

01-04-93



4 January, 1993

Mr. Charles B Schwer
Agency of Natural Resources
Department of Environmental Conservation
Hazardous Materials Management Division
103 South Main Street/West Building
Waterbury, Vermont 05671-0404

RE: Joe's Discount Beverage, Springfield, Vermont.
VTDEC Site #92-1279

Dear Mr. Schwer:

Please find enclosed Griffin International's Report on the Investigation of Residual Subsurface Petroleum Contamination at the above referenced site. A copy of this report has been reviewed by the Springfield Savings and Loan Bank.

If you have any questions, please call.

Cordially,

A handwritten signature in cursive script that reads "Christopher Hill". The signature is written in dark ink and is positioned above the printed name and title.

Christopher Hill
Hydrogeologist

Enclosure

REPORT
ON THE INVESTIGATION OF
RESIDUAL SUBSURFACE PETROLEUM
CONTAMINATION

JOE'S DISCOUNT BEVERAGE
CLINTON STREET
SPRINGFIELD, VERMONT

VTDEC SITE #92-1279
GRIFFIN PROJECT #9924273

DECEMBER 1992

Prepared For:

Springfield Savings & Loan
85 Main Street
Springfield, Vermont 05156
(802) 885-2184

Prepared By:

GRIFFIN INTERNATIONAL, INC.
2B Dorset Lane
Williston, Vermont 05495
(802) 879-7708

TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	1
INTRODUCTION	2
SITE BACKGROUND	
Site Description	2
Site History	3
INVESTIGATIVE PROCEDURES	
Monitoring Well Installation	4
Soil Borings	4
Receptor Survey	5
Groundwater Sampling and Analyses	6
Determination of Groundwater Flow Direction and Gradient.	7
RISK ASSESSMENT	8
CONCLUSIONS	9
RECOMMENDATIONS	10
APPENDIX: Site Location Map	A1
Area Sketch Map	A2
Site Map	A3
Groundwater Contour Map	A4
Liquid Level Data	A5
Groundwater Quality Summary	A6
Monitoring Well and Soil Boring Logs	A7-A9
Laboratory Reports	

EXECUTIVE SUMMARY

Seven petroleum underground storage tanks (USTs) were permanently removed from the Joe's Discount Beverage Property in Springfield, Vermont on 12 August 1992. No replacement tanks are being installed. During removal of the USTs, residual petroleum contamination was detected in soils and groundwater surrounding and beneath the former USTs. Follow-up investigation indicates that residual petroleum contamination consists primarily of adsorbed oil and diesel fuel in the soils surrounding the former USTs. Groundwater quality results indicate that some groundwater contamination beneath and downgradient of the former USTs has occurred. Contaminant concentrations in a downgradient monitoring well are above Vermont Drinking Water Standards. The limits of downgradient contamination have not been fully determined. Off property migration of dissolved phase contamination may have occurred. However, there appears to be little risk posed to the public health and safety or any sensitive receptors. No free phase product was detected in any on-site monitoring wells.

Based on the low risk to surrounding receptors and the absence of free phase product in any on-site monitoring wells, Griffin is not recommending remedial action at this site at this time. To document the reduction of contaminant concentrations in the downgradient monitoring well Griffin is recommending the collection of groundwater samples from that well on a quarterly basis for a period of one year. Groundwater samples should be analyzed according to EPA Method 624. To monitor for possible accumulations of hydrocarbon vapors in the basement of an adjacent residence, Griffin recommends measuring hydrocarbon vapor concentrations in that basement at the time quarterly groundwater samples are collected.

INTRODUCTION

This report details the investigation of residual subsurface petroleum contamination at the Joe's Discount Beverage Property in Springfield, Vermont. This work has been conducted by Griffin International, Inc. (Griffin) for the Springfield Savings & Loan of Springfield, Vermont in response to the 25 August 1992 letter to Mr. Gary Holt of the Springfield Savings and Loan from the Vermont Department of Environmental Conservation (VTDEC).

SITE BACKGROUND

Site Description

The Joe's Discount Beverage property is located on Clinton Street in Springfield, Vermont (See Site Location Map, Page A1 Appendix). The property is situated on the narrow valley floor of the Black River. The Black River flows southeasterly to a confluence with the Connecticut River 3.5 miles distant. The surficial geology at the site is mapped on the Surficial Geologic Map of Vermont as recent alluvium and pebbly sand deposited in a glaciolacustrine environment. Materials encountered during monitoring well installation generally consisted of poorly sorted fine to coarse sand with occasional gravel. Bedrock underlies this deposit at depths of eight to eleven feet.

The Springfield city center is approximately 2,000 feet northwest along Clinton Street. The properties surrounding the Joe's Discount Beverage site are used primarily for commercial activities. The locations of surrounding buildings are indicated on the Area Sketch Map, page A2 of the Appendix. The property is bounded to the northwest by an empty lot which was reportedly once used as a gas station. Beyond this empty lot is the Springfield Chamber of Commerce. To the northeast and across Clinton Street is another empty lot which is also reported to have been a gas station at one time. Also across Clinton Street, to the east, is an automobile dealership. To the southeast the property is bounded by the Garofano residence. Water to the building on the Joe's Discount Beverage property and all the surrounding buildings is supplied by the Springfield Municipal Water Supply System which draws water from a well field several miles to the northwest in the Black River valley.

Site History

On 12 August 1992, seven petroleum underground storage tanks were removed from the Joe's Discount Beverage Property. Details of the volume and contents of the individual tanks appears below in Table 1.

UST #	Volume (Gals)	Contents
1	6,000	Gasoline
2	6,000	Gasoline
3	6,000	Gasoline
4	3,000	Gasoline
5	3,000	Waste Oil
6	3,000	Gasoline
7	550	Waste Oil

Table 1. Summary of UST Volumes and Contents

After removal, inspection of six the tanks indicated them to be in good condition. Only UST #4 was observed to have a hole caused by corrosion pitting. All of the tanks were permanently removed, and no replacement tanks were installed. No USTs requiring permits are believed to remain on-site. Locations of the former USTs are indicated on the attached Site Map (Page A3, Appendix).

During removal of the USTs, hydrocarbon vapors were detected in soils excavated from around the USTs using an Hnu Model PI101 photoionization detector (PID). PID measurements taken during screening of the soils surrounding the tanks were generally around 50 parts per million (ppm) but were up to 150 ppm near UST #2 and #4 and up to 200 ppm near UST #1.

Oversight services of the tank removals were provided by Griffin International. Additional details of the tank removals appear in Griffin's tank closure report dated 13 August 1992.

INVESTIGATIVE PROCEDURES

In an effort to determine the degree and extent of residual petroleum contamination at the site, three monitoring wells were installed in the vicinity of the former USTs at the Joe's Discount Beverage Location. Monitoring well locations are indicated on the attached Site Map. Groundwater samples were collected from the monitoring wells and analyzed for petroleum related compounds. Survey data for a site map was collected and a review of sensitive receptors was completed. Details and results of the work completed follow.

Monitoring Well Installation

To help determine the degree and extent of soil and groundwater contamination at the site, three monitoring wells were completed by Technical Drilling Services, Inc. of Clinton, Massachusetts under the direct supervision of a Griffin hydrogeologist. This work was completed on 16 October 1992.

The wells were installed using a hollow stem auger drill rig. Soil core samples were collected from each borehole at five foot intervals using a split spoon sampler. Soil core samples and drill cuttings collected directly from the augers were screened for volatile organic compounds (VOCs) using an Hnu Model PI101 photo-ionization detector (PID) and logged by the hydrogeologist. Soils encountered in the three boreholes generally consisted of poorly sorted fine to coarse sand with occasional gravel. Each of the three boreholes were drilled to refusal on bedrock. Well logs appear on pages A7-A9 of the Appendix.

Monitoring well locations are indicated on the attached Site Map. MW1 is located at the upgradient edge of the former UST locations. MW2 is located in the downgradient direction from the former USTs to help determine the downgradient extent of residual petroleum contamination. MW3 was placed down and cross gradient from the former USTs to help establish the lateral extent of residual petroleum contamination at the site.

During the installation of MW1, elevated PID readings of 60 ppm were recorded during screening of the soil core samples from the borehole. A heavy petroleum odor was noted and old oil was observed in the soil core sample extracted from the borehole of MW1.

During the installation of MW2, elevated PID readings of up to 40 ppm were recorded during the screening of the soil core samples from the borehole. An odor of old diesel fuel was detected and

a heavy sheen of residual petroleum was observed on soils in soil core samples extracted from this borehole.

No elevated PID readings, petroleum odors or visible petroleum contamination were observed during the inspection of the soil core samples extracted from the borehole for MW3. PID readings and soil characteristics observed during drilling are listed on the detailed well logs on page A7 to A9 of the Appendix.

The monitoring wells are constructed of two inch diameter, 0.010" slot PVC well screen and attached casing. The annulus between the borehole wall and the screened section of each well contains a silica gravel pack to filter fine sediments from groundwater entering the well. The annulus of each well also contains a bentonite seal to prevent surface water from infiltrating into the borehole. Each well is protected at the surface by locking wells caps, flush mounted steel well head protection casings, and bolt down covers. Well construction details appear on the well logs in the Appendix (pages A7-A9).

Once the wells were installed they were developed by a Griffin field technician, using a clean Teflon bailer, to remove fine sediments from the sand pack around the well screen and to draw surrounding groundwater into the monitoring well. No free phase product was detected during well development.

Receptor Survey

The bank of the Black River was inspected during the UST removals on 12 August 1992 and again on 16 October 1992 during installation of the monitoring wells. During these inspections, the river bank was thoroughly inspected for any signs of migrating petroleum contamination. Indicators such as petroleum sheens, odors, and stressed vegetation were searched for. These inspections yielded no evidence that residual petroleum contamination was seeping into the Black River, or that any detectable contamination was present anywhere along the river's bank.

Also during the 16 October site visit, Griffin screened the basement of the adjacent Garofano residence (See Site Map, Appendix) for residual petroleum contamination. During this inspection the Hnu Model PI101 PID was used to screen air and soils in the basement for the presence of hydrocarbon vapors. Upon entering the basement of the residence a slight smell of oil was detected. However, an ambient PID reading of 0.0 ppm was recorded. The ambient PID reading on the first floor of the house was also 0.0 ppm.

Griffin also screened exposed soils around where the water line enters the Garofano residence on the northeast (street) side of the house. Concrete around the water line is chipped away where it enters the house leaving the soils around the line exposed. No elevated PID readings were recorded during this screening.

The heating oil tank in the Garofano residence is reported to have been replaced in mid 1991. A slow leak of fuel oil, reported as a slow drip in the fuel line from the heating oil tank to the furnace, was repaired in approximately September 1992. The leak had stained the floor from the leaking line to the sump of the basement. An elevated PID reading of 4 ppm was recorded in the basement sump, but no visible petroleum sheen was observed. Petroleum vapors have been previously noticed by Mr. Garofano and reported to the local fire department. The reported vapors were not determined by the local fire department to pose a safety hazard.

The building on the Joe's Discount Beverage Property has no basement. No basements adjacent to the Joe's Discount Beverage property, other than the Garofano residence, were located. No basements on the northeast side of Clinton Street were screened.

All buildings along this section of Clinton Street are served by the Springfield Municipal Water Supply System. The water main for the buildings runs parallel to Clinton Street and is buried beneath the sidewalk along the southwest side of the street as indicated on the Site Map. The Springfield Water Supply System is served by a well field several miles up the Black River valley to the northwest. Since the Municipal Wells are several miles upgradient of the site, there appears to be little or no risk posed to those wells by the residual petroleum contamination at this site.

Groundwater Sampling and Analyses

On 22 October 1992, Griffin collected groundwater samples from each of the three monitoring wells. Groundwater samples were collected for analyses by EPA Method 602 and 418.1. EPA method 602 tests for the petroleum related compounds benzene, toluene, ethylbenzene, xylenes (the BTEX compounds) and MTBE (methyl tertiary butyl ether, an anti-knock gasoline additive). EPA Method 418.1 tests for total petroleum hydrocarbons (TPH). All samples were collected according to Griffin's groundwater sampling protocol which includes well development prior to sample collection.

The laboratory analysis of the groundwater sample from MW1, at the upgradient edge of the former UST locations, indicated that none of the BTEX or MTBE compounds were present in groundwater surrounding this well. Total Petroleum Hydrocarbons were detected at 30 ppm.

The laboratory analysis of the groundwater sample from downgradient MW2 detected elevated concentrations of both the BTEX and MTBE compounds. Of the detected compounds only two, benzene (946 parts per billion (ppb)) and MTBE (631 ppb), were present and concentrations above Vermont Drinking Water Standards. Total petroleum hydrocarbons were detected at 9.3 ppm in MW2. Observed contaminant concentrations and Vermont Drinking Water Standards are tabulated on page A6 of the Appendix.

The analysis of the groundwater sample from MW3, located hydraulically down and cross gradient from the former UST locations, indicates that none of the petroleum related compounds tested for are present in groundwater surrounding MW3.

Duplicate, trip blank and equipment blank samples indicate that adequate Quality Assurance/Quality Control was maintained during sample collection and analyses. No free phase product was detected during collection of the groundwater samples.

Determination of Groundwater Flow Direction and Gradient

Prior to groundwater sampling, Griffin measured the relative water table elevations in wells MW1 through MW3. Measurements were made relative to a benchmark (top of casing at MW1), which was assigned an arbitrary elevation of 100 feet. Water level data is presented on page A5 of the Appendix.

The water table elevation in each monitoring well was calculated by subtracting the depth to water measurement (made from top of casing) from the assigned top of casing elevations. Using the water table elevations from each monitoring well, the groundwater contour map on page A4 of the Appendix was developed. Groundwater was encountered at depths ranging from four to six feet below grade and was determined to be flowing northeasterly toward the Black River at a gradient of approximately five percent. This is a steep water table gradient and is likely a result of the steep rising slope behind the Joe's Beverage site. Based on the flatter topography to the northeast of Clinton Street it is likely that the water table gradient decreases in that direction.

RISK ASSESSMENT

Based on the absence of any field detectable residual petroleum contamination along the banks of the Black River, it appears that the river has not been impacted by the residual petroleum contamination detected in the former UST pits. The former UST pits are between 200 and 300 feet from the Black River.

The Black River does not appear at risk of contamination by free phase product from the site since none was detected in any of the on-site monitoring wells. Based on the levels of residual dissolved phase contamination observed in downgradient MW-2, it appears unlikely dissolved phase contamination will reach the river in significant concentrations. The processes of dilution, dispersion, and biodegradation will likely reduce contaminant concentrations to below detectable levels before reaching the river.

Since buildings in the area are served by water from the Springfield Municipal Water Supply, which does not appear at risk, there appears to be little or no risk posed to the drinking water for the surrounding buildings. Since the water main beneath Clinton Street is a pressurized line, residual petroleum contamination which may enter the trench in which the water main is laid should be prevented from entering the water line.

No drilled or dug water supply wells were located during the visual inspection of the area by Griffin personnel. Therefore, there appears to be little or no risk to any surrounding water supply wells.

Since the building on the Joe's Discount Beverage Property does not have a basement, the risk posed to that structure from the accumulation of hydrocarbon vapors is low. Petroleum vapors have been previously observed in the basement of the Garofano residence. Since there has been a leak of heating oil in the Garofano basement from the heating oil line for the house, the origin of the detected petroleum vapors is not clear. The low PID readings observed in the Garofano basement are consistent with the levels of contamination to be expected from a small fuel oil leak. The Garofano residence does not appear to be directly downgradient of the former USTs which reduces the chances that petroleum vapors from migrating petroleum would collect there. Based on the existing data, the future risk posed to the Garofano residence by the migration and accumulation of petroleum vapors appears low.

CONCLUSIONS

Based on the information gathered during this limited site assessment, Griffin has reached the following conclusions:

- 1) Seven petroleum USTs were removed from the Joe's Discount Beverage location in Springfield, Vermont on 12 August 1992. These tanks were permanently removed and no replacement tanks were installed, or are scheduled to be installed. During removal of the USTs, residual petroleum contamination was detected in soils and groundwater surrounding and beneath the USTs. The age of the USTs is unknown, however six of the USTs appeared to be in good condition upon removal, with no apparent holes or punctures. UST #4 was observed to have at least one small hole in it due to pitting. The fill pipe to UST #7 (waste oil) was observed to be broken, and waste oil had contaminated soils surrounding the broken line.
- 2) The source of the residual petroleum contamination appears to be a combination of leaking fill pipes, corrosion pitting of UST #4, and possible over-fills of the USTs during bulk fuel deliveries.

It has been reported during conversations with Mr. Garofano that above ground bulk fuel storage tanks were once located on the hillside behind the Joe's Discount Beverage facility. Inadvertent petroleum releases during fuel transfers to and from these former bulk fuel storage tanks over the course of their operation may have resulted in petroleum contamination of soils and groundwater upgradient of the Joe's Discount Beverage site. If significant upgradient petroleum contamination occurred as a result of the operation of these reported bulk fuel storage tanks, it is likely that that contamination would contribute to observed contamination in the vicinity of the former USTs at the Joe's Discount Beverage Property.

- 3) Residual petroleum contamination remains in soils in the former UST pit area. Residual, dissolved phase, petroleum contamination likely exists in groundwater immediately beneath the former UST locations and extends downgradient to MW2. Several petroleum related compounds detected in MW2 exist at concentrations above the Vermont Drinking Water Standards for these compounds. The downgradient extent of residual subsurface petroleum contamination has not been determined, and may extend beyond MW2.

- 4) River bank inspections indicate that the residual petroleum contamination has not reached the Black River in field detectable concentrations. It appears unlikely that free phase or dissolved petroleum contamination will reach the river in field detectable amounts.
- 5) Although free phase petroleum products were observed in soil core samples during monitoring well installation, there appears to be no free phase product floating on the water table or able to migrate into the well screen of the monitoring wells. No free phase petroleum products were detected during well development or water sample collection.
- 6) There appears to be little imminent threat or long term risk to the public health and safety. There appears to be little or no risk to any surrounding sensitive receptors.
- 7) The permanent removal of the former USTs has removed the likely source of petroleum contamination. The remaining petroleum contamination observed in soils at the site is likely mostly immobile, in part because the area of the former USTs is capped by pavement.

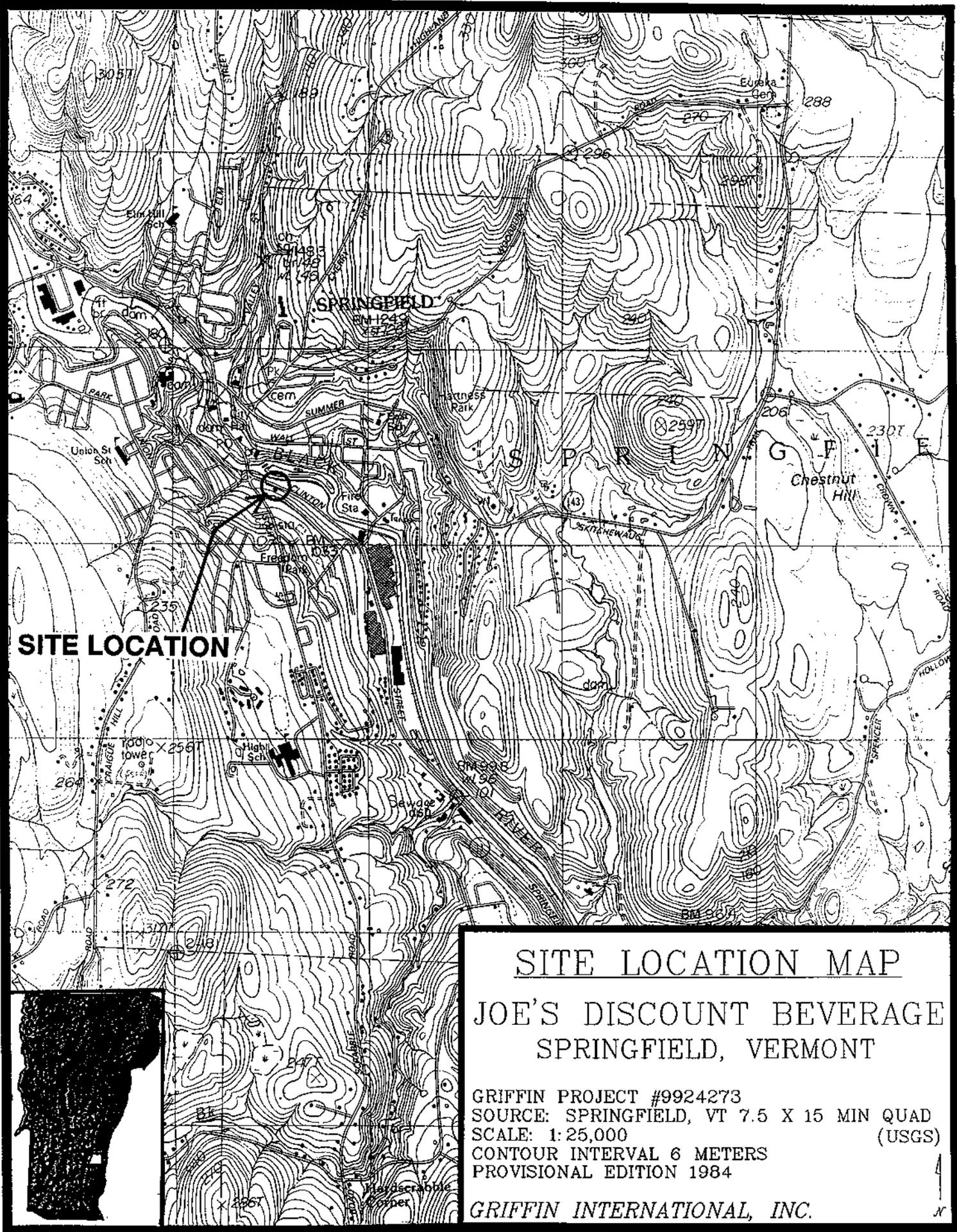
RECOMMENDATIONS

Based on the information collected during this site investigation, Griffin is not recommending active remediation at this time. The free phase contamination appears to consist primarily of waste oil and diesel fuel residues adsorbed to soils. The absence of mobile, recoverable free phase liquid product in on-site monitoring wells makes it unlikely that any product can be recovered through manual bailing or pumping. Based on the low volatility of waste oil it is unlikely that soil venting would be successful in recovering a significant amount of the residual oil contamination observed in the soil core samples from MW1 or near former UST #7. Based on the water quality data from MW1, it does not appear that residual adsorbed oil contamination is causing contaminant concentrations to exceed Vermont Drinking Water Standards for the tested compounds in the vicinity of the observed oil contamination. Although soil venting could reduce adsorbed phase contaminant concentrations in the soils contaminated by the former gasoline USTs (as detected by PID during tank removals), the low risk posed to surrounding receptors makes remediation of this site appear unwarranted.

To document the reduction in dissolved phase contaminant concentrations in groundwater at the site, Griffin recommends collecting groundwater samples from the three on-site monitoring wells for analyses by EPA Method 624 on a quarterly basis for a period of one year. Data obtained

from the groundwater sampling will help to determine whether contaminant concentrations are declining and whether further action is warranted.

APPENDIX



SITE LOCATION

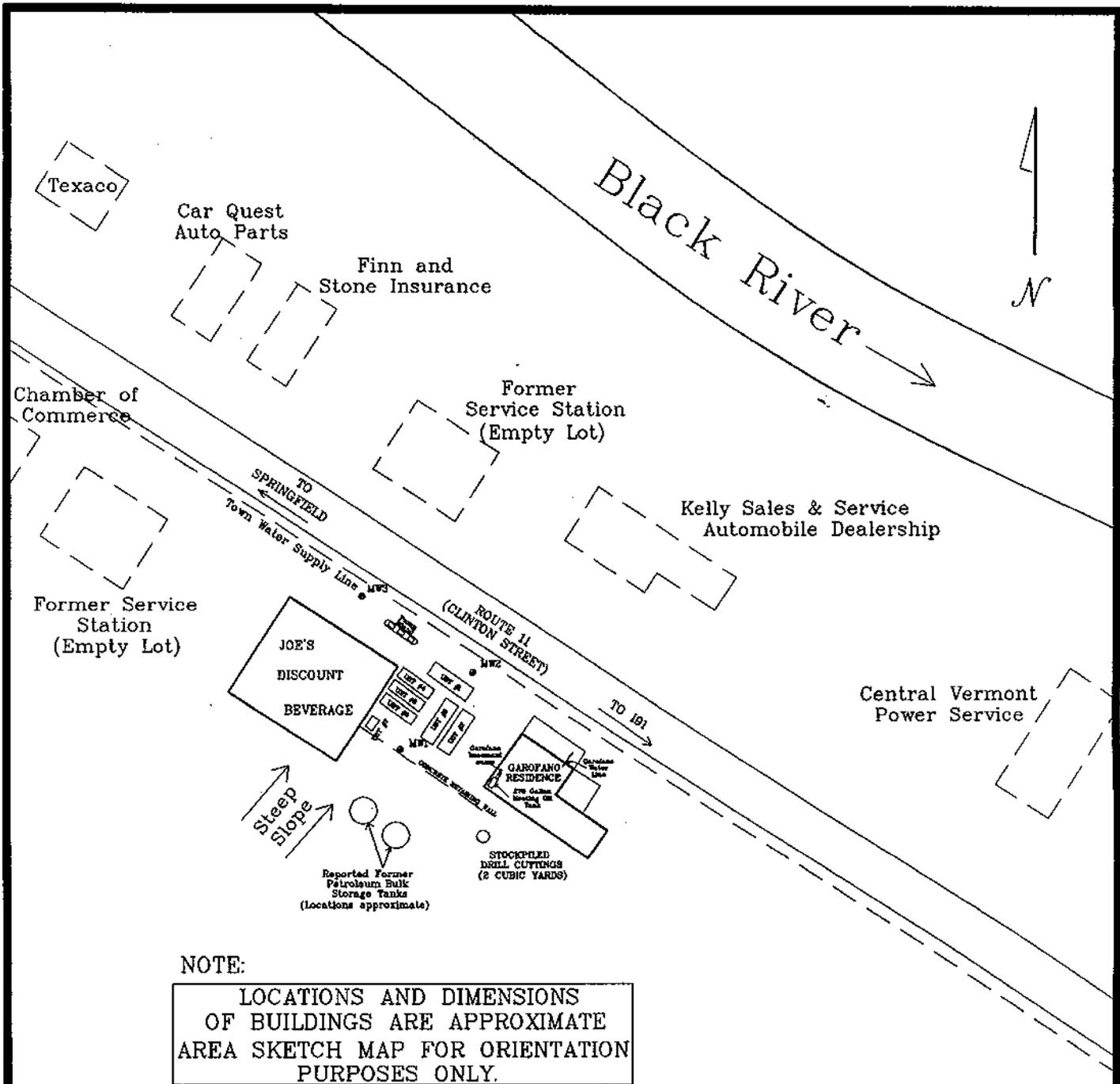
SITE LOCATION MAP

**JOE'S DISCOUNT BEVERAGE
SPRINGFIELD, VERMONT**

GRIFFIN PROJECT #9924273
SOURCE: SPRINGFIELD, VT 7.5 X 15 MIN QUAD
SCALE: 1:25,000 (USGS)
CONTOUR INTERVAL 6 METERS
PROVISIONAL EDITION 1984

GRIFFIN INTERNATIONAL, INC.





NOTE:

LOCATIONS AND DIMENSIONS
OF BUILDINGS ARE APPROXIMATE
AREA SKETCH MAP FOR ORIENTATION
PURPOSES ONLY.

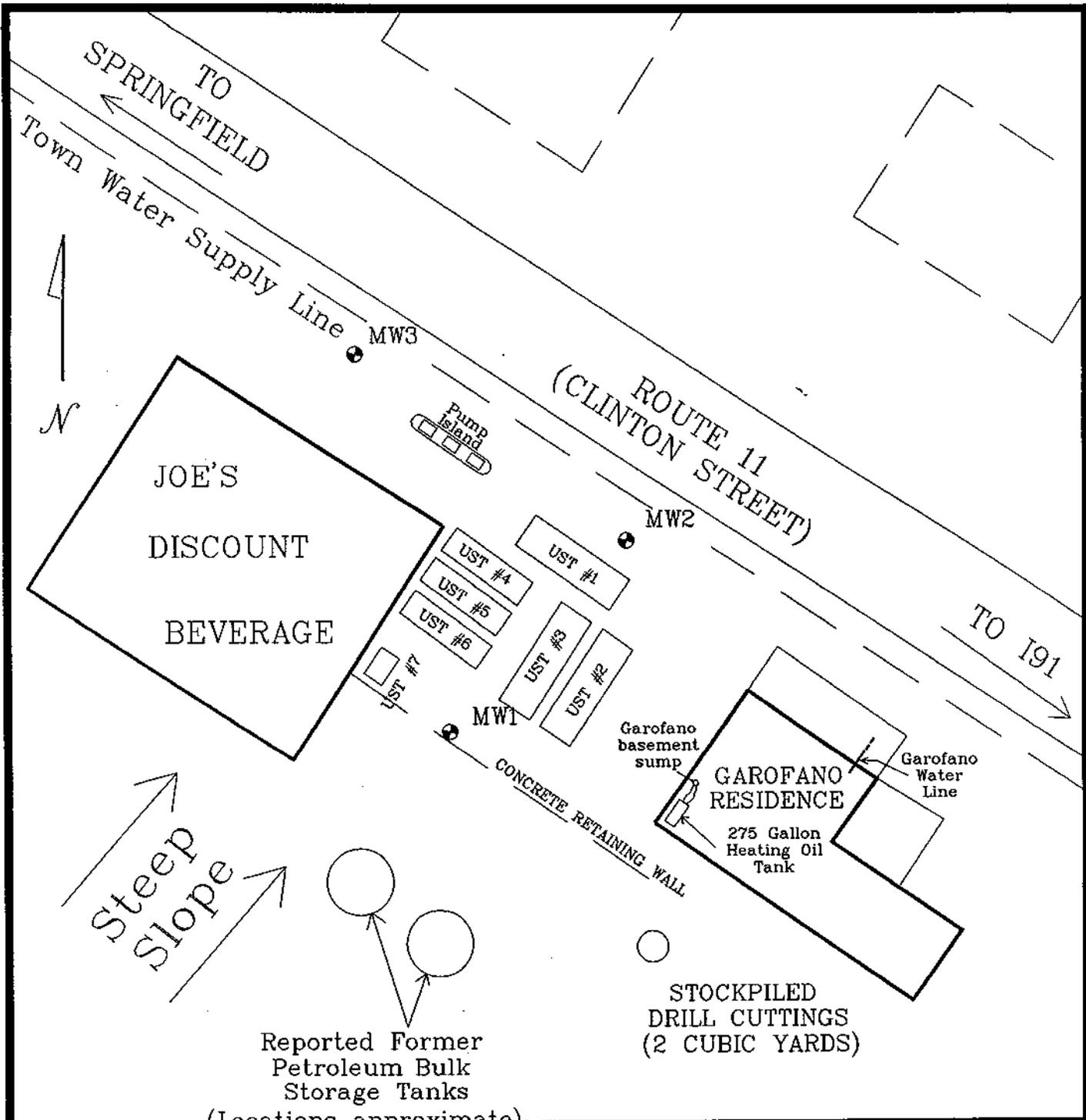
AREA SKETCH MAP

JOE'S DISCOUNT BEVERAGE SPRINGFIELD, VERMONT

MW1 } MONITORING WELL WITH I.D.

GRIFFIN PROJECT #9924273
DRAWN: 12/14/92
REF: JOE'S





Reported Former
Petroleum Bulk
Storage Tanks
(Locations approximate)

SITE MAP

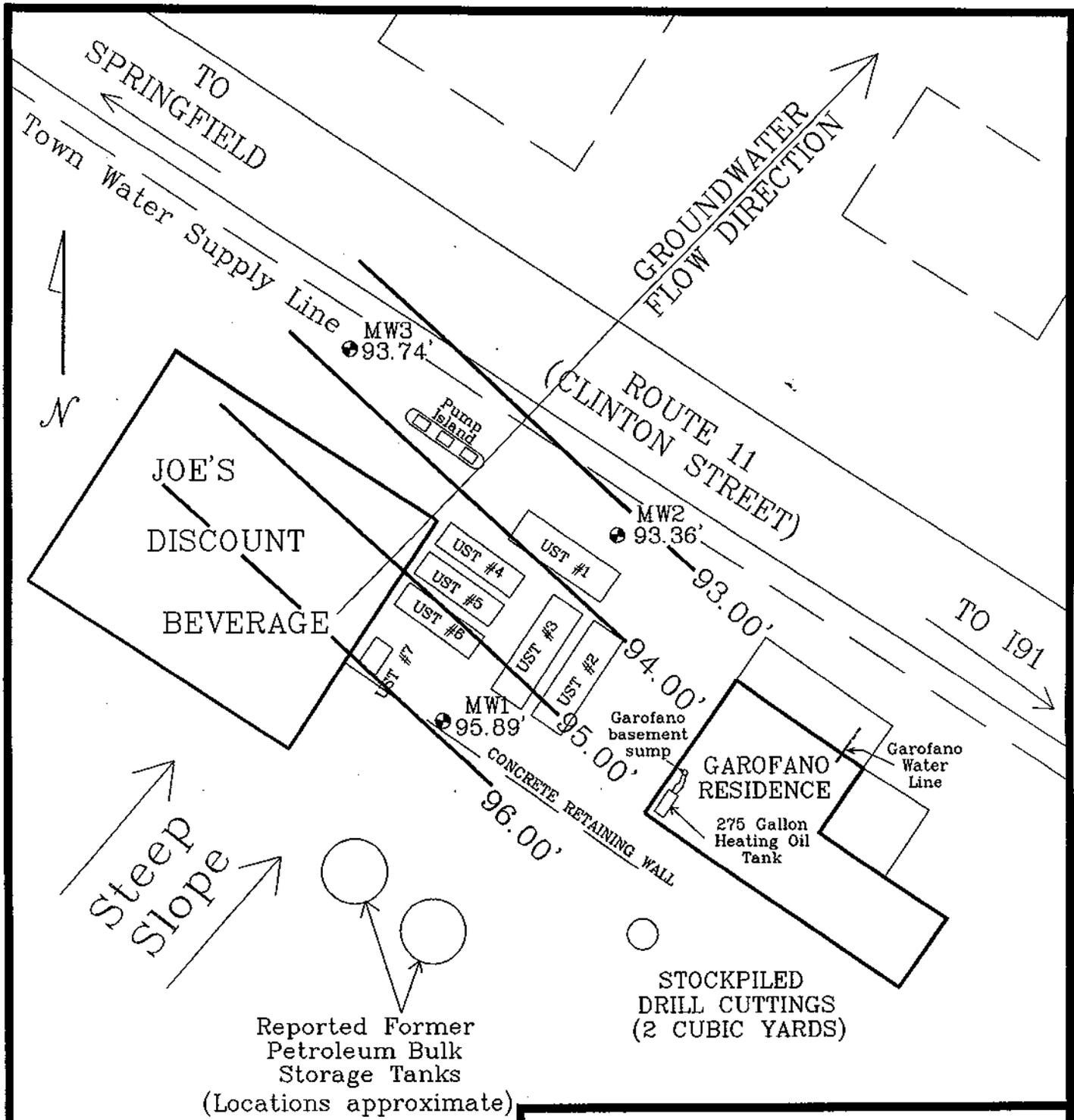
**JOE'S DISCOUNT BEVERAGE
SPRINGFIELD, VERMONT**

● } MONITORING WELL WITH I.D.
MW1 }

GRIFFIN PROJECT # 9924273
DRAWN 12/14/92
REF: JOE'S

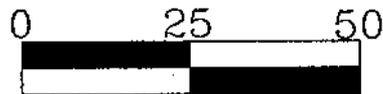
0 25 50

SCALE IN FEET



GROUNDWATER CONTOUR MAP
JOE'S DISCOUNT BEVERAGE
SPRINGFIELD, VERMONT

● } MONITORING WELL WITH I.D. AND
 MW1 } WATER TABLE ELEVATION IN FEET
 92.37' MONITORING DATE: 10/22/92
 DRAWN 12/14/92
 REF: JOE'S



SCALE IN FEET

**Liquid Level Monitoring Data
Joe's Discount Beverage
Springfield, Vermont**

Monitoring Date: 22 October 1992

Well I.D.	Well Depth	Top of Casing Elevation	Depth To Product	Depth To Water	Product Thickness	Specific Gravity Of Product	Hydro Equivalent	Corrected Depth To Water	Corrected Water Table Elevation
MW-1	8.0	100.00	-	4.11	-	-	-	-	95.89
MW-2	11.0	98.81	-	5.45	-	-	-	-	93.36
MW-3	11.0	99.44	-	5.70	-	-	-	-	93.74

All Values Reported in Feet

**Groundwater Quality Summary
Joe's Discount Beverage
Springfield, Vermont**

Sampling Date: 22 October 1992

PARAMETER	Location			Vermont Drinking Water Standards
	MW-1	MW-2	MW-3	
Benzene	ND	946.	ND	5.0*
Chlorobenzene	ND	ND	ND	100.0**
1,2-DCB	ND	ND	ND	-
1,3-DCB	ND	ND	ND	-
1,4-DCB	ND	ND	ND	-
Ethylbenzene	ND	51.9	ND	680.0**
Toluene	ND	47.9	ND	2,420.0**
Xylenes	ND	157.	ND	400.0**
Total BTEX	ND	1,203.	ND	-
MTBE	ND	631.	ND	40.0**
BTEX+MTBE	ND	1,834.	ND	-
T.P.H.	30.	9.3	ND	-

All Values Reported in ug/L (ppb) Except T.P.H. reported in mg/L (ppm)

* - Maximum Contaminant Level

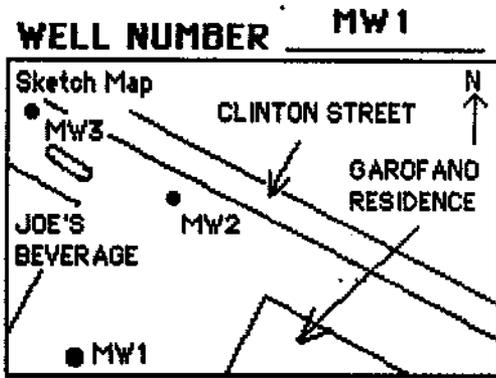
ND - None Detected

** - Health Advisory Level

Quality Assurance and Control Samples

PARAMETER	Equipment Blank	Trip Blank	Duplicate (MW-2)
Benzene	ND	ND	1,160.
Chlorobenzene	ND	ND	ND
1,2-DCB	ND	ND	ND
1,3-DCB	ND	ND	ND
1,4-DCB	ND	ND	ND
Ethylbenzene	ND	ND	68.0
Toluene	ND	ND	63.5
Xylenes	ND	ND	202.
Total BTEX	ND	ND	1,494.
MTBE	ND	ND	708.
BTEX+MTBE	ND	ND	2,202.
T.P.H.	ND	ND	20.

PROJECT JOE'S DISCOUNT BEVERAGE
 LOCATION SPRINGFIELD, VERMONT
 DATE DRILLED 10/16/92 TOTAL DEPTH OF HOLE 8'
 DIAMETER 4.6"
 SCREEN DIA. 2" LENGTH 5' SLOT SIZE .010"
 CASING DIA. 2" LENGTH 3' TYPE PVC
 DRILLING CO. TECH. DRILLING SVCS DRILLING METHOD HOLLOW STEM AUGER
 DRILLER _____ LOG BY P. MURRAY



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON AND PID READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		ROAD BOX	5 - 7' 5,3,4,6 60 ppm	0 - 1' Light brown SAND and GRAVEL
1		WELL CAP		1 - 5' Dark Gray Med. to Coarse SAND Some Fine to Coarse GRAVEL Heavy Petroleum Odor - Oil
2		CONCRETE		
3		BENTONITE		
4		WELL RISER		
5		WELL SCREEN		
6		GRAVEL PACK		
7		BOTTOM PLUG		
8				BASE OF EXPLORATION AT 8 FEET
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

A7

PROJECT JOE'S DISCOUNT BEVERAGE

LOCATION SPRINGFIELD, VERMONT

DATE DRILLED 10/16/92 TOTAL DEPTH OF HOLE 11'

DIAMETER 4'6"

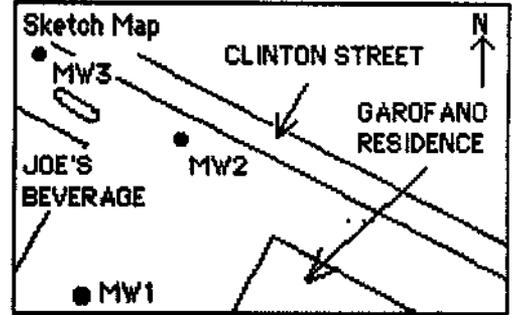
SCREEN DIA. 2" LENGTH 9' SLOT SIZE .010"

CASING DIA. 2" LENGTH 2' TYPE PVC

DRILLING CO. TECH. DRILLING SVCS. DRILLING METHOD HOLLOW STEM AUGER

DRILLER _____ LOG BY P. MURRAY

WELL NUMBER MW 2



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON AND PID READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		ROAD BOX		
1		WELL CAP		
2		CONCRETE BENTONITE	1 - 5'	1 - 5' Light Brown, Fine to Coarse, SAND and GRAVEL. No Odor
3		WELL RISER	0.5 ppm	
4		WELL SCREEN		
5			5 - 7'	5 - 7' Wet, Medium SAND. Little GRAVEL
6		GRAVEL PACK	2,4,4,3	Little Gray Brown SILT. Smell of Old Diesel Fuel
7			40 ppm	
8				
9			10 - 11'	10 - 11' Wet, Fine to Coarse SAND and GRAVEL. Dark Gray. Little SILT.
10			14,60 / 3"	Heavy Petroleum Sheen on Soils, Diesel Odor.
11			6 ppm	
12				BASE OF EXPLORATION AT 11' ON BEDROCK
13				
14		BOTTOM PLUG		
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

PROJECT JOE'S DISCOUNT BEVERAGE

LOCATION SPRINGFIELD, VERMONT

DATE DRILLED 10/16/92 TOTAL DEPTH OF HOLE 11'

DIAMETER 4.6"

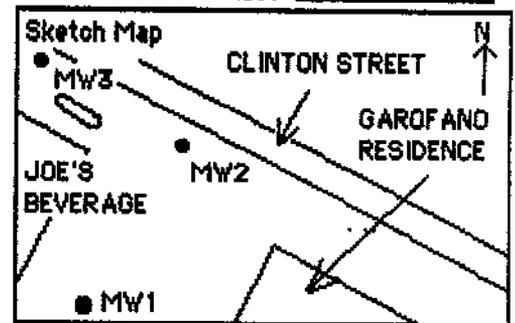
SCREEN DIA. 2" LENGTH 9' SLOT SIZE .010"

CASING DIA. 2" LENGTH 2'6" TYPE PVC

DRILLING CO. TECH. DRILLING SVCS DRILLING METHOD HOLLOW STEM AUGER

DRILLER _____ LOG BY P. MURRAY

WELL NUMBER MW3



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON AND PID READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0				
1		ROAD BOX	0 - 3'	0 - 3' Dry SAND and GRAVEL
2		WELL CAP	0 ppm	
3		CONCRETE		
4		BENTONITE		
5		WELL RISER		
6		WELL SCREEN		3 - 5' Dark Brown TOP SOIL? Med SAND, ORGANICS
7		GRAVEL PACK	5 - 7'	5 - 7' Wet, Fine to Med. SAND. Little SILT No Odor
8			4,3,3,3	
9			0 ppm	
10				10 - 11'3" Wet Coarse GRAVEL, Some SAND, Little SILT.
11		BOTTOM PLUG	10 - 11'3"	
12			19,30,60 / 3"	BASE OF EXPLORATION AT 11' ON BEDROCK
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Joe's Discount Beverage
REPORT DATE: November 5, 1992
DATE SAMPLED: October 22, 1992
DATE RECEIVED: October 23, 1992
ANALYSIS DATE: November 5, 1992

PROJECT CODE: GIJD1754
REF.#: 37,496
STATION: MW #1
TIME SAMPLED: 11:38
SAMPLER: Don Tourangeau

<u>Parameter</u>	<u>Detection Limit (ug/L)¹</u>	<u>Concentration (ug/L)</u>
Benzene	5	ND ²
Chlorobenzene	10	ND
1,2-Dichlorobenzene	10	ND
1,3-Dichlorobenzene	10	ND
1,4-Dichlorobenzene	10	ND
Ethylbenzene	5	ND
Toluene	5	ND
Xylenes	5	ND
MTBE	25	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 17

NOTES:

- 1 Detection limit raised due to high levels of contaminants. Sample run at 20% dilution.
- 2 None detected

Reviewed by _____

RECEIVED NOV 09 1992



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Joe's Discount Beverage
REPORT DATE: November 5, 1992
DATE SAMPLED: October 22, 1992
DATE RECEIVED: October 23, 1992
ANALYSIS DATE: November 4, 1992

PROJECT CODE: GIJD1754
REF.#: 37,497
STATION: MW #2
TIME SAMPLED: 12:05
SAMPLER: Don Tourangeau

<u>Parameter</u>	<u>Detection Limit (ug/L)¹</u>	<u>Concentration (ug/L)</u>
Benzene	10	946.
Chlorobenzene	20	ND ²
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	10	51.9
Toluene	10	47.9
Xylenes	10	157.
MTBE	50	631.

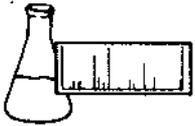
NUMBER OF UNIDENTIFIED PEAKS FOUND: 6

NOTES:

- 1 Detection limit raised due to high levels of contaminants. Sample run at 10% dilution.
- 2 None detected

Reviewed by _____

RECEIVED NOV 09 1992



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Joe's Discount Beverage
REPORT DATE: November 5, 1992
DATE SAMPLED: October 22, 1992
DATE RECEIVED: October 23, 1992
ANALYSIS DATE: November 4, 1992

PROJECT CODE: GIJD1754
REF.#: 37,498
STATION: MW #3
TIME SAMPLED: 12:40
SAMPLER: Don Tourangeau

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,4-Dichlorobenzene	2	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by _____

RECEIVED NOV 09 1992



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

TOTAL HYDROCARBONS - EPA METHOD 418.1

CLIENT: Griffin International
REPORT DATE: November 9, 1992
PROJECT NAME: Joe's Discount Beverage
PROJECT CODE: GIJD1755
DATE SAMPLED: October 22, 1992
DATE RECEIVED: October 23, 1992
DATE ANALYZED: November 6, 1992
SAMPLER: Don Tourangeau

Reference number:

Concentration (mg/L)¹

37,501	ND ²
37,502	30.
37,503	9.3
37,504	ND
37,505	20.
37,506	ND

Sample ID:

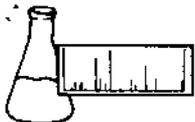
37,501: Trip Blank; 07:43
37,502: MW #1; 11:38
37,503: MW #2; 12:05
37,504: MW #3; 12:40
37,505: Duplicate; 12:05
37,506: Equipment Blank; 12:55

Notes:

- 1 Method detection limit is 0.8 ppm
- 2 None detected

RECEIVED NOV 12 1992

Reviewed by _____



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Joe's Discount Beverage
REPORT DATE: November 5, 1992
DATE SAMPLED: October 22, 1992
DATE RECEIVED: October 23, 1992
ANALYSIS DATE: November 4, 1992

PROJECT CODE: GIJD1754
REF.#: 37,495
STATION: Trip Blank
TIME SAMPLED: 7:43
SAMPLER: Don Tourangeau

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,4-Dichlorobenzene	2	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	5	ND

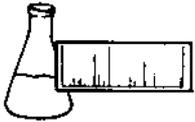
NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by _____

RECEIVED NOV 09 1992



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Joe's Discount Beverage
REPORT DATE: November 5, 1992
DATE SAMPLED: October 22, 1992
DATE RECEIVED: October 23, 1992
ANALYSIS DATE: November 5, 1992

PROJECT CODE: GIJD1754
REF.#: 37,499
STATION: Duplicate (MW-2)
TIME SAMPLED: 12:05
SAMPLER: Don Tourangeau

<u>Parameter</u>	<u>Detection Limit (ug/L)¹</u>	<u>Concentration (ug/L)</u>
Benzene	10	1,160.
Chlorobenzene	20	ND ²
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	10	68.0
Toluene	10	63.5
Xylenes	10	202.
MTBE	50	708.

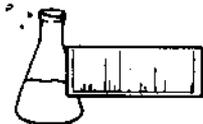
NUMBER OF UNIDENTIFIED PEAKS FOUND: 6

NOTES:

- 1 Detection limit raised due to high levels of contaminants. Sample run at 10% dilution.
- 2 None detected

Reviewed by _____

RECEIVED NOV 09 1992



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Joe's Discount Beverage
REPORT DATE: November 5, 1992
DATE SAMPLED: October 22, 1992
DATE RECEIVED: October 23, 1992
ANALYSIS DATE: November 4, 1992

PROJECT CODE: GIJD1754
REF.#: 37,500
STATION: Equipment Blank
TIME SAMPLED: 12:55
SAMPLER: Don Tourangeau

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,4-Dichlorobenzene	2	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by _____

RECEIVED NOV 09 1992

CHAIN-OF-CUSTODY RECORD
005537

Project Name: <i>John's Discard - Backhoe</i> Site Location: <i>SPRINGFIELD # 9924273</i>	Reporting Address: <i>Post Office</i>	Billing Address: <i>Post Office</i>
Endyne Project Number:	Contact Name: <i>Chris Hill</i> Company/Phone #: <i>879-7708</i>	Sampler Name: <i>Don Tomberlin</i> Company/Phone #: <i>879-7708</i>

Lab #	Sample Description	Matrix	Date/Time	Container		Field Results/Remarks	Analysis Required	Sample Preservation	Risk
				No.	Type/Size				
	TRIP BLANK	U	07:43	2	40mL		20	HCL	
	TRIP BLANK	W	07:43	1	1 LITRE		23		
	MW #1	U	11:38	2	40mL	HCT	20		
	MW #1	W	11:38	2	1 LITRE	HCT	23		
	MW #2	U	12:05	2	40mL		20		
	MW #2	W	12:05	2	1 LITRE		23		
	MW #3	U	12:40	2	40mL		20		
	MW #3	W	12:40	2	1 LITRE		23		
	DUPLICATE	U	12:05	2	40mL		20		
	DUPLICATE	W	12:05	2	1 LITRE		23		
	Equipment blank	W	12:55	2	40mL		20		
	Equipment blank	U	12:55	2	1 LITRE		23		

Relinquished by: Signature <i>Don Tomberlin</i>	Received by: Signature <i>Michelle Curran</i>	Date/Time <i>10/23/02 9:50am</i>
---	---	----------------------------------

Relinquished by: Signature	Received by: Signature	Date/Time
----------------------------	------------------------	-----------

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals ICP/AA	21	EPA 624	26	EPA 8270
2	Chloride	7	Total P	12	TSS	17	Fecal and/or Tot.	22	EPA 625 B/N or A	27	EPA 8010
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8020
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 606 Pest/PCB	29	EPA 8060
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240	30	EPTOX
31	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
32	Other (Specify):										

LABORATORY: WHITE

PROJECT MANAGER: YELLOW

SAMPLER: PINK