared for:

**National Guard Bureau
Andrews Air Force Base, Maryland 20331**

Prepared by:

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Submitted to:

**Hazardous Waste Remedial Actions Program
Martin Marietta Energy Systems, Inc.**

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Acronyms and Abbreviations

ANG	-- Air National Guard
BGS	-- below ground surface
BTXE	-- benzene, toluene, xylenes, and ethylbenzene
CAR	-- Closure Assessment Report
CGI	-- combustible gas indicator
DOE	-- Department of Energy
EPA	-- Environmental Protection Agency
ER	-- equipment rinsate
gal	-- gallons
HAZWRAP	-- Hazardous Waste Remedial Actions Program
IAG	-- Interagency Agreement
LEL	-- lower explosive limit
MCL	-- maximum contaminant level
mm	-- millimeters
mg/kg	-- milligrams per kilogram
mg/L	-- milligrams per liter
NGB	-- National Guard Bureau
NVANG	-- Nevada Air National Guard
ORNL/PAG	-- Oak Ridge National Laboratory/Pollutant Assessments Group
PID	-- photoionization detector
ppm	-- parts per million
QA/QC	-- quality assurance/quality control
RDO	-- Reno Drain Oil
RRI	-- Rapid Response Initiative
TPH	-- total petroleum hydrocarbon
TRG	-- Tactical Reconnaissance Group
ug/L	-- micrograms per liter
USTs	-- underground storage tanks
WCDHD	-- Washoe County District Health Department

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of this Closure Assessment Report (CAR) is to present the results of the closure investigation performed during the removal of four abandoned underground storage tanks (USTs) located at the Nevada Air National Guard Base (herein referred to as the Base), Reno, Nevada. Included in the scope of the CAR is a summary of UST excavation and removal work, a discussion of all soil and groundwater sampling results, and a discussion on the disposal of the USTs and the excavated backfill material. The objective of this document is to provide sufficient data to close out the four UST locations in accordance with regulations set forth by the implementing agency, the Washoe County District Health Department (WCDHD). Upon regulatory concurrence, this CAR will serve as the basis for the preparation of a decision document.

1.2 BACKGROUND

The National Guard Bureau (NGB) has developed the Rapid Response Initiative (RRI) to conduct site assessments, evaluate potential corrective actions, and design the selected remedies at leaking UST and spill sites at Air National Guard facilities. The Department of Energy (DOE), through an existing Interagency Agreement (IAG) with the Air Force, provides technical assistance in implementing the RRI for the NGB. Martin Marietta Energy Systems was assigned the responsibility of managing the Hazardous Waste Remedial Actions Program (HAZWRAP) for DOE. The CAR was prepared by Oak Ridge National Laboratory/Pollutant Assessments Group (ORNL/PAG) under direction of HAZWRAP.

1.3 FACILITY DESCRIPTION

The Base presently occupies approximately 60 acres in the southern portion of the northwest quadrant of the Reno Cannon International Airport complex located approximately

5 miles southeast of downtown Reno (Fig. 1.1).

The Base has been in operation at its present location since April 1948, when the Nevada Air National Guard was established as the 192nd Fighter Squadron. Over time, the Base has expanded, and its designation has changed several times to what is currently known as the 152nd Tactical Reconnaissance Group. A map of the Base is presented in Fig. 1.2. The purpose of the Base is to provide reconnaissance data and photographs during national disasters and/or wartime. The operation of the Base includes the processing of film and the routine maintenance of RF-4C jet aircraft, ANG vehicles, and other types of ground equipment.

A summary of the meteorology, topography, geology, and hydrology of the Base can be found in the Installation Restoration Program Preliminary Assessment report for the Nevada Air National Guard Base dated January 1989.

The Base currently has 20 USTs that are still in service. The locations of the four USTs removed during the closure investigation are shown in Fig. 1.3.

2.0 SITE ASSESSMENT HISTORY

2.1 PREVIOUS INVESTIGATIONS

On November 17, 1989, state of Nevada heating specialist Rick Pruitt, notified the Base of a continuing problem with water and sludge in UST No. 04 and that the tank was a possible "leaker". The Base informed Alan Dreher with WCDHD of the "leaker" on December 12, 1989. At this time, the Base was granted a 60-day extension to the December 22, 1989 deadline for completion of its UST testing program. Initial testing of the four USTs was performed by the Scott Company located in Oakland, California. Tank tightness tests were performed on the four tanks between December 1989 and May 1990. Results of the tests and other tank data are summarized in Table 2.1. UST No. 04 was taken out of service in December 1989 and the other three were taken out of service in April 1991. Preparation for the closure process began in April 1991. It was determined that closure by tank removal would best achieve the closure requirements.

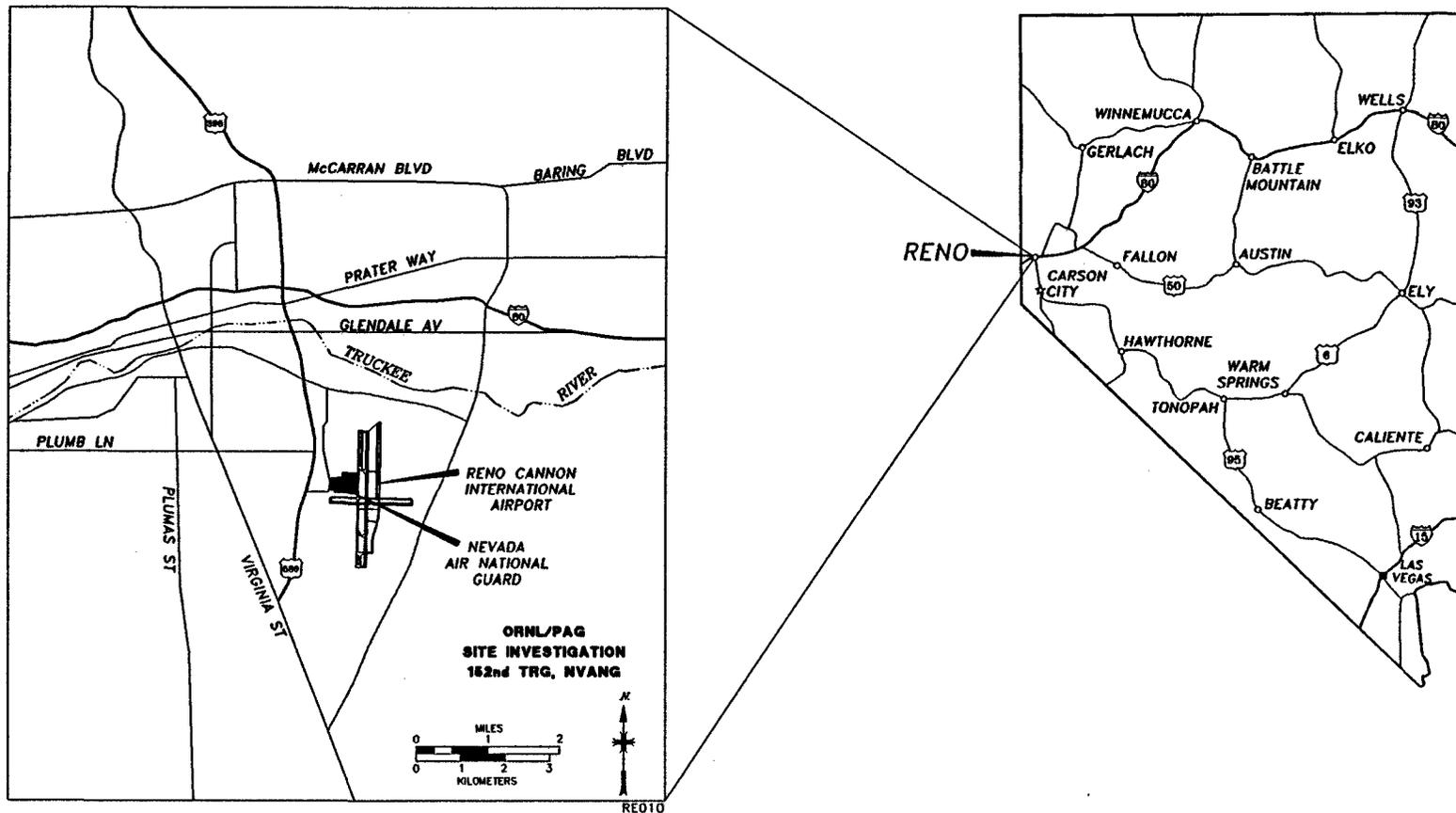
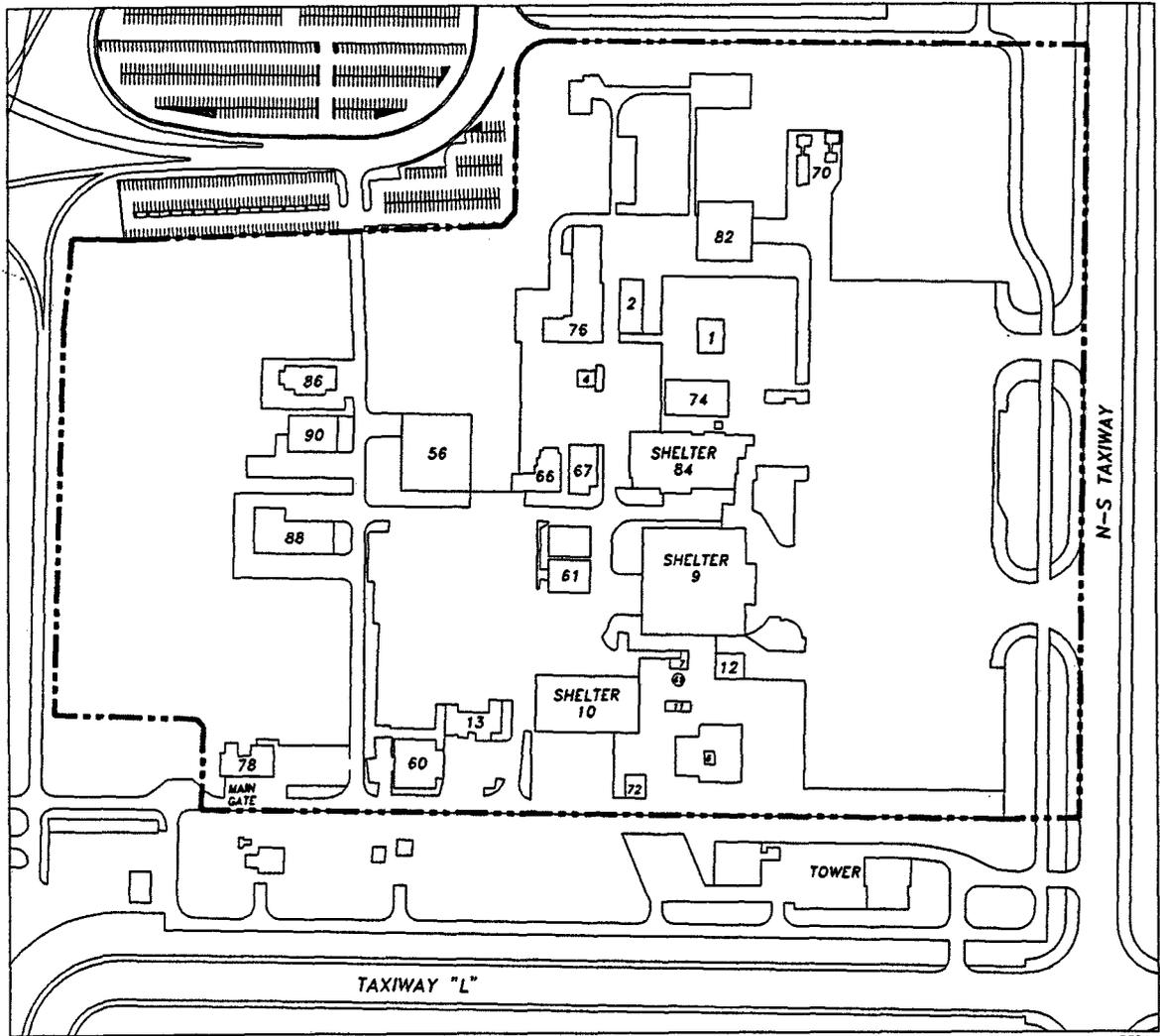


Fig. 1.1. Location map of the Nevada Air National Guard Base.



RE014

**ORNL/PAG
RAPID RESPONSE INITIATIVE
152nd TRG
NEVADA AIR NATIONAL GUARD
RENO CANNON INTERNATIONAL AIRPORT
RENO, NEVADA**

--- BASE BOUNDARY

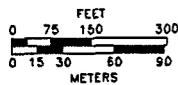


Fig. 1.2. Map of the Base.

Table 2.1 UST Summary

UST No.	Building No.	Size (gal)	Contents	Construction	Date Installed	1991 Status	Tank Tight? (Yes/No)
01	Between 1 & 2	1,500	Heating oil	Steel	1960	Empty	No
02	North of 84	4,000	Heating oil	Steel	1978	Empty	No
03	South of 82	3,000	Heating oil	Steel	1976	Empty	No
04	East of 76	3,000	Heating oil	Steel	1977	Empty	No

2.2 CLOSURE INVESTIGATION

The UST removal contract was awarded to Evax Technology from Scotts Valley, California, on September 30, 1991. A pre-construction meeting was held at the Base on October 7, and the notice to proceed was granted October 9. A subcontractor to Evax Technology, Tank Excavators from Santa Cruz, California, performed the tank excavations.

On October 10, 1991, Tank Excavators began excavation work associated with the removal of the four USTs. The excavated soil was removed and segregated in four separate areas according to UST number. Within each area, the soil was further segregated based on its origin from within the excavated tank pit (e.g., UST 01, top of tank). Air monitoring using a photoionization detector (PID) and a combustible gas indicator (CGI) was performed and recorded by ORNL/PAG personnel during the excavation process. The air monitoring records are presented in Appendix A. No elevated readings were recorded during the excavation process. Samples collected to characterize the soil and groundwater remaining in the UST excavations are referred to as closure samples. Closure sample results are discussed in Section 3.1. Results of waste characterization sampling performed on the excavated soils are presented in Section 3.2. A photographic record of the UST removals was compiled by ORNL/PAG personnel and will be archived in ORNL/PAG files. Following are summaries of the work performed at each of the UST locations.

2.2.1 Underground Storage Tank 01

UST 01, which is located between Buildings 1 and 2, was commonly known as Tank

No. 2 due to its proximity to Building 2 (Fig. 1.3). UST 01 was a 1,500 gal steel tank installed in 1960 and used for heating oil over its 31-year history.

Excavation to the top of UST 01 and excavation of the east and west fuel line trenches were conducted on October 11 and 17 respectively. Minor soil staining was observed around the fill pipe of the tank. No signs of leaks or spills were observed in the trenches, and no elevated PID or CGI readings were recorded during the above excavations. The remaining soil in the fuel line trenches was sampled according to WCDHD protocols, which are included in Appendix B. Closure sampling results are discussed in Section 3.1. The 3/4-in. copper fuel lines and the 2-in. steel vent line were removed and inspected for pitting and corrosion. All lines were in good condition.

UST 01 and its associated fuel lines were rinsed by Reno Drain Oil (RDO) on October 16. Before the rinsing procedure commenced, RDO measured the initial percent combined lower explosive limit (% LEL) and percent oxygen (% O₂) in the tank. Initial readings were 27% LEL and 20% O₂ in UST 01. The rinsing procedure consisted of flushing the tank and fuel lines with a water and phosphate detergent solution three times followed by the extraction of any remaining liquid. The final readings were 2% LEL and 18% O₂. Before UST 01 was pulled, it was purged with dry ice to comply with WCDHD requirements.

UST 01 was removed in good condition at 1430 hours on October 21. Mr. Dreher inspected the tar-coated tank and declared it to be in good condition. Due to the tank's relatively small size and lack of visible contamination, Mr. Dreher indicated that one soil sample from the pit wall, just above the saturated zone, would satisfy WCDHD sampling requirements. Groundwater with no visible oil sheen was observed in the bottom of the tank pit and was subsequently sampled. Closure sampling results are discussed in Section 3.1.

All identification labels were removed from UST 01 for liability reasons. The tank was then loaded onto an RDO truck and transported to the RDO facility where it was destroyed. A copy of the tank disposal certificate for UST 01 is included in Appendix C.

Excavated soil from UST 01 and its associated fuel line trenches was segregated and sampled by the tank removal contractor for waste characterization purposes. Results of the excavated soils analyses are discussed in Section 3.2.

2.2.2 Underground Storage Tank 02

UST 02, which is located north of Building 84, was commonly known as Tank No. 84 due its proximity to Building 84 (Fig. 1.3). UST 02 was a 4,000 gal steel tank installed in 1978 and used for heating oil over its 13-year history.

Excavation to the top of UST 02 and excavation of the vent/fuel line access point were conducted on October 10 and 17 respectively. Minor soil staining was observed around the fill pipe of the tank. No signs of leaks or spills were observed in the vent/fuel access point adjacent to Building 84, and no elevated PID or CGI readings were recorded during the excavations. The fuel/vent access point was sampled according to WCDHD protocols, which are presented in Appendix B. Closure sampling results are presented in Section 3.1. The 3/4-in. copper fuel lines and the 2-in. steel vent line were severed at the access point and removed without trenching. The lines were inspected for pitting and corrosion and found to be in good condition. The line-removal procedure was discussed with Mr. Dreher, who indicated that trenching under the large concrete pad supporting air conditioning equipment for Building 84 would not be necessary.

UST 02 and its associated fuel lines were rinsed by RDO on October 16. Initial % LEL and % O₂ in UST 02 were 9 and 20 respectively. After conducting the previously discussed rinsing and draining procedure, final % LEL and % O₂ readings were recorded as 7 and 20 respectively. Before UST 02 was pulled, it was purged with dry ice to comply with WCDHD requirements.

UST 02 was removed in good condition at 1035 hours on October 18. Mr. Dreher inspected the tar-coated tank and declared it to be in good condition. Mr. Dreher indicated that one soil sample from the pit wall, just above the saturated zone on each end of the tank, would satisfy the WCDHD sampling requirements. Groundwater with a light oil sheen was observed in the bottom of the tank pit and was subsequently sampled. Closure sampling results are discussed in Section 3.1.

All identification labels were removed from UST 01 for liability reasons. The tank was then loaded onto an RDO truck and transported to the RDO facility where it was destroyed. A copy of the tank disposal certificate for UST 02 is included in Appendix C.

Excavated soil from UST 02 was segregated and sampled by the tank removal contractor for waste characterization purposes. Results of the excavated soils analyses are discussed in Section 3.2.

2.2.3 Underground Storage Tank 03

UST 03, which is located south of Building 82, was commonly known as Tank No. 82 due its proximity to Building 82 (Fig. 1.3). UST 03 was a 3,000 gal steel tank installed in 1976 and used for heating oil over its 15-year history.

Excavation to the top of UST 03 was conducted on October 15. Minor soil staining was observed around the fill pipe of the tank. The fuel and vent lines were pulled out from under the existing concrete on October 21. Trenching of the fuel and vent lines was determined unnecessary by Mr. Dreher, who inspected the lines and declared them to be in good condition. No elevated PID or CGI readings were recorded during the above excavation.

UST 03 and its associated fuel lines were rinsed by RDO on October 16. Initial % LEL and % O₂ in UST 03 were 3 and 18 respectively. After conducting the previously discussed rinsing and draining procedure, final % LEL and % O₂ readings were recorded as 2 and 18 respectively. Before UST 03 was pulled, it was purged with dry ice to comply with WCDHD requirements.

UST 03 was removed in good condition at 1315 hours on October 21. Mr. Dreher inspected the tar-coated tank and declared it to be in good condition. Mr. Dreher indicated that one soil sample from the pit wall, just above the saturated zone on each end of the tank, would satisfy the WCDHD sampling requirements. Groundwater with a light oil sheen was observed in the bottom of the tank pit and was subsequently sampled. Closure sampling results are discussed in Section 3.1.

All identification labels were removed from UST 01 for liability reasons. The tank was then loaded onto an RDO truck which transported it to the RDO facility where it was destroyed. A copy of the tank disposal certificate for UST 03 is included in Appendix C.

Excavated soil associated with UST 03 was segregated and sampled by the tank removal contractor for waste characterization purposes. Results of the excavated soils analyses are discussed in Section 3.2.

2.2.4 Underground Storage Tank 04

UST 04, which is located east of Building 76, was commonly known as Tank No. 76 due its proximity to Building 76 (Fig. 1.3). UST 04 was a 3,000 gal steel tank installed in 1977 and used for heating oil over its 16-year history.

Excavation to the top of UST 04 was performed October 15. Excavation of the fuel line trench and the vent line trench was performed October 16 and 17 respectively. Minor soil staining was observed around the fill pipe of the tank. No signs of leaks or spills were observed in the trenches, and no elevated PID or CGI readings were recorded during the above excavations. The soil remaining in the fuel and vent line trenches was sampled according to WCDHD protocols, which are presented in Appendix B. Closure sampling results are discussed in Section 3.1. The 3/4-in. copper fuel lines and the 2-in. steel vent line were removed and inspected for pitting and corrosion. All lines were in good condition.

UST 04 and its associated fuel lines were rinsed by RDO on October 16. Initial % LEL and % O₂ in UST 04 were 9 and 6 respectively. After conducting the previously discussed rinsing and draining procedure, the final % LEL and % O₂ readings were recorded as 5 and 18 respectively. Before UST 04 was pulled, it was purged with dry ice to comply with WCDHD requirements.

UST 04 was removed in good condition at 1315 hours on October 18. Mr. Dreher inspected the tar-coated tank and declared it to be in good condition. Due to the tank's relatively small size and lack of visible contamination, Mr. Dreher indicated that one soil sample from the pit wall would satisfy the WCDHD sampling requirements. The saturated zone was not invaded during the tank excavation, and no groundwater was observed in the bottom of the tank pit. Closure sampling results are discussed in Section 3.1.

All identification labels were removed from UST 01 for liability reasons. The tank

was then loaded onto an RDO truck and transported to the RDO facility where it was destroyed. A copy of the tank disposal certificate for UST 04 is included in Appendix C.

The excavated soil from UST 04 and its associated piping trenches was segregated and sampled by the tank removal contractor for waste characterization purposes. Results of the excavated soils analyses is discussed in Section 3.2.

3.0 SAMPLE RESULTS AND DISCUSSION

As previously discussed, two types of sampling were performed during the investigation. The first type, referred to as closure sampling, was conducted on the soil and groundwater remaining in the tank pits and trenches following excavation. The second type of sampling, referred to as waste characterization sampling, was conducted on the segregated stockpiles of soils excavated from the UST locations. The following sections present a discussion of the sampling results.

3.1 CLOSURE SAMPLING

Closure sampling was conducted to determine whether or not the soil and groundwater remaining in the tank pits and trenches met the WCDHD closure protocols. The WCDHD closure standard for total petroleum hydrocarbons (TPH) in soil is 100 mg/kg TPH; any soil remaining in the tank pits or trenches must not exceed this value. Because there is no TPH standard applicable to groundwater, current maximum contaminant levels (MCLs) for benzene, toluene, xylenes, and ethylbenzene (BTXE) were used as guidelines. The current MCLs for these four compounds are as follows: benzene = 5 ug/L, toluene = 2000 ug/L, xylenes (total) = 10,000 ug/L, and ethylbenzene = 700 ug/L.

In the interest of time, sample analysis was performed within 24 hours by a laboratory certified by the state of Nevada. Soil and groundwater samples were analyzed for TPH using modified EPA method 8015 calibrated with a diesel standard. Groundwater samples were additionally analyzed for BTXE using EPA method 8240.

Summaries of soil and groundwater sampling results for the closure of each UST

location are presented in Tables 3.1 through 3.4. Also included beneath each of the tables is a figure delineating the sampling locations. The certificates of analysis for all of the closure sample data are presented in Appendix D.

A review of the data presented in Tables 3.1 through 3.4 indicates that no significant contamination was encountered. With the exception of one soil sample from UST 04 that contained 25 mg/kg TPH, all remaining closure soil samples had non-detectable results. Since 25 mg/kg is below the soil TPH standard of 100 mg/kg, no further action is required for any of the remaining soil.

The TPH values for the groundwater samples range from 2.65 to 47.28 mg/L and may be attributed to the dissolution of the tar coating on the tanks. This scenario is supported by the lack of TPH contamination in any of the soil samples collected from the pit walls just above the saturated zone. Similarly, the results of the groundwater sample analyses for BTXE are all below detection limits. Because no MCLs were exceeded, no further action on the groundwater is required.

3.1.1 Field Quality Control Measures

The field quality control measures taken during the UST closure investigation consist of a duplicate soil sample and an equipment rinsate. The duplicate soil sample (SO6PF01-08) was collected from the same location as SO5PF01-08 at UST 01 (see Table 3.1). Both samples produced non-detectable results. An equipment rinsate (ERPF03 in Appendix D) was collected after soil sampling equipment decontamination at UST 03 and analyzed for TPH. The resulting 0.76 mg/L TPH found in ERPF03 is inconclusive since the soil which was sampled prior to the collection of the rinsate had no measurable TPH. Therefore, the source of the TPH may be attributed to the deionized water or the sample container used for the

TABLE 3.1
UST CLOSURE SAMPLING RESULTS
FROM UST 01

SAMPLE NO.	SAMPLE LOCATION	SAMPLE MATRIX	ANALYSIS PERFORMED	ANALYTICAL RESULTS
SO1PT01-03	UST 01 TRENCH	SOIL	TPH ¹ /DIESEL	ND ²
SO2PT01-03	UST 01 TRENCH	SOIL	TPH/DIESEL	ND
SO3PT01-04	UST 01 TRENCH	SOIL	TPH/DIESEL	ND
SO4PT01-03	UST 01 TRENCH	SOIL	TPH/DIESEL	ND
SO5PF01-08	UST 01 PIT FLOOR	SOIL	TPH/DIESEL	ND
SO6PF01-08	UST 01 PIT FLOOR	SOIL	TPH/DIESEL	ND
GW1PF01	UST 01 PIT FLOOR	WATER	TPH/DIESEL BTXE ³	47.28 mg/L ND

¹ TPH = Total petroleum hydrocarbons using a diesel standard.

² ND = Non-detectable.

³ BTXE = Benzene, toluene, xylenes, and ethylbenzene.

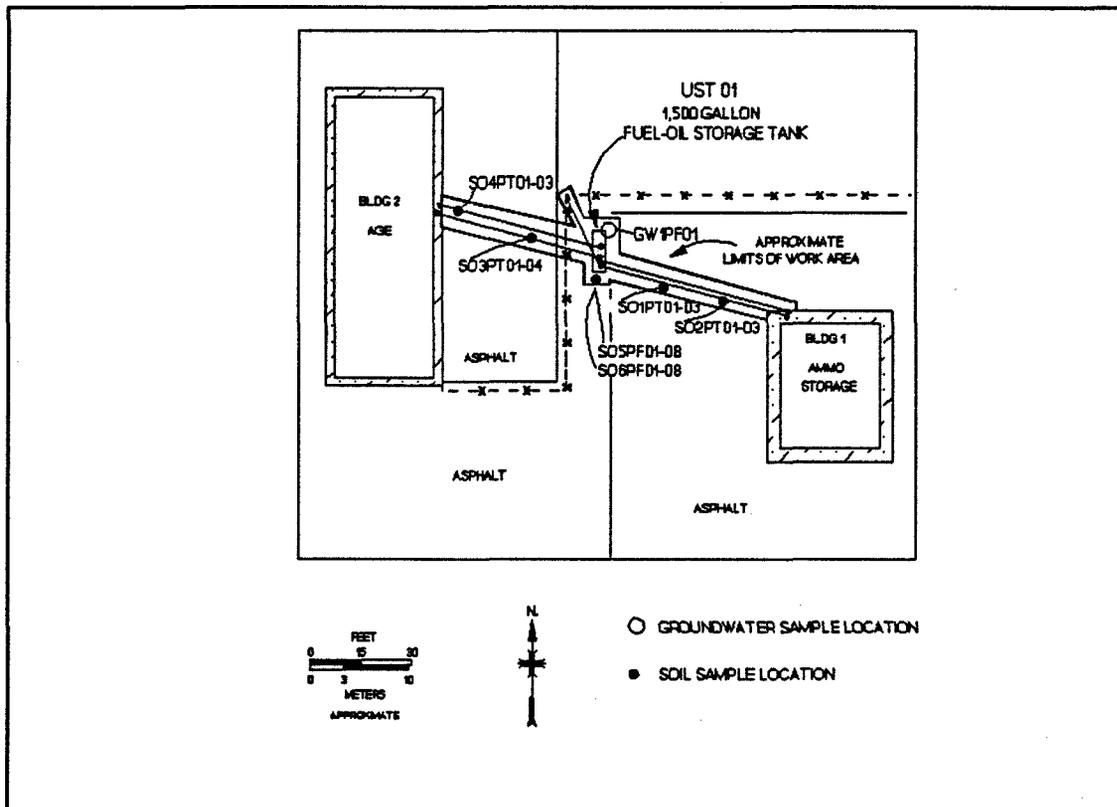


Fig. 3.1. Sampling locations at UST 01.

**TABLE 3.2
UST CLOSURE SAMPLING RESULTS
FROM UST 02**

SAMPLE NO.	SAMPLE LOCATION	SAMPLE MATRIX	ANALYSIS PERFORMED	ANALYTICAL RESULTS
SO1PT02-01	UST 02 TRENCH	SOIL	TPH ¹ /DIESEL	ND ²
SO2PF02-08	UST 02 PIT FLOOR	SOIL	TPH/DIESEL	ND
SO3PT02-08	UST 02 PIT FLOOR	SOIL	TPH/DIESEL	ND
GW1PF02	UST 02 PIT FLOOR	WATER	TPH/DIESEL BTXE ³	2.65 mg/L ND

¹ TPH = Total petroleum hydrocarbons using a diesel standard.

² ND = Non-detectable.

³ BTXE = Benzene, toluene, xylenes, and ethylbenzene.

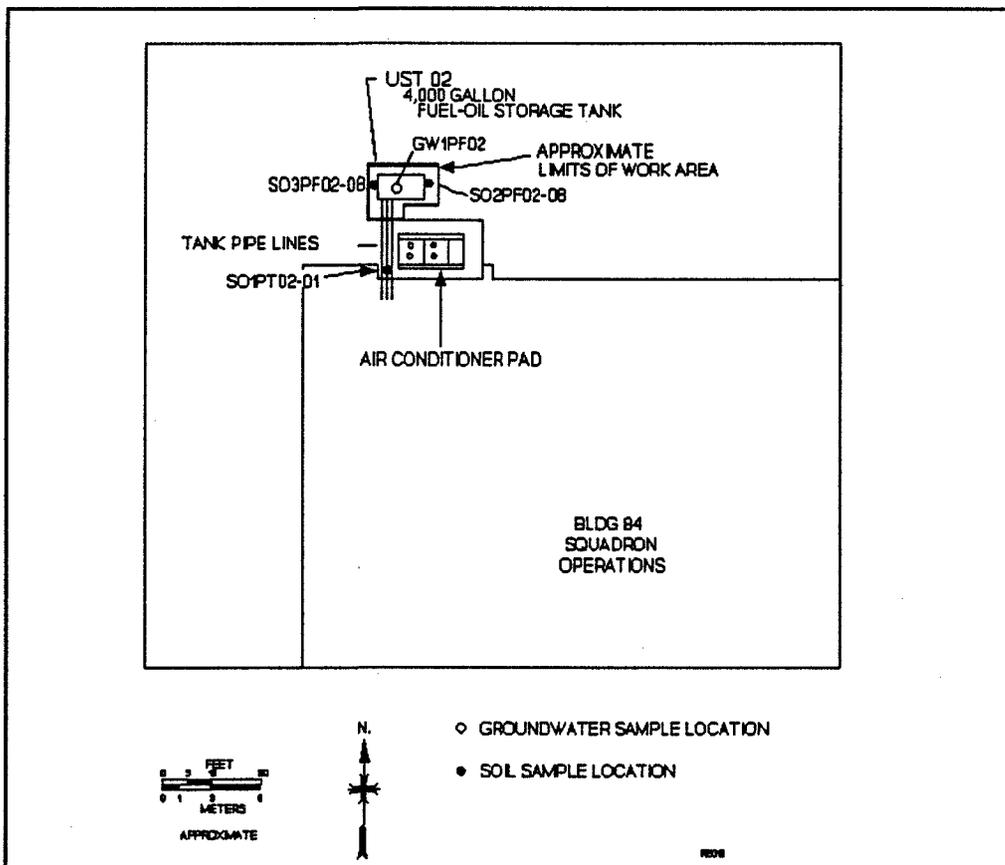


Fig. 3.2. Sampling locations at UST 02.

**TABLE 3.3
UST CLOSURE SAMPLING RESULTS
FROM UST 03**

SAMPLE NO.	SAMPLE LOCATION	SAMPLE MATRIX	ANALYSIS PERFORMED	ANALYTICAL RESULTS
SO1PF03-08	UST 03 PIT FLOOR	SOIL	TPH ¹ /DIESEL	ND ²
SO2PF03-08	UST 03 PIT FLOOR	SOIL	TPH/DIESEL	ND
GW1PF03	UST 03 PIT FLOOR	WATER	TPH/DIESEL BTXE ³	3.09 mg/L ND

¹ TPH = Total petroleum hydrocarbons using a diesel standard.

² ND = Non-detectable.

³ BTXE = Benzene, toluene, xylenes, and ethylbenzene.

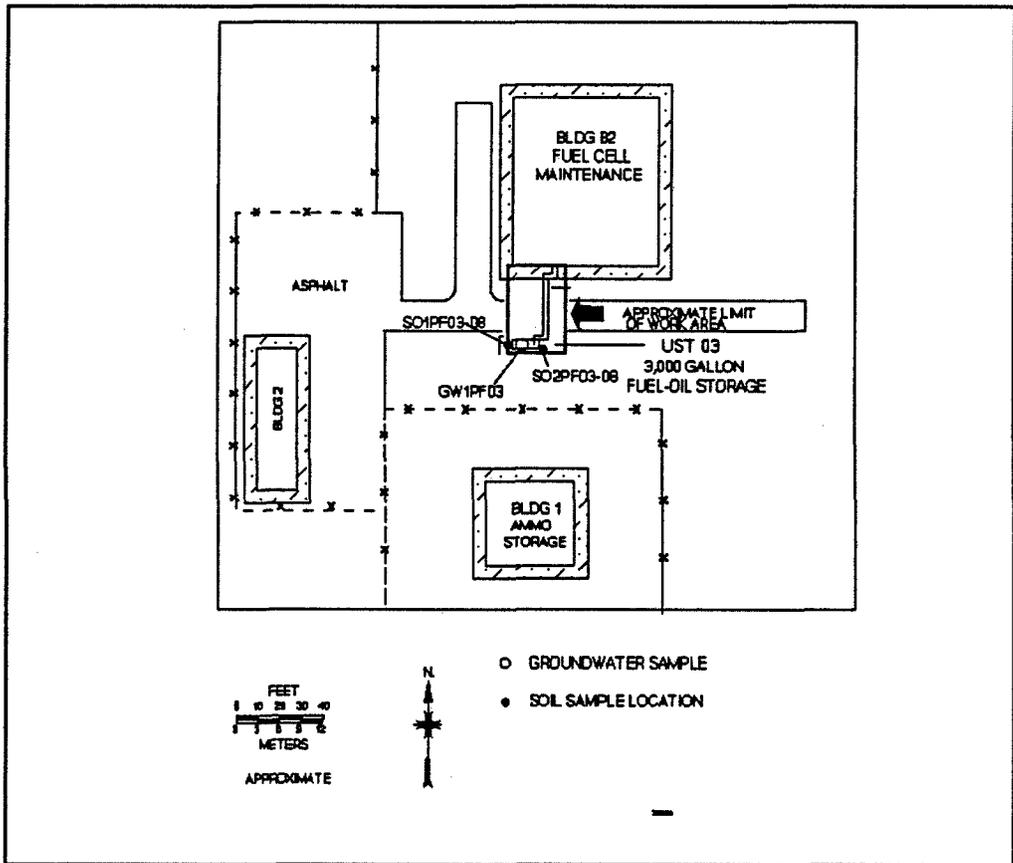


Fig. 3.3. Sampling locations at UST 03.

**TABLE 3.4
UST CLOSURE SAMPLING RESULTS
FROM UST 04**

SAMPLE NO.	SAMPLE LOCATION	SAMPLE MATRIX	ANALYSIS PERFORMED	ANALYTICAL RESULTS
SO1PT04-02	UST 04 TRENCH	SOIL	TPH ¹ /DIESEL	25 mg/kg
SO2PT04-02	UST 04 TRENCH	SOIL	TPH/DIESEL	ND ²
SO2PF04-08	UST 04 PIT FLOOR	SOIL	TPH/DIESEL	ND

¹ TPH = Total petroleum hydrocarbons using a diesel standard.

² ND = Non-detectable.

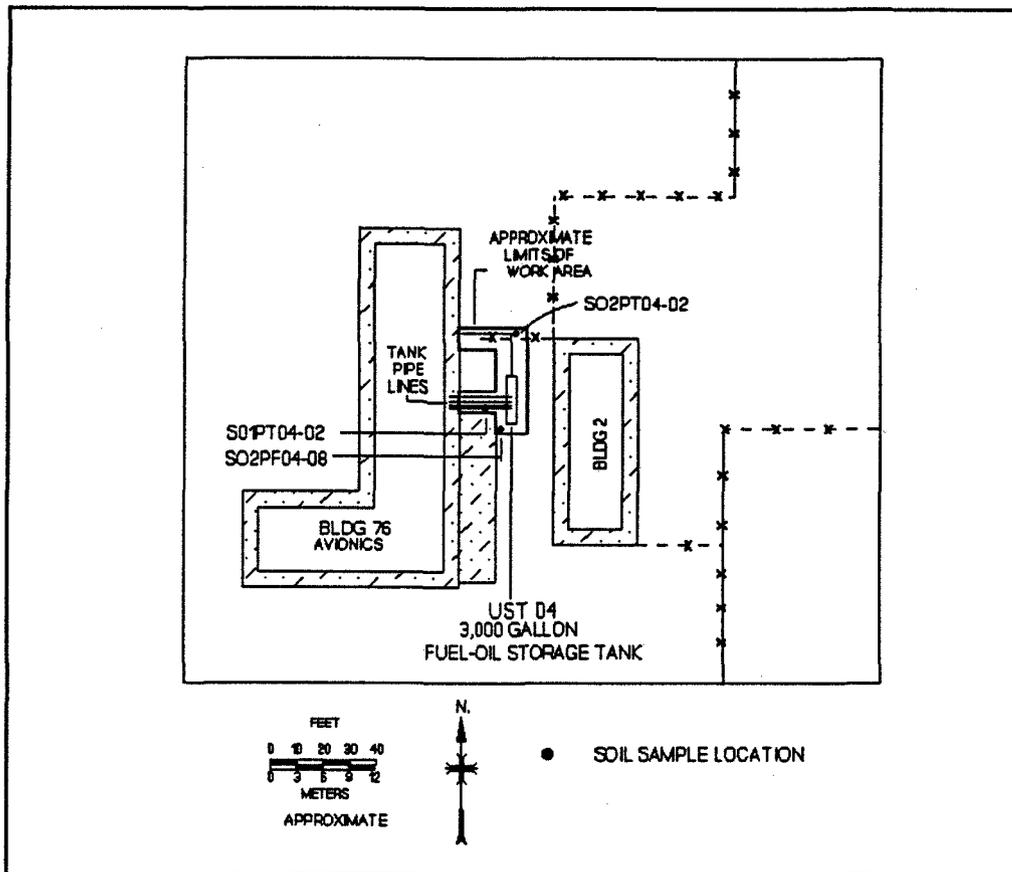


Fig. 3.4. Sampling locations at UST 04.

rinsate sample.

3.2 EXCAVATED SOILS CHARACTERIZATION

The excavated soils were segregated by tank number and stockpiled on the Base. All soil stockpiles were placed on and covered with 6 mm plastic sheeting. The stockpiles were sampled by RDO with the assistance of Mr. Dreher on October 18. The samples were analyzed for TPH using a diesel standard; results of the analyses are summarized in Table 3.5. The certificate of analysis for these samples is included in Appendix D.

The TPH values for the excavated soil samples range from 52 to 293 mg/kg. These values are not surprising, considering the bulk of the excavated soil originates from above each UST location, where the effects of tank overfilling or surface spills would be most noticeable.

3.3 BACKFILLING OF EXCAVATED AREAS

Based on the lack of any contamination in excess of the WCDHD standards for TPH and BTXE, the four UST excavations at the Base were backfilled with clean fill material. The presence of TPH in the excavated soil in excess of 10 mg/kg, precluded its use as backfill material. Therefore, the estimated 300 cubic yards of excavated soils were transported to an incineration facility and thermally treated. The disposal certificates for the excavated soils are included in Appendix E.

4.0 CONCLUSION

No contamination in excess of the WCDHD standards for TPH and BTXE remains in the soil or groundwater at the four UST locations at the Base. All of the excavated soil was characterized and consequently disposed of by incineration. Therefore, closure as prescribed by WCDHD protocols was successfully achieved.

**TABLE 3.5
EXCAVATED SOIL SAMPLING RESULTS**

SAMPLE NO	SAMPLE LOCATION	SAMPLE MATRIX	ANALYSIS PERFORMED	ANALYTICAL RESULTS
1	UST 02 ABOVE TANK	SOIL	TPH ¹ /DIESEL	237 mg/Kg
2	UST 01 ABOVE TANK	SOIL	TPH/DIESEL	69 mg/Kg
3	UST 01 EAST TRENCH	SOIL	TPH/DIESEL	52 mg/Kg
4	UST 01 WEST TRENCH	SOIL	TPH/DIESEL	75 mg/Kg
5	UST 04 ABOVE TANK	SOIL	TPH/DIESEL	71 mg/Kg
6	UST 04 TRENCHES	SOIL	TPH/DIESEL	56 mg/Kg
7	UST 02 ABOVE TANK	SOIL	TPH/DIESEL	293 mg/Kg

¹ TPH = Total petroleum hydrocarbon using a diesel standard.

APPENDIX A
AIR MONITORING RECORDS

AIR MONITORING RECORD

PROJECT RENO RRI UST CLOSURE DATE 10/21/91 LOCATION UST 03 (TANK 82)

ON-SITE TIME-START 1030 END 1349 INSTRUMENT HNU 101/GAS TECH 84

PID AND CGI MEASUREMENTS

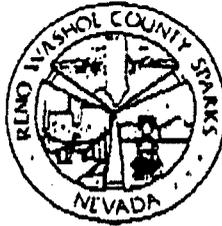
TIME	PID VALUE IN PPM				CGI VALUES								PIT DEPTH
	AA	BZ	PS	SS	%LEL				%O ₂				
					AA	BZ	PS	SS	AA	BZ	PS	SS	
1030	0	0	0.1	NA	0	0	2	NA	20	19	19	NA	BEFORE PULL
1200	0	0	0.1	0.1	2	1	2	NA	20	20	19	NA	8 FT BGS
1340	0	0	0.2	0.1	1	2	1	NA	19	18	18	NA	8 FT BGS

AA = AMBIENT AIR PS = PIT SPACE BZ = BREATHING ZONE SS = SOIL SAMPLE

COMMENTS Pulled UST 03, collected two soil samples from pit walls @ 8 ft BGS.

RECORDED BY: F. Gardner

**APPENDIX B
WASHOE COUNTY DISTRICT HEALTH DEPARTMENT
UST CLOSURE PROTOCOLS**



DISTRICT HEALTH DEPARTMENT

USTs Closures: General Protocols of the Washoe County District Health Department (WCDHD)

This may not apply to the Air Guard facility: Contact Bob Wirthlin (Capt) City OF Reno Fire Protection 689 2954

At the present time permits to close USTs are issued by either the building or fire department or both, having jurisdiction. In some cases no permits are issued. Where permits are issued, the fire department is responsible for safety issues pertaining to closures; where no permits are issued, the WCDHD is responsible. As of July 1, 1991 anyone involved in closure operations or site remediation or management will be required to have Nevada Certification. If during the closure, contamination is discovered that results in the requirement to construct monitoring wells, permits must be obtained through the Nevada Division of Water Resources. (Address listed at the end of this letter)

I. Abandonments or Change of Use

Regardless of approval by the WCDHD, approval to abandon or change the use of a USTs must be obtained from the applicable fire prevention entity. Prior to allowing abandonment or change of use, the WCDHD requires an assessment to demonstrate the USTs did not leak. If the assessment indicates contamination, the USTs must be closed by removal. Assessment plans must be approved by the WCDHD prior to implementation. Generally, a representative of the WCDHD will be on site during the sampling phase.

II. Removals

A representative of the WCDHD must be on site during removals to make preliminary inspections and to insure safety procedures are followed.

- 1) Inerting procedures/explosivity safety
- 2) Visual inspection of tank and piping
- 3) Organoleptic (OL) inspections of soils/groundwater
- 4) Sampling protocol and methodology
- 5) Initial remediation activities

III Sampling

- A. Generally one (1) soil sample will be required from :
- 1) each end of each UST, not greater than 2' below the UST bottom in native soil; (*Depends on tank size*)
 - 2) each 20' of piping;
 - 3) beneath each dispenser pump/island;
 - 4) each 50 cubic yards of excavated soil stockpile.
- Composites may be acceptable in some circumstances.
The number of samples required may increase or decrease depending on site specific conditions.
- B. Generally, if (OL) evidence of soil contamination is present, the soil must be tested for the following analytes:
- 1) Homogeneous fuels e.g. gasoline, kerosene, diesel
 - a) Total Petroleum Hydrocarbons (TPH), EPA modified 8015 method
 - b) Benzene, Toluene, Xylene, Ethylbenzene (BTXE) EPA method 8020 (*Not required if UST contained only diesel*)
 - 2) Heterogeneous mixes e.g. used oil, RCRA substances,
 - a) TCLP extractions for Volatile Organics using EPA Method 8240 and for metals (Cd, Cr, Pb), or
 - b) Specific RCRA substances

Generally, landfill disposal of contaminated soils may be approved if TPH is less than 200 ppm and TCLP extraction for 8240 analytes, Cd, Cr, and Pb, are less than allowable maximum concentration levels. Contaminated soils will not be allowed to be used as backfill at the site.
 - 3) In cases where there is no (OL) evidence of contamination, sampling for TPH is all that will be required.
 - 4) Groundwater contamination, or anticipated groundwater contamination, will involve additional protocols.

Standard USTs Closure
Page 3

Contaminated materials may not be stockpiled on site for more than thirty days. The stockpiled material must be placed on an impervious material and covered in a manner that will prevent volatile organic or toxic emissions to the atmosphere.

The WCDHD requires a 24 hour prior notice for inspections and for sampling verification. The local fire prevention districts must be consulted for their notification requirements. At the WCDHD please contact: Alan Dreher 702 328-2612
Dave McNinch 702 328-2493

Nevada Certification: Ralph Capurro
State of Nevada
Department of Environmental Protection
Waste Management
123 West Nye Lane
Carson City, Nevada 89710
(702) 687-5872

Well Construction: Tom Gallagher/Robert Martinez
State of Nevada
Department of Environmental Protection
Water Resources
123 West Nye Lane
Carson City, Nevada 89710
(702) 687-4380

APPENDIX C
UST DISPOSAL CERTIFICATES



Reno Drain Oil Service

Nevada Contractors License No. 0032271

11970 I-80 EAST / SPARKS, NEVADA 89431

Ph: (702) 348-7564 FAX (702) 342-0202

TANK EXCAVATORS
P.O. BOX 8402
SANTA CRUZ. CA 95061

OCTOBER 23. 1991

RE: RDO TANK #: 306. 307. 308. 314
TANK ORIGIN: NEVADA AIR NATIONAL GUARD

DEAR CUSTOMER:

THIS LETTER IS TO CERTIFY THAT ON OCTOBER 19. 1991. RENO DRAIN OIL SERVICE RECEIVED 1 - 1500. 2 - 3000 AND 1 - 4000 GL PETROLEUM STORAGE TANKS FROM YOU FOR RECYCLING UNDER THE FOLLOWING E.P.A. AND WASHOE COUNTY HEALTH DEPARTMENT APPROVED PROCESS:

- 1) TO ELIMINATE FIRE HAZARD AND PROTECT RELEASE DURING TRANSPORT. THE TANKS WERE EMPTIED OF ALL LIQUIDS BEFORE BEING TRANSPORTED. THE CONTAINERS WERE THEN INSPECTED FOR DAMAGE THAT MAY HAVE ALLOWED RESIDUAL WASTE TO ESCAPE.
- 2) AFTER ARRIVAL AT OUR FACILITY. THE TANKS WERE PRESSURE WASHED ON THE INTERIOR AND THE RINSE MATERIAL WAS RECYCLED AT AN AUTHORIZED FACILITY.
- 3) THE CONTAINERS WERE THEN RENDERED SAFE TO CUT TO PIECES WITH A TORCH BY INTRODUCING NONFLAMMABLE GASES TO ELIMINATE POSSIBLE EXPLOSION.
- 4) THE TANKS WERE THEN RECYCLED FOR RECOVERABLE METALS. OR OTHERWISE DISPOSED IN ACCORDANCE WITH ALL FEDERAL. STATE. AND LOCAL STANDARDS.

IF YOU HAVE ANY QUESTIONS. PLEASE CONTACT MY OFFICE.

REGARDS.

RICHARD CHANNEL
GENERAL MANAGER

RECEIVED

OCT 24 1991

PURCHASING & CONTRACTING

#12x13

APPENDIX D
CERTIFICATES OF ANALYSES

GBL

GREAT BASIN LABORATORIES, INC.

ENVIRONMENTAL SERVICES / CERTIFIED WELL WATER ANALYSIS
1479 S. WELLS AVE., RENO, NV 89502
(702) 323-4822 • FAX (702) 323-4822

Report To: Sampled: 10-16-91 Submitted: 10-16-91
Name: MARTIN MARIETTA INC. Source: AIR NATIONAL GUARD BASE
Address: P.O. BOX 2008 No. of Samples: ONE
City: OAK RIDGE, TN. 37831 Sampled By: [X]Client/[]GBL
Telephone: (615)576-1431 GBL Control No. 1091-040
Authorized By: Notes: PURCHASE ORDER: 36X-SJ567V
PLANT: CRNL

<u>SAMPLE ID / DATE</u>	<u>ANALYSIS</u>	<u>RESULTS (mg/Kg)</u>	<u>RANGE</u>
S01PT04-02 10-16	TPH	25	DIESEL

Remarks: ND = NONE DETECTED

DETECTION LIMIT = 10 mg/Kg

Report By: John E. Sabatini
Laboratory Director

Date: 10-16-91
Analysed by: JAS

GBL

GREAT BASIN LABORATORIES, INC.

ENVIRONMENTAL SERVICES / CERTIFIED WELL WATER ANALYSIS
1479 S. WELLS AVE., RENO, NV 89502
(702) 323-4822 • FAX (702) 323-4822

Report To: Sampled: 10-17-91 Submitted: 10-17-91
Name: MARTIN MARIETTA INC. Source: AIR NATIONAL GUARD BASE
Address: P.O. BOX 2008 No. of Samples: SIX
City: OAK RIDGE, TN. 37831 Sampled By: Client/[]GBL
Telephone: (615)576-1431 GBL Control No. 1091-043
Authorized By: Notes: PURCHASE ORDER: 36X-SJ567V
PLANT: ORNL

<u>SAMPLE ID / DATE</u>	<u>ANALYSIS</u>	<u>RESULTS (mg/Kg)</u>	<u>RANGE</u>
S01PT01-03 10-17	TPH	ND	
S02PT01-03 10-17	TPH	ND	
S03PT01-04 10-17	TPH	ND	
S04PT01-03 10-17	TPH	ND	
S02PT04-02 10-17	TPH	ND	
S01PT02-01 10-17	TPH	ND	

Remarks: ND = NONE DETECTED DETECTION LIMIT = 10 mg/Kg
Report By: John E. Sabatini Date: 10-18-91
Laboratory Director Analysed by: JAS

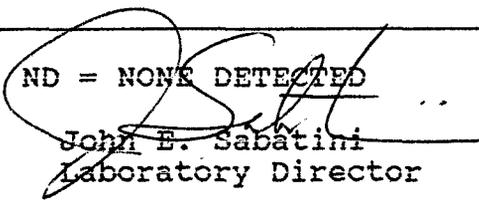
GBL

GREAT BASIN LABORATORIES, INC.

ENVIRONMENTAL SERVICES / CERTIFIED WELL WATER ANALYSIS
1479 S. WELLS AVE., RENO, NV 89502
(702) 323-4822 • FAX (702) 323-4822

Report To: _____ Sampled: 10-18-91 Submitted: 10-18-91
Name: MARTIN MARIETTA INC. Source: AIR NATIONAL GUARD BASE
Address: P.O. BOX 2008 No. of Samples: FOUR
City: OAK RIDGE, TN. 37831 Sampled By: [X]Client/[]GBL
Telephone: (615)576-1431 GBL Control No. 1091-047
Authorized By: _____ Notes: PURCHASE ORDER: 36X-SJ567V
PLANT: ORNL

<u>SAMPLE ID / DATE</u>	<u>ANALYSIS</u>	<u>RESULTS (mg/Kg)</u>	<u>RANGE</u>
S02PF02-08 10-18	TPH	ND	
S03PF02-08 10-18	TPH	ND	
S05PF01-08 10-18	TPH	ND	
S02PF04-08 10-18	TPH	ND	

Remarks: ND = NONE DETECTED DETECTION LIMIT = 10 mg/Kg
Report By:  John E. Sabatini Date: 10-21-91
Laboratory Director Analysed by: JAS

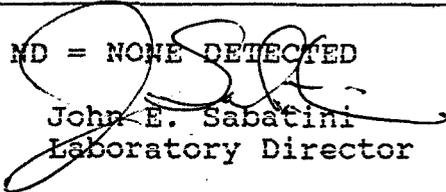
GBL

GREAT BASIN LABORATORIES, INC.

ENVIRONMENTAL SERVICES / CERTIFIED WELL WATER ANALYSIS
1479 S. WELLS AVE., RENO, NV 89502
(702) 323-4822 • FAX (702) 323-4822

Report To: Sampled: 10-21-91 Submitted: 10-21-91
Name: MARTIN MARIETTA INC. Source: AIR NATIONAL GUARD BASE
Address: P.O. BOX 2008 No. of Samples: THREE
City: OAK RIDGE, TN. 37831 Sampled By: [X]Client/[]GBL
Telephone: (615)576-1431 GBL Control No. 1091-051
Authorized By: Notes: PURCHASE ORDER: 36X-SJ567V
PLANT: ORNL

<u>SAMPLE ID / DATE</u>	<u>ANALYSIS</u>	<u>RESULTS (mg/Kg)</u>	<u>RANGE</u>
S02PF03-08 10-21	TPH	ND	
S01PF03-08 10-21	TPH	ND	
S06PF01-08 10-21	TPH	ND	

Remarks: ND = NONE DETECTED DETECTION LIMIT = 10 mg/Kg
Report By:  John E. Sabatini Date: 10-22-91
Laboratory Director Analysed by: JAS

GBL

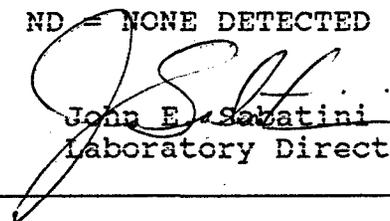
GREAT BASIN LABORATORIES, INC.

ENVIRONMENTAL SERVICES / CERTIFIED WELL WATER ANALYSIS
1479 S. WELLS AVE., RENO, NV 89502
(702) 323-4822 • FAX (702) 323-4822

Report To: Sampled: 10-21-91 Submitted: 10-21-91
Name: MARTIN MARIETTA INC. Source: AIR NATIONAL GUARD BASE
Address: P.O. BOX 2008 No. of Samples: ONE
City: OAK RIDGE, TN. 37831 Sampled By: [X]Client/[]GBL
Telephone: (615)576-1431 GBL Control No. 1091-048
Authorized By: Notes: PURCHASE ORDER: 36X-SJ567V
PLANT: ORNL

<u>SAMPLE ID / DATE</u>	<u>ANALYSIS</u>	<u>RESULTS (mg/l)</u>	<u>RANGE</u>
GW1PF02	TPH	2.65	DIESEL
10-21	BTXE		
	Benzene	ND	
	Toluene	ND	
	Xylene	ND	
	Ethyl-Benzene	ND	

Remarks: ND = NONE DETECTED TPH DETECTION LIMIT = 0.5 mg/l
BTXE DETECTION LIMIT = 0.2 mg/l

Report By:  John E. Sabatini
Laboratory Director

Date: 10-22-91
Analysed by: JAS

OCT-22-1991 09:32AM FROM

TO

3420202 P.04

**NEVADA ENVIRONMENTAL
LABORATORY**

1030 Matley Lane • Reno, Nevada 89502
(702) 348-2522 • Fax (702) 348-2546
1-800-368-5221 (1-800-ENV LAB 1)

Client: Reno Drain Oil Services
11970 I-80 East
Sparks, NV 89431

Project: Nevada Air Guard/
Reno
Job #:

Attn: Richard Channel

Phone #: (702) 348-7564
Fax #: (702) 342-0202

Sampled: October 18, 1991

Analyzed: October 21, 22, 1991

Method: EPA 8015 (Modified)

Sample Type: Soil

<u>Client ID/ Lab ID</u>	<u>Parameter</u>	<u>Results</u>	<u>Detection</u>
T-1 TOT RDO101891-07	TPH	69 mg/kg *	10 mg/kg
T-1 Lines North RDO101891-08	TPH	52 mg/kg *	10 mg/kg
Vent 76 RDO101891-09	TPH	56 mg/kg **	10 mg/kg
T-84 TOT RDO101891-10	TPH	237 mg/kg ***	10 mg/kg
T-1 Lines South RDO101891-11	TPH	75 mg/kg **	10 mg/kg
T-76 TOT RDO101891-12	TPH	71 mg/kg *	10 mg/kg
T-82 TOT RDO101891-13	TPH	293 mg/kg ***	10 mg/kg

* - TPH components are in the range of Diesel/Motor Oil

** - TPH components are in the range of Motor Oil

*** - TPH components are in the range of Diesel

RECEIVED
OCT 24 1991
PURCHASING & CONTRACTING

Marie Ott Theisen

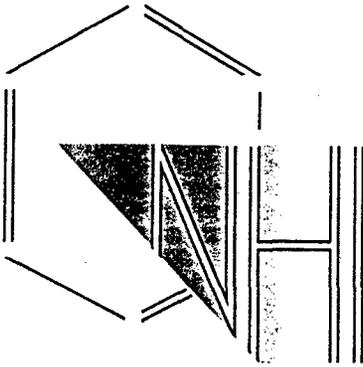
D-7

October 22, 1991

Marie Ott Theisen, Ph.D.
Laboratory Manager

Date

APPENDIX E
EXCAVATED SOIL
CERTIFICATE OF DISPOSAL



NEVADA HYDROCARBON INC.

P.O. BOX 9927 RENO, NEV. 89507 (702) 342-0200 FAX (702) 342-0609

April 8, 1992

Nevada Air National Guard
1776 National Guard Way
Reno, NV 89502

Dear Mr. John Peck,

This letter is to certify that all contaminated soil shipped to Nevada Hydrocarbon, Inc. on Bill of Lading number(s) AHA-1 through AHA-11 have been thermally treated.

Analysis of the treated soil was conducted by an independent laboratory using US EPA Method 8015. A certificate of analysis showing a total petroleum hydrocarbon (TPH) level for the treated soil is enclosed for your permanent records. The TPH level is indicated in milligrams per kilogram (mg/kg), which approximates parts per million.

As determined by the Nevada Division of Environmental Protection, the Nevada action level for hydrocarbon contaminated soil is 100 mg/kg TPH. Any soil contaminated with hydrocarbons below 100 mg/kg is considered environmentally safe. The Nevada Hydrocarbon, Inc. standard of treatment is 50 mg/kg, or half of the state action level.

We thank you for this opportunity to be of service to you. Should you have any further questions, please feel free to call me at any time.

Sincerely,

Nick Horning
General Manager

NEVADA ENVIRONMENTAL
LABORATORY

1030 Matley Lane • Reno, Nevada 89502
(702) 348-2522 • Fax (702) 348-2546
1-800-368-5221 (1-800-ENV LAB 1)

Client: Nevada Hydrocarbon Inc
P.O. Box 9927
Reno, NV 89507

Project:
Job #:

Attn: Becky Clark

Phone #: (702) 342-0200

Sampled: January 30, 1992

Fax #: (702) 342-0609

Analyzed: Feb. 4, 1992

Method: EPA 8015 (Modified)

Sample Type: Soil

Client ID/
Lab ID

Parameter

Results

Detection

BFY BGG BGA

BFR AHA

NHC013192-02

TPH

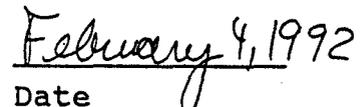
ND

10 mg/kg

ND - Not Detected



Marie Ott Theisen, Ph.D.
Laboratory Manager


Date