LINCOLN
APPLIED GEOLOGY, INC.
Environmental Consultants

September 3, 1998

SEP 8 10 27 AM '98

Lynda Provencher
Department of Environmental Conservation
Sites Management Section
103 South Main Street
Waterbury, VT 05671-0404

RE: Cumberland Farms Facility #4004, Rutland, Vermont (VDEC #92-2274)

Dear Ms. Provencher:

Attached please find a copy of our site investigation report on the above referenced site.

If you have a questions regarding this matter, please call me at (802) 453-4384.

Sincerely,

Lincoln Applied Geology, Inc.

Richard S. Vandenberg

Richard S. Vandenberg
Hydrogeologist

RSV/njp

enclosure

163 Revell Road • Lincoln, Vermont 05443 • (802) 453-4384 • FAX (802) 453-5399

Site Investigation Report
for
Cumberland Farms, Inc.
Route 7
Rutland, Vermont
VDEC Site #97-2274

Prepared for:

Cumberland Farms, Inc.
777 Dedham Street
Canton, MA 02021

Prepared by:

Lincoln Applied Geology, Inc.
September 3, 1998

Prepared by:

Richard S. Vandenberg
Hydrogeologist

Reviewed and Approved by:

Stephen Revell, CPG
Senior Hydrogeologist

Lincoln Applied Geology, Inc
Environmental Consultants
163 Revell Road • Lincoln, Vermont 05443 • (802) 453-4384 • FAX (802) 453-5399

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EXECUTIVE SUMMARY

In response to finding significant petroleum contaminated soil during underground storage tank (UST) removal activities, Cumberland Farms, Inc (CFI) contracted Lincoln Applied Geology, Inc. (LAG) to perform a site investigation at CFI facility #4004 located in Rutland, Vermont (VDEC # 97-2274). This site investigation consisted of the installation and sampling of four monitor wells and collection of ground water samples from three of the wells. The results of this site investigation showed that only a very small amount of vapor, adsorbed, and dissolved phase contamination exists on-site. The full extent of the ground water contamination has been defined. No free phase product was observed. Ground water concentrations do not exceed Vermont Groundwater Quality Enforcement Standards (GQES) except for benzene in one monitor well (MW-4).

A receptor survey was also completed as a part of the site investigation to define potential sensitive receptors of the contamination. Basements in several buildings deemed "at risk" were evaluated with a photoionization detector to determine if vapor impacts are actively occurring. No impacts were noted in any of the buildings that were screened. No other potential receptors of this contamination were identified other than the adjacent Mussey Brook and the soil and ground water beneath the site.

Results of this site investigation clearly show that there is no significant contamination remaining beneath the site. As a result, it is recommended that one additional round of water quality sampling be conducted to verify these low levels. If levels remain the same, we are prepared to recommend that the site be granted sites management activity completed (SMAC) status.

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Environmental Consultants

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GENERAL SITE HISTORY and DESCRIPTION

The site is owned and operated by Cumberland Farms, Inc. (CFI) and is located on Route 7 in Rutland, Vermont. The general site location is shown on **Figure 1** and **Figure 2** shows the pertinent site features. The area surrounding the CFI facility is dominated by commercial buildings. Mussey Brook runs past the facility to the south and is within 100 feet of the site. **Figure 2** also shows the various land use activities surrounding the property.

In ~~August~~ Oct. 1997, four 10,000 gallon USTs were removed and replaced with four 12,000 gallon USTs (3 gasoline and 1 diesel). Prior to abandonment, the removed USTs were cleaned by a CFI subcontractor and abandoned in accordance with Vermont Department of Environmental Conservation (VDEC) guideline for disposal. The tanks were cleaned by Precision Industrial Maintenance, Inc. and were taken to Mac Steel and Earth Waste Systems to be used for scrap metal. Results of the UST removal and assessment indicate that a release had previously occurred beneath the site. Some evidence of spillage or leakage was noted in the soils surrounding the dispenser islands and USTs. The condition of the tanks and product lines, and olfactory evidence suggested that the contamination was not from a recent release. Approximately 600 tons of contaminated soils were excavated from around the UST and dispenser island areas. The excavated soils were taken to MTS Environmental in Epsom, NH and converted into asphalt. A copy of the Underground Storage Tank Permanent Closure Form completed by LAG is attached as **Appendix A**.

A brief receptor assessment performed at the time of the UST closure revealed that the underlying soils and ground water are the only current receptors of the contamination. Ground water was observed 13.5 feet below the ground surface during the excavation and UST removal process. The CFI building and all other surrounding properties were also appropriately screened with a photoionization detector (PID) to verify that no vapor impacts were present in the surrounding buildings. No significant impacts were noted.

SITE GEOLOGY

On May 18, 1998 a total of four soil borings were advanced by T & K Drilling of Troy, New Hampshire in order to inspect the soils and to install ground water monitoring wells on-site. The locations of the four monitoring wells are shown on **Figure 2**. Soil boring logs and well construction details are included on the geologic logs attached as **Appendix B**.

MW-1 was located and drilled as an upgradient ambient well. MW-2 was drilled on-site near the location of the former USTs to evaluate the subsurface conditions in the UST area. Well MW-3 and MW-4 were drilled to evaluate the former dispenser island area. Sediments encountered in the borings for MW-2, MW-3, and MW-4 consisted of a

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variable depth of fine to coarse sand and gravel with some cobbles extending to, at least, 18 feet. At approximately 18 feet a fine light green silty sand was noted.

Well MW-1 was drilled to a final depth of 7.5 feet due to the presence of shallow bedrock in the northeast corner of the site. This shallow bedrock was noted during the UST removal and was not completely unexpected. No ground water was noted during drilling of this well. Due to the lack of groundwater in the well, a sediment sample was collected from the interval containing the most elevated PID assay to quantify any contamination present.

HYDROGEOLOGY

Fluid levels were measured in all monitor wells on June 5, 1998 to check for free floating hydrocarbons and to collect water levels so that a grounwater contour map could be prepared. The collected measurements are shown on **Table 1**. The water levels were measured with an interface probe capable of measuring free floating product thicknesses as thin as 0.01 feet. No free floating product was measured in any of the new monitor wells. Utilizing the June 5, 1998 water level data a Ground Water Contour Map was prepared and is included as **Figure 3**. This map confirms the expected ground water flow direction toward Mussey Brook (southeast). The ground water flows along a relatively flat gradient between 0.006 and 0.008 feet/foot.

CONTAMINATION MONITORING/ANALYSIS

During the advancement of the soil borings, a PID was used to measure the total level of organic vapors associated with the collected soil samples. These results are listed in the boring logs included as **Appendix B**. Results of the chemical analysis of the soil sample obtained from MW-1 showed that no volatile organic compounds (VOCs) of concern were detected, but a very small amount of gasoline range organic total petroleum hydrocarbons (TPH) were present in the sample.

When monitor wells were sampled, the concentration of VOCs in the headspace of the monitoring wells was assayed with the PID. The results are also included in **Table 2**. These headspace results correlate well with the PID levels measured during soil boring placement.

The buildings surrounding the site were also screened with a PID to determine if they had been impacted by the contamination noted on-site. Buildings screened for the presence of VOCs include Design Graphics, New England Outdoorsman, and the CFI building. No detectable concentrations of VOCs were noted in any of the buildings **(Figure 2)**.

On June 5, 1998 all monitor wells were purged and sampled using industry accepted protocols. The samples were submitted to Toxikon Laboratories in Bedford,

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MA for analysis of BTEX and MTBE by GC/MS.

Chemical analysis data obtained from the sampling round indicate that concentrations of dissolved benzene, ethylbenzene, and xylene (BTEX) and methyl tert butyl ether (MTBE) were detected in only well MW-4 which is in the area of the former dispenser island. No concentrations of these constituents were detected in wells MW-2 or MW-3. Copies of the analytical laboratory results are included as **Appendix C**, and the data are presented in **Table 3**.

The chemical analysis data obtained clearly show that the plume of dissolved phase contamination is quite insignificant. It is worth noting that only benzene [11 parts per billion (ppb)] was detected above of its GQES. When the chemical analysis data are evaluated in conjunction with the ground water flow data it is apparent that this is residual contamination from the dispenser island area, and it probably has not migrated any distance because it would have also been detected in either MW-2 or MW-3.

CONTAMINANT RISK ASSESSMENT

The lack of remaining elevated soil contamination in the source area and on insignificant plume of dissolved phase BTEX and MTBE shows that very little contaminant is present beneath this site. However, each potential receptor of the contamination was evaluated to assess risk based on the current hydrogeologic and chemical data available. This assessment was completed to address only those receptors that are truly at risk of being impacted. Based on the fact that only low level contamination is present in the former dispenser area, the adjacent Mussey Brook remains a potential receptor of this contamination. It is our opinion that the surrounding buildings are not at risk of vapor impact from the remaining residual contamination due to their proximity to the site. Ground water sampling has demonstrated that the underlying ground water is only slightly contaminated with dissolved phase BTEX and MTBE. In this regard, it appears that whatever (residual) contaminant mass is present, it is in the former dispenser area around MW-4.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the data collected during the site investigation indicates that:

1. Minor dissolved phase petroleum contamination exists beneath the source area of the site.

2. It is clear from the data presented that dissolved phase contamination has not spread downgradient and off-site to the south/southeast.

3. The full extent and magnitude of the contaminant plume is known.

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4. The only potential receptor of this contamination is the adjacent Mussey Brook.

Based on the preceding conclusions it is our recommendation that the following tasks be performed:

1. Sample all monitor wells in the fall of 1998 to verify these low dissolved concentrations. If stable to declining concentrations are noted we will recommend that the site receive a Sites Management Activity Completed (SMAC) status.

F:\CLIENTS\CUMBRLND.FRM\RUTLAND\0898INIT.RPT

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Project: Cumberland Farms, Inc.
Location: Rutland, Vermont

Table 1
Station # 4004
Sheet 1 of 1

Ground Water Elevation/Product Level (feet)

Data Point	TOC	06/05/98					
MW-1	99.09	<93.99					
MW-2	99.50	86.37					
MW-3	99.07	86.61					
MW-4	98.85	87.43					

Notes:
1 - Elevation datum assumed
2 - Reference elevation is elevation of top of PVC well casing
Light Grey Cell = DRY
Dark Grey Cell = Inaccessible

Project: Cumberland Farms. Inc.
Location: Rutland, Vermont

Table 2
VDEC Site # n/a
Sheet 1 of 1

Photoionization Results (PID - ppm)

Data Point	06/05/98					
MW-1	BG					
MW-2	BG					
MW-3	BG					
MW-4	192					

Notes:
BG - Background
SL - Saturated Lamp

Project: Cumberland Farms, Inc.
Location: Rutland, Vermont

Table 3
Site # 4004
Sheet 1 of 1

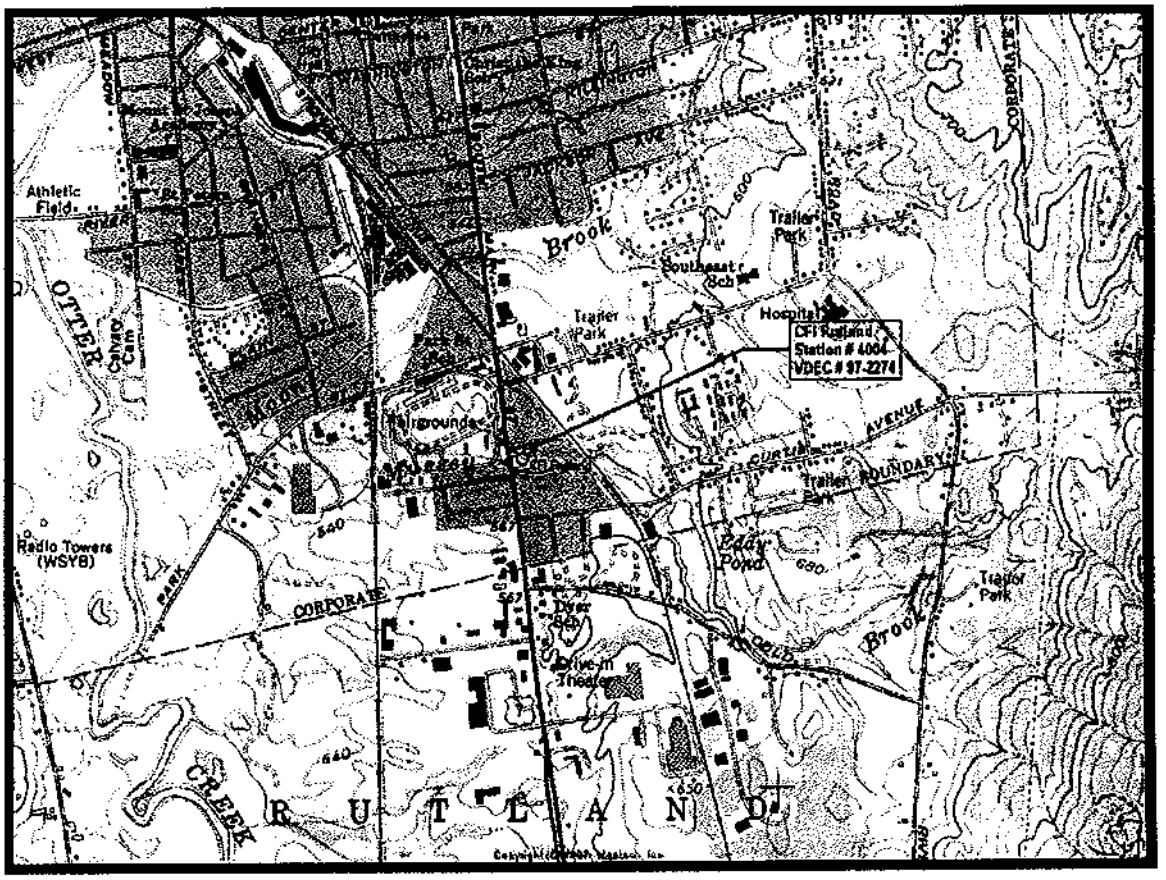
Ground Water Quality Results (ppb)

Data Point	Compound	06/05/98				
	Benzene					
	Toluene					
	Ethylbenzene					
	Xylenes					
	MTBE					
MW-1	BTEX					
	Benzene	<1				
	Toluene	<2				
	Ethylbenzene	<2				
	Xylenes	<2				
	MTBE	<2				
MW-2	BTEX	<7				
	Benzene	<1				
	Toluene	<2				
	Ethylbenzene	<2				
	Xylenes	<2				
	MTBE	<2				
MW-3	BTEX	<7				
	Benzene	11				
	Toluene	<2				
	Ethylbenzene	6.4				
	Xylenes	111				
	MTBE	29.2				
MW-4	BTEX	130.4				

NOTES:
< - Contaminant not detected at specified detection limit

Figure 1

Cumberland Farms, Inc.
Station # 4004
VDEC # 97-2274
Rutland, Vermont

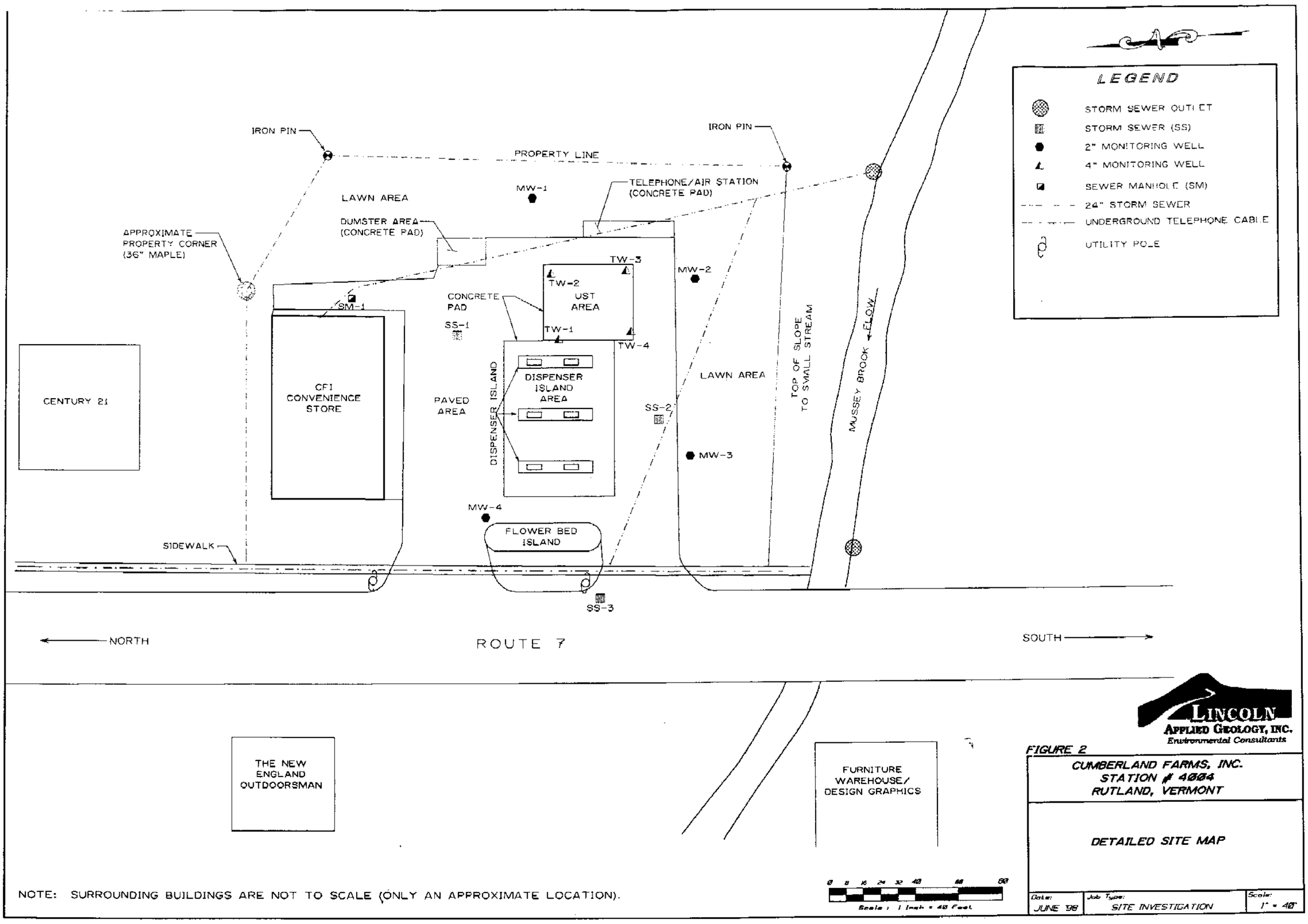


Scale 1" = 2,000'

QUADRANGLE LOCATION

RUTLAND, VT.
43072-E8-TF-024

1961
PHOTOREVISED 1988
DMA 6471 III SW-SERIES V813



NOTE: SURROUNDING BUILDINGS ARE NOT TO SCALE (ONLY AN APPROXIMATE LOCATION).

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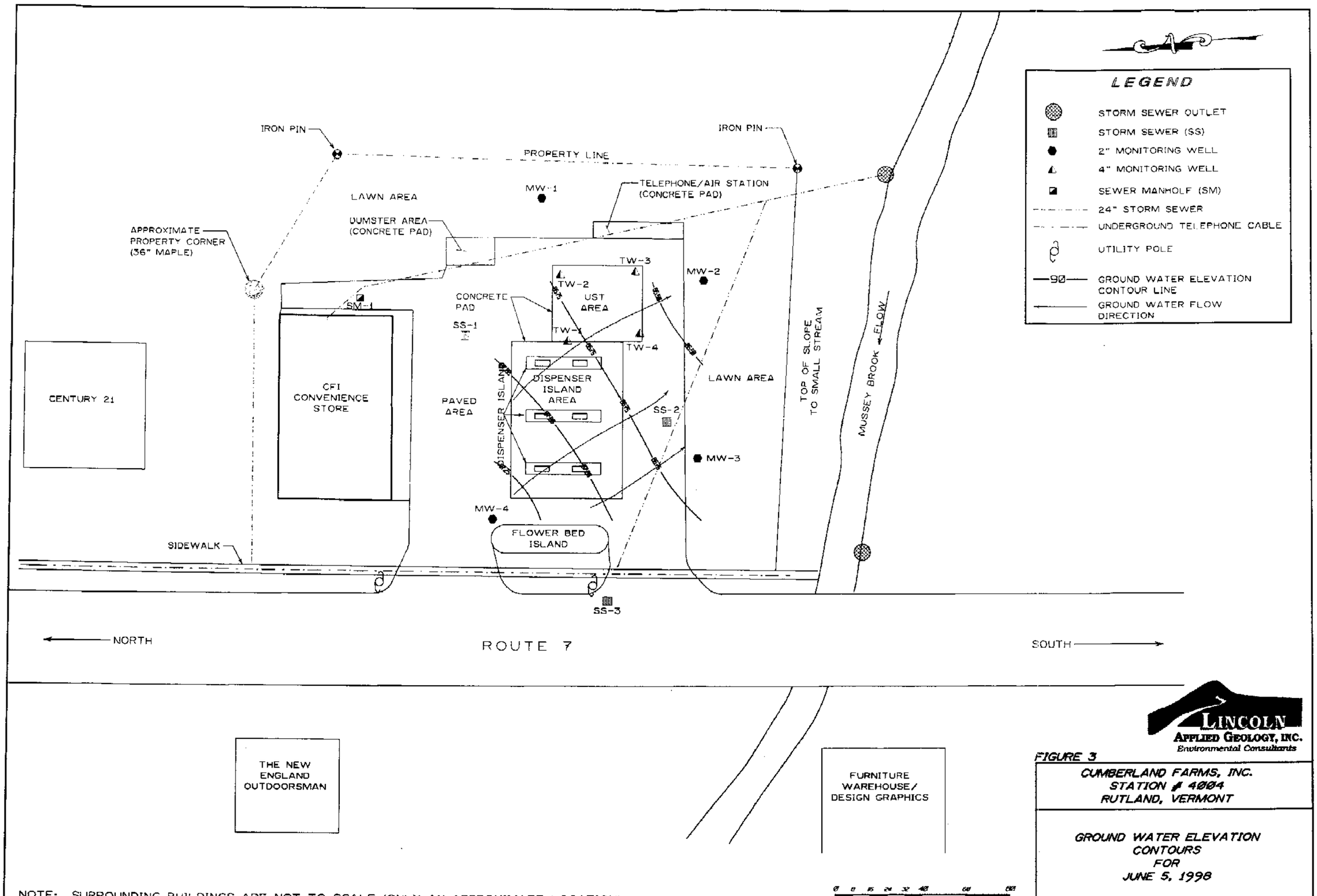
FIGURE 2

CUMBERLAND FARMS, INC.
STATION # 4004
RUTLAND, VERMONT

DETAILED SITE MAP

Date:	Job Type:	Scale:
JUNE '98	SITE INVESTIGATION	1" = 40'



NOTE: SURROUNDING BUILDINGS ARE NOT TO SCALE (ONLY AN APPROXIMATE LOCATION).

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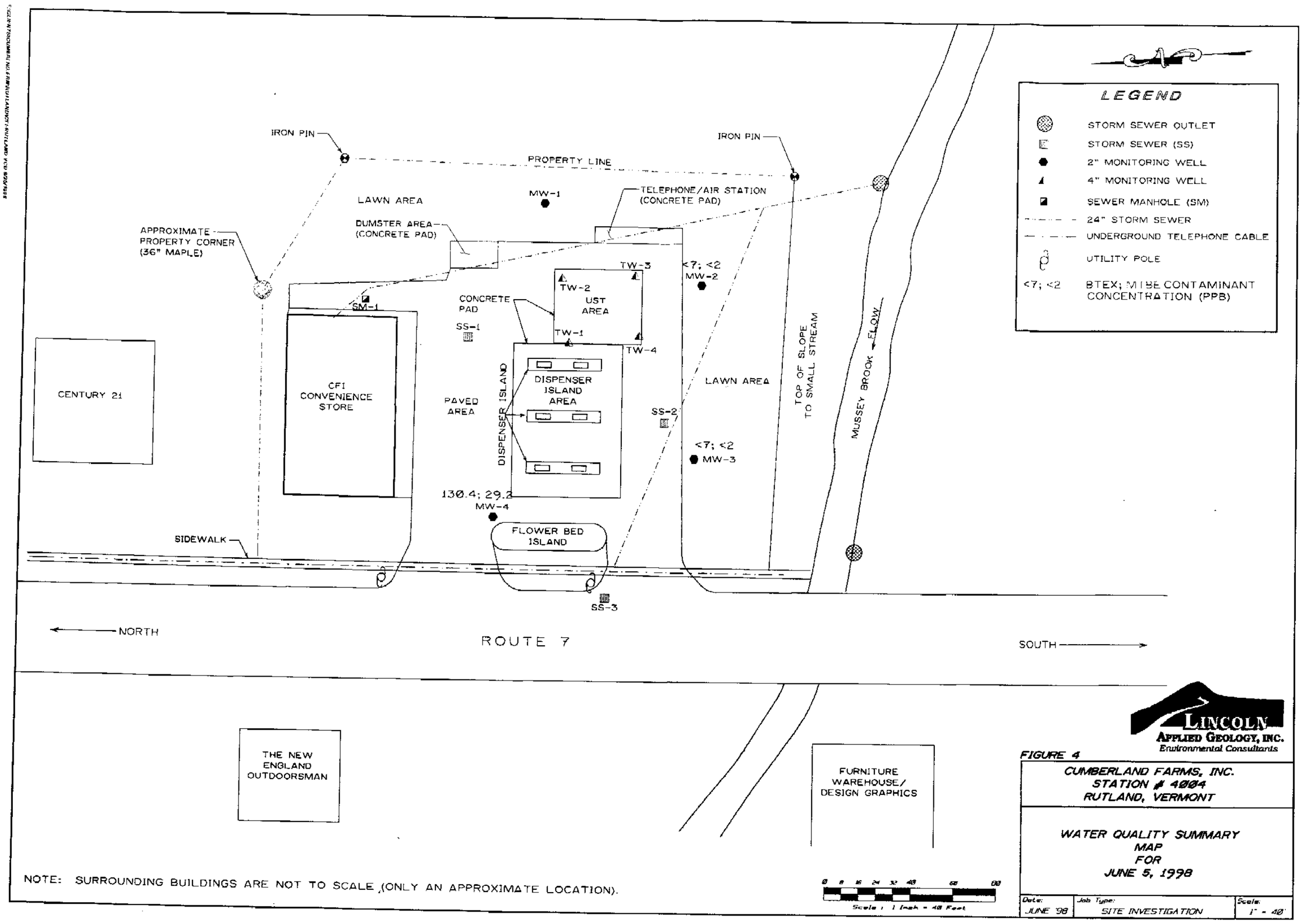
FIGURE 3

CUMBERLAND FARMS, INC.
STATION # 4004
RUTLAND, VERMONT

GROUND WATER ELEVATION
CONTOURS
FOR
JUNE 5, 1998

Date:	Job Type:	Scale:
JUNE '98	SITE INVESTIGATION	1" = 40'



NOTE: SURROUNDING BUILDINGS ARE NOT TO SCALE (ONLY AN APPROXIMATE LOCATION).

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Environmental Consultants

FIGURE 4

CUMBERLAND FARMS, INC.
STATION # 4004
RUTLAND, VERMONT

WATER QUALITY SUMMARY
MAP
FOR
JUNE 5, 1998

Date:	Job Type:	Scale:
JUNE '98	SITE INVESTIGATION	1" = 40'

Appendix A

UST Permanent Closure Form and Site Investigation Expressway Notification Form

UNDERGROUND STORAGE TANK PERMANENT CLOSURE FORM

Agency Use Only
Facility ID# 1352
Date of scheduled activity: 9/22/97
Facility Town RUTLAND
DEC Official SI Eval. by

Vermont Agency of Natural Resources
Dept. of Environmental Conservation
Waste Management Division
103 South Main Street, West Building
Waterbury, Vermont 05671-0404
Telephone: (802) 241-3888

Site assessment company:
Site assessor:
Phone Number of company (or person): ( )
Date of UST closure: __/__/__
Date of site assessment: __/__/__

Section A. Facility Information:
Name of facility: CUMBERLAND FARMS #4004 Number of employees:
Street address of facility: Route 7; Rutland, VT 05701
Owner of UST(s) to be closed: Cumbarland Farms Contact(if different than owner): Bill Lovely
Mailing address of owner: 777 Dedham Street; Canton, MA 02021-9118
Telephone number of owner: 617-828-4900 Contact telephone #: same

Section B. UST Closure Information: (please check one)
Reason for initiating UST closure: __Suspected Leak ___Liability X Replacement __Abandoned
Which Portion of UST is to be closed: __Tanks ___Piping X Tanks & Piping

USTs (piping is considered a part of UST system) undergoing permanent closure. Include condition of USTs

UST #	Product	Size (gallons)	Tank age	Tank Condition	Piping age	Piping condition
001	diesel	10,000	approx. 17 yr	excellent	approx. 17 yr	good, some rust
002	gas	10,000	approx. 17 yr	excellent	approx. 17 yr	good; some rust
003	gas	10,000	approx. 17 yr	excellent	approx. 17 yr	good; some rust
004	gas	10,000	approx. 17 yr	excellent	approx. 17 yr	good; some rust

Which tanks, if any, will be closed in-place: USTs# 0 Authorized by: Date: __/__/__
Disposal/destruction of removed UST(s): Location Tanks #001, 002, & 004 -Earth Waste System - Milton #003-Mac Steel-Rutland Method scrap metal Date: 10/7/97
Amount (gal.) and type of waste generated from USTs: Total Waste Sludge/water etc. = 709 gal.
(tank contents are hazardous wastes unless recovered as usable product)
Tank cleaning company (must be trained in confined space entry) Precision Industrial Maitenance, Inc.
Certified hazardous waste hauler: Precision Industrial Maitenance, Inc. Generator ID number: VTP000002496

Section C. Initial site characterization:
Work in this section must be completed by a professional environmental consultant or hydrogeologist with experience in environmental sampling for the presence of hazardous materials. A full report from the consultant must accompany this form.

PID information:
Make: HNU Model: PI-101 Calibration information (date, time, gas): daily 0700 (10/6 & 10/7) w/isobutylene

Excavation information: *(some tank pulls require more than one excavation)*

Tank(s) # and Excavation (A,B,C,etc)	Depth (ft)	Excavation size(ft²)	Peak PID reading	Depth of Peak (ft)	Avg PID reading	Bedrock Depth (ft)	Groundwater encountered? (y/n) and at depth (ft)	Soil type
A	14	2,200	SL	13.5	150	12-? (variable)	yes-14	fill/dark sandy silt and tan sand

Indicate all readings and samples on site diagram
Number of soil samples collected for laboratory analysis? 7 results due date 10/23/97
Have any soils been polyencapsulated on site? Yes___(#yds³___PID range above zero low ___ - ___ peak) No X
Have any soils been transported off site? Yes X list amount (yds³): 300 No___
Location transported to: MTS, EPSOM, New Hampshire DEC official who approved Chuck Schwer
Amount of soils backfilled(yds³): ~200 PID range above zero low 10 - 50 peak
Have limits of contamination been defined? Yes___No X
Is there any other known contamination on- site? Yes___No X Comments:

Free Phase product encountered? Yes___thickness___ No X
Groundwater encountered? Yes X depth(ft) 13.5 No___
Are there existing monitoring wells on-site? Yes___ how many:___(locate on site diagram)No X
Have new monitoring wells been installed? Yes___ how many:___(locate on site diagram)No X
Have samples been taken from any monitoring wells for lab analysis? Yes__ results due date __/__/__ No X

Is there a water supply well on site? Yes___(check type: shallow___rock___spring___) No X
How many public water supply wells are located within a 0.5 mile radius? 0 min. distance (ft.):___
How many private water supply wells located within a 0.5 mile radius? 0 min distance (ft.):___

cility ID# 1352

Section D: Tanks/Piping Remaining/installed

Regardless of size, include USTs at site as to *status, e.g. "abandoned", "in use", or "to be installed". (Most installations require permits and advance notice to this office.)

UST#	Product	Size(gallons)	Tank age	*Tank status	Piping age	*Piping Status
004	gas	12,000	new	to be installed	new	to be installed
005	gas	12,000	new	to be installed	new	to be installed
006	gas	12,000	new	to be installed	new	to be installed

/ There are no other tanks at this site.

Section E. Statements of UST closure compliance:
(must have both signatures or site assessment not complete)

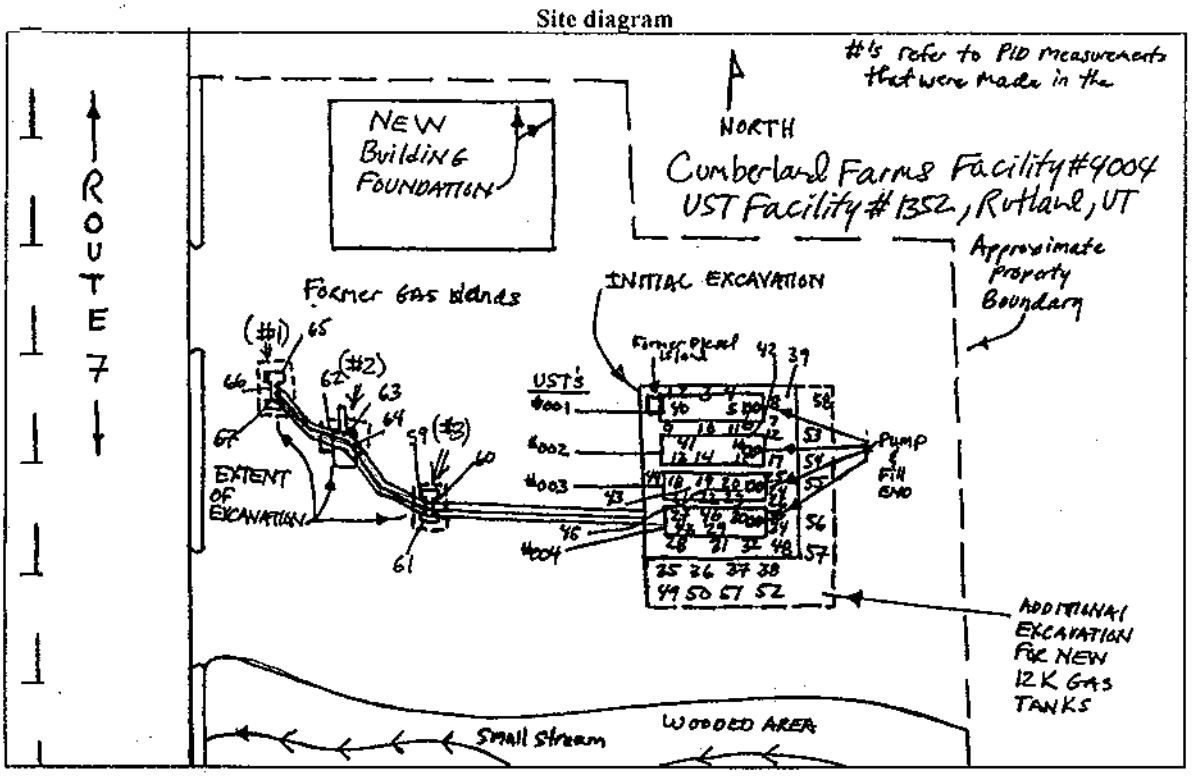
. the party responsible for compliance with the Vermont UST Regulations and related statutes at this facility, I hereby certify that the all of the information provided on this form is true and correct to the best of my knowledge.

[signature] AGENT FOR OWNER Date: 10/14/97
nature of UST owner or owner's authorized representative

As the environmental consultant on site, I hereby certify that the site assessment requirements were performed in ccordance with DEC policy and regulations, and that information which I have provided on this form is true and rrect to the best of my knowledge.

Richard S. Valley Date: 10/14/97
nature of Environmental Consultant

Site diagram



Return form along with complete narrative report and photographs to the Department of Environmental Conservation(DEC), Underground Storage Tank Program within 72 hours of closure.

This Closure Form may only be issued for the facility and the date indicated in the upper left hand corner of page 1. **Changes in the scheduled closure date should be phoned in at least 48 hours in advance.** Both the yellow and white copies of this form must be returned to the address on the top of page 1 of this form; the pink copy should be retained by the UST owner. A written report from an environmental consultant covering all aspects of closure and site assessment, complete with photographs and any other relevant data, must accompany this form. All procedures must be conducted by qualified personnel, to include training required by 29 CFR 1910.120. Documentation of all methods and materials used must be adequate. All work must be performed in compliance with DEC policy "UST Closure and Site Assessment Requirements" as well as all applicable statues, regulations, and additional policies. The DEC may reject inadequate closure forms and reports.

State of Vermont

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

Waste Management Division
103 South Main Street/West Office
Waterbury, Vermont 05671-0404
(802) 241-3888, FAX (802) 241-3296

Department of Fish and Wildlife
Department of Forests, Parks and Recreation
Department of Environmental Conservation
State Geologist
RELAY SERVICE FOR THE HEARING IMPAIRED
1-800-253-0191 TDD>Voice
1-800-253-0195 Voice>TDD

SITE INVESTIGATION EXPRESSWAY NOTIFICATION FORM

Site Owner: Cumberland Farms, Inc.

Site Name, Town: Rutland City Station #4004

___ Yes, this site will participate in the Site Investigation Expressway Process.

X
___ No, this site will not participate in the Site Investigation Expressway Process.

If yes, please complete the checklist below:

✓ Contamination present in soils above action levels ___ Yes ___ No

If yes, summarize levels:

_____

_____

✓ Free product observed ___ Yes ___ No

✓ Groundwater contamination observed ___ Yes ___ No

✓ Surface water contamination observed ___ Yes ___ No

✓ Suspected release of hazardous substances ___ Yes ___ No

If yes, please explain:

_____

_____

✓ Affected receptors ___ Yes ___ No

If yes, please identity receptors including names and addresses of third party receptors:

_____

_____

_____

Please provide an estimated date of when you expect to submit Site Investigation Report: _____

Owner's Signature/Date: _____ Consultant's Signature/Date: _____

The SMS has reviewed this expressway notification form and approves / disapproves of this action.

SMS Signature/Date: _____

Appendix B

Geologic Logs

WELL LOG

WELL:	MW-1
LOCATION:	Cumberland Farms, Inc. - Rutland, Vt
DRILLER:	Lincoln Applied Geology, Inc.
HYDROGEOLOGIST:	Richard S. Vandenberg, Lincoln Applied Geology, Inc.
DATE:	May 18, 1998

Soils Description: **(BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)**

Depth	Description	PID (ppm)
0 - 5'	Sand, very fine to fine, dark brown; some sand, fine to very fine; trace gravel; some sand.	50
5' - 6.9'	Refusal on bedrock sand, very fine, red to tan; some silt; moist.	10

Well Construction:

Bottom of Boring:	6.9 feet
Bottom of Well:	6.9 feet
Well Screen:	0.010 screen from 4.9 to 6.9 feet
Solid Riser:	0.5 to 4.9 feet
Sand Pack:	3.9 feet to 1.9 feet
Bentonite Seal:	1.0 to 1.9 feet
Backfill:	0 to 1 foot
Well Box:	Flush-grade bolt down.

WELL LOG

WELL: MW-2
LOCATION: Cumberland Farms, Inc. - Rutland, Vt
DRILLER: Lincoln Applied Geology, Inc.
HYDROGEOLOGIST: Richard S. Vandenberg, Lincoln Applied Geology, Inc.
DATE: May 18, 1998

Soils Description: **(BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)**

Depth	Description	PID (ppm)
0 - 2'	Fill, bricks and sand; some gravel.	BG
2' - 10'	Sand, very fine to fine; some gravel; some cobble (marble). Dry.	5
10' - 15'	Silt, ligth brown to olive; some sand, fine; trace clay. Ground water present at 11 - 11.5 feet.	20
15' - 19'	Sand, fine to very fine; tan to brown; some silt; trace clay.	BG
19' - 20'	Silt and clay, ligth green	

Well Construction:

Bottom of Boring: 20 feet
Bottom of Well: 18 feet
Well Screen: 8 to 18 feet
Solid Riser: 0 to 8 feet
Sand Pack: 7 to 18 feet
Bentonite Seal: 6 to 7 feet
Backfill: 0 to 6 feet
Well Box: Flush grade bolt down.

WELL LOG

WELL: MW-3
LOCATION: Cumberland Farms, Inc. - Rutland, Vt
DRILLER: Lincoln Applied Geology, Inc.
HYDROGEOLOGIST: Richard S. Vandenberg, Lincoln Applied Geology, Inc.
DATE: May 18, 1998

Soils Description: **(BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)**

Depth	Description	PID (ppm)
0 - 7'	Sand, fine to very coarse; some silt; trace cobble.	BG
7' - 12'	Sand, fine to coarse, brown to orange brown; trace silt; ground water encountered at 12 feet.	BG
12' - 18'	Silt, and clay, some very fine sand.	BG

Well Construction:

Bottom of Boring: 18 feet
Bottom of Well: 18 feet
Well Screen: 8 to 18 feet
Solid Riser: 0.5 to 8 feet
Sand Pack: 7 to 18 feet
Bentonite Seal: 6 to 7 feet
Backfill: 0.75 to 6 feet
Well Box: Flush grade bolt down.

WELL LOG

WELL: MW-4
LOCATION: Cumberland Farms, Inc. - Rutland, Vt.
DRILLER: Lincoln Applied Geology, Inc.
HYDROGEOLOGIST: Richard S. Vandenberg, Lincoln Applied Geology, Inc.
DATE: May 18, 1998

Soils Description: **(BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)**

Depth	Description	PID (ppm)
0 - 5'	Sand, fine to coarse, brown; some gravel, fine; some cobble; some debris (wood, etc).	BG
5' - 12'	Sand, fine to medium, tan; dry. Ground water encountered at 12 feet.	BG
12' - 18'	Sand, very fine, brown to olive; some silt; trace sand, medium. Bottom 6" silt, ligth green.	20

Well Construction:

Bottom of Boring: 18 feet
Bottom of Well: 18 feet
Well Screen: 8 to 18 feet
Solid Riser: 0 to 8 feet
Sand Pack: 7 to 8 feet
Bentonite Seal: 6 to 7 feet
Backfill: 0 to 6 feet
Well Box: Flush grade bolt down.

Appendix C

Soil and Ground Water Quality Results

Page 1 TOXIKON CORP. REPORT Work Order # 98-06-254

Received: 06/10/98 06/18/98 11:44:49

REPORT LINCOLN APPLIED GEOLOGY
TO REVELL DRIVE
LINCOLN, VT 05443
802-453-4384 FAX: 5399
ATTEN RICK VANDENBURG

PREPARED TOXIKON CORPORATION
BY 15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY
CONTACT JOHNM

CLIENT LINCOLN VT SAMPLES 4
COMPANY LINCOLN APPLIED GEOLOGY
FACILITY REVELL DRIVE
LINCOLN, VT 05443

MA CERT # M-MA064: TRACE METALS, SULFATE,CYANIDE,RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST.,NUTRIENTS. DEMAND. O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID CFI RUTLAND
TAKEN 6/5/98
TRANS
TYPE WATER
P.O. #
INVOICE under separate cover

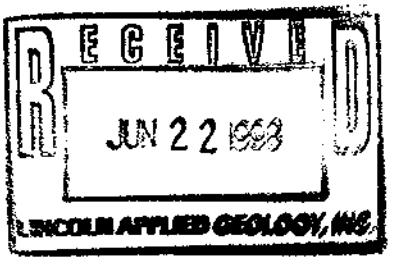
VERIFIED BY:
CERT #MMA064

SAMPLE IDENTIFICATION

01 TRIP BLANK
02 MW-2
03 MW-3
04 MW-4

TEST CODES and NAMES used on this workorder

8020M PURGEABLE AROMATICS



SAMPLE ID TRIP BLANK FRACTION 01A TEST CODE 8020M NAME PURGEABLE AROMATICS
Date & Time Collected 06/05/98 08:30:00 Category WATER

EPA Method 8020 with MTBE

	RESULT	REPORTING LIMIT
BENZENE	ND	1.0
TOLUENE	ND	2.0
ETHYLBENZENE	ND	2.0
XYLENES (TOTAL)	ND	2.0
Methyl-t-Butyl Ether	ND	2.0

Notes and Definitions for this Report:

UNITS: ug/L
DATE RUN: 06/16/98
ANALYST: SEP
INSTRUMENT: V2
DIL. FACTOR: 1

ND = not detected at detection limit

SAMPLE ID MW-2 FRACTION 02A TEST CODE 8020M NAME PURGEABLE AROMATICS
Date & Time Collected 06/05/98 12:30:00 Category WATER

EPA Method 8020 with MTBE

	RESULT	REPORTING LIMIT
BENZENE	ND	1.0
TOLUENE	ND	2.0
ETHYLBENZENE	ND	2.0
XYLENES (TOTAL)	ND	2.0
Methyl-t-Butyl Ether	ND	2.0

Notes and Definitions for this Report:

UNITS: ug/L
DATE RUN: 06/16/98
ANALYST: SEP
INSTRUMENT: V2
DIL. FACTOR: 1

ND = not detected at detection limit

Received: 06/10/98 Results by Sample

SAMPLE ID MW-3 FRACTION 03A TEST CODE 8020M NAME PURGEABLE AROMATICS
Date & Time Collected 06/05/98 12:45:00 Category WATER

EPA Method 8020 with MTBE

	RESULT	REPORTING LIMIT
BENZENE	ND	1.0
TOLUENE	ND	2.0
ETHYLBENZENE	ND	2.0
XYLENES (TOTAL)	ND	2.0
Methyl-t-Butyl Ether	ND	2.0

Notes and Definitions for this Report:

UNITS: ug/L
DATE RUN: 06/16/98
ANALYST: SEP
INSTRUMENT: V2
DIL. FACTOR: 1

ND = not detected at detection limit

SAMPLE ID MW-4 FRACTION 04A TEST CODE 8020M NAME PURGEABLE AROMATICS
Date & Time Collected 06/05/98 13:00:00 Category WATER

EPA Method 8020 with MTBE

	RESULT	REPORTING LIMIT
BENZENE	11.0	1.0
TOLUENE	ND	2.0
ETHYLBENZENE	6.4	2.0
XYLENES (TOTAL)	111	2.0
Methyl-t-Butyl Ether	29.2	2.0

Notes and Definitions for this Report:

UNITS: ug/L
DATE RUN: 06/16/98
ANALYST: SEP
INSTRUMENT: V2
DIL. FACTOR: 1

ND = not detected at detection limit

TEST CODE 8020M NAME PURGEABLE AROMATICS

EPA Method 8020: Volatile Aromatic Compounds incl. MTBE.

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

TOXIKON
15 Wiggins Ave., Bedford, MA 01730
Telephone: (781) 275-3330
Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 48-06-25?

DUE DATE : 06-19-98

COMPANY: Lincoln Applied Geology
ADDRESS: Revell Drive
Lincoln VT 05443
PHONE #: (802) 453-4995 FAX #: (802) 453-2799
P.O. #:
PROJECT MANAGER: Kirk Vandenberg
PROJECT ID/LOCATION: CFE Rutland

SAMPLE TYPE: 1. WASTEWATER, 2. SOIL, 3. SLUDGE, 4. OIL, 5. DRINKING WATER, 6. WATER (GW/MW/SW), 7. OTHER (SPECIFY)
CONTAINER TYPE: P - PLASTIC, G - GLASS, V - VOA

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	ANALYSES: 8010 + MTBE
(1)	Trip Blank	GW	40ml	G	2	6-5-98	8:30	HCl	X
(2)	MW-2	"	"	"	"	"	12:30	"	"
(3)	MW-3	"	"	"	"	"	12:45	"	"
(4)	MW-4	"	"	"	"	"	1:00	"	"

SAMPLED BY: Jeremy Revell
DATE: 6 - 5 - 98
TIME: 12:30 -

RELINQUISHED BY: Jay Lloyd
DATE: 6 - 9 - 98
TIME: 7:50 -

RELINQUISHED BY: Linda Kunce
DATE: 6 - 9 - 98
TIME: 9:00 -

METHOD OF SHIPMENT

QUOTATION #:

RECEIVED BY: Linda Kunce
DATE: 6 - 9 - 98
TIME: 1:30 -

RECEIVED FOR LAB BY: D. Mather
DATE: 06 - 10 - 98
TIME: 13 - 40 -

COOLER TEMPERATURE: 2-4°C

☐ RUSH ..... BUSINESS DAY TURN AROUN
☑ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than those listed above?
Yes ____ No ✓ If Yes, 1st Known ____

Page 1 TOXIKON CORP. REPORT Work Order # 98-05-414

Received: 05/20/98 05/27/98 11:34:06

REPORT TO: LINCOLN APPLIED GEOLOGY
REVELL DRIVE
LINCOLN, VT 05443
802-453-4384 FAX: 5399
ATTEN RICK VANDENBERG

PREPARED BY: TOXIKON CORPORATION
15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (617)275-3330

CERTIFIED BY

CONTACT JOHNM

CLIENT LINCOLN VT SAMPLES 1
COMPANY LINCOLN APPLIED GEOLOGY
FACILITY REVELL DRIVE
LINCOLN, VT 05443

MA CERT # M-MA064: TRACE METALS, SULFATE, CYANIDE, RES. FREE CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST., NUTRIENTS, DEMAND, O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778 FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID CFI RUTLAND
TAKEN 5/18/98
TRANS
TYPE SOIL
P.O. #
INVOICE under separate cover

VERIFIED BY:
CERT #MMA064

SAMPLE IDENTIFICATION

01 BORING #1 (0-0.5')

TEST CODES and NAMES used on this workorder

8020M PURGEABLE AROMATICS
GRO GASOLINE RANGE ORGANICS

RECEIVED
JUN - 1 1998
LINCOLN APPLIED GEOLOGY, INC.

SAMPLE ID BORING #1 (0-0.5') FRACTION 01A TEST CODE 8020M NAME PURGEABLE AROMATICS
Date & Time Collected 05/18/98 11:30:00 Category SOIL

EPA Method 8020 with MTBE

	RESULT	REPORTING LIMIT
BENZENE	ND	1.0
TOLUENE	ND	2.0
ETHYLBENZENE	ND	2.0
XYLENES (TOTAL)	ND	2.0
Methyl-t-Butyl Ether	ND	2.0

Notes and Definitions for this Report:

UNITS: ug/Kg
DATE RUN: 05/26/98
ANALYST: NLC
INSTRUMENT: V5
DIL. FACTOR: 1

ND = not detected at detection limit

Received: 05/20/98 Results by Sample

SAMPLE ID BORING #1 (0-0.5') FRACTION 01A TEST CODE GRO NAME GASOLINE RANGE ORGANICS
Date & Time Collected 05/18/98 11:30:00 Category SOIL

8015 MODIFIED GRO

	RESULT *	LIMIT
ALIPHATICS	ND	0.010
AROMATICS	0.014	0.010

Notes and Definitions for this Report:

DATE RUN	05/26/98
ANALYST	NLC
INSTRUMENT	V5
DIL. FACTOR	1
UNITS =	mg/Kg

ND = not detected at detection limit

TEST CODE 8020M NAME PURGEABLE AROMATICS

EPA Method 8020: Volatile Aromatic Compounds incl. MTBE.

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

TEST CODE GRO NAME GASOLINE RANGE ORGANICS

METHOD:EPA METHOD 8015 Modified;Gasoline Range Organics

Nonhalogenated Volatile Organics. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods 3rd Edition, Final Update I.

Quantitation for BTEX/MTBE is performed by analysis on a PID detector. Miscellaneous aromatics eluting between o-xylene and 1,2,4-trimethylbenzene are quantitated on the PID detector using the response factor of o-xylene.Miscellaneous aliphatics eluting between 3-methylpentane and isooctane are quantitated on the FID detector using the response factor of n-hexane.

This method meets the specifications of Maine DEP Method 3.1.1.2.6

TOXIKON
15 Wiggins Ave., Bedford, MA 01730
Telephone: (781) 275-3330
Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 98-05-417
DUE DATE : 06-01-98

COMPANY: Lincoln Applied Geology, Inc.
ADDRESS: Revell Drive
Lincoln, VT 05443
PHONE #: (802) 453-4381 FAX #: (802) 453-5399
P.O. #:
PROJECT MANAGER: Rick Vandenberg
PROJECT ID/LOCATION: CFI - Rutland

SAMPLE TYPE: 1. WASTEWATER, 2. SOIL, 3. SLUDGE, 4. OIL, 5. DRINKING WATER, 6. WATER (GW/MW/SW), 7. OTHER (SPECIFY)
CONTAINER TYPE: P - PLASTIC, G - GLASS, V - VOA

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	ANALYSES: EPA 8020 + MTBE	ANALYSES: Modified TPH 8015	SPECIAL INSTRUCTIONS / COMMENTS
(1)	Boring #1 (0-0.5')	Soil	802	Glass	1	5/19	1130	ICE	X	X	

SAMPLED BY: Richard S. Vail
DATE: 5 - 19 - 98
TIME: - 09 - 55
QUOTATION #:

RELINQUISHED BY:
DATE: - -
TIME: - -
RECEIVED BY:
DATE: - -
TIME: - -

RELINQUISHED BY:
DATE: - -
TIME: - -
RECEIVED FOR LAB BY:
DATE: 05 - 20 - 98
TIME: 14 - 52 -

METHOD OF SHIPMENT
COOLER TEMPERATURE: R-1

☐ RUSH ..... BUSINESS DAY TURN AROUND
☐ ROUTINE

Sample disposal information
Are there any other known or suspected contaminants in these samples other than those listed above?
Yes ___ No ___ If Yes, or Known ___