

**AGRA EARTH & ENVIRONMENTAL, INC.  
SUMMARY REPORT FOR TANK CLOSURE  
GOLD HILL LIQUOR AND GROCERY  
FAIRBANKS, ALASKA**

**ISSUE NO. 1**

**Submitted To:**

Mr. Phil Carboy  
Gold Hill Liquor and Grocery  
3040 Parks Highway  
P.O. Box 80701  
Fairbanks, Alaska 99708

**Submitted By:**

AGRA Earth & Environmental, Inc.  
600 University Avenue, Suite 5E  
Fairbanks, Alaska 99709

**November 1994  
32-01110-00**

100.26.120,  
H310013901





AGRA Earth &  
Environmental, Inc.  
600 University Avenue  
Suite 5E  
Fairbanks, Alaska  
U.S.A. 99709-3695  
Tel (907) 479-7586  
Fax (907) 479-0193

December 9, 1994  
32-01110-00

Alaska Department of Environmental Conservation  
Northern Regional Office  
610 University Avenue  
Fairbanks, Alaska 99709

**RECEIVED**

**DEC 12 1994**

**DEPT. OF ENVIRONMENTAL  
CONSERVATION  
NRO**

**Attention: Benjamin P. Thomas  
Environmental Specialist**

**RE: SUMMARY REPORT FOR TANK CLOSURE  
GOLD HILL LIQUOR AND GROCERY  
FAIRBANKS, ALASKA**

Dear Ben:

Please find the enclosed Summary Report for your review. The report details the tank closure proceedings performed at the Gold Hill Store. We included a copy of the Post-Closure Notice for your files.

Thank you for your cooperation with this project. If you have any questions or comments regarding this report, or if we can be of further assistance, please call me at 479-7586.

Sincerely,

**AGRA Earth and Environmental, Inc.**

A handwritten signature in black ink, appearing to read 'John B. Carnahan', written over the typed name.

John B. Carnahan  
Environmental Project Manager





**POST-CLOSURE INFORMATION  
FOR ALASKA UNDERGROUND STORAGE TANKS**  
Post Closure Information and site assessment report is required 30 days closure activities.



**Facility - Location**  
(Do not use P.O. Box)

**Tank Owner**

Name Gold Hill  
Address 3040 Parks Hwy  
Fairbanks, AK 99701  
Phone (907) 479-2333

Name Phil & Genevieve Carboy  
Address P.O. Box 80701  
College, AK 99708  
Phone (907) 479-2333

Facility ID # 0440

**SITE ASSESSMENT MUST BE COMPLETED FOR ANY TANK CLOSURE**

Site Assessment Performed By: AGRA Earth & Environmental, Inc.

Closure Performed By: ROWCON Services UST License # AA254

Date Site Assessment Performed: July 27-August 2, 1994

**SITE ASSESSMENT REPORT MUST BE SUBMITTED TO DEPARTMENT OF ENVIRONMENTAL CONSERVATION DISTRICT OFFICE**

Was the closed tank replaced by new UST? Yes \_\_\_\_\_ No X  
If yes, please submit a new registration form containing information on the new tanks.

Tanks Removed Or Closed In-ground				
<u>Tank Number</u>	<u>Tank Size</u>	<u>Removed or Closed In-ground</u>	<u>Last Product Stored</u>	<u>Leaking?</u>
<u>1</u>	<u>10,000</u>	<u>Removed</u>	<u>Unleaded</u>	<u>Suspected</u>
<u>2</u>	<u>4,000</u>	<u>Removed</u>	<u>Unleaded</u>	<u>Suspected</u>
<u>3</u>	<u>4,000</u>	<u>Removed</u>	<u>Unleaded</u>	<u>Suspected</u>

All releases should be reported to a DEC District Office within 24 hours. For further information refer to the Alaska Underground Storage Tank Regulations (18 AAC 78) or contact the Department of Environmental Conservation.

Submitted By: John Carnahan AGRA Earth & Env. 907-479-7586  
(Name) (Firm) (Phone)

Return Completed Form to: Alaska Department of Environmental Conservation  
3601 C Street, Suite 398  
Anchorage, AK 99503  
FAX # (907) 563-6032

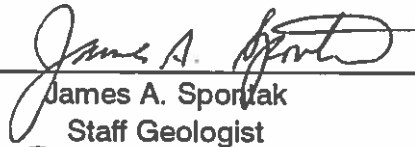
**AGRA EARTH & ENVIRONMENTAL, INC.  
SUMMARY REPORT FOR TANK CLOSURE  
Gold Hill Liquor and Grocery**

Submitted To:

Mr. Phil Carboy  
Gold Hill Liquor and Grocery  
3040 Parks Highway  
P.O. Box 80701  
Fairbanks, Alaska 99708

Submitted By:

AGRA Earth & Environmental, Inc.  
600 University Avenue, Suite 5E  
Fairbanks, Alaska 99709

  
James A. Sportak  
Staff Geologist

  
John B. Carnahan  
Environmental Project Manager

NOVEMBER 1994

32-01110-00



## TABLE OF CONTENTS

	<u>PAGE</u>
1.0 INTRODUCTION .....	1
1.1 Project Description .....	1
1.2 Site Description .....	4
2.0 METHODS .....	6
2.1 Health and Safety Plan .....	6
2.2 Tank Removal and Soil Excavation .....	7
2.3 Environmental Assessment Monitoring .....	8
2.4 Sample Collection and Laboratory Analyses .....	9
3.0 OBSERVATIONS AND RESULTS .....	9
3.1 Tanks and Piping .....	10
3.2 Subsurface Conditions .....	10
3.3 Soil Stockpiling .....	11
4.0 ANALYTICAL RESULTS .....	12
5.0 ADEC SOIL CLEANUP LEVELS .....	15
6.0 CONCLUSIONS .....	15
7.0 LIMITATIONS .....	16
8.0 CLOSURE .....	16

## LIST OF FIGURES

Figure 1	Vicinity Map .....	2
Figure 2	Site Location Map .....	3
Figure 3	Excavation Detail .....	5

## LIST OF TABLES

Table 1	Summary of Tank Types and Sizes .....	6
Table 2	Summary of Sample Analytical Results .....	13
Table 3	ADEC Level A Cleanup Criteria .....	15

## APPENDICES

Appendix A	Photo-Documentary Log
Appendix B	Laboratory Data



## 1.0 INTRODUCTION

In July and August 1994, AGRA Earth & Environmental, Inc. (AGRA) completed the excavation and removal of 3 underground storage tanks (USTs) at the Gold Hill Liquor and Grocery Store property at 3040 Parks Highway in Fairbanks, Alaska. The property is currently owned by Phil and Genevieve Carboy and is described as Tax Lot 926 in Section 9, Township 1 South, Range 2 West, Fairbanks Meridian, within the Fairbanks North Star Borough (FNSB), Alaska. Figure 1 (page 2) shows the project vicinity. Figure 2 (page 3) identifies the subject site in relation to the other properties in the Gold Hill area.

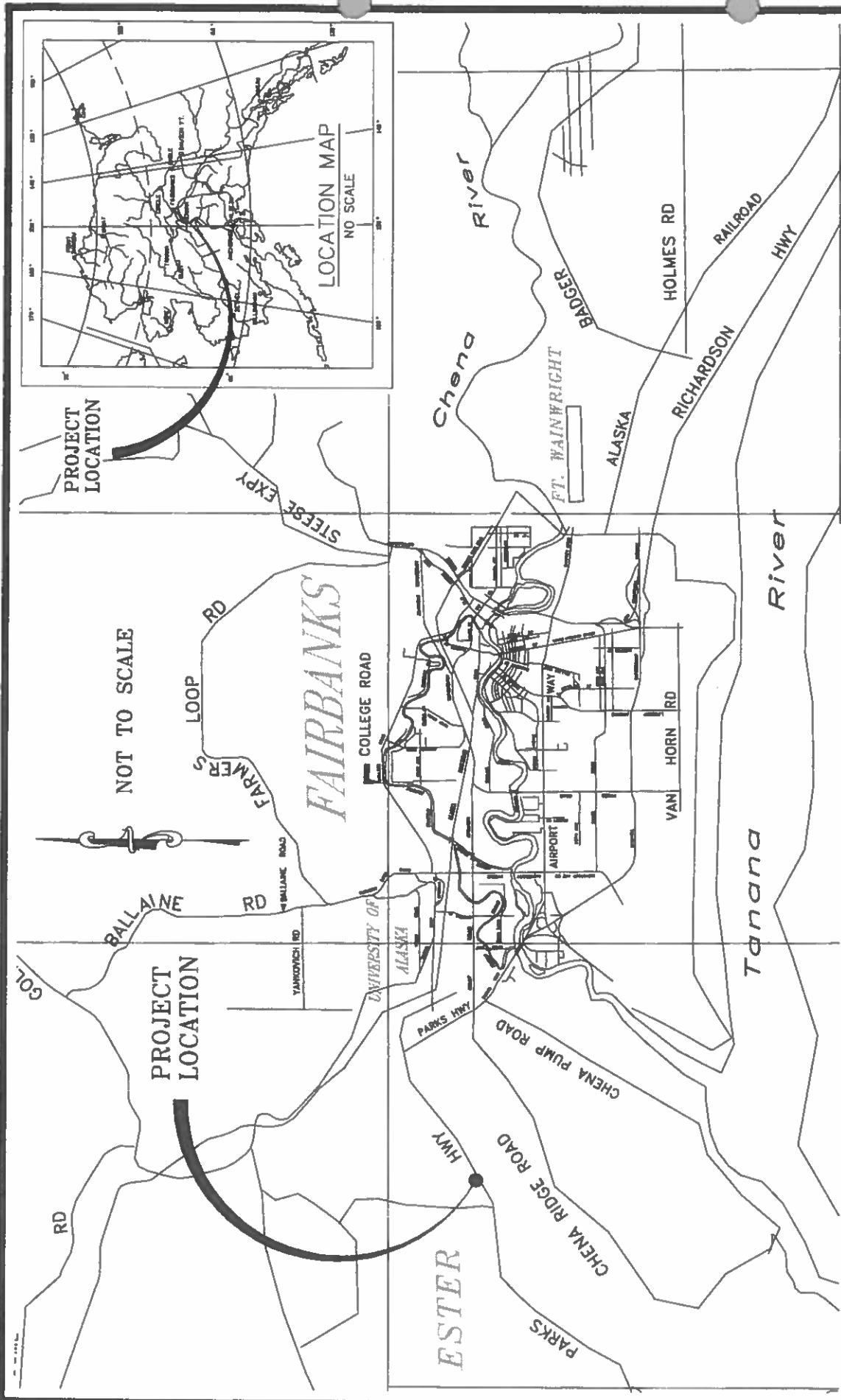
The current UST Site Assessment was performed as part of a larger site investigation associated with the decommissioning of the regulated UST system on the property. The investigation was funded in part through the Alaska Department of Environmental Conservation (ADEC) UST Financial Assistance Program.

AGRA has prepared this Summary Report to document the removal of impacted soils and to present confirmatory soil sample analytical results. This report contains: (1) a summary of on-site work conducted by Rowcon Services (Rowcon) and AGRA personnel; (2) photographs of work in progress; (3) observations noting subsurface conditions, soil types, stratification, and zones of potential hydrocarbon impacts; (4) measurements including the resultant size of the excavated area and the apparent depth to ground water at the excavation area; and (5) maps locating the site. In addition, we summarize our field methods, present the results obtained from soil samples sent for laboratory analysis, and describe the disposal method for all excavated soils.

### 1.1 PROJECT DESCRIPTION

The objective of the project was to remove the 3 referenced tanks in accordance with the ADEC *Underground Storage Tank* regulations 18 AAC 78. AGRA was responsible for conducting site monitoring, collecting representative soil samples from the base of each excavated area, and completing this summary report. Rowcon personnel performed the tank system decommissioning, soil removal and stockpiling, and excavation backfill. Prior to the start of work and on a continuing basis during the job operations, AGRA coordinated with Mr. Phil Carboy to minimize any disruptions to daily operations at the Gold Hill Store.





FROM FAIRBANKS NORTH STAR BOROUGH  
GENERAL VICINITY MAP.

**UST REMOVAL**

AGRA EARTH & ENVIRONMENTAL, INC.  
600 University Avenue  
Suite 5E  
Fairbanks, Alaska 99709

PROJ # 32-01110-00  
DESIGN JAS  
DRAWN PTS/F1110VIC  
DATE 08/31/94  
SCALE NOT TO SCALE  
REVISED

**VICINITY MAP**

GOLD HILL STORE  
TL 926, SEC 9, T1S, R2W  
FNSB, AK

**FIGURE 1**





The project included the following activities:

- Health and Safety Plan development;
- Removal and salvaging of the dispenser island canopy, fuel dispensers, and turbine pumps;
- Excavation and removal of one 10,000-gallon and two 4,000-gallon metal USTs;
- Development of the impacted soil stockpile area;
- Environmental monitoring and sampling during the removal process;
- Collection and submittal of representative soil samples to document potential hydrocarbon impacts at the excavation limits and in the stockpiled soils; and
- Preparation of this Summary Report.

## 1.2 SITE DESCRIPTION

The subject property is located adjacent to the George Parks Highway, approximately 7½ miles west of downtown Fairbanks. Although the site is generally flat and level, the surface of the northwest portion of the lot becomes progressively more uneven as the ground approaches the base of the steep bluff at the northern edge of the property. The uneven areas of the property appear to be tailings piles (from historic placer mining) that are now overgrown with vegetation. The property slopes generally to the south and runoff from the site is channeled into a drainage ditch that parallels the north side of the highway. The soils overlying the UST area appeared to be loosely packed gravel with coarse sand, supporting sparse vegetation.

The site supports a single-story building on the western half of the property that is used as a grocery and liquor store. In addition to being a retail store, the business has also operated as a gasoline station. Figure 3 (page 5) indicates the site layout in the area of the former USTs. Table 1 summarizes the former tank system components.

The southeastern portion of the site is leased by the FNSB for use as a solid waste dumpster station. The main building is of wood frame construction with wooden siding and metal roofing and is serviced by a private well and septic system. The well is located beneath the westernmost corner of the building, and the septic tank and leach field are located near the northern property boundary at the base of the bluff. The oil-fired furnace in the building is fueled from an unregulated, buried, heating oil tank located along the northwest side of the building.



**TABLE 1**

**Summary of Tank Types and Sizes**

Tank ID	Tank Size (gal)	Tank Description	Product Type
Tank No. 1	4,000	Steel, Greer, with steel piping	Gasoline
Tank No. 2	4,000	Steel, with steel piping	Gasoline
Tank No. 3	10,000	Steel, with steel piping	Gasoline

Climatic conditions during this project included temperatures of approximately 70 to 80 degrees Fahrenheit during midday with bright sunshine and mild winds. Site logistics were coordinated and managed in order to minimize the potential for generating excess dust and debris spillage from the excavation work. At the close of the excavation portion of the project, the work area was cleared of debris and other deleterious materials.

## 2.0 METHODS

In each of the following subsections, AGRA provides a summary of plan development and pertinent field methods used during the removal and site assessment operations.

### 2.1 HEALTH AND SAFETY PLAN

AGRA performed site monitoring and assessment activities under a site-specific health and safety (H&S) plan. The H&S plan included the following major categories:

- Key personnel within the AGRA H&S administration;
- A hazard analysis, on-site monitoring plan, and emergency procedures;
- A site characterization based on past investigation, including site control measures and an action plan; and
- Training requirements and project roles for all key individuals.



AGRA personnel reviewed and signed the H&S plan prior to commencing field work. A joint safety meeting was conducted prior to the start of work for both AGRA and Rowcon personnel to increase worker awareness of potential hazards that may be encountered during field work. AGRA and its subcontractors are certified to work in hazardous environments in accordance with OSHA requirements. Copies of all training and medical surveillance records were kept on file at the AGRA Fairbanks office. A signed copy of the H&S plan is available for review at our Fairbanks office.

## 2.2 TANK REMOVAL AND SOIL EXCAVATION

Rowcon personnel removed the tanks in accordance with the American Petroleum Institute Recommended Practice 1604 *Removal and Disposal of Used Underground Petroleum Storage Tanks*. Rowcon removed a 48-inch protective metal casing from around the fill piping associated with the three tanks. The tanks were situated approximately 2 feet below ground surface. Rowcon cut and removed the system piping after the lines were drained of residual fuel and were purged with CO<sub>2</sub>. The fuel purged from both the tanks and associated piping was stored in a 500-gallon holding tank supplied by Rowcon. During the removal of tank piping, sorbent materials were placed beneath each cut area to minimize the potential for product spillage onto the ground surface. The cut piping was loaded directly for disposal hauling. Electrical conduits were cut at the limits of the excavation in the dispenser island area and were abandoned in place. The tanks were purged with air to reduce the level of hazardous vapors inside each tank and were then inerted with dry ice. The tanks were tested using a combustible gas meter to check that vapor levels were below 10 percent of the lower explosive limit (LEL) prior to removing the USTs for disposal.

Rowcon prepared each tank and associated piping for removal using the following sequence:

- 1) At the project start, Rowcon removed and disposed of a concrete dispenser island, removed and salvaged the canopy associated with the former dispenser island, and removed and salvaged the dispensers and associated turbine pumps;
- 2) Careful excavation exposed the tops of the tanks and the underground piping;
- 3) All tanks were purged with air and were inerted with dry ice to create safe handling conditions prior to their removal from the ground;
- 4) The excavated tanks were transported to the northern portion of the Gold Hill Store property where further tank cleaning was completed prior to the transfer of ownership of the used tanks; and
- 5) The removed piping was transported to the FNSB landfill for ultimate disposal.



Potentially hydrocarbon-impacted soils removed during tank excavation were stockpiled on a 20-mil bottom liner in accordance with the ADEC *Guidance for Storage, Remediation, and Disposal of Petroleum Contaminated Soils*. A lined, bermed holding cell was constructed to store these materials on the northeast corner of the Gold Hill property. The salvaged dispensers and canopy were placed on and covered with 10-mil reinforced polyethylene liner and were stored on the north side of the store building for use by Gold Hill Liquor and Grocery.

### 2.3 ENVIRONMENTAL ASSESSMENT MONITORING

AGRA performed assessment monitoring in accordance with the ADEC UST Regulations 18 AAC 78 and the AGRA Quality Assurance Program Plan (QAPP). The QAPP is approved by and is on file with the Northern Regional Office of the ADEC.

Throughout the soil excavation and tank removal process, AGRA personnel were on site to observe and document the project activities. A photographic log is included as Appendix A of this report. Additional site-specific field documentation included:

- Qualitative observations of the excavated soil (visual discoloration or odors);
- Visual inspection for signs of leakage upon removal of each tank;
- Visual inspection and notation of the piping associated with each tank;
- Field screening of the excavated soil using a Thermo Environmental Instruments, Model 580D Organic Vapor Monitor (OVM);
- Visual inspection of the remaining in situ soils for signs of potential petroleum hydrocarbon impact; and
- Field drawings depicting the former location of each tank, associated piping, excavation limits, location of stockpiled soil, soil sample locations, and associated field soil screening measurements.

AGRA monitored and recorded vapor concentrations in the excavated and stockpiled soils with an OVM throughout the UST excavation. These measurements were collected for documentation purposes only. All excavated soils were stockpiled in the holding cell on site because of elevated OVM readings.



## 2.4 SAMPLE COLLECTION AND LABORATORY ANALYSES

AGRA personnel collected documentary soil samples at the close of each major portion of the projects activities. Initial samples were collected from the bottom of the trench formed during the removal of the dispenser island piping. In total, 4 samples were collected at 20-foot intervals along the trenched area at a depth of approximately 2 feet below grade. AGRA also obtained 4 samples of soils directly beneath the former dispenser island and associated piping. Sample GHP-1 was collected in conjunction with the initial trench sampling subsequent to piping removal. Samples GHP-6 through GHP-8 were collected at a depth of 7.5 feet below grade in the dispenser area to document potential hydrocarbon impacts to the in situ soils after a zone of contaminated soil was removed.

Upon completion of tank removal operations, AGRA collected two representative soil samples from the base of the excavation beneath each former storage tank in accordance with ADEC UST regulations. Additionally, sidewall sample collection was incorporated into the sampling program to identify the level of potential impacts at the excavation limits. In total, 12 samples were collected from the excavation sidewalls around the pit perimeter -- 6 samples obtained at a depth of approximately 4.5 to 6.5 feet below grade and 6 samples collected directly beneath the shallow samples at a depth of 16 feet below grade.

AGRA collected soil vapor headspace samples in conjunction with laboratory sample procurement. The headspace sample collection method consisted of filling a clean plastic sealable bag half full of soil and then sealing the bag. The headspace samples were allowed to warm to surface-ambient temperatures for approximately 20 minutes. The OVM probe was gently inserted into the plastic bag to sample the bag air space. The highest measured OVM reading was recorded as the soil vapor headspace measurement for each sample.

Soil samples submitted for laboratory analysis were transported in a chilled cooler to Superior Precision Analytical Laboratories (SPAL) of Martinez, California. AGRA selected three test methods to document the potential contaminant levels at the excavation limits to include: benzene, toluene, ethyl benzene, and xylenes (BTEX) by EPA Method 8020, gasoline range petroleum hydrocarbons (GRPH) by EPA Method 8015 modified, and total metals (Pb) by EPA Method 6010. Sample locations are indicated on Figure 3.

## 3.0 OBSERVATIONS AND RESULTS

In each of the following subsections, AGRA details the observations noted during the tank excavation and soil removal operations.



### 3.1 TANKS AND PIPING

During July 27 through August 1, 1994, Rowcon personnel completed the excavation and removal of the Gold Hill UST system. The former concrete dispenser island was removed from the work area and was transported to a designated portion of the property for later disposal hauling. Soils removed from the excavation surface, both in the piping trench area and in the tank system location, were temporarily stockpiled adjacent to the pit perimeter to facilitate site logistics.

Upon removal of each tank, AGRA personnel inspected the tank metal and associated piping. AGRA observed that the removed piping was in fair condition with no noticeable wetted joints or unions, or other signs of potential leakage. The piping appeared to be intact prior to cutting and removal; however, the piping showed appreciable surface rusting. The tanks were in good to fair condition with moderate surface corrosion and no apparent holes or leaks. Tank No. 2 indicated moderate to heavy corrosion of the tank base metal on the underside of the UST. Tank No. 3 was observed to have heavy surface corrosion on an attached 24-inch manway. The photographs included with this report show the conditions of the USTs upon removal. The excavation was terminated at the soil/groundwater interface located at approximately 16.5 feet below surface grade.

### 3.2 SUBSURFACE CONDITIONS

AGRA conducted the site assessment work to include soil removal and impacted soil stockpiling on July 28 through August 1, 1994. Figure 3 shows the respective locations of the excavated areas in relation to pertinent site features and structures.

The tank excavation dimensions were approximately 72 feet by 40 feet at ground surface with a depth of 16.5 feet. The native soils within the excavation were visually identified as medium brown, cobbly gravel with sand to approximately 4.5 feet below ground surface. A distinct contact with finer-grained soils was observed at this depth. The soils below the 4.5-foot depth were predominantly coarse sand with some silt fining downwards to a silty sand at 8 feet below grade. This layer extended to an approximate depth of 11 feet where a gradational contact to silt with sand was noted at approximately 15 feet below ground surface. However, these descriptions of soil type represent only a generalized view of the subsurface soils in the area of the former tank system. As in typical tailings and other reworked mining areas, a high degree of material variability was noted across the excavated areas. In general, soil types were more fine-grained directly adjacent to the store building and more cobbly and coarse-grained toward the FNSB disposal area.



AGRA field personnel screened the in situ soils as the excavation work was completed for each tank removal. The top 4.5 feet of soil overlying the tanks consisted of materials with OVM readings ranging from 54 ppm on the vent ends of the tanks to 3,724 ppm near the former fill pipes. Soils excavated from beneath the former tanks produced OVM measurements ranging from 200 ppm to 6,000 ppm.

In the former fill area, AGRA observed grey-stained sandy soils, starting at a depth of 3 feet below ground surface and extending from the eastern edge of the excavation near Tank No. 3 to approximately 10 feet west of the store building along the piping trench. OVM measurements recorded for these stained soils ranged from 450 to greater than 2,000 ppm. The stained soils continued vertically to the pit base and apparently extended beyond the excavation limits (see photographs in Appendix A).

The apparent soil/groundwater interface was located at approximately 16.5 feet below grade. Soil samples were collected at a depth of 16 feet, within approximately 6 inches of the subsurface water. The sampled soils were moist, but not saturated. OVM screening of these samples indicated headspace levels that ranged from 681 ppm to 2,694 ppm. The highest headspace measurement recorded for the collected sidewall samples was 3,561 ppm in sample GHSW-8 along the southeastern wall of the excavation.

Soil samples collected across the former piping trench connecting the tank and dispenser island areas produced OVM readings ranging from 0 to 1.1 ppm. However, a zone of impacted soils was noted in the dispenser island area, extending from immediately below the former dispenser piping to approximately 7 feet below grade. OVM measurements collected from the excavated materials varied between 40 ppm and 847 ppm. These soils were stockpiled in the long-term stockpile area. OVM readings showed dissipating levels at a depth of 7 feet below grade, with levels ranging from 1.8 ppm to 161 ppm.

### 3.3 SOIL STOCKPILING

Prior to the start of soil excavation, an area on the northern portion of the Gold Hill Store property was designated for potentially impacted soil stockpiling. Rowcon personnel prepared the stockpile area by removing miscellaneous debris and then grading the area to eliminate the presence of deleterious materials. Rowcon then constructed a storage cell which was founded on a 50 ft X 100 ft section of 24-mil bottom liner. The sides of the pile area were bermed to minimize the potential for leachate migration and runoff.



In total, approximately 1,100 cubic yards (yd<sup>3</sup>) of soil were stockpiled on site. AGRA personnel collected 4 discrete soil samples and 1 soil duplicate sample from the impacted soil pile. The highest OVM measurement documented during pile screening was 4,991 ppm (sample GHSS-1). Figure 3 shows the stockpile sample locations.

#### 4.0 ANALYTICAL RESULTS

Soil samples collected from the base of the excavation indicated levels of hydrocarbon impact above Level A cleanup criteria. Benzene levels were highest in sample GHE-1, collected beneath the former fill piping of Tank No. 1, at a concentration of 10 mg/kg. Total BTEX concentrations ranged from 0.044 mg/kg in sample GHE-3 to 812 mg/kg in sample GHE-1. This sample (GHE-1) also reported the highest GRPH concentrations at 4,200 mg/kg. The calculated mean level of GRPH across the excavation bottom was 895 mg/kg.

Samples collected along the piping trench and in the dispenser island area reported benzene, total BTEX, and GRPH concentrations below Level A standards. Samples collected from the excavation sidewalls indicated elevated benzene, total BTEX, and GRPH concentrations predominantly at the base of the wall near the apparent soil/groundwater interface. Benzene levels for these base samples ranged from non-detectable in sample GHSW-14 collected from the northern tank vent-end sidewall to 36 mg/kg in sample GHSW-8 collected from the southeastern sidewall. Total BTEX and GRPH concentrations were also highest in sample GHSW-8 at levels of 2,076 and 8,400 mg/kg, respectively.

Soil samples collected from the impacted stockpiled soils reported benzene concentrations ranging from non-detectable to 10 mg/kg in sample GHSS-3. Total BTEX was detected in this sample at 862 mg/kg. The highest GRPH level was noted for sample GHSS-1 at 5,500 mg/kg. The analytical results for duplicate samples GHE-DUP-1 and GHSS-DUP-2 are within acceptable standards for error.

Total lead was detected in 7 soil samples at a maximum concentration of 16 mg/kg. Although there are no cleanup criteria for total lead in soil, the ADEC has used levels as high as 1,000 mg/kg lead at other sites. On this basis, lead is not expected to be a contaminant of concern at this site.

Table 2 summarizes the analytical results for the soil samples collected during this project. Figure 3 shows the sampled locations together with a graphic representation of the tabulated results.





**Table 2**  
**Summary of Sample Analytical Results**  
 (Results in mg/kg)

Sample ID	Lab ID	Collection Area	OVM Reading	Benzene	Total BTEX	GRPH	Total Lead
GHP-1	92256-1	Piping Trench/ Dispenser Island	182	ND(0.025)	0.636	5	NT
GHP-2	92256-2		0.7	ND(0.005)	0.126	ND(1)	NT
GHP-3	92256-3		0	ND(0.005)	0.011	ND(1)	NT
GHP-4	92256-4		0.4	ND(0.005)	0.015	ND(1)	NT
GHP-5	92256-5		1.1	ND(0.005)	ND	ND(1)	NT
GHP-6	92267-6		161	ND(0.005)	0.39	2	ND(5)
GHP-7	92267-7		16	ND(0.005)	0.032	ND(1)	ND(5)
GHP-8	92267-8		1.8	ND(0.005)	0.152	1	5
GHE-1	92256-6	Excavation Base	2694	10	812	4200	16
GHE-2	92256-7		2250	ND(0.25)	51.15	520	6
GHE-3	92256-8		1397	ND(0.005)	0.044	1	10
GHE-4	92256-9		681	ND(0.25)	16.6	150	9
GHE-5	92256-10		2278	ND(0.25)	51.3	290	14
GHE-DUP-1	92256-12		---	0.46	30.26	230	NT
GHE-6	92256-11		1277	ND(0.13)	12.37	210	9

ND - indicates the analyte was not detected above the method detection limit; the detection limit is shown in parentheses.  
 NT - indicates that the sample was not tested for the given parameter.  
 Shading indicates that the tested parameter exceeds ADEC soil cleanup levels for this site.  
 GHE-DUP-1 is a field duplicate of sample GHE-5. GHSS-DUP-2 is a field duplicate of sample GHSS-1.



Table 2 (Continued)

Summary of Sample Analytical Results  
 (Results in mg/kg)

Sample ID	Lab ID	Collection Area	OVM Reading	Benzene	Total BTEX	GRPH	Total Lead
GHSW-7	92256-13	Excavation Sidewalls	708	ND(0.005)	0.016	ND(1)	NT
GHSW-8	92256-14		3561	36	2076	8400	NT
GHSW-9	92256-15		160	ND(0.005)	39.018	ND(1)	NT
GHSW-10	92256-16		1768	18	838	4100	NT
GHSW-11	92256-17		281	ND(0.005)	0.048	ND(1)	NT
GHSW-12	92256-18		1336	3.4	158.4	870	NT
GHSW-13	92256-19		165	ND(0.005)	0.006	ND(1)	NT
GHSW-14	92256-20		996	ND(0.5)	541	3500	NT
GHSW-15	92256-21		868	ND(0.5)	427.9	2800	NT
GHSW-16	92256-22		767	4.4	349.4	2100	NT
GHSW-17	92256-23		200	ND(0.005)	24.006	ND(1)	NT
GHSW-18	92256-24		1058	3.7	540.7	2500	NT
GHSS-1	92267-1		Impacted Soil Stockpile	4991	6	643	5500
GHSS-DUP-2	92267-5	---		6.3	609.3	6000	NT
GHSS-2	92267-2	4851		ND(0.5)	556	2800	NT
GHSS-3	92267-3	2454		10	862	5200	NT
GHSS-4	92267-4	3995		ND(0.5)	100	810	NT

ND - indicates the analyte was not detected above the method detection limit; the detection limit is shown in parentheses.

NT - indicates that the sample was not tested for the given parameter.

Shading indicates that the tested parameter exceeds ADEC soil cleanup levels for this site.

GHE-DUP-1 is a field duplicate of sample GHE-5. GHSS-DUP-2 is a field duplicate of sample GHSS-1.



## 5.0 ADEC SOIL CLEANUP LEVELS

The ADEC UST Regulations provide cleanup levels for petroleum-impacted soils. The cleanup levels are based on site-specific criteria. However, based on the analytical results for soil samples collected from the base of the excavation, it is the professional judgement of AGRA that the groundwater at the pit location is hydrocarbon-impacted. As a result, the ordinary site matrix evaluation is foregone, and the ADEC Level A cleanup criteria must be adopted for the site. The following table indicates Level A standards.

Table 3

### ADEC Level A Cleanup Criteria

CONTAMINANT	CLEANUP LEVEL (mg/kg)	OBSERVED HIGHEST CONCENTRATION (mg/kg)	
GRPH	50	8,400	GHSW-8
Total BTEX	10	2,076	GHSW-8
Benzene	0.1	36	GHSW-8

## 6.0 CONCLUSIONS

Gold Hill Liquor and Grocery, in conjunction with the ADEC Northern Regional Office, contracted AGRA to coordinate and complete the removal of three USTs at the Gold Hill property. Because hydrocarbon impacts to the groundwater have been documented in the vicinity of the tank area, the most stringent ADEC soil cleanup criteria were used to determine the extent of excavation. Since it was determined that excavation of all hydrocarbon-impacted soils was not economically feasible, AGRA limited the size of the excavation by removing only the most severely contaminated soils.

AGRA personnel collected representative soil samples from the excavation base and dispenser island area for laboratory analyses in accordance with ADEC UST Regulations. All samples collected from the dispenser island area and associated piping trench indicated hydrocarbon concentrations below Level A cleanup standards. However, the results obtained for the UST excavation bottom samples indicated hydrocarbon levels that exceeded Level A criteria.

Results obtained for sidewall samples indicated definite trends in the tank excavation area. Shallow samples collected at a depth of 4.5 to 6.5 feet below grade exhibited either non-detectable or minor concentrations of gasoline range hydrocarbons along the north, south, and



east sidewalls. The western sidewall, adjacent to the store building, reported significant benzene, total BTEX, and GRPH levels in these shallow soils. Probable causes for this contamination can include both defective piping and surface spills.

The soils at the groundwater interface exhibited high concentrations of the tested gasoline constituents, indicating that hydrocarbon impacts extend beyond the limits of the excavated area. A moderate sheen was noted on the soil particles during sidewall sampling of the moist soils in the eastern portion of the excavation. The greatest impacts were noted at the southeastern corner of the tank area, in the inferred direction of groundwater flow. Inspection of the analytical data shows dissipating levels at the northeastern corner of the excavation, though the impacts still exceed ADEC Level A cleanup criteria.

All impacted soils derived during the removal work are stockpiled on site in accordance with ADEC guidelines for long-term stockpiling. In total, approximately 1,100 yd<sup>3</sup> of contaminated materials were placed into the pile for future remediation and disposal.

At the close of tank removal activities, the excavation area was backfilled with clean pit-run materials. The excavated areas were compacted in approximate 18-inch lifts. The excavation area was closed with a roller-compacted gravel surface.

## 7.0 LIMITATIONS

The observations and findings presented in this report are professional opinions based on the information gained from limited observations and analytical results from a limited number of soil samples. Laboratory analyses were performed for specific parameters indicated by known past uses of the tanks. Additional constituents, not tested for as part of this project, may be present. The measured concentrations of contaminants may not be representative of conditions at other locations on the subject site. No warranty or guarantee is expressed or implied.

## 8.0 CLOSURE

AGRA is currently conducting additional Phase II site assessment work at the Gold Hill property. This information, together with an analysis of the Ground-Penetrating Radar (GPR) work conducted previously, will be presented to both the ADEC and Gold Hill Liquor and Grocery as these activities are completed.

Thank you for this opportunity to serve Gold Hill Liquor and Grocery. If you have any questions or comments regarding this report, please do not hesitate to call our office at (907) 479-7586.



**APPENDIX A**  
**PHOTO-DOCUMENTARY LOG**





Photo 1: View of Gold Hill Store, looking toward former dispenser island area.

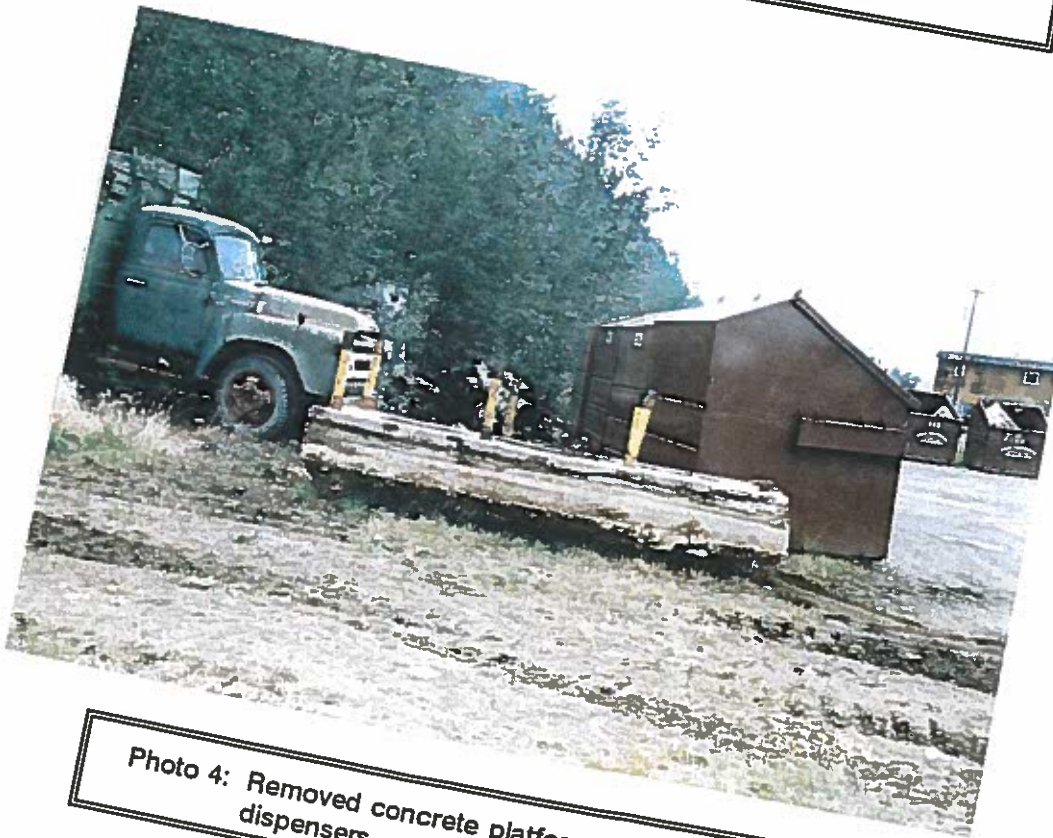


Photo 2: Tank area before excavation.





**Photo 3: Salvaged dispensers, stored on and covered with 10-mil polyethylene liner.**



**Photo 4: Removed concrete platform, formerly supporting dispensers.**



Photo 5: Close-up view of dispenser area underground piping.



Photo 6: Preparation of impacted soil stockpile area included the removal of debris and site grading.







Photo 7: Site work in dispenser island area.



Photo 8: Grey staining was evident at the location of the tank fill piping.





**Photo 9: Grey-stained soils were observed to extend to approximately 8 feet below grade, dissipating laterally away from the fill piping area.**



**Photo 10: Protective metal casings were removed from around fill pipes during site work.**





**Photo 11: Hand-digging near fuel lines. Note wood support at photo center.**



**Photo 12: All lines were drained prior to cutting and removal.**





Photo 13: Lines were purged with CO<sub>2</sub> prior to and during pipe cutting.



Photo 14: Excavation in tank area, exposing tank tops.





**Photo 15: Removal of turbine pumps.**



**Photo 16: The tanks were purged with air and were subsequently inerted with dry ice.**





Photo 17: Removal of 10,000-gallon tank (Tank No. 1).



Photo 18: Excavation bottom, directly beneath Tank No. 1.





**Photo 21: Grey-stained soils were observed on the vent end of Tank No. 2.**



**Photo 22: General condition of Tank No. 2.**



Photo 19: Removal of 4,000-gallon tank (Tank No. 2).



Photo 20: Excavation bottom, directly beneath Tank No. 2.







Photo 23: Removal of Tank No. 3.



Photo 24: Close-up view of the bottom of Tank No. 3.





**Photo 25: The tanks were stored on 10-mil polyethylene liner adjacent to the impacted soil stockpile.**



**Photo 26: Soil conditions along the eastern sidewall of the tank excavation area.**





**Photo 27: Soil conditions along the western sidewall of the tank area, adjacent to the store building.**



**Photo 28: Subsurface conditions along south sidewall of tank area.**





**Photo 29: View of tank area south sidewall during contaminant tracking. Note highly variable conditions.**



**Photo 30: Formation of impacted soil stockpile.**





Photo 31: View of tank area during backfill and compaction.



Photo 32: View of site during final grading.



**APPENDIX B**  
**LABORATORY DATA**





# Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

RZA AGRA ALASKA  
Attn: JAMES SPONTAK

Project 32-01110-00 T7  
Reported 09-August-1994

## VOLATILE PETROLEUM HYDROCARBONS

Sample preparation by Purge and Trap (EPA SW-846 method 5030). Gasoline analysis by SW-846 method 8015 modified. Gasoline range quantified as all compounds between C6 and C10. Benzene, Toluene, Ethyl Benzene and Xylenes analyses by EPA SW-846 method 8020.

### Chronology

Laboratory Number 92256

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
GHP-1	07/27/94	08/02/94	08/07/94	08/07/94		1
GHP-2	07/27/94	08/02/94	08/07/94	08/07/94		2
GHP-3	07/27/94	08/02/94	08/07/94	08/07/94		3
GHP-4	07/27/94	08/02/94	08/07/94	08/07/94		4
GHP-5	07/27/94	08/02/94	08/07/94	08/07/94		5
GHE-1	07/29/94	08/02/94	08/07/94	08/07/94		6
GHE-2	07/29/94	08/02/94	08/07/94	08/07/94		7
GHE-3	07/29/94	08/02/94	08/07/94	08/07/94		8
GHE-4	07/29/94	08/02/94	08/07/94	08/07/94		9
GHE-5	07/29/94	08/02/94	08/07/94	08/07/94		10
GHE-6	07/29/94	08/02/94	08/07/94	08/07/94		11
GHE-DUP-1	07/29/94	08/02/94	08/07/94	08/07/94		12
GHSW-7	07/29/94	08/02/94	08/07/94	08/07/94		13
GHSW-8	07/29/94	08/02/94	08/07/94	08/07/94		14
GHSW-9	07/29/94	08/02/94	08/07/94	08/07/94		15



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RZA AGRA ALASKA  
Attn: JAMES SPONTAK

Project 32-01110-00 T7  
Reported 09-August-1994

## VOLATILE PETROLEUM HYDROCARBONS

Sample preparation by Purge and Trap (EPA SW-846 method 5030). Gasoline analysis by SW-846 method 8015 modified. Gasoline range quantified as all compounds between C6 and C10. Benzene, Toluene, Ethyl Benzene and Xylenes analyses by EPA SW-846 method 8020.

### Chronology

Laboratory Number 92256

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
GHSW-10	07/29/94	08/02/94	08/07/94	08/07/94		16
GHSW-11	07/29/94	08/02/94	08/07/94	08/07/94		17
GHSW-12	07/29/94	08/02/94	08/07/94	08/07/94		18
GHSW-13	07/29/94	08/02/94	08/07/94	08/07/94		19
GHSW-14	07/29/94	08/02/94	08/07/94	08/07/94		20
GHSW-15	07/29/94	08/02/94	08/07/94	08/07/94		21
GHSW-16	07/29/94	08/02/94	08/07/94	08/07/94		22
GHSW-17	07/29/94	08/02/94	08/07/94	08/07/94		23
GHSW-18	07/29/94	08/02/94	08/07/94	08/07/94		24





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RZA AGRA ALASKA  
Attn: JAMES SPONTAK

Project 32-01110-00 T7  
Reported 09-August-1994

## VOLATILE PETROLEUM HYDROCARBONS

Laboratory Number	Sample Identification	Matrix
92256- 1	GHP-1	Soil
92256- 2	GHP-2	Soil
92256- 3	GHP-3	Soil
92256- 4	GHP-4	Soil
92256- 5	GHP-5	Soil
92256- 6	GHE-1	Soil
92256- 7	GHE-2	Soil
92256- 8	GHE-3	Soil
92256- 9	GHE-4	Soil
92256-10	GHE-5	Soil

### RESULTS OF ANALYSIS

Laboratory Number:	92256- 1	92256- 2	92256- 3	92256- 4	92256- 5
Gasoline:	5	ND<1	ND<1	ND<1	ND<1
Benzene:	ND<.025	ND<.005	ND<.005	ND<.005	ND<.005
Toluene:	0.07	0.006	ND<.005	0.01	ND<.005
Ethyl Benzene:	0.066	ND<.005	ND<.005	ND<.005	ND<.005
Total Xylenes:	0.5	0.12	0.011	0.005	ND<.005
Concentration:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
-- Surrogate % Recoveries --					
Trifluorotoluene (SS):	76	77	77	76	79
Laboratory Number:	92256- 6	92256- 7	92256- 8	92256- 9	92256-10
Gasoline:	4200	520	1	150	290
Benzene:	10	ND<.250	ND<.005	ND<.250	ND<.250
Toluene:	110	2.2	0.011	0.6	8.4
Ethyl Benzene:	22	0.95	ND<.005	ND<.250	4.9
Total Xylenes:	670	48	0.033	16	38
Concentration:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
-- Surrogate % Recoveries --					
Trifluorotoluene (SS):	141	88	104	93	128



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Project 32-01110-00 T7  
Reported 09-August-1994

## VOLATILE PETROLEUM HYDROCARBONS

Laboratory Number	Sample Identification	Matrix
92256-11	GHE-6	Soil
92256-12	GHE-DUP-1	Soil
92256-13	GHSW-7	Soil
92256-14	GHSW-8	Soil
92256-15	GHSW-9	Soil
92256-16	GHSW-10	Soil
92256-17	GHSW-11	Soil
92256-18	GHSW-12	Soil
92256-19	GHSW-13	Soil
92256-20	GHSW-14	Soil

### RESULTS OF ANALYSIS

Laboratory Number:	92256-11	92256-12	92256-13	92256-14	92256-15
Gasoline:	210	230	ND<1	8400	ND<1
Benzene:	ND<.13	0.46	ND<.005	36	ND<.005
Toluene:	1	5.8	0.006	890	0.013
Ethyl Benzene:	0.37	3	ND<.005	180	0.005
Total Xylenes:	11	21	0.01	970	39
Concentration:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
-- Surrogate % Recoveries --					
Trifluorotoluene (SS):	104	103	78	MI	72
Laboratory Number:	92256-16	92256-17	92256-18	92256-19	92256-20
Gasoline:	4100	ND<1	870	ND<1	3500
Benzene:	18	ND<.005	3.4	ND<.005	ND<.5
Toluene:	270	0.011	42	ND<.005	61
Ethyl Benzene:	70	0.005	15	ND<.005	40
Total Xylenes:	480	0.032	98	0.006	440
Concentration:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
-- Surrogate % Recoveries --					
Trifluorotoluene (SS):	MI	73	116	81	MI



# Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

RZA AGRA ALASKA  
Attn: JAMES SPONTAK

Project 32-01110-00 T7  
Reported 09-August-1994

## VOLATILE PETROLEUM HYDROCARBONS

Laboratory Number	Sample Identification	Matrix
92256-21	GHSW-15	Soil
92256-22	GHSW-16	Soil
92256-23	GHSW-17	Soil
92256-24	GHSW-18	Soil

### RESULTS OF ANALYSIS

Laboratory Number:	92256-21	92256-22	92256-23	92256-24
Gasoline:	2800	2100	ND<1	2500
Benzene:	ND<.5	4.4	ND<.005	3.7
Toluene:	7.9	52	0.006	130
Ethyl Benzene:	ND<.5	23	ND<.005	57
Total Xylenes:	420	270	24	350
Concentration:	mg/kg	mg/kg	mg/kg	mg/kg
-- Surrogate % Recoveries --				
Trifluorotoluene (SS): MI		118	69	140



# Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

## VOLATILE PETROLEUM HYDROCARBONS Quality Assurance and Control Data - Soil

Laboratory Number 92256

Compound	Method Blank (mg/kg)	RL (mg/kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Gasoline:	ND<1	1	108/108	70-130	0%
Benzene:	ND<.005	.005	91/100	70-130	9%
Toluene:	ND<.005	.005	111/111	70-130	0%
Ethyl Benzene:	ND<.005	.005	97/99	70-130	2%
Total Xylenes:	ND<.005	.005	105/103	70-130	2%

MI=MATRIX INTERFERENCES.

Definitions:

ND = Not Detected

RPD = Relative Percent Difference

RL = Reporting Limit

mg/kg = Parts per million (ppm)

QC File No. 92256

*Atsush Sabap*  
 Senior Chemist  
 Account Manager



# Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

RZA AGRÁ ALASKA  
Attn: JAMES SPONTAK

Project 32-01110-00 T7  
Reported 09-August-1994

## ANALYSIS FOR TOTAL LEAD by EPA Method SW-846 6010

### Chronology

Laboratory Number 92256

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
GHE-1	07/29/94	08/02/94	08/05/94	08/05/94		6
GHE-2	07/29/94	08/02/94	08/05/94	08/05/94		7
GHE-3	07/29/94	08/02/94	08/05/94	08/05/94		8
GHE-4	07/29/94	08/02/94	08/05/94	08/05/94		9
GHE-5	07/29/94	08/02/94	08/05/94	08/05/94		10
GHE-6	07/29/94	08/02/94	08/05/94	08/05/94		11



# Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

RZA AGRA ALASKA  
Attn: JAMES SPONTAK

Project 32-01110-00 T7  
Reported 09-August-1994

## ANALYSIS FOR TOTAL LEAD

Laboratory Number	Sample Identification	Matrix
92256- 6	GHE-1	Soil
92256- 7	GHE-2	Soil
92256- 8	GHE-3	Soil
92256- 9	GHE-4	Soil
92256-10	GHE-5	Soil
92256-11	GHE-6	Soil

## RESULTS OF ANALYSIS

Laboratory Number:	92256- 6	92256- 7	92256- 8	92256- 9	92256-10
--------------------	----------	----------	----------	----------	----------

Lead (Pb):	16	6	10	9	14
Concentration:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg

Laboratory Number:	92256-11
--------------------	----------

Lead (Pb):	9
Concentration:	mg/Kg



# Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

ANALYSIS FOR TOTAL LEAD

Quality Assurance and Control Data - Soil

Laboratory Number 92256

Compound		Method Blank (mg/Kg)	RL (mg/Kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Lead	(Pb) :	ND<5	5	103/102	75-125	1%

Definitions:


ND = Not Detected

RPD = Relative Percent Difference

RL = Reporting Limit

mg/Kg = Parts per million (ppm)

QC File No. 92256

  
 Senior Chemist  
 Account Manager

92256

# Chain of Custody Record / Analysis Request

**RZA AGRA Alaska, Inc.**

Engineering & Environmental Services  
 600 University Avenue, Suite 5E  
 Fairbanks, AK 99709-3695  
 (907) 479-7586 FAX: (907) 479-0193

No. 531

Project Name: GOLD HILL STORE Job No.: 32-0110-00 T7  
 Project Manager: J. CARNAHAN Phone #: (907) 479-7586  
 Sampler: J. SPONTAK

Analysis Requested: (circle, check box or write preferred method in box)

BTEX by 5030/8020	GRPH by 5030/8015	DRPH by 3550/8100	BTEX/GRPH combo by 5030/8020-8015	TPH by 3550/418.1	Halogenated Volatiles by 5030/8010	Aromatics by 602	Polynuclear Aromatics by EPA 610 OR 6310	Total Halogens (TOX) by EPA 9076	Total Metals by ICP AA	TCLP Metals by EPA 1311	Purgeable Organics GCNS by EPA 8240 or 824	Base/Nonhalo/Organics GCNS by EPA 825 OR 8270	PCB by EPA 8080	Total Metals (Pb) by 6010	Hold for Further Analysis	RUSH (see below)
			X													

Lab Samp ID	Date Collected	Time Collected	Matrix (S=soil, W=water, A=air)	40 ml VOA /	1 L Glass /	8 oz Glass /	# Containers/Preservation
GHP-1	7-21-94	1710	S				X
GHP-2		1714					
GHP-3		1718					
GHP-4		1721					
GHP-5		1725					
GHE-1	7-21-94	0835					
GHE-2		0838					
GHE-3		0842					
GHE-4		0845					
GHE-5		0854					
GHE-6		0857					
GHE-DUF-1							

LABORATORY: Superior

Turnaround:  
 8 hour  
 24 hour  
 5 business day  
 10 business day  
 other (if) business day

Total # Containers: \_\_\_\_\_  
 Condition of Containers? \_\_\_\_\_  
 Condition of Seals? \_\_\_\_\_

RELINQUISHED BY SAMPLER:	RELINQUISHED BY:
Signature: <u>James A. Spontak</u>	Signature: _____
Printed Name: <u>James A. Spontak</u>	Printed Name: _____
Firm: <u>AGRA E&amp;E</u>	Firm: _____
Date/Time: <u>8-1-94 / 1000</u>	Date/Time: _____
RECEIVED BY:	RECEIVED BY:
Signature: _____	Signature: <u>Flangwily</u>
Printed Name: _____	Printed Name: _____
Firm: _____	Firm: _____
Date/Time: _____	Date/Time: <u>8-2-94 11:00AM</u>

PURPOSE OF SAMPLING/COMMITMENTS:

Special Handling

Samples Stored in ice.  4°C  
 Appropriate containers   
 Samples preserved no  
 VOA's without headspace no  
 Comments: \_\_\_\_\_



9-22-94

# RZA AGRA Alaska, Inc.

Engineering & Environmental Services  
600 University Avenue, Suite 5E  
Fairbanks, AK 99709-3695  
(907) 479-7586 FAX: (907) 479-0193

No. 530

# Chain of Custody Record / Analysis Request

Analysis Requested: (circle, check box or write preferred method in box)

Project Name: GOLD HILL STORE Job No.: 32-0110-00 77  
 Project Manager: J. CARNAHAN Phone #: (907) 479-7586  
 Sampler: J. SPONTAK

RZA AGRA Alaska, Inc. Sample ID	Lab Samp ID	Date Collected	Time Collected	Matrix (S=soil, W=water, A=air)	# Containers/Preservation			
					40 ml VOA /	1 L Glass /	8 oz Glass /	CHILL
GHSW-7		7-21-94	1715	S				X
GHSW-8			1422					
GHSW-9			1505					
GHSW-10			1514					
GHSW-11			1520					
GHSW-12			1524					
GHSW-13			1530					
GHSW-14			1534					
GHSW-15			1540					
GHSW-16			1542					
GHSW-17			1600					
GHSW-18			1605					

BTEX by 5030/8020	
GRPH by 5030/8015	
DRPH by 3550/8100	
BTEX/GRPH combo by 5030/8020-8015	X
TPH by 3550/418.1	
Hydrogenated Volatiles by 5030/8010	
Aromatics by 602	
Polynuclear Aromatics by EPA 610 OR 8310	
Total Halogens (TOX) by EPA 9076	
Total Metals by ICP AA	
TCLP Metals by EPA 1311	
Purgeable Organics GCNS by EPA 8240 or 824	
Base/Marked Organics GCNS by EPA 825 OR 8270	
PCB by EPA 8080	
Hold for Further Analysis	
RUSH (see below)	

RELINQUISHED BY SAMPLER:	RELINQUISHED BY:
Signature: <u>James A. Spontak</u>	Signature: _____
Printed Name: <u>James A. Spontak</u>	Printed Name: _____
Firm: <u>AGRA E&amp;E</u>	Firm: _____
Date/Time: <u>8-1-94 1100</u>	Date/Time: _____
RECEIVED BY:	RECEIVED BY:
Signature: _____	Signature: <u>Flangulig</u>
Printed Name: _____	Printed Name: _____
Firm: _____	Firm: _____
Date/Time: _____	Date/Time: <u>8-2-94</u>

LABORATORY: <u>Superior</u>	Special Handling
Total # Containers: _____	Turnaround: <input type="checkbox"/> 8 hour
Condition of Containers? _____	<input type="checkbox"/> 24 hour
Condition of Seals? _____	<input type="checkbox"/> 5 business day
	<input type="checkbox"/> 10 business day
	<input type="checkbox"/> other _____ (#) business day

PURPOSE OF SAMPLING COMMENTS: FL 702  
 Samples Stored in ice: \_\_\_\_\_  
 Appropriate containers: NA  
 Samples preserved: NA  
 VOA's without headspace: NA  
 Comments: \_\_\_\_\_

11:00 AM



# Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

RZA AGRA ALASKA  
Attn: JOHN CARNAHAN

Project 32-01110-00T7  
Reported 09-August-1994

## VOLATILE PETROLEUM HYDROCARBONS

Sample preparation by Purge and Trap (EPA SW-846 method 5030). Gasoline analysis by SW-846 method 8015 modified. Gasoline range quantified as all compounds between C6 and C10. Benzene, Toluene, Ethyl Benzene and Xylenes analyses by EPA SW-846 method 8020.

Chronology				Laboratory Number 92267			
Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #	
GHSS-1	08/01/94	08/03/94	08/09/94	08/09/94		1	
GHSS-2	08/01/94	08/03/94	08/09/94	08/09/94		2	
GHSS-3	08/01/94	08/03/94	08/09/94	08/09/94		3	
GHSS-4	08/01/94	08/03/94	08/09/94	08/09/94		4	
GHSS-DUP-2	08/01/94	08/03/94	08/09/94	08/09/94		5	
GHP-6	08/01/94	08/03/94	08/08/94	08/08/94		6	
GHP-7	08/01/94	08/03/94	08/08/94	08/08/94		7	
GHP-8	08/01/94	08/03/94	08/08/94	08/08/94		8	



# Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

RZA AGRA ALASKA  
Attn: JOHN CARNAHAN

Project 32-01110-00T7  
Reported 09-August-1994

## VOLATILE PETROLEUM HYDROCARBONS

Laboratory Number	Sample Identification	Matrix
92267- 1	GHSS-1	Soil
92267- 2	GHSS-2	Soil
92267- 3	GHSS-3	Soil
92267- 4	GHSS-4	Soil
92267- 5	GHSS-DUP-2	Soil
92267- 6	GHP-6	Soil
92267- 7	GHP-7	Soil
92267- 8	GHP-8	Soil

### RESULTS OF ANALYSIS

Laboratory Number:	92267- 1	92267- 2	92267- 3	92267- 4	92267- 5
--------------------	----------	----------	----------	----------	----------

Gasoline:	5500	2800	5200	810	6000
Benzene:	6	ND<0.5	10	ND<0.5	6.3
Toluene:	150	52	200	7.7	140
Ethyl Benzene:	37	24	62	4.3	33
Total Xylenes:	450	480	590	88	430

Concentration:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
----------------	-------	-------	-------	-------	-------

-- Surrogate % Recoveries --

Trifluorotoluene (SS):	57	62	91	67	51
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Laboratory Number:	92267- 6	92267- 7	92267- 8
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Gasoline:	2	ND<1	1
Benzene:	ND<.005	ND<.005	ND<.005
Toluene:	0.024	0.011	0.022
Ethyl Benzene:	0.026	ND<.005	ND<.005
Total Xylenes:	0.34	0.021	0.13

Concentration:	mg/kg	mg/kg	mg/kg
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-- Surrogate % Recoveries --

Trifluorotoluene (SS):	60	71	78
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# Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

## VOLATILE PETROLEUM HYDROCARBONS Quality Assurance and Control Data - Soil

Laboratory Number 92267

Compound	Method Blank (mg/kg)	RL (mg/kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Gasoline:	ND<1	1	94/86	70-130	9%
Benzene:	ND<.005	.005	109/110	70-130	1%
Toluene:	ND<.005	.005	92/94	70-130	2%
Ethyl Benzene:	ND<.005	.005	74/77	70-130	4%
Total Xylenes:	ND<.005	.005	77/78	70-130	1%

### Definitions:

ND = Not Detected

RPD = Relative Percent Difference

RL = Reporting Limit

mg/kg = Parts per million (ppm)

QC File No. 92267

Senior Chemist  
Account Manager



# Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

RZA AGRA ALASKA  
Attn: JOHN CARNAHAN

Project 32-01110-00T7  
Reported 11-August-1994

ANALYSIS FOR TOTAL LEAD  
by EPA Method SW-846 6010

Chronology					Laboratory Number 92267	
Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
GHP-6	08/01/94	08/03/94	08/04/94	08/05/94		6
GHP-7	08/01/94	08/03/94	08/04/94	08/05/94		7
GHP-8	08/01/94	08/03/94	08/04/94	08/05/94		8



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RZA AGRA ALASKA  
Attn: JOHN CARNAHAN

Project 32-01110-00T7  
Reported 11-August-1994

## ANALYSIS FOR TOTAL LEAD

Laboratory Number	Sample Identification	Matrix
92267- 6	GHP-6	Soil
92267- 7	GHP-7	Soil
92267- 8	GHP-8	Soil

## RESULTS OF ANALYSIS

Laboratory Number: 92267- 6 92267- 7 92267- 8

Lead	(Pb):	ND<5	ND<5	5
Concentration:		mg/Kg	mg/Kg	mg/Kg



# Superior Precision Analytical, Inc.

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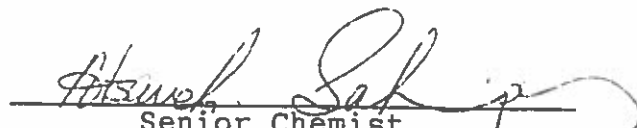
## ANALYSIS FOR TOTAL LEAD Quality Assurance and Control Data - Soil

Laboratory Number 92267

Compound		Method Blank (mg/Kg)	RL (mg/Kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Lead	(Pb):	ND<5	5	101/103	75-125	2%

### Definitions:

ND = Not Detected  
 RPD = Relative Percent Difference  
 RL = Reporting Limit  
 mg/Kg = Parts per million (ppm)  
 QC File No. 92267

  
 Senior Chemist  
 Account Manager

92267 30696NH

**RZA AGRA Alaska, Inc.**

Engineering & Environmental Services  
600 University Avenue, Suite 5E  
Fairbanks, AK 99709-3695  
(907) 479-7586 FAX: (907) 479-0193

Nº 529

Project Name: GOLD HILL STORE Job No.: 32-0110-00 T7  
Project Manager: J. CAKNAHAN Phone #: (907) 479-7586  
Sampler: JAS

**Chain of Custody Record / Analysis Request**

Analysis Requested: (circle, check box or write preferred method in box)

BTEX by 5030/8020	
GRPH by 5030/8015	
DRPH by 3550/8100	
BTEX/GRPH combo by 5030/8020-8015	XXXXXX
TCM by 3550/418.1	
Regulated Volatiles by 5090/4010	
Aromatics by 602	
Polynuclear Aromatics by EPA 810 OR 8310	
Total Volatiles (TOV) by EPA 9176	
Total Metals by TCMRA	
TCMP Metals by EPA 1311	
Purgeable Organics GONS by EPA 8240 or 824	
Basecatalytic Organics GONS by EPA 823 OR 8270	
PCB by EPA 8080	
Total Metals (Pb) by 6010	XXXX
Hold for Further Analysis	
RUSH (see below)	

Lab Samp ID	Date Collected	Time Collected	Matrix (S=soil, W=water, A=air)	# Containers/Preservation
GHSS-1	8-1-94		S	1 4g Glass
GHSS-2				
GHSS-3				
GHSS-4				
GHSS-DUP-2				
GHP-6				
GHP-7				
GHP-8				

Analysis Requested: (circle, check box or write preferred method in box)

LABORATORY: Superior

RELINQUISHED BY: Signature: \_\_\_\_\_ Printed Name: \_\_\_\_\_ Firm: \_\_\_\_\_ Date/Time: \_\_\_\_\_

RECEIVED BY: Signature: Nicki Heath Printed Name: NICKI HEATH Firm: Superior MTZ Date/Time: 8/3/94 10:15 AM

Special Handling: Turnaround:  8 hour  24 hour  5 business day  10 business day  other: \_\_\_\_\_

PURPOSE OF SAMPLING / COMMENTS: Samples preserved in ice. Appropriate containers. Samples stored in ice. Appropriate containers. Samples preserved. VOC's without headspace. Comments: VOC's without headspace