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March 4, 1994

North Carolina Department of Environment,
Health and Natural Resources
Division of Environmental Management
Groundwater Section
441 North Harrington Street
Raleigh, North Carolina 27603

Attention: Ms. Linda Raynor
Environmental Engineer

Subject: Tank Closure Report
Roy Goodwin Property
FTF #7217-2
Lake Junaluska, North Carolina
Delta Project No. 50-93-802.02

Dear Linda:

Enclosed is a copy of the referenced report. Included within is a summary of the tank removal activities, results of the soil laboratory analyses, and recommendations for additional investigative activities.

Approximately 75 cubic yards (120 tons) of soil were excavated during the removal of the tanks at the subject site. The soil was stockpiled on the property of the former Junaluska produce market which is owned by Mr. Roy Goodwin, Jr. According to the laboratory reports, total petroleum hydrocarbons (TPH) with a distillation range similar to No. 2 fuel oil (diesel) or kerosene were not detected in the tank closure soil samples. The highest concentrations of TPH with a distillation range similar to gasoline was 14,200 milligrams per kilogram.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

Luba K. Gross
Project Manager

LKG/amh

UNDERGROUND STORAGE TANK CLOSURE REPORT

ROY GOODWIN PROPERTY

LAKE JUNALUSKA, NORTH CAROLINA

DELTA PROJECT NO. 50-93-802.02

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This report was prepared by:

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March, 1994

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1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this report is to present a summary of the removal of two underground storage tanks (USTs) located at the former Junaluska Produce Market in Lake Junaluska, North Carolina.

The scope of the work was authorized by Ms. Linda Raynor of the North Carolina Division of Environmental Management (DEM), on October 26, 1993. Task authorization (7217-2) included:

- subcontracting the tank removal to McCall Brothers, Inc.;
- obtaining soil samples from beneath the tanks;
- submitting the samples to CTE Laboratories for total petroleum hydrocarbon analysis;
- excavating visually contaminated soil; and,
- preparing this report.

1.2 Site Description

The site is located at the intersection of NC 209 and SR 1523 in a residential area of Haywood County in Lake Junaluska, North Carolina. The property is owned by Mr. Roy Goodwin, Jr. and consists of one building which is currently for sale. According to the geophysical survey (January 1992 NC DOT-Preliminary Site Assessment Report) conducted at the site as a part of a proposed road improvement, four USTs were located at the subject property.

Soil sampling performed on the Goodwin property in the vicinity of NC 209 and SR 1523 by the NC DOT revealed a petroleum hydrocarbon blend with a distillation range similar to gasoline with concentrations ranging from 57 to 200 mg/kg.

1.3 Site History

According to the DEM documentation, the current property owner, Mr. Roy Goodwin, Jr., did not operate a gasoline station on the subject location. Beginning in 1975, Mr. Goodwin and his wife operated a glass and mirror business. The last use of the USTs was in the late 1950's.

2.0 SITE ACTIVITIES

2.1 Product Removal

Residual amounts of product and water (estimated at 650 gallons in the 750 gallon tank) were removed by Holston Used Oil Recycling Co. on December 8, 1993, prior to excavating the tanks. A copy of the manifest for the pumped product and water is included in Appendix A.

2.2 Tank Removal

On December 8, 1993, McCall Brothers, Inc. began excavating the tanks. Two 750 gallon tanks were located immediately in front of the building. An explosimeter was inserted into each tank prior to removal to determine if the explosive levels in each tank were within established limits.

The remaining two tanks identified during the geophysical survey were not discovered. Several attempts were made to uncover the tanks in their suspected location. However, after repeated unsuccessful excavations performed at the site, the search for the remaining tanks was discontinued. The excavated soil removed during the search for the tanks was screened in the field using an organic vapor analyzer (OVA). Samples obtained for field screening were placed in plastic ziploc bags and allowed to approach air vapor equilibrium for at least 10 minutes. OVA readings ranged from 50 to over 1,000 parts per million (ppm). The soil was stockpiled at the site on plastic.

Soil removed from the vicinity of the two 750 gallon tanks and lines was also screened in the field using the OVA. OVA results ranging from 950 to over 1,000 ppm were obtained from the headspace readings of soil samples from around and beneath the two tanks. OVA results ranged from 10 to over 1000 ppm in the soil samples collected around and beneath the distribution lines.

The excavated area measured 13 feet in width, 30 feet in length and 8 feet in depth. Photographs documenting the excavation are presented in Appendix B. The Site Investigation Report for Permanent Closure (GW/UST-2) is included in Appendix C. The location of the USTs and the soil sample locations are shown in Figure 1.

Tank #1 and Tank #2

Both tanks were 750 gallon steel tanks. The surface of the removed tanks was rusted. No holes or pits were observed (Photo #1 and #2). OVA results were over 1,000 ppm beneath the tanks. A petroleum (gasoline) odor was encountered in the excavation. No ground water was visible in the excavation. Soil beneath the tanks was dry. The removed soil was stockpiled at the site on plastic. Significant visible hydrocarbon soil staining was noticeable within the perimeter of the excavation.

Distribution Lines

The surface of the dispenser lines was rusted; minor corrosion was evident on the surface of the product lines (Photo #3). A strong gasoline like odor was noted, OVA readings ranged between 10 and over 1000 ppm in the fill area around and beneath the lines. Excavated soil was stockpiled at the site on plastic.

2.3 Tank Disposal

The tanks were transported to U.S.T. Disposal Company in Charlotte, North Carolina for recycling. A copy of the certificate of disposal is included in Appendix D.

2.4 Closure Sampling

A total of four samples were collected on December 8, 1993 from beneath the tanks at the locations shown in Figure 1. The samples were obtained at depths ranging from approximately eight to ten feet below the tank basins by filling a sampling jar with soil from the backhoe bucket. Each sample jar was labeled, placed in a chilled cooler and shipped to CTE Laboratories, Inc. for analysis.

2.5 Basin Backfilling

On December 8, 1993 following closure sampling, the excavation was backfilled to grade using clean soil from the excavation plus an additional clean fill from an off-site facility.

3.0 ANALYTICAL RESULTS

Soil samples collected from beneath each removed tank were analyzed for total petroleum hydrocarbons (TPH) by GC scan using either EPA SW-846, Method 5030 for volatile fuels such as gasoline or EPA SW-846, Method 3550 for less volatile fuels such as kerosene and diesel. The analytical results are summarized in Table 2. Copies of the analytical report and chain of custody may be found in Appendix E. TPH concentrations with a distillation range similar to gasoline ranging between 55.5 mg/kg and 14,200 mg/kg were detected in soil samples collected beneath the 750 gallon tanks (Tanks #1 and #2). TPH concentrations with a distillation range similar to fuel oil No. 2 or diesel were not identified by CTE Laboratories at the site.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the analytical data and field observations, petroleum products have been released to the subsurface from the former UST systems at the site.

The extent and magnitude of residual soil and ground water contamination should be determined. The work plan and associated cost estimate will be provided upon request. The excavated soil will be treated in accordance with DEM protocol. A letter summarizing the soil removal/disposal activities will be submitted to the NCDEHNR under a separate cover.

5.0 REMARKS

The recommendations contained in this report represent our professional opinions. These opinions are arrived at in accordance with currently accepted hydrogeologic and geologic practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by:

DELTA ENVIRONMENTAL CONSULTANTS, INC.

_____ _____

Luba K. Gross Date
Project Manager

This report was reviewed by:

_____ _____

W. Robert Cotton, P.G., P.E. Date
Project Manager

/amh

TABLES

TABLE 1

UNDERGROUND STORAGE TANK DESCRIPTION
ROY GOODWIN PROPERTY
LAKE JUNALUSKA, NORTH CAROLINA
FTF #7217-2

DELTA PROJECT NO. 50-93-802.02

TANK #	SIZE	TANK TYPE	LOCATION (Figure 2)	YEAR INSTALLED
1	750 gal.	N/A	In front of the office - removed	N/A
2	750 gal.	N/A	In front of the office - removed	N/A
3	750 gal.	N/A	South corner of the office - not found	N/A
4	750 gal.	N/A	South corner of the office - not found	N/A

TABLE 2

SOIL ANALYTICAL DATA
ROY GOODWIN PROPERTY
LAKE JUNALUSKA, NORTH CAROLINA
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December 8, 1993

Tank #	Sample #	Depth	Parameter	DETECTION LIMIT TPH/Kerosene	DETECTION LIMIT TPH/Gasoline	RESULTS TPH/Kerosene	RESULTS TPH/Gasoline
1	SS-1	8-10	Petroleum Hydrocarbons by GC	1.0	0.10	<1	14,200
	SS-2	8-10	Petroleum Hydrocarbons by GC	1.0	0.10	<1	13,300
2	SS-3	8-10	Petroleum Hydrocarbons by GC	1.0	0.10	<1	55.5
	SS-4	8-10	Petroleum Hydrocarbons by GC	1.0	0.10	<1	132.0

All unites are in milligrams per kilogram (parts per million).

FIGURES

APPENDICES

APPENDIX A

WASTE WATER DISPOSAL MANIFEST

APPENDIX B

SITE PHOTOGRAPHS

Photograph 1: Excavated Tank #1.

Photograph 2: Excavated tanks #1 and #2.

Photograph 3: Removal of distribution lines.

APPENDIX C

SITE INVESTIGATION REPORT FOR PERMANENT CLOSURE OF UST

APPENDIX D

TANK DISPOSAL CERTIFICATE

APPENDIX E

LABORATORY ANALYTICAL RESULTS