

Phase (check one)	Type (check one)
<input checked="" type="checkbox"/> Site Investigation <input type="checkbox"/> Corrective Action Feasibility Investigation <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Corrective Action Summary Report <input type="checkbox"/> Operations & Monitoring Report	<input type="checkbox"/> Work Scope <input checked="" type="checkbox"/> Technical Report <input type="checkbox"/> PCF Reimbursement Request <input type="checkbox"/> General Correspondence

**SITE INVESTIGATION**

**Springfield Recycling Center  
Springfield, VT 05156**

**SMS Site #98-2540**

MAN 3 10 10 AM '99

**A Facility Owned By:  
The Town of Springfield  
96 Main Street  
Springfield, VT 05156  
(802) 885 - 2104  
Contact: Robert Forguites**

**Prepared By:  
Dufresne-Henry, Inc.  
Precision Park  
North Springfield, VT 05150  
(802) 886-2261  
Contact: Bruce H. Cox, P.E.**

**March 1, 1999**

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## EXECUTIVE SUMMARY

An Initial Site Investigation has been completed at the Springfield Recycling Center in Springfield, Vermont. The investigation was in response to the discovery of soil contamination during the Closure Assessment of (1) 10,000 gallon gasoline, (1) 5,000 gallon gasoline, and (1) 10,000 gallon diesel single wall steel underground storage tanks (UST's). PID readings up to 2,500+ ppm were observed in the headspace of soil samples. The piping to the fuel pump directly above the UST's was determined to be the primary cause of the contamination. All contaminated soil was put back in place pending additional investigation. The investigation proceeded under the "Expressway Program".

Four test borings were completed on the site in January 1999. One well was located at the former fuel pump, one in the presumed upgradient direction, and two in the presumed downgradient direction. All of the wells were sampled and analyzed once for VOC's by EPA Method 8021B. BTEX and MTBE well in excess of the Vermont Enforcement Standard were found in the well under the former fuel pump. Benzene and MTBE above the Enforcement Standard were found in both of the downgradient wells, one of which is approximately 90 feet from the source. Low level concentrations of Toluene, Ethylbenzene, and Xylenes were found in the upgradient well.

Soil on the site is layers of sand and gravel. The upper horizons are almost certainly recent alluvium from the Black River. Deeper sediments could be related to the North Springfield Delta. Regardless of the source, the soils are largely coarse grained, and judged to be quite permeable. Bedrock was not encountered in the relatively shallow borings. The direction of groundwater flow is to the east, toward the Black River.

The great majority of the structures within one-half mile of the site are on the municipal water supply system. Approximately a half dozen residences within the same radius could be connected to private wells. The nearest Springfield municipal wells are located approximately 2,700 feet northwest (upstream) of the site. These wells tap a relatively shallow sand and gravel aquifer. Previous sampling of the Town wells has found periodic, low-level concentrations of MTBE. Although these instances are not likely to be related to conditions at the Recycling Center, the possibility can not be ruled out at this time. The nearest surface water is the Black River which abuts the property to the east. At its nearest point it is approximately 300 feet northeast of the former UST's. A small intermittent stream is approximately 260 feet north of the former tanks. No breakout has been reported in either stream. All structures in the immediate vicinity have slab on grade foundations. Much of the Recycling Center is paved. Impacts from vapors are not expected.

Based on these findings, the site does not meet the SMS criteria for corrective actions at this time. None of the on-site monitoring wells have exhibited free product, nor has contamination of a sensitive receptor been confirmed. It is our opinion that additional site investigation is needed to determine the limits of the contamination plume. Site monitoring

should also be commenced to check for free product in the existing monitoring wells, and to verify the long-term direction of groundwater flow. It is our opinion the following tasks be completed:

1. Complete a series of test probes in the hydraulic upgradient and downgradient directions to help determine the areal limits of the contaminant plume. The probing would be conducted with small diameter solid stem augers advanced to a depth several feet into the water table. Soil from the flights would be screened with a PID for the presence of VOC's.
2. Install at least two (2) monitoring wells in the downgradient direction and one (1) monitoring well in the upgradient direction based on the findings of 1. above. Additional downgradient wells are likely to be needed due to the coarse grained, highly permeable nature of the site soils.
3. Sample all of the monitoring wells during spring runoff if possible. The recommended frequency of future sampling will be based on those results.
4. Determine whether the site contamination is, or could be, the source of the MTBE at the Town water supply wells.
5. Check all of the site monitoring wells at least quarterly for free product and to determine seasonal and long-term groundwater flow directions. The Black River and the on-site stream should also be checked for evidence of breakout.
6. Commence passive free product recovery immediately if product is found in any well.
7. Make a preliminary assessment of the sites need and potential for remediation via vapor extraction, pump-and-treat, etc.

**SITE INVESTIGATION  
SPRINGFIELD RECYCLING CENTER  
SPRINGFIELD, VERMONT**

**Introduction**

The Springfield Recycling Center is located on Fairground Road in Springfield, Vermont. A site location map is included as Appendix A.

Dufresne-Henry, Inc., in conjunction with North Country Environmental Services, conducted a Tank Closure Assessment at the site on November 9, 1998. The tanks removed were (1) 10,000 gallon gasoline, (1) 5,000 gallon gasoline, and (1) 10,000 gallon diesel single wall steel Underground Storage Tanks (UST's). The fuel dispenser was also removed at the same time. Evidence of soil contamination was observed with peak headspace PID readings ranging from 1,756 ppm to 2,500+ ppm. A weathered gasoline odor was noted. The contamination was attributed to the system piping, which had failed. All excavated soil was backfilled pending additional investigation. The owner opted to proceed under the "Expressway Program". Dufresne-Henry prepared a Work Plan and a Health and Safety Plan for the proposed activities at the site. Copies of these documents will be found in Appendix B. The remainder of this report describes the on-site activities and subsequent findings based on that work plan.

**Site Description**

The Springfield Recycling Center is located on the east side of Fairground Road. The recycling facility consists of two recycling sheds in the northeast corner, a centrally located weighing station for the transfer station, open top dumpsters for scrap metal, etc, and paved and unpaved roads and parking areas. On the same parcel, but in a separate fenced off area in the southeast corner, is the Department of Public Works salt shed and a small concrete block building. There is a large sand pile west of the recycling sheds. The entire parcel has an area of 8.05 acres. The Black River immediately borders the property to the east. A small brook parallels the north property line. Adjacent property is residential to the west, and vacant to the north and south.

## **Site History**

The Recycling Center has been on the site since the late 1980's or early 1990's. The portion of the site currently occupied by the salt shed was the site of the former North Springfield Wastewater Treatment Plant. Evidence from aerial photos suggests the plant was constructed prior to 1971. The date of discontinuance is not known, but likely preceded 1980.

Two gasoline and one diesel oil UST's were removed from the site on November 9, 1998. The tanks were located in a paved area west of the weigh station. The tanks were oriented in an east-west direction, and were directly under the pump island. It is likely the tanks were installed in 1985 or 1986 following the reported removal of tanks at the Department of Public Works garage at that time. No new tanks were installed at the site. No other UST's are known to exist on the property.

The Fourth Quarter 1998 Update (January 19, 1999) Vermont Hazardous Waste Sites List maintained by the Hazardous Materials Management Division (HMMD) contains 29 other sites in Springfield. One of the sites is almost directly across the Black River, and one may be within a one-half mile radius of the subject property, but is on the opposite side of the Black River. Neither are likely to have any impact on the subject property.

## **Monitoring Well Installation**

Four (4) shallow groundwater monitoring wells were installed on January 7 and 8, 1999 by M & W Soils Engineering, Inc. of Charlestown, New Hampshire. All borings and well installations were under the field observation of Dufresne-Henry personnel. A summary of relevant data for the borings is presented in Table 1 below. The boring locations are noted on the site plan in Appendix C. Logs of the borings and a daily report of field activities are included as Appendix D.

Table 1  
Summary of Test Boring Data

Boring Designation	Location	Total Depth (ft)	PID Readings (ppm)
MW-1	North end of former pump island	18.0	13 - 2,500+
MW-2	45' northwest of former pump island	17.0	3 - 32
MW-3	60' east of former pump island	15.0	5.6 - 16
MW-4	90' southeast of former pump island	15.0	4.2 - 104

During boring advancement continuous split spoon soil samples were taken starting at the surface for MW-1 and MW-2. In MW-3 and MW-4 continuous split spoons were taken starting at 5 feet. All soil samples were screened for the presence of Volatile Organic Compounds (VOC's) with a Photovac HL-2,000 photoionization detector (10.6 eV lamp, calibrated on-site with 99.1 ppm Isobutylene). The screening was done at room temperature in the headspace of the sample jars.

In well MW-1, olfactory evidence of contamination was observed between the depths of 2' and 14'. Peak PID readings ranged from 13 ppm to 2,500+ ppm. Moderate to strong fresh and weathered gasoline (varnish-like) odors were observed. In MW-2 no evidence of contamination by visual or olfactory senses was observed in the samples or on the tools. Peak PID readings ranged from 3 ppm to 32 ppm. In MW-3 faint oily gasoline odors were observed between 7' and 13', with peak PID readings ranging from 5.6 ppm to 16 ppm. In MW-4, faint oily gasoline odors were observed between 9' and 13', with peak PID readings ranging from 4.2 ppm to 104 ppm. The general geologic column in undisturbed areas is layers of sand and gravel. Refusal was not encountered at any location.

Two-inch diameter PVC monitoring wells were installed in each of the borings. Each well was constructed from 10' of .010" machine slotted screen. Each well was backfilled with clean silica sand to a point above the screen and a bentonite seal installed. The wells were protected at the ground surface by grouting in watertight cast iron monitoring well boxes.

## Monitoring Well Sampling

All of the Dufresne-Henry monitoring wells were sampled on January 12, 1999. The sampling was performed by Dufresne-Henry personnel. Three well volumes were purged prior to drawing a sample. No sheens were observed. The refrigerated sample was shipped to Eastern Analytical, Inc. of Concord, New Hampshire on January 12, 1999 via overnight carrier. The sample was analyzed for VOC's by EPA Method 8021B and for Total Petroleum Hydrocarbons (TPH) by EPA Method 8100(mod). A summary of the analyses is presented in Tables 2 and 3 below. A copy of the contract laboratory analytical report is included as Appendix E.

Table 2  
Summary of VOC Results

Compound	E.S. ( $\mu\text{g/L}$ )	MW-1 ( $\mu\text{g/L}$ )	MW-2 ( $\mu\text{g/L}$ )	MW-3 ( $\mu\text{g/L}$ )	MW-4 ( $\mu\text{g/L}$ )
Benzene	5	<b>11,000</b>	<1	<b>1,600</b>	<b>700</b>
Toluene	1,000	<b>44,000</b>	11	200	200
Ethylbenzene	700	<b>5,000</b>	4	300	400
Xylenes	10,000	<b>34,000</b>	32	400	1,300
MTBE	40	<b>40,000</b>	<10	<b>5,000</b>	<b>2,000</b>

E.S. Vermont Enforcement Standard

Concentrations in **bold** exceed the Enforcement Standard

Table 3  
Summary of TPH Results

Compound	MW-1 mg/l	MW-2 mg/l	MW-3 mg/l	MW-4 mg/l
TPH	290	<0.6	0.5	0.9

The results above confirm that groundwater on the site is contaminated. In well MW-1 the

Enforcement Standards for BTEX and MTBE have been significantly exceeded. The Standards for Benzene and MTBE are exceeded in wells MW-3 and MW-4. The State of Vermont does not have a standard for TPH. Of particular note are the high MTBE concentrations in the two downgradient wells. MTBE is a gasoline additive used as an octane enhancer. Widespread use in Vermont began in the early 1980's. MTBE has the characteristic of being significantly more soluble in water than other gasoline constituents. As such, it moves quicker and its detection is generally a precursor to the arrival of the main part of the plume. In this case MTBE has been found in high concentrations at least 90 feet from the source. The high Benzene concentrations at those locations may indicate the leading edge of the plume is much closer to the Black River.

### **Site Geology**

Surficial geology at the site is published as recent alluvium in the flood plain of the Black River. The borings generally corroborate the mapping. Material lower in the soil column may be related to the North Springfield Delta created at the end of the Pleistocene Epoch.

Published mapping indicates the site is very near a contact between the Mount Holly Formation to the west and the Bull Hill gneiss of the Cavendish Formation to the east. The Mount Holly is generally described as fine - medium grained biotitic gneiss, that may be granitoid or schistose in places. There may be minor beds of mica schist and quartzite, and numerous small bodies of pegmatite and gneissoid granitic rock. The Bull Hill gneiss is described as a quartz-plagioclase-microcline-biotite gneiss. The Mount Holly is the older of the two being Precambrian. The age of the Bull Hill is Lower Cambrian. It is reasonable to assume that the bedrock is fractured to a degree. Bedrock was not encountered in the borings, and the depth to it is not known.

### **Site Hydrogeology**

At the time the monitoring wells were sampled on January 12, 1999, the depth to the water table ranged from 6.6' to 7.6'. The overall direction of groundwater flow is to the east toward the Black River. The gradient is approximately .008 ft/ft. A groundwater contour map is included as Appendix F.

## **Potential Receptors**

The 1972 USGS Chester, Vermont topographic quadrangle and site reconnaissance indicate in excess of one hundred structures within a half mile radius of the site. The vast majority are associated with the Pedden Acres development on the opposite side of the Black River and at higher elevation. Those structures on the west side of the river are also at higher elevations. All of the Pedden Acre properties are connected to the municipal water supply. State of Vermont well records indicate that a half-dozen± properties within a half-mile radius of the site may have private wells. All of the remaining properties, including those just noted, are on the municipal system, or could be connected to it. The water main for the Springfield municipal system follows Fairground Road in the vicinity of the site. The nearest Springfield municipal wells are located approximately 2,700 feet northwest (upstream) of the site. These wells tap a relatively shallow sand and gravel aquifer. Previous sampling of the Town wells has found periodic, low-level concentrations of MTBE. Although these instances are not likely to be related to conditions at the Recycling Center, the possibility can not be ruled out at this time. The nearest surface water is the Black River which abuts the property to the east. At its nearest point it is approximately 300 feet northeast of the former UST's. A small intermittent stream is approximately 260 feet north of the former tanks. No breakout has been reported in either stream. Ice cover at the time of the investigation prohibited observation. A copy of the North Springfield water system base map is included as Appendix G.

## **Summary and Recommendations**

The Springfield Recycling Center has occupied the site since the late 1980's or early 1990's. Prior to that time the site had also been in the control of the Town of Springfield, being used for the North Springfield Wastewater Treatment Plant. The plant is no longer in use, and that portion of the site is currently used for the Town salt shed. In November 1998 (1) 10,000 gallon gasoline, (1) 5,000 gallon gasoline, and (1) 10,000 gallon diesel UST's were removed from the site. No new tanks were installed.

Four (4) shallow groundwater monitoring wells were installed in January 1999, and sampled for VOC's by EPA Method 8021B and for TPH by EPA method 8100(mod). At least trace concentrations were found at all locations. BTEX and MTBE well in excess of the Vermont

Enforcement Standard were found in the well under the former fuel pump. The Benzene concentration is 2,200 times the Standard and the MTBE concentration is 1,000 times the Standard. Benzene and MTBE above the Enforcement Standard were found in both of the downgradient wells, one of which is approximately 90 feet from the source. Low level concentrations of Toluene, Ethylbenzene, and Xylenes were found in the upgradient well.

All but a possible few residences within a half mile of the Recycling Center are connected to the municipal water supply system. The great majority of these are on the opposite side of the Black River and at higher elevation. The nearest Springfield municipal wells are located approximately 2,700 feet northwest (upstream) of the site. These wells tap a relatively shallow sand and gravel aquifer. Previous sampling of the Town wells has found periodic, low-level concentrations of MTBE. Although these instances are not likely to be related to conditions at the Recycling Center, the possibility can not be ruled out at this time. The nearest surface water is the Black River which abuts the property to the east. At its nearest point it is approximately 300 feet northeast of the former UST's. A small intermittent stream is approximately 260 feet north of the former tanks. No breakout has been reported in either stream.

Based on these findings, the site does not meet the SMS criteria for corrective actions at this time. None of the on-site monitoring wells have exhibited free product, nor has contamination of a sensitive receptor been confirmed. It is our opinion that additional site investigation is needed to determine the limits of the contamination plume. Site monitoring should also be commenced to check for free product in the existing monitoring wells, and to verify the long-term direction of groundwater flow.

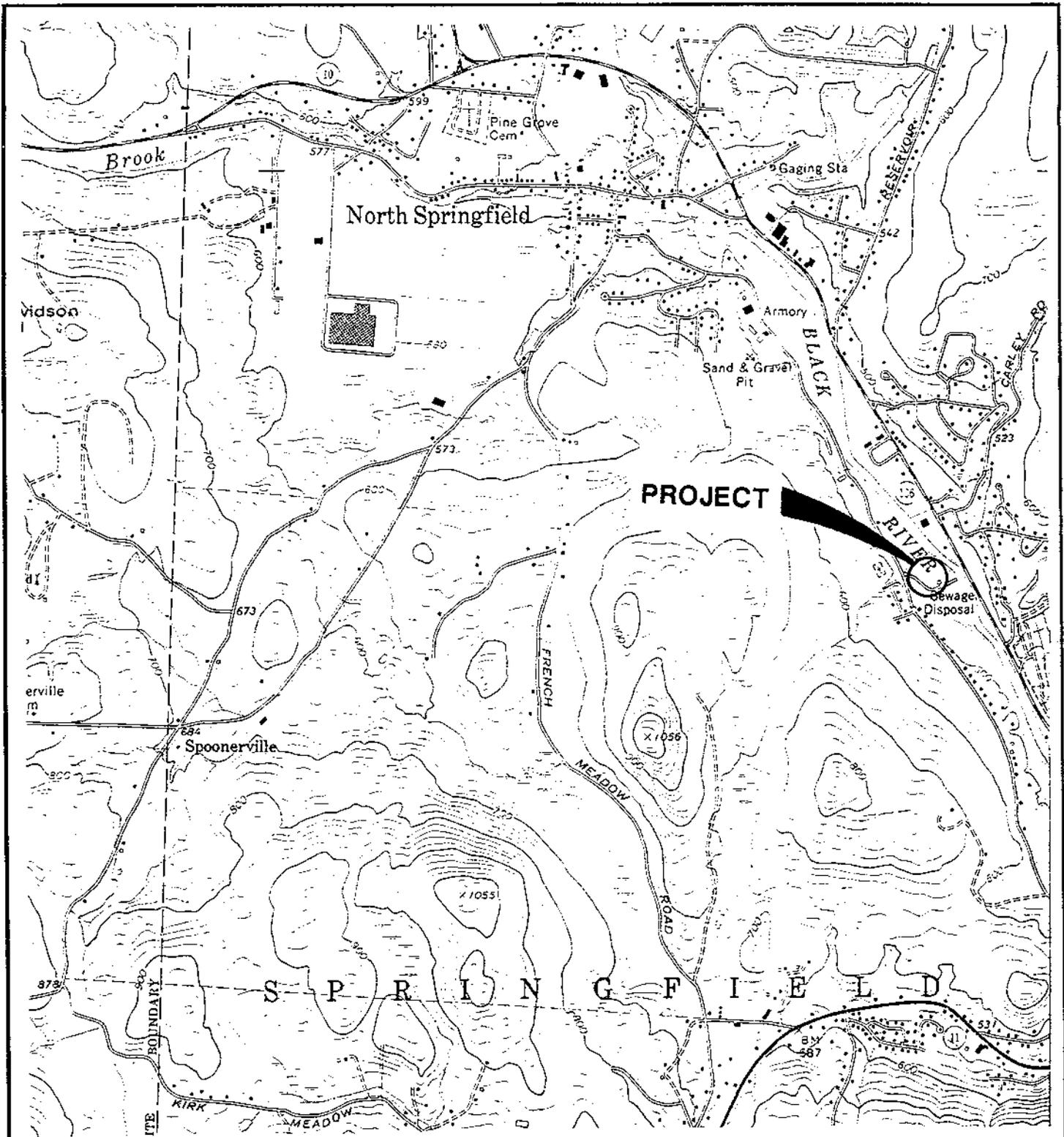
It is our opinion the following tasks be completed:

1. Complete a series of test probes in the hydraulic upgradient and downgradient directions to help determine the areal limits of the contaminant plume. The probing would be conducted with small diameter solid stem augers advanced to a depth several feet into the water table. Soil from the flights would be screened with a PID for the presence of VOC's.
2. Install at least two (2) monitoring wells in the downgradient direction and one (1) monitoring well in the upgradient direction based on the findings of 1. above.

Additional downgradient wells are likely to be needed due to the coarse grained, highly permeable nature of the site soils.

3. Sample all of the monitoring wells during spring runoff if possible. The recommended frequency of future sampling will be based on those results.
4. Determine whether the site contamination is, or could be, the source of the MTBE at the Town water supply wells.
5. Check all of the site monitoring wells at least quarterly for free product and to determine seasonal and long-term groundwater flow directions. The Black River and the on-site stream should also be checked for evidence of breakout.
6. Commence passive free product recovery immediately if product is found in any well.
7. Make a preliminary assessment of the sites need and potential for remediation via vapor extraction, pump-and-treat, etc.

**APPENDIX A**  
**SITE LOCATION MAP**



SCALE  
1:24,000

TAKEN FROM A QUADRANGLE MAP FOR CHESTER, VT  
FIELD CHECKED 1972



SITE LOCATION PLAN  
FOR  
SPRINGFIELD RECYCLING CENTER  
FAIRGROUND ROAD  
SPRINGFIELD, VERMONT

Project No.	4080008.02
Proj. Mgr.	F.D.D.
Scale	1:24,000
Date	JAN. 1999
A	SLP-1

**APPENDIX B**

**EXPRESSWAY FORM, WORK PLAN,  
SITE HEALTH AND SAFETY PLAN**



State of Vermont

AGENCY OF NATURAL RESOURCES  
Department of Environmental Conservation

Department of Fish and Wildlife  
Department of Forests, Parks and Recreation  
Department of Environmental Conservation  
State Geologist

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

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: Town of Springfield VT

Site Name, Town: Recycle Center

- Yes, this site will participate in the Site Investigation Expressway Process.
- 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: PID reading from 1.533cm to 2,500 ppm in soil above groundwater

- 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: Groundwater at Recycle Pool

- Affected receptors  Yes  No

If yes, please identify receptors including names and addresses of third party receptors:  
Soil & groundwater

Please provide an estimated date of when you expect to submit Site Investigation Report: 12/3/98

Owner's Signature/Date: [Signature] Consultant's Signature/Date: [Signature] 4/18/98

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

SMS Signature/Date: \_\_\_\_\_

Proposed Work Plan  
Site Investigation

**SPRINGFIELD RECYCLING CENTER  
SPRINGFIELD, VERMONT**

This work plan outlines the tasks to be completed for a Site Investigation at the Springfield Recycling Center in Springfield, Vermont. The facility was used for fueling Town vehicles. The plan has been prepared as a result of a petroleum product release discovered during the Closure Assessment of (1) 10,000 gallon gasoline, (1) 10,000 gallon diesel, and (1) 5,000 gallon gasoline UST's. Soil sample headspace PID readings in excess of 2,500 ppm were observed. No evidence of free product was observed. The water table was encountered at a depth of approximately 8.5 feet.

The purpose of the investigation is to determine the existence and extent of subsurface petroleum contamination at the site. The proposed monitoring wells will be used to help ascertain the extent of a contamination plume and provide basic hydrogeologic data. At this time it is anticipated that four (4) shallow groundwater monitoring wells will be installed. The wells will be arrayed such that one is in the presumed upgradient direction, one at the location of the former UST's, and the remaining two downgradient of the former UST's. All field personnel are OSHA certified for hazardous site operations under 29 CFR part 1910.120.

#### BORINGS

It is anticipated that the borings for the monitoring wells will be completed using 4 1/4" hollow stem augers. If possible, monitoring well borings will be taken a minimum of five (5) feet into the prevailing water table. It is anticipated that well depth will not exceed 20 feet. Petroleum based pipe dope for use on drill rods, tools, or casing will not be allowed. No type of drilling mud, including polymers, will be used. Should flowing sands be encountered, clean water obtained locally will be used to increase hydraulic head. If flowing sands are particularly problematic, casing will be used. All borings and monitoring well installations will be performed by M & W Soils Engineering, Inc. of Charlestown, New Hampshire under the field supervision of Dufresne-Henry personnel.

#### SOIL SAMPLING

It is anticipated that continuous split spoon soil samples will be taken in the boring at the site of the former UST's and in the downgradient borings. The sampling frequency in the upgradient boring will not exceed 5 feet. The frequency will be a field decision of the Dufresne-Henry inspector. The split spoon sampler allows retrieval of relatively undisturbed soil samples from a known depth for classification and Volatile Organic Compound (VOC) screening. All soil samples and material from the auger flights will be screened for VOC's by headspace analysis with a

Photovac HL-2000 photoionization detector (10.6 eV lamp, calibrated with Isobutylene). The act of driving the sampler (Standard Penetration Test) also gives an indication of the density or degree of compaction of the soil. Representative samples from each spoon will be placed in glass jars and retained by Dufresne-Henry. These are for project records only and are not intended for chemical analysis. Detailed logs of geology, drilling data, PID readings, and monitoring well installation will be prepared for each boring. At this time it is not anticipated that analytical soil samples will be collected.

## MONITORING WELLS

Monitoring wells will be constructed from 2", 0.010" machine slotted, threaded, flush joint, Schedule 40 PVC. Assuming no refusal, each monitoring well will consist of 10' to 15' of screen with sufficient riser to reach approximately 2" below the surface grade. The bottom of the well will be set such that approximately 5 feet of screen extends below the water table observed at the time of installation. For wells with shallow depth to the water table, the screened interval will be a decision of the Dufresne-Henry inspector. The bottom of all wells will be provided with a PVC cap or point, or a plug with an expanding gasket. The annular space between the auger and the screen will be carefully backfilled with clean silica sand to create a filter pack around the well. The filter pack will extend from the bottom of the well to approximately 2 feet above the screen. A bentonite seal will be installed above the filter pack, and the remainder of the hole will be backfilled with native soil. A protective monitoring well box will be grouted in flush at the surface or a stick-up steel casing installed depending on the location. All wells will have removable top caps for sampling and sounding. The wells will be developed by surging, and by pumping or bailing.

## DECONTAMINATION

The borings may, or may not, be completed within the zone of contamination. However, to prevent cross contamination between the borings, strict decontamination procedures will be followed. All in-ground tools and equipment will be decontaminated by steam cleaning prior to the start of work and between borings. All decontamination will be done on-site at a designated location. Within the known contaminated area, routine cleaning of equipment, such as split spoons, will use water obtained at the site and a product such as ALCONOX. Disposal of spent cleaning solution will be at the site. Excess contaminated soil will be stored on-site in a polyencapsulated stockpile.

## WATER SAMPLING

Water quality samples will be obtained from the Dufresne-Henry installed monitoring wells following a period of stabilization. The samples will be taken by Dufresne-Henry personnel. Samples will be obtained with disposable bailers which will be left in the wells to facilitate future sampling. Samples may not be obtained from any well exhibiting free product. All of the

monitoring wells will be analyzed for VOC's by EPA Method 8021B and for TPH by EPA Method 8100(mod). The analyses will be done by Eastern Analytical, Inc. of Concord, New Hampshire, or by Scitest, Inc.

#### SITE SURVEY

The relative locations and elevations of the monitoring wells will be determined. Sufficient additional surveying will be performed to update any existing site plan or prepare a new site plan.

#### RECEPTOR ASSESSMENT

A receptor assessment will be conducted to identify potential receptors including nearby water supply wells and surface water. The basements of nearby buildings, if any, will be screened with the PID as deemed necessary.

#### REPORTING

A report will be prepared summarizing the findings and recommendations of the investigation including the monitoring well installation, groundwater quality and overall characterization of shallow subsurface conditions, and the likely impacts on potential receptors. Conclusions and recommendations regarding the need for long term treatment and/or monitoring will be included. The report will be submitted within 30 days of the monitoring well installation.

A summary breakdown of estimated costs to complete the work will be found attached.

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HEALTH AND SAFETY PLAN  
FOR  
SITE INVESTIGATION  
SPRINGFIELD RECYCLING CENTER  
SPRINGFIELD, VERMONT

This Health and Safety Plan applies only to Dufresne-Henry, Inc. employees.

PROPOSED ON-SITE ACTIVITIES:

Installation of four (4) groundwater monitoring wells, decontamination, and groundwater sampling.

PROPOSED DATE(S) OF WORK: Wells: January 7, 1999  
Sampling: Week of January 11, 1999

ANTICIPATED WEATHER CONDITIONS: temperatures in the teens - 40's, possible snow.

PROPOSED SITE INVESTIGATION TEAM:

<u>Personnel</u>	<u>Responsibilities</u>
Bruce Cox	Project Manager
Bruce Cox	Site Safety Officer
Bruce Cox/Oscar Garcia	Field Team Leader (Monitoring Wells/Sampling)
Harry Henderson	Site Representative
Robert Butler	ANR Representative

All Dufresne-Henry, Inc. personnel arriving or departing the Site should check in and out with the Site Safety Officer. All Dufresne-Henry activities on-Site must be cleared through the Field Team Leader or Project Manager.

Background Information

Site Status:  Active  Inactive  Unknown

Site Description (Topography, on-site structures, vegetation, surrounding population, contaminated areas (if known))

The Springfield Recycling Center is located on the north side of Fairground Road in Springfield, VT. On-site utilities may include underground power and stormwater piping. The depth to the water table is approximately 9'.

Dig Safe was contacted on 12/28/98. The site is clear after 7:15 am on 12/30/98. The Dig Safe number is T9907371-01. The Town of Springfield Water and Sewer Department was contacted on January 4, 1998. None of those utilities are on site.

Site History:

The site history is not known at this time. The subject portion of the site was used by the Town of Springfield as a fueling depot for the DPW. Three (3) UST's were removed in 1998.

Monitoring or Sampling Data From Previous Site work:

A UST Closure Assessment was conducted by Dufresne-Henry on November 9, 1998. Three (3) UST's were removed; (1) 5,000 gallon gasoline, (1) 10,000 gallon gasoline, and (1) 10,000 gallon diesel. Soil sample headspace readings of 2,500+ ppm were observed. The excavated contaminated soil was backfilled.

No other site investigations are known.

HAZARD REFERENCE

Waste Types:

Liquid       Solid (soil)      \_\_\_ Sludge       Vapor      \_\_\_ Unknown

Waste Characteristics:

\_\_\_ Corrosive       Ignitable      \_\_\_ Radioactive  
 Volatile      \_\_\_ Toxic      \_\_\_ Reactive  
\_\_\_ Unknown      \_\_\_ Other      \_\_\_ Persistent

Specific Substances of Greatest Concern (if known): gasoline, diesel fuel

Hazard Evaluation:

Task: Mon. Well Install.       Low      \_\_\_ Medium      \_\_\_ High

Identification of Hazards: gasoline, diesel fuel

---

Task: Decontamination       Low      \_\_\_ Medium      \_\_\_ High

Identification of Hazards: gasoline, diesel fuel

---

Task: Sampling       Low      \_\_\_ Medium      \_\_\_ High

Identification of Hazards: gasoline, diesel fuel

---

Task:      \_\_\_ Low      \_\_\_ Medium      \_\_\_ High

Identification of Hazards:

---

Other Physical Hazards: (weather, heavy equipment, site structures...)  
Drill rig, traffic, weather.

Hazard Assessment:

OVERALL HAZARD: \_\_\_ Serious \_\_\_ Moderate X Low \_\_\_ Unknown

On-Site Control

Site control is necessary to minimize potential exposure of workers to hazardous waste/materials, protect the public from the Site's chemical and physical hazards, and to facilitate work activity. The procedures to be followed involve the establishment of Site work zones, Site security, and safe work practices.

The on-Site staging area and support zone has been established at:

The lower gate to the Recycling Center.

The personal contamination reduction zone (decon area) has been established at:

The former UST location.

During the intrusive work, the exclusion area will be defined as follows:

A 15 foot radius around the drill rig.

The decontamination of sampling and/or heavy equipment will be conducted:

The former UST location. Steam cleaning will be done in a drum or other container.

These sub-regions of on-Site control have been established in order to reduce the potential cross contamination and proliferation of contamination by potentially contaminated equipment and personal protective equipment.

SITE ACTIVITIES

Required Personal Protective Equipment (PPE)

<u>Task</u>	<u>Entry Level of Protection</u>	<u>Monitoring Equipment</u>	<u>Upgrade/Downgrade Contingency</u>
Well Install.	Mod D	Photovac HL-2000 Explosimeter O <sub>2</sub> meter H <sub>2</sub> S meter	Upgrade to Level C with PID readings over 10 ppm for 5 minutes in breathing space.
Decon.	Mod D	"	"
Sampling	Mod D	"	"

Note: Breathing space PID readings of 50 ppm, explosimeter readings over 25% of the LEL, O<sub>2</sub> deficiency or enrichment, or H<sub>2</sub>S readings will result in shutting down the job and consulting with State officials and the client.

Specific protective equipment for each level of protection is as follows:

Level C: Full Face Respirator w/appropriate cartridge (Willson T45)  
Chemically Resistant Suit (Tyvek®)  
Outer Rubber Slush Boots  
Outer Chemically Resistant Gloves  
Surgical Gloves  
Hard Hat  
Steel Toe/Shank Work Boots

Modified Level D: Chemically Resistant Suit (Tyvek®)  
Outer Rubber Slush Boots  
Outer Chemically Resistant Gloves  
Surgical Gloves  
Hard Hat  
Steel Toe/Shank Work Boots  
Safety Glasses or Face Shield

Level D: Work Clothes  
Steel Toe/Shank Work Boots  
Surgical Gloves  
Hard Hat

Rationale for change in level of protection:

Upgrade to Level C with PID readings of 10 ppm or more for 5 minutes in the breathing space. PID readings over 50 ppm in the breathing space, explosimeter readings of over 25% of the LEL, O<sub>2</sub> deficiency or enrichment, or H<sub>2</sub>S readings will result in shutting down the job and consulting with State officials and the client.

NO CHANGES TO THE SPECIFIED LEVELS OF PROTECTION SHALL BE MADE WITHOUT THE APPROVAL OF THE SITE SAFETY OFFICER OR PROJECT MANAGER.

#### Monitoring Procedures

Site Monitoring Equipment:

Photovac MicroTIP (Model HL-2000, 10.6 eV lamp)  
 Explosimeter  
 Draeger Tube & Pump  
 O<sub>2</sub> Meter  
 Other: H<sub>2</sub>S meter

Methods and Frequency of Monitoring:

Air space and soil samples: Photovac MicroTIP HL-2000.  
Air space: explosimeter/O<sub>2</sub> meter/H<sub>2</sub>S meter.

Frequency: Soil samples; as obtained.  
Air; not to exceed every 15 minutes.

Decontamination and Disposal

Personnel Decontamination Procedure:

- Level C: Slush boot and glove wash, slush boot and glove rinse, tape removal, outer glove removal, (cartridge change), slush boot removal, suit removal, inner glove removal.
- Modified Level D: Slush boot and glove wash, slush boot and glove rinse, slush boot removal, suit removal, glove removal.

Equipment Decontamination:

The drill rig and tools will be decontaminated by steam cleaning prior to the start of work and between borings. The use of clean augers (not previously used on the job) will be permitted with washing of the bit in ALCONOX. All decontamination will be done on-site. Routine washing of split spoon samplers, etc will use water brought to the site. Disposal of spent cleaning liquid will be on site.

Disposal Procedure for Investigation-Derived Materials:  
(decon waste, disposables)

All decon waste and disposables will remain on site. Contaminated soil and wash water will be drummed on site.

SITE OPERATING PROCEDURES/SAFETY GUIDELINES

- \*\* Always observe the buddy system. Never enter or exit site alone, and never work alone in an isolated area. Never wander off by yourself.
- \*\* Always maintain a line-of-sight.
- \*\* Practice contamination avoidance. Never sit down or kneel, never lay equipment on the ground, avoid obvious sources of contamination such as puddles, and avoid unnecessary contact with on-site objects
- \*\* No eating, drinking, or smoking outside the designated "clean" zone.
- \*\* In the event PPE is ripped or torn, work shall stop and PPE shall be removed and replaced as soon as possible.
- \*\* Be alert to any unusual changes in your own condition; never ignore warning signs. Notify Health and Safety Coordinator as to suspected exposures or accidents.
- \*\* A vehicle will be readily available exclusively for emergency use. All personnel going on-site shall be familiar with the most direct route to the nearest hospital.
- \*\* In the event of direct skin contact, the affected area shall be washed immediately with soap and water.
- \*\* Copies of the Health and Safety Plan shall be readily accessible at the command post.
- \*\* Note wind direction. Personnel shall remain upwind whenever possible during on-site activities.
- \*\* Never climb over or under refuse or obstacles. Use safety harness/safety lines when sampling lagoons, stream beds, and ravines with steep banks.
- \*\* Hands and face must be thoroughly washed before eating, drinking, etc.
- \*\* Any modifications to this safety plan MUST be approved by the Site Safety Officer.

Special Procedures:  
Confined Space Entry

No attempt will be made to enter abandoned buildings, manholes, tanks, or any other confined areas.

Other:

Personnel Monitoring: (If applicable: Heat stress, frostbite, air sampling of individual breathing zone)

Monitoring of individual breathing space will be monitored by a Photovac MicroTIP HL-2000, explosimeter, and O<sub>2</sub> meter as outlined in monitoring procedures. Monitoring of weather related hazards will be dictated by existing conditions.

### EMERGENCY SITUATIONS

The following standard emergency procedures will be used by Dufresne-Henry on-site personnel. The Site Safety Officer (SSO) shall be notified of any on-site emergencies and be responsible for ensuring that the appropriate procedures are followed.

#### Personnel Injury to Dufresne-Henry Employees in the Exclusion Zone

Upon notification of an injury to a Dufresne-Henry employee in the exclusion zone, a rescue team will enter the zone (if required) to remove the injured person to the hotline. The SSO and Project Manager should evaluate the nature of the injury, and the affected person should be decontaminated to the extent possible prior to movement to the support zone. The SSO shall arrange for appropriate first aid, and contact should be made for an ambulance and with the designated medical facility (if required). No Dufresne-Henry personnel shall re-enter the exclusion zone until the cause of the injury or symptoms are determined.

#### Personnel Injury to Dufresne-Henry Employees in the Support Zone

Upon notification of an injury to a Dufresne-Henry employee in the support zone, the Project Manager and SSO will assess the nature of the injury. If the cause of the injury or loss of the injured person does not affect the performance of site personnel, operations may continue, with the on-site Field Team Leader initiating the appropriate first aid and necessary follow-up as stated above. If the injury increases the risk to others, all Dufresne-Henry personnel shall move to the decon line for further instructions. Dufresne-Henry activities on-site will cease until the added risk is removed or minimized.

#### Fire/Explosion

Upon notification of a fire or explosion on-site, all Dufresne-Henry personnel will assemble at the decon line. The fire department shall be alerted and all Dufresne-Henry personnel moved to a safe distance from the involved area.

#### Personal Protective Equipment Failure

If any Dufresne-Henry site personnel experience a failure or alteration of protective equipment that effects the protection factor, that person and his/her buddy shall immediately leave the exclusion zone. Re-entry shall not be permitted until the equipment has been repaired or replaced.

#### Other Equipment Failure

If any other equipment on-site fails to operate properly, the Project Manager and SSO shall be notified and then determine the effect of this failure on continuing operations on-site. If the failure affects the safety of on-site Dufresne-Henry personnel or prevents the completion of the tasks, all Dufresne-Henry personnel shall leave the exclusion zone until the situation is evaluated and appropriate actions taken.

In all situations, when an on-site emergency results in evacuation of the exclusion zone, Dufresne-Henry personnel shall not re-enter until:

1. The conditions resulting in the emergency have been corrected.
2. The hazards have been reassessed.
3. The Site Safety Plan has been reviewed.
4. Dufresne-Henry personnel have been briefed on any changes in the Site Safety Plan.

EMERGENCY INFORMATION

AMBULANCE: Springfield Phone: (802) 885 - 4545

HOSPITAL: Springfield Hospital  
25 Ridgewood Road  
Springfield, VT  
(see attached map) Phone: (802) 885 - 2151

POLICE: Springfield Phone: (802) 885 - 2113

FIRE DEPARTMENT: Springfield Phone: (802) 885 - 4545

POISON CENTER: Phone: (603) 650 - 5000

ANR INCIDENT RESPONSE: Office Phone: (802) 241 - 3888  
Bob Butler (802) 241 - 3892

CORPORATE:

Dufresne-Henry N. Springfield, VT Phone: (802) 886 - 2261

Project Manager: Bruce Cox Ext 431

SITE REPRESENTATIVE Harry Henderson Phone: (802) 886 - 2208

NEAREST PHONE: Boring contractors vehicle

LOCATION OF ON-SITE FIRST AID KIT: Boring contractors vehicle

EMERGENCY VEHICLE:

The following individuals have read this safety document and are familiar with its contents, site conditions, and on-site safety procedures (please sign below):

<u>Name</u>	<u>Company</u>
Bruce Cox _____	Dufresne-Henry, Inc. _____
Oscar Garcia _____	Dufresne-Henry, Inc. _____
F. David Deane _____	Dufresne-Henry, Inc. _____
Myron Domingue _____	M & W Soils Engineering, Inc. _____
Michael Hitchcock _____	M & W Soils Engineering, Inc. _____
Chris Conant _____	M & W Soils Engineering, Inc. _____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Copies of this SSP have been given to:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Approval Signatures:

PM \_\_\_\_\_  
Div. Dir. \_\_\_\_\_

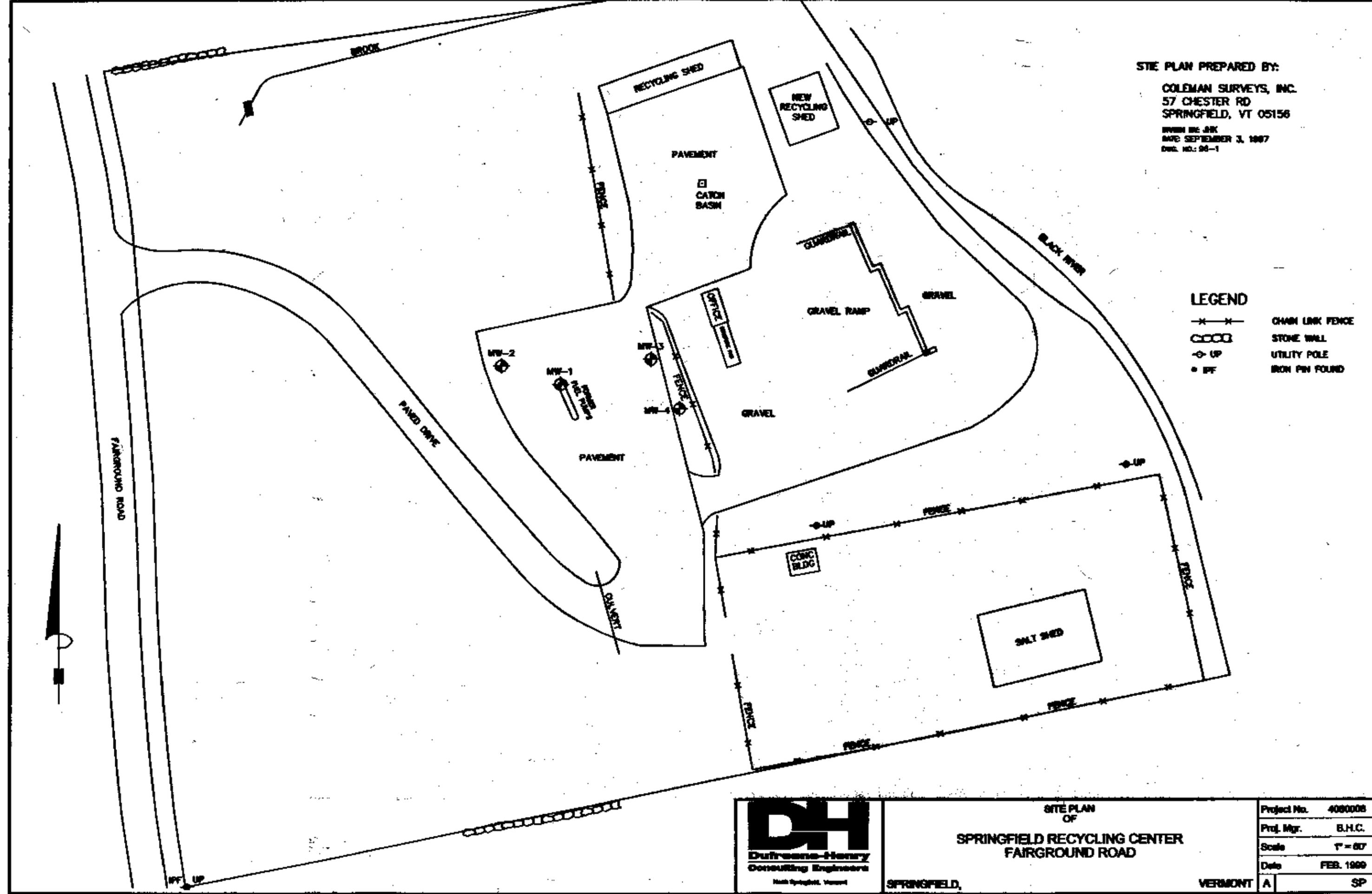
**APPENDIX C**

**SITE PLAN**

SITE PLAN PREPARED BY:  
 COLEMAN SURVEYS, INC.  
 57 CHESTER RD  
 SPRINGFIELD, VT 05156  
 DRAWN BY: JHK  
 DATE: SEPTEMBER 3, 1987  
 DWG. NO.: 98-1

**LEGEND**

- x—x— CHAIN LINK FENCE
- CCCC STONE WALL
- ⊕ UP UTILITY POLE
- PF IRON PIN FOUND



SITE PLAN  
 OF  
**SPRINGFIELD RECYCLING CENTER**  
**FAIRGROUND ROAD**  
 SPRINGFIELD, VERMONT

Project No.	408008
Proj. Mgr.	B.H.C.
Scale	1" = 60'
Date	FEB. 1988
	A
	SP

**APPENDIX D**  
**BORING LOGS**  
**AND**  
**DAILY REPORT**

BORING LOCATION MW-1		INCLINATION V		BEARING		DATE START/FINISH 1/7/99 / 1/7/99				
CASING ID		CORE SIZE		TOTAL DEPTH 18 FT		DRILLED BY: M & W SOILS ENGINEERING, INC. (M.D.)				
GROUND EL (AD) 99.84		DEPTH TO WATER/DATE 8± FT/ IMMED.		LOGGED BY: B. COX						
ELEV	SAMPLE			SAMP OD (IN)	LENGTH		REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION	
	AD (FT)	DEPTH (FT)	TYPE AND NO.		B	REC (IN)				PENE-TRATION (IN)
97.84	2.0						4 1/4" HSA	8"/CCH	0" - 2" Bituminous concrete pavement. 2" - 2' Medium brown SAND and GRAVEL.	
95.84	4.0	SS-1	5 3 5 11	2	3	24			Medium brown, loose - medium dense, silty, gravelly SAND. Predominately very fine - fine grained, well sorted sand. 20%± non plastic fines. 30%± gravel. Slightly moist. Moderate varnish-like odor, no staining. 108 ppm peak, 70+ ppm.	
93.84	6.0	SS-2	12 7 5 4	2	15	24			Medium brown, medium dense, silty, gravelly SAND as above. Trace of mica and mafic minerals. Dry. Strong, fresher gasoline odor than above. 2,500+ ppm.	
91.84	8.0	SS-3	5 4 3 2	2	6	24			Medium gray brown, loose, silty, gravelly SAND similar to above. Wet at bottom. Strong, fresh and weathered gasoline odor. 2,500+ ppm.	
89.84	10.0	SS-4	5 6 10 15	2	7	24			Medium - dark gray, medium dense, silty SAND. Very fine - medium grained, well sorted sand. 20%± non plastic fines. Trace of mica and mafic minerals. Probable gravel below 9±. Saturated. Strong, fresher gasoline odor. 2,500+ ppm.	
87.84	12.0	SS-5	26 48 26 24	2	17	24			Medium brown, dense - very dense, sandy GRAVEL. Very fine - very coarse grained, poorly sorted sand. 10%+ non plastic fines. 60%+ gravel 1/8" - probable cobbles. Saturated. Faint gasoline odor. 260 ppm peak, 100+ ppm sustained.	
85.84	14.0	SS-6	28 28 15 7	2	16	24			Medium brown, medium dense - very dense, sandy GRAVEL similar to above, but with more coarser grained sand, and less and finer gravel. Trace of non plastic fines. Likely to be sandier below 13±. Saturated. Moderate - strong gasoline odor. 2,000 ppm peak, 700+ ppm sustained.	
83.84	16.0	SS-7	4 5 4 6	2	13	24			Medium gray, loose, gravelly silty SAND. Very fine - rarely medium grained, well sorted sand. 30%± non plastic fines. 10%+ fine gravel to 3/8". Saturated. No odor or staining.	
81.84	18.0	SS-8	8 14 7 9	2	15	24			Medium gray, medium dense, gravelly, silty SAND similar to above. Wet. No odor or staining. 13 ppm.	
									No refusal to depth.  Installed 10' of 2" dia. .010" slot, threaded, flush joint, Schd 40 PVC at 15'. Sand backfill to 4'. Bentonite seal 2.7' - 4'. Grouted in flush, watertight, cast iron monitoring well box.	
B - Penetration resistance, Blows/6" of a 140 lb hammer falling 30 in to drive a split spoon sampler. REC - Length of sample recovered. SS - Split spoon sample. U - Undisturbed samples S - Shelby tube                      D - Denison F - Fixed piston                     P - Pitcher O - Osterberg SAMP OD - Outside diameter of sampling spoon							NOTES  HSA = Hollow Stem Auger CCH = Conical Cutter Head ppm Refers to PID reading (10.6 eV lamp)  Top of PVC elev = 99.47		TOWN OF SPRINGFIELD RECYCLING CENTER SITE INVESTIGATION  SPRINGFIELD, VERMONT  DATE: 1/7/99                      PROJECT: 4080008.02	
PAGE 1			OF 1			LOG OF BORING: MW-1				

DH DUFRESNE-HENRY, INC.



BORING LOCATION MW-2		INCLINATION V		BEARING		DATE START/FINISH 1/7/99 / 1/7/99				
CASING ID		CORE SIZE		TOTAL DEPTH 17 FT		DRILLED BY: M & W SOILS ENGINEERING, INC. (M.D.)				
GROUND EL (AD) 99.88		DEPTH TO WATER/DATE 8± FT/ IMMED.		LOGGED BY: B. COX						
ELEV	SAMPLE			SAMP OD (IN)	LENGTH		REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION	
	AD (FT)	DEPTH (FT)	TYPE AND NO.		B	REC (IN)				PENE-TRATION (IN)
97.88	2.0						4 1/4" HSA	8"/CCH	0" - 3" Bituminous concrete pavement. 3" - 2" Medium brown SAND and GRAVEL.	
95.88	4.0	SS-1	30* 10 5 5	2	20	24	* 30 (frost)		2' - 3' Medium brown, medium dense, gravelly SAND similar to above. 3' - 4' Medium brown gray, loose - medium dense, sandy SILT. 70%+ non plastic, inorganic fines. Trace of mica. Trace of fine roots. Slightly moist. No odor or staining. 32 ppm peak, 5+ ppm sustained.	
93.88	6.0	SS-2	6 7 7 5	2	15	24			Medium gold brown, medium dense, silty SAND. Very fine - fine grained, well sorted sand. 40%± non plastic fines. Trace of mica and mafic minerals. Dry. No odor or staining. 12 ppm.	
91.88	8.0	SS-3	4 4 4 4	2	14	24			Medium brown, loose, silty SAND similar to above, but slightly coarser grained overall. Coarse grained sand bottom 1"±. Wet bottom several inches. No odor or staining. 3.5 ppm.	
89.88	10.0	SS-4	3 4 6 28	2	16	24			Medium brown, loose - medium dense, silty, gravelly SAND that gets coarser grained with depth. Very fine - very coarse grained, poorly sorted sand. 10%+ non plastic fines. 20%+ fine gravel 1/8" - 3/8". Saturated. No odor or staining. 27 ppm peak, 10+ ppm sustained.	
84.88	15.0						4" SSA	4 1/2"/FB	Could not drive spoon at 10'. Refusal on HSA at 10'6"± Advanced solid stem augers to 15'.	
82.88	17.0	SS-5	20 56 52 52	2	16	24			Medium - dark gray, very dense, TILL. Predominately very fine grained, well sorted sand. 40%± non plastic fines. 40%± gravel to 1"±. Dry. No odor or staining. 3 ppm.	
									No refusal to depth.  Installed 10' of 2" dia, .010" slot, threaded, flush joint, Schd 40 PVC at 15'. Sand backfill to 4'. Bentonite seal 2.8' - 4'. Grouted in flush, watertight, cast iron monitoring well box.	
B - Penetration resistance, Blows/6" of a 140 lb hammer falling 30 in to drive a split spoon sampler. REC - Length of sample recovered. SS - Split spoon sample. U - Undisturbed samples S - Shelby tube                   D - Denison F - Fixed piston               P - Pitcher O - Osterberg SAMP OD - Outside diameter of sampling spoon							NOTES HSA = Hollow Stem Auger CCH = Conical Cutter Head SSA = Solid Stem Auger FB = Finger Bit ppm Refers to PID reading (10.6 eV lamp) Top of PVC elev = 99.62		TOWN OF SPRINGFIELD RECYCLING CENTER SITE INVESTIGATION  SPRINGFIELD, VERMONT DATE: 1/7/99                   PROJECT: 4080008.02	
PAGE 1 OF 1				LOG OF BORING: MW-2						



BORING LOCATION MW-3		INCLINATION V		BEARING		DATE START/FINISH 1/8/99 / 1/8/99				
CASING ID		CORE SIZE		TOTAL DEPTH 15 FT		DRILLED BY: M & W SOILS ENGINEERING, INC. (M.D.)				
GROUND EL (AD) 99.83		DEPTH TO WATER/DATE 9±		FT/ IMMED.		LOGGED BY: B. COX				
ELEV	SAMPLE				LENGTH		REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION	
	AD (FT)	DEPTH (FT)	TYPE AND NO.	B	SAMP OD (IN)	REC (IN)				PENE-TRATION (IN)
94.83	5.0						4 1/4" HSA	8"/CCH	0" - 3" Bituminous concrete pavement. 3" - 5" Medium brown SAND and GRAVEL.	
92.83	7.0	SS-1	2 2 2 1	2	10	24			Medium brown, very loose, silty SAND. Very fine - fine grained, well sorted sand. 30%± non plastic fines. Trace of mica and mafic minerals. Dry. No odor or staining. 5.6 ppm.	
90.83	9.0	SS-2	3 2 2 1	2	8	24			Medium brown gray, very loose - loose, silty SAND similar to above, but grayer. Occasional light orange mottles. Saturated at bottom. Faint gasoline odor. 7.9 ppm.	
88.83	11.0	SS-3	4 9 70 58	2	15	24			9' - 10'± Medium brown gray, medium dense, silty SAND similar to above. 10' - 11' Medium gray, very dense, sandy GRAVEL. Very fine - very coarse grained, poorly sorted sand, rounded sand of quartz and rock fragments. 10% non plastic fines. 50%+ rounded gravel 1/8" - 2"+. Saturated. Faint gasoline odor. 15 ppm peak, 5+ ppm sustained.	
86.83	13.0	SS-4	22 19 22 14	2	19	24			Medium gray, dense, sandy GRAVEL similar to above. Saturated. Faint oily gasoline odor. 16 ppm peak, 5+ ppm sustained.	
84.83	15.0	SS-5	2 1 2 2	2	5	24			Medium gray, very loose, silty SAND. Predominately fine grained, well sorted sand. 20%+ non plastic fines. Trace of coarse grained sand, mica, and mafic minerals. Saturated. Very faint gasoline odor (?). 16 ppm.	
									No refusal to depth.  Installed 10' of 2" dia. .010" slot, threaded, flush joint, Schd 40 PVC at 15'. Sand backfill to 3'8". Bentonite seal 2'10" - 3'8". Grouted in flush, watertight, cast iron monitoring well box.	
B - Penetration resistance, Blows/6" of a 140 lb hammer falling 30 in to drive a split spoon sampler. REC - Length of sample recovered. SS - Split spoon sample. U - Undisturbed samples S - Shelby tube F - Fixed piston O - Osterberg SAMP OD - Outside diameter of sampling spoon D - Denison P - Pitcher							NOTES HSA = Hollow Stem Auger CCH = Conical Cutter Head ppm Refers to PID reading (10.6 eV lamp) Top of PVC elev = 99.55		TOWN OF SPRINGFIELD RECYCLING CENTER SITE INVESTIGATION  SPRINGFIELD, VERMONT DATE: 1/8/99 PROJECT: 4080008.02	
							PAGE 1 OF 1		LOG OF BORING: MW-3	

DH DUFRESNE-HENRY, INC.



BORING LOCATION		MW-4		INCLINATION		V		BEARING		DATE START/FINISH		1/8/99 / 1/8/99		
CASING ID		CORE SIZE		TOTAL DEPTH		15		FT		DRILLED BY: M & W SOILS ENGINEERING, INC. (M.D.)				
GROUND EL (AD)		99.81		DEPTH TO WATER/DATE		9±		FT/ IMMED.		LOGGED BY: B. COX				
ELEV	SAMPLE			SAMP OD (IN)	LENGTH		REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION					
AD (FT)	DEPTH (FT)	TYPE AND NO.	B	SAMP OD (IN)	REC (IN)	PENE-TRATION (IN)	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION					
94.81	5.0						4 1/4" HSA	8"/CCH	0" - 3" Bituminous concrete pavement. 3" - 5' Medium brown SAND and GRAVEL.					
92.81	7.0	SS-1	2 3 5 6	2	16	24			Medium gold brown, loose - medium dense, silty SAND. Very fine - fine grained, well sorted sand. 30%± non plastic fines. Gravelly bottom 6"±. Trace of mica and mafic minerals. Dry. No odor or staining. 4.2 ppm.					
90.81	9.0	SS-2	13 13 16 16	2	3	24			Medium gray brown, medium dense, sandy GRAVEL. Very fine - coarse grained, moderately poorly sorted sand. 10% - 20% non plastic fines. 50%+ fine rounded gravel 1/8" - 1"±. Saturated at bottom. No odor or staining. 9.5 ppm.					
88.81	11.0	SS-3	22 22 20 22	2	3	24			Medium gray brown, dense, sandy GRAVEL. Very fine - very coarse grained, poorly sorted sand of quartz and rock fragments. 10%± non plastic fines. 60%+ gravel 1/8" - 2"+. Saturated. Faint, oily gasoline odor, no staining. 89 ppm.					
86.81	13.0	SS-4	26 24 15 10	2	20	24			Medium gray, medium dense - dense, sandy GRAVEL similar to above, but with a coarser sand fraction, and finer gravel. May get sandier below 12"±. Saturated. Faint, oily gasoline odor. 104 ppm peak, 30+ ppm sustained.					
84.81	15.0	SS-5	2 3 2 3	2	16	24			Medium gray, very loose, silty SAND. Predominately fine grained, well sorted sand. 20%+ non plastic fines. Trace of coarse grained sand, mica, and mafic minerals. Saturated. No odor or staining. 15 ppm peak, 10+ ppm sustained.					
									No refusal to depth.  Installed 10' of 2" dia, .010" slot, threaded, flush joint, Schd 40 PVC at 15'. Sand backfill to 3'8". Bentonite seal 2'9" - 3'8". Grouted in flush, watertight, cast iron monitoring well box.					
B - Penetration resistance, Blows/6" of a 140 lb hammer falling 30 in to drive a split spoon sampler. REC - Length of sample recovered. SS - Split spoon sample. U - Undisturbed samples S - Shelby tube                   D - Denison F - Fixed piston               P - Pitcher O - Osterberg SAMP OD - Outside diameter of sampling spoon							NOTES  HSA = Hollow Stem Auger CCH = Conical Cutter Head ppm Refers to PID reading (10.6 eV lamp)  Top of PVC elev = 99.53			TOWN OF SPRINGFIELD RECYCLING CENTER SITE INVESTIGATION  SPRINGFIELD, VERMONT DATE: 1/8/99                   PROJECT: 4080008.02				
PAGE 1			OF 1		LOG OF BORING: MW-4									

DH DUFRESNE-HENRY, INC.



M & W Soils Engineering Inc.  
Main St. Charlestown, NH 03603

SHEET 1 OF 1  
DATE 1/7/99  
HOLE NO. MW-1  
LINE & STA.  
OFFSET

TO DUFRESNE-HENRY, INC. ADDRESS NORTH SPRINGFIELD, VT  
PROJECT NAME SPRINGFIELD RECYCLING CENTER LOCATION SPRINGFIELD, VT  
REPORT SENT TO BRUCE COX PROJ. NO.  
SAMPLES RETAINED BY DUFRESNE-HENRY, INC. OUR JOB NO. 7638-99

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	SURFACE ELEV.
AT 9:7"	AT IMMEDIATELY	HOURS	Type HSA	SS	DATE STARTED 1/7/99
AT	AT	HOURS	Size I. D. 4 1/4"	1 1/2"	DATE COMPL. 1/7/99
			Hammer Wt. 140#	BIT	BORING FORMAN M.D., M.H. & C.C.
			Hammer Fall 30"		INSPECTOR B. COX
					SOILS ENGR.

LOCATION OF BORING AS STAKED, IN PARKING LOT, CENTER OF OLD TANKS

Depth	SAMPLE DEPTHS FROM-TO	TYPE OF SAMPLE	Blows per 6" on sampler	MOISTURE DENSITY OR CONSIST.	STRATA CHANGE ELEV.	FIELD SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness, Drilling time, seams and ect	SAMPLE		
							NO.	PEN	REC
					1 7/8"	ASPHALT	1	24"	6"
5'	2' - 4'	SS	5 3			MED. DENSE BROWN COARSE SAND (FILL)	2	24"	14"
	4' - 6'	SS	5 3				3	24"	18"
	6' - 8'	SS	7 11				4	24"	14"
	8' - 10'	SS	5 4				5	24"	16"
				3 2				6	24"
10'	10' - 12'	SS	5 6		9' +/-	DENSE - WET BROWN FINE TO COARSE GRAVEL	7	24"	13"
	12' - 14'	SS	10 15				8	24"	15"
	14' - 16'	SS	28 48		12'				
15'	16' - 18'	SS	26 24		14'	DENSE - WET BROWN COARSE SAND AND FINE GRAVEL			
			15 7						
			4 5		18'				
20'			4 6			DENSE - WET GREY FINE SAND WITH SOME SILT - TRACE OF FINE GRAVEL			
			8 14						
			7 9						

GROUND SURFACE TO 18' USED HSA CASING THEN DROVE SS 24"

Sample Type	Proportions Used	140 lb. wt. x 30"-fall an 2" O.D. Sampler	summary
D-Dry C-Cored W-Washed	trace 0 to 10%	Cohesionless Density	EARTH BORING 18"
UP-Unfinished Piston	little 10 to 20%	0-10 Loose	ROCK CORING
TP-Test Pit A-Augur V-Vane	some 20 to 35%	10-30 Med. Dense	SAMPLES 8
UT-Undisturbed Thinwall	and 35 to 50%	30-50 Dense	HOLE NO. MW-1
		50+ Very Dense	
		Cohensive Consistency	
		0-4 Soft 30 + Hard	
		4-8 M/Stiff	
		8-15 Stiff	
		15-30 V-Stiff	

**M & W Soils Engineering Inc.**  
Main St. Charlestown, NH 03603

SHEET 1 OF 1  
DATE 1/7/99  
HOLE NO. MW-2  
LINE & STA.  
OFFSET

TO DUFRESNE-HENRY, INC. ADDRESS NORTH SPRINGFIELD, VT  
PROJECT NAME SPRINGFIELD RECYCLING CENTER LOCATION SPRINGFIELD, VT  
REPORT SENT TO BRUCE COX PROJ. NO.  
SAMPLES RETAINED BY DUFRESNE-HENRY, INC. OUR JOB NO. 7638-99

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	SURFACE ELEV.
AT 9'5"	AT 1/2 HOURS	Type HSA	SS		DATE STARTED 1/7/99
		Size I. D. 4 1/4"	1 1/2"		DATE COMPL. 1/7/99
		Hammer Wt. 140#	BIT		BORING FORMAN M.D., M.H. & C.C.
		Hammer Fall 30"			INSPECTOR B. COX
					SOILS ENGR.

LOCATION OF BORING SOUTH OF OLD TANKS, IN PARKING LOT

Depth	SAMPLE DEPTHS FROM-TO	TYPE OF SAMPLE	Blows per 6" on sampler		MOISTURE DENSITY OR CONSIST.	STRATA CHANGE ELEV.	FIELD SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness, Drilling time, seams and ect.	SAMPLE		
								NO.	PEN	REC
						3"	ASPHALT	1	24"	19"
	2' - 4'	SS	30	10		1'	BROWN COARSE GRAVEL			
			5	5	MED. DENSE		BROWN FINE SAND - TRACE OF ORGANICS AND SILT	2	24"	17"
	4' - 6'	SS	6	7		4'+/-				
5'	6' - 8'	SS	4	4				3	24"	14"
			4	4	MED. DENSE		BROWN MEDIUM TO COARSE SANDS	4	24"	18"
	8' - 10'	SS	3	4						
			6	28						
10'					DENSE - WET	9'6"	BROWN COARSE SANDS AND FINE GRAVELS			
						11'				
					VERY DENSE		GREY GRAVELLY SANDS WITH SOME SILTS	5	24"	16"
15'	15' - 17'	SS	20	56						
			52	52		17'				
20'							NO BEDROCK TO DEPTH			
							SET 2" PVC WELL AT 15' TOP OF WELL AT 5' SAND TO 4' BENTONITE TO 2'10"			
							MATERIALS USED: 10' OF 2" PVC 0.010" SLOT SCREEN 5' OF 2" PVC SOLID 25# OF BENTONITE CHIPS 200# OF SAND 40# OF CEMENT MIX 1 2" GRIPPER 1 2" PVC CAP 1 6" CAST IRON MANHOLE			

GROUND SURFACE TO 17' USED HSA CASING THEN DROVE SS 24" summary

Sample Type	Proportions Used	140 lb. wt. x 30"-fall an 2" O.D. Sampler	
D-Dry C-Cored W-Washed	trace 0 to 10%	Cohesionless Density	Cohesive Consistency
UP-Unfinished Piston	little 10 to 20%	0-10 Loose	0-4 Soft 30 + Hard
TP-Test Pit A-Auger V-Vane	some 20 to 35%	10-30 Med. Dense	4-8 M/Stiff
UT-Undisturbed Thinwall	and 35 to 50%	30-50 Dense	8-15 Stiff
		50+ Very Dense	15-30 V-Stiff

EARTH BORING 17'  
ROCK CORING  
SAMPLES 5  
HOLE NO. MW-2

M & W Soils Engineering Inc.  
Main St. Charlestown, NH 03603

SHEET 1 OF 1  
DATE 1/8/99  
HOLE NO. MW-3  
LINE & STA.  
OFFSET

TO DUFRESNE-HENRY, INC. ADDRESS NORTH SPRINGFIELD, VT  
PROJECT NAME SPRINGFIELD RECYCLING CENTER LOCATION SPRINGFIELD, VT  
REPORT SENT TO BRUCE COX PROJ. NO.  
SAMPLES RETAINED BY DUFRESNE-HENRY, INC. OUR JOB NO. 7638-99

GROUND WATER OBSERVATIONS		Type	CASING	SAMPLER	CORE BAR	SURFACE ELEV.
AT 10'1"	AT 1/2 HOURS		HSA	SS		DATE STARTED 1/8/99
		Size I. D.	4 1/4"	1 1/2"		DATE COMPL. 1/8/99
		Hammer Wt.		140#	BIT	BORING FORMAN M.D., M.H. & C.C.
AT _____ AT _____ HOURS		Hammer Fall		30"		INSPECTOR B. COX
						SOILS ENGR.

LOCATION OF BORING NORTH OF OLD TANKS

Depth	SAMPLE DEPTHS FROM-TO	TYPE OF SAMPLE	Blows per 6" on sampler		MOISTURE DENSITY OR CONSIST.	STRATA CHANGE ELEV.	FIELD SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness, Drilling time, seams and ect	SAMPLE		
								NO.	PEN	REC
5'					FROZEN	3"	ASPHALT			
						2"	BROWN FINE GRAVEL			
	5' - 7'	SS	2	2	MED. DENSE		BROWN MEDIUM SAND	1	24"	19"
	7' - 9'	SS	3	3		2		24"	21"	
			2	1						
9' - 11'	SS	4	9		9'		3	24"	11"	
10'			70	58	MED. DENSE		BROWN COARSE SAND AND FINE GRAVELS	4	24"	15"
	11' - 13'	SS	22	19	WET	10'				
	13' - 15'	SS	2	2	VERY DENSE	13'	BROWN COARSE GRAVELS	5	24"	12"
15'			1	2	LOOSE	15'	BROWN MEDIUM TO COARSE SANDS - TRACE OF SILT			
							NO BEDROCK TO DEPTH			
							SET 2" PVC WELL AT 15'			
							TOP OF WELL AT 5'			
							SAND TO 3'8"			
							BENTONITE TO 2'10"			
							MATERIALS USED:			
							10' OF 2" PVC 0.010" SLOT SCREEN			
							5' OF 2" PVC SOLID			
							25# OF BENTONITE CHIPS			

GROUND SURFACE TO 15' USED HSA CASING THEN DROVE SS 24"

Sample Type D-Dry C-Cored W-Washed UP-Unfinished Piston TP-Test Pit A-Auger V-Vane UT-Undisturbed Thinwall	Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%	140 lb. wt. x 30"-fall an 2" O.D. Sampler	summary	
			Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense	Cohesive Consistency 0-4 Soft 30 + Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff

EARTH BORING 15'  
ROCK CORING  
SAMPLES 5  
HOLE NO. MW-3

M & W Soils Engineering Inc.  
Main St. Charlestown, NH 03603

SHEET 1 OF 1  
DATE 1/8/99  
HOLE NO. MW-4  
LINE & STA.  
OFFSET

TO DUFRESNE-HENRY, INC. ADDRESS NORTH SPRINGFIELD, VT  
PROJECT NAME SPRINGFIELD RECYCLING CENTER LOCATION SPRINGFIELD, VT  
REPORT SENT TO BRUCE COX PROJ. NO.  
SAMPLES RETAINED BY DUFRESNE-HENRY, INC. OUR JOB NO. 7638-99

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	SURFACE ELEV.
AT 10'5"	AT IMMEDIATELY	Type HSA	SS		DATE STARTED 1/8/99
	HOURS	Size I. D. 4 1/4"	1 1/2"		DATE COMPL. 1/8/99
AT	AT	Hammer Wt. 140#	BIT		BORING FORMAN M.D., M.H. & C.C.
	HOURS	Hammer Fall 30"			INSPECTOR B. COX
					SOILS ENGR.

LOCATION OF BORING

Depth	SAMPLE DEPTHS FROM-TO	TYPE OF SAMPLE	Blows per 6" on sampler	MOISTURE DENSITY OR CONSIST.	STRATA CHANGE ELEV.	FIELD SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness, Drilling time, seams and act	SAMPLE		
							NO.	PEN	REC
					3"	ASPHALT			
				DENSE	2'	BROWN COARSE GRAVEL			
				MED. DENSE		BROWN MEDIUM SAND	1	24"	17"
5'	5' - 7'	SS	2 3		6'		2	24"	6"
	7' - 9'	SS	13 13				3	24"	8"
			16 16				4	24"	19"
	9' - 11'	SS	22 22	DENSE - WET		BROWN COARSE GRAVELS			
10'	11' - 13'	SS	26 24		13'+/-		5	24"	16"
			16 10						
	13' - 15'	SS	2 3	LOOSE	15'	BROWN MEDIUM TO COARSE SANDS			
15'			2 3			NO BEDROCK TO DEPTH			
						SET 2" PVC WELL AT 15'			
						TOP OF WELL AT 5'			
						SAND TO 3'8"			
						BENTONITE TO 2'9"			
						MATERIALS USED:			
						10' OF 2" PVC 0.010" SLOT SCREEN			
						5' OF 2" PVC SOLID			
						25# OF BENTONITE CHIPS			
						200# OF SAND			
						40# OF CEMENT MIX			
						1 2" GRIPPER			
						1 2" PVC CAP			
						1 6" CAST IRON MANHOLE			

GROUND SURFACE TO 15'

USED HSA CASING THEN DROVE SS 24"

Sample Type

D-Dry C-Cored W-Washed  
UP-Unfinished Piston  
TP-Test Pit A-Auger V-Vane Tes  
UT-Undisturbed Thinwall

Proportions Used  
trace 0 to 10%  
little 10 to 20%  
some 20 to 35%  
and 35 to 50%

140 lb. wt. x 30"-fall an 2" O.D. Sampler  
Cohesionless Density  
0-10 Loose  
10-30 Med. Dense  
30-50 Dense  
50+ Very Dense  
Cohesive Consistency  
0-4 Soft 30 + Hard  
4-8 M/Stiff  
8-15 Stiff  
15-30 V-Stiff

summary

EARTH BORING 15'  
ROCK CORING  
SAMPLES 5

HOLE NO. MW-4

SPRINGFIELD RECYCLING CENTER  
SITE INVESTIGATION  
SPRINGFIELD, VERMONT

January 7, 1999

Dufresne-Henry, Inc. - Bruce Cox on site at 11:45 am.

M & W Soils Engineering, Inc. - Myron Domingue, Michael Hitchcock and Chris Conant on site at 11:45 am.

Dig Safe #T9907371-01.

Prior to the start of work I stopped at the DPW garage to arrange for removal of snow from the area of the former UST's.

MW-1

MW-1 is located at the north end of the former pump island. The boring was started at 12:30 pm. All water used for cleaning split spoons and other tools was brought to the site by the boring contractor. Drilled with 4 1/4" hollow stem augers taking continuous split spoon samples starting at 2 feet. All samples were screened for VOC's with a Photovac HL-2000 (10.6 eV lamp, calibrated with 99.1 ppm Isobutylene). Representative soil samples from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. The total depth of the boring was 18' with no refusal. The general geologic column is bituminous concrete pavement to 2", gravelly sand to 8', silty sand to 10', sandy gravel to 14', and silty sand to the limit of the boring. The water table was encountered at approximately 8'. Evidence of contamination was observed in all of the samples. Peak PID readings ranged from 13 ppm to 2,500+ ppm. Installed a 10' long, 2" diameter, .010" machine slotted, threaded, flush joint, Schedule 40 PVC well at 15'. All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 4'. A bentonite seal was installed from 2.7' - 4'. A 6" diameter cast iron, watertight, monitoring well box was grouted in at the surface.

Materials: 10' of 2", .010" slot, threaded, flush joint, Schd 40 PVC.  
4'9" of 2", solid wall, threaded, flush joint, Schd 40 PVC.  
200 lb of silica sand.  
25 lb± of bentonite chips.  
40 lb of concrete mix.  
1 2" push-on PVC cap.  
1 2" expanding gasket cap.  
1 6" monitoring well box.

MW-2

MW-2 is located approximately 45' northwest of the former pump island. The boring was started at 2:25 pm. All water used for cleaning split spoons and other tools was brought to the site by the boring contractor. Drilled with 4 1/4" hollow stem augers taking continuous split spoon samples

starting at 2 feet. All samples were screened for VOC's with a Photovac HL-2000 (10.6 eV lamp, calibrated with 99.1 ppm Isobutylene). Representative soil samples from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. The total depth of the boring was 17' with no refusal. The hollow stem augers could only be advanced to 15'. Solid stem augers were used to advance the hole to 17'. The general geologic column is bituminous concrete pavement to 3", gravelly sand to 3', sandy silt to 4', silty sand to 6', gravelly sand to 15', and till to the limit of the boring. The water table was encountered at approximately 8'. No evidence of contamination by visual or olfactory senses was observed in the samples or on the tools. Peak PID readings ranged from 3 ppm to 32 ppm. Installed a 10' long, 2" diameter, .010" machine slotted, threaded, flush joint, Schedule 40 PVC well at 15'. All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 4'. A bentonite seal was installed from 2.8' - 4'. A 6" diameter cast iron, watertight, monitoring well box was grouted in at the surface.

Materials: 10' of 2", .010" slot, threaded, flush joint, Schd 40 PVC.  
4'9" of 2", solid wall, threaded, flush joint, Schd 40 PVC.  
200 lb of silica sand.  
25 lb± of bentonite chips.  
40 lb of concrete mix.  
1 2" push-on PVC cap.  
1 2" expanding gasket cap.  
1 6" monitoring well box.

Visitors: DPW personnel.

Weather: Mostly cloudy, teens to singles, breezy.

Off site: 4:20 pm.

### **January 8, 1999**

Dufresne-Henry, Inc. - Bruce Cox on site at 8:55 am.

M & W Soils Engineering, Inc. - Myron Domingue, Michael Hitchcock, and Chris Conant on site at 9:25 am.

The completed wells were tied in.

### MW-3

MW-3 is located approximately 60' east of the former pump island. The boring was started at 9:30 am. All water used for cleaning split spoons and other tools was brought to the site by the boring contractor. Drilled with 4 1/4" hollow stem augers taking continuous split spoon samples starting at 5 feet. All samples were screened for VOC's with a Photovac HL-2000 (10.6 eV lamp, calibrated with 99.1 ppm Isobutylene). Representative soil samples from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. The total depth of the boring was 15' with no refusal. The general geologic column is bituminous concrete pavement to 3", silty sand to 10', sandy gravel to 13', and silty sand to the limit of the boring. The water table was encountered at approximately

9'. Olfactory evidence of contamination was observed from 7' to 13'. Peak PID readings ranged from 5.6 ppm to 16 ppm. Installed a 10' long, 2" diameter, .010" machine slotted, threaded, flush joint, Schedule 40 PVC well at 15'. All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 3'8". A bentonite seal was installed from 2'10" - 3'8". A 6" diameter cast iron, watertight, monitoring well box was grouted in at the surface.

Materials: 10' of 2", .010" slot, threaded, flush joint, Schd 40 PVC.  
4'9" of 2", solid wall, threaded, flush joint, Schd 40 PVC.  
200 lb of silica sand.  
25 lb± of bentonite chips.  
40 lb of concrete mix.  
1 2" push-on PVC cap.  
1 2" expanding gasket cap.  
1 6" monitoring well box.

#### MW-4

MW-4 is located approximately 90' southeast of the former pump island. The boring was started at 11:20 am. All water used for cleaning split spoons and other tools was brought to the site by the boring contractor. Drilled with 4 1/4" hollow stem augers taking continuous split spoon samples starting at 5 feet. All samples were screened for VOC's with a Photovac HL-2000 (10.6 eV lamp, calibrated with 99.1 ppm Isobutylene). Representative soil samples from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. The total depth of the boring was 15' with no refusal. The general geologic column is bituminous concrete pavement to 3", silty sand to 7', sandy gravel to 13', and silty sand to the limit of the boring. The water table was encountered at approximately 9'. Olfactory evidence of contamination was observed from 9' to 13'. Peak PID readings ranged from 4.2 ppm to 109 ppm. Installed a 10' long, 2" diameter, .010" machine slotted, threaded, flush joint, Schedule 40 PVC well at 15'. All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 3'8". A bentonite seal was installed from 2'9" - 3'8". A 6" diameter cast iron, watertight, monitoring well box was grouted in at the surface.

Materials: 10' of 2", .010" slot, threaded, flush joint, Schd 40 PVC.  
4'9" of 2", solid wall, threaded, flush joint, Schd 40 PVC.  
200 lb of silica sand.  
25 lb± of bentonite chips.  
40 lb of concrete mix.  
1 2" push-on PVC cap.  
1 2" expanding gasket cap.  
1 6" monitoring well box.

The remaining wells were tied in, and rim and top of PVC elevations surveyed for all.

Visitors: none.

Weather: Partly cloudy, singles to 20's, windy.

Off site: 2:00 pm±.

**APPENDIX E**

**CONTRACT LABORATORY ANALYTICAL REPORT**



Oscar Garcia  
Dufresne-Henry  
Precision Park  
N. Springfield, VT 05150

REC'D

FEB 19 1999

DUFRE

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 15437 DUFVT  
Client Identification: Recycling Ctr. Springfield 4080008.02  
Date Received: 1/13/99

Dear Mr. Garcia:

Enclosed please find the laboratory report for the above identified project. All analyses were subjected to rigorous quality control measures to assure data accuracy. Unless otherwise stated, all holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol.

The following standard abbreviations and conventions apply throughout all Eastern Analytical, Inc. reports:

< = "less than" followed by the detection limit  
TNR = Testing Not Requested  
ND = None Detected, no established detection limit  
RL = Reporting Limits

If you have any questions regarding the results contained within, please feel free to directly contact me, the department supervisor, or the analytical chemist who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Will Brunkhorst (W)  
Will Brunkhorst, President

1/29/99  
Date



# LABORATORY REPORT

Eastern Analytical, Inc. ID#: 15437

Client: Dufresne-Henry

Client Designation: Recycling Ctr. Springfield 4080008.02

## Volatile Organic Compounds

Client ID:	MW-1	MW-2	MW-3	MW-4
Matrix:	aqueous	aqueous	aqueous	aqueous
Date Received:	1/13/99	1/13/99	1/13/99	1/13/99
Date Analyzed:	1/22/99	1/22/99	1/22/99	1/22/99
Analyst:	VG	VG	VG	VG
Units:	ug/L	ug/L	ug/L	ug/L
Method:	8021B	8021B	8021B	8021B
Dilution Factor:	1,000	1	100	100
Chloromethane	< 10,000	< 10	< 1,000	< 1,000
Vinyl chloride	< 2,000	< 2	< 200	< 200
Bromomethane	< 10,000	< 10	< 1,000	< 1,000
Chloroethane	< 10,000	< 10	< 1,000	< 1,000
1,1-Dichloroethene	< 1,000	< 1	< 100	< 100
Methylene chloride	< 2,000	< 2	< 200	< 200
trans-1,2-Dichloroethene	< 2,000	< 2	< 200	< 200
1,1-Dichloroethane	< 2,000	< 2	< 200	< 200
cis-1,2-Dichloroethene	< 2,000	< 2	< 200	< 200
Chloroform	< 2,000	< 2	< 200	< 200
1,1,1-Trichloroethane	< 2,000	< 2	< 200	< 200
Carbon tetrachloride	< 2,000	< 2	< 200	< 200
1,2-Dichloroethane	< 2,000	< 2	< 200	< 200
Trichloroethene	< 2,000	< 2	< 200	< 200
1,2-Dichloropropane	< 2,000	< 2	< 200	< 200
Bromodichloromethane	< 2,000	< 2	< 200	< 200
cis-1,3-Dichloropropene	< 2,000	< 2	< 200	< 200
trans-1,3-Dichloropropene	< 2,000	< 2	< 200	< 200
1,1,2-Trichloroethane	< 2,000	< 2	< 200	< 200
Tetrachloroethene	< 2,000	< 2	< 200	< 200
Dibromochloromethane	< 2,000	< 2	< 200	< 200
Chlorobenzene	< 2,000	< 2	< 200	< 200
Bromoform	< 2,000	< 2	< 200	< 200
1,1,2,2-Tetrachloroethane	< 2,000	< 2	< 200	< 200
MTBE	40,000	< 10	5,000	2,000
Benzene	11,000	< 1	1,600	700
Toluene	44,000	11	200	200
Ethylbenzene	5,000	4	300	400
m,p-Xylene	24,000	22	300	900
o-Xylene	10,000	10	100	400

Approved By Clifford Chase, Volatile Organics Supervisor

*Clifford Chase* 1/27/99



# LABORATORY REPORT

Eastern Analytical, Inc. ID#: 15437

Client: Dufresne-Henry

Client Designation: Recycling Ctr. Springfield 4080008.02

Sample ID:	MW-1	MW-2	MW-3	MW-4
Analytical Type:	Sample	Sample	Sample	Sample
Matrix:	aqueous	aqueous	aqueous	aqueous
Date Sampled:	1/12/99	1/12/99	1/12/99	1/12/99
Date Received:	1/13/99	1/13/99	1/13/99	1/13/99
Units:	mg/l	mg/l	mg/l	mg/l
Date of Extraction/Prep:	1/13/99	1/13/99	1/13/99	1/13/99
Date of Analysis:	1/13/99	1/13/99	1/13/99	1/13/99
Analyst:	DJS	DJS	DJS	DJS
Method:	8100 Mod	8100 Mod	8100 Mod	8100 Mod
Dilution Factor:	12	1	1	1
TPH (C9-C40)	290	< 0.6	0.5	0.9

Approved By: Timothy Schaper Organics Supervisor

*Timothy Schaper* 1/27/99

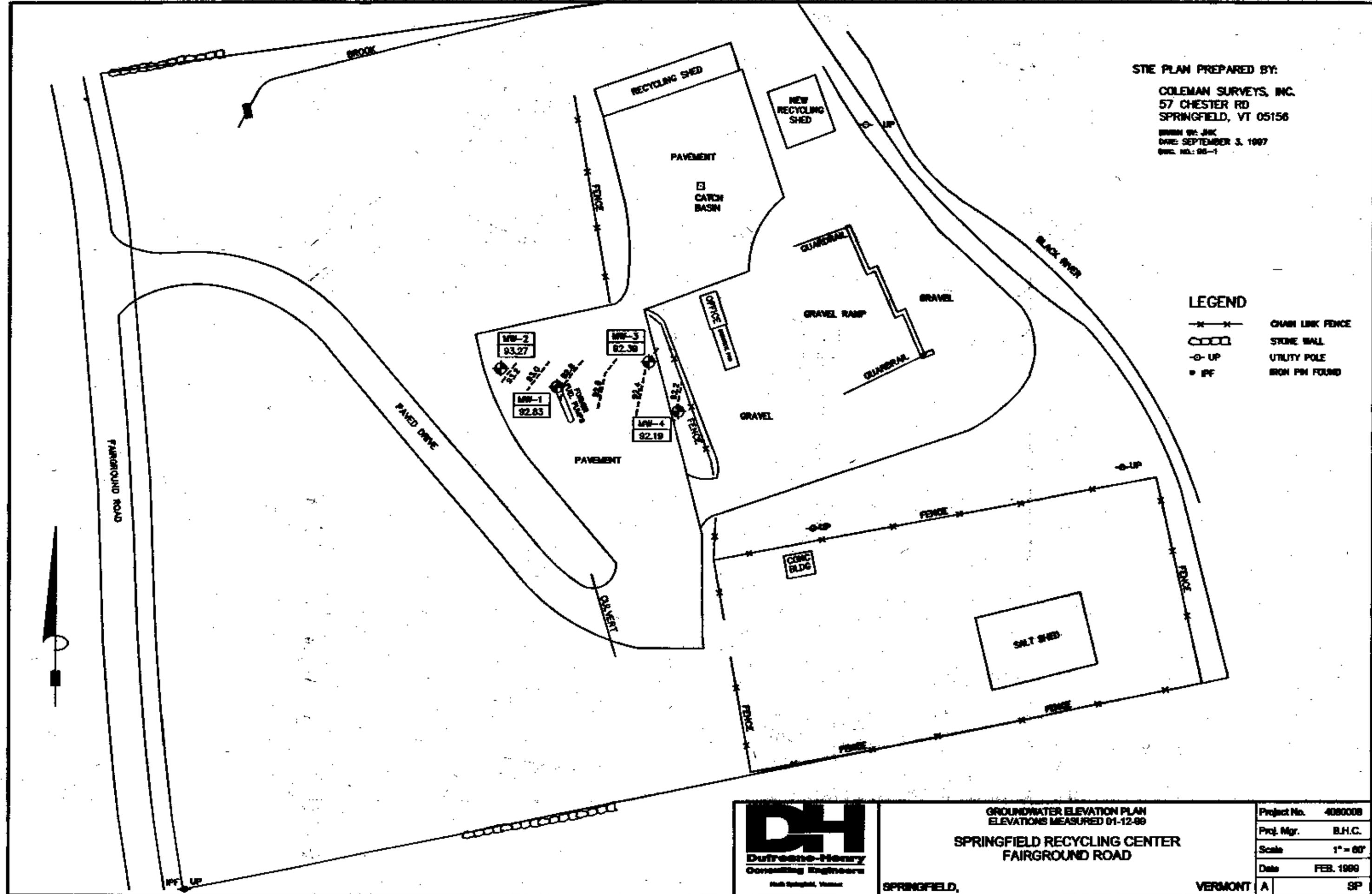


**APPENDIX F**

**GROUNDWATER CONTOUR MAP**

SITE PLAN PREPARED BY:  
 COLEMAN SURVEYS, INC.  
 57 CHESTER RD  
 SPRINGFIELD, VT 05156  
 DRAWN BY: JAK  
 DATE: SEPTEMBER 3, 1997  
 DWG. NO.: 98-1

**LEGEND**  
 -x-x- CHAIN LINK FENCE  
 ○○○○ STONE WALL  
 ⊕-UP UTILITY POLE  
 ●-FF IRON PIN FOUND



GROUNDWATER ELEVATION PLAN  
 ELEVATIONS MEASURED 01-12-89  
**SPRINGFIELD RECYCLING CENTER**  
 FAIRGROUND ROAD  
 SPRINGFIELD, VERMONT

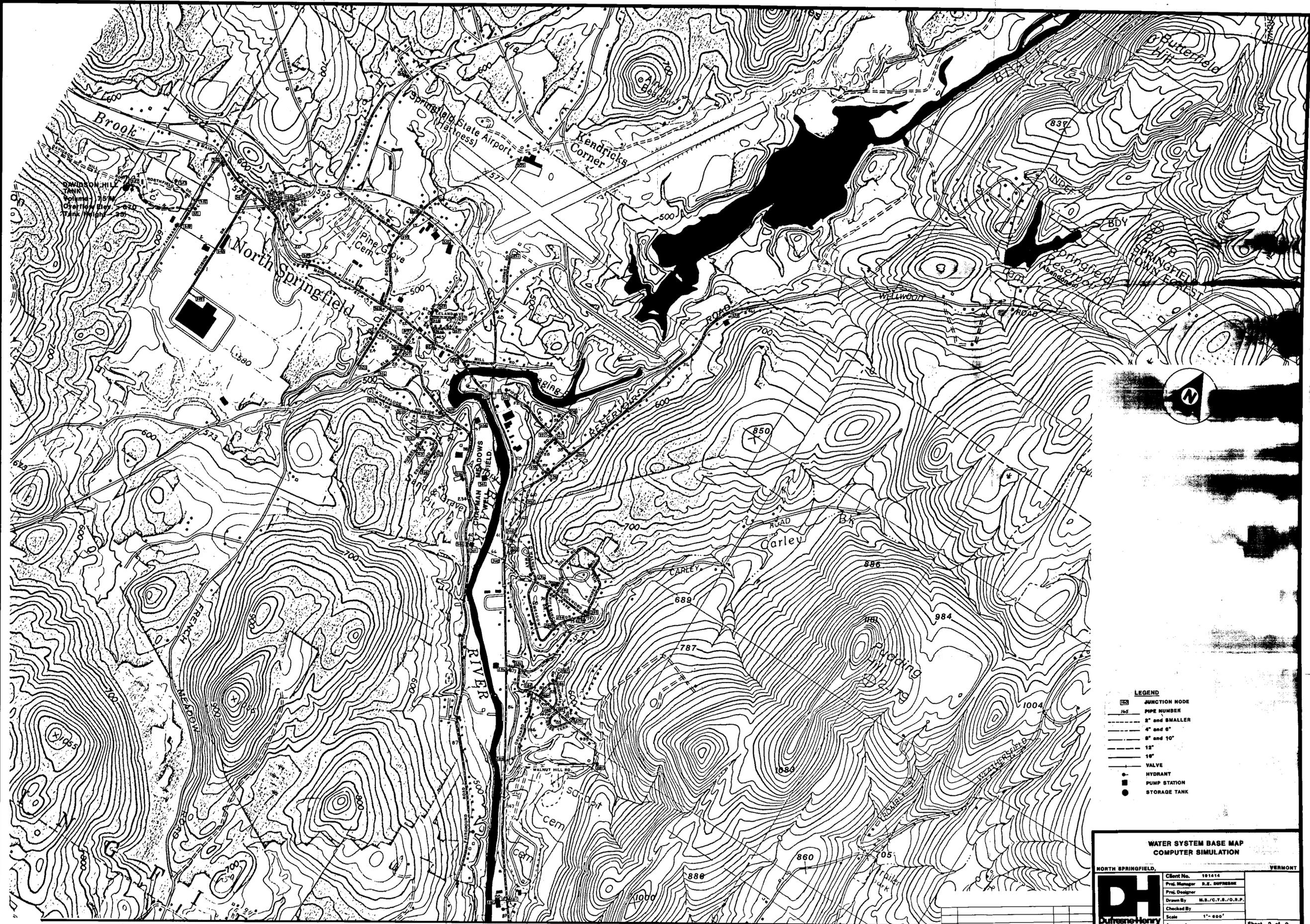
Project No.	408008
Proj. Mgr.	B.H.C.
Scale	1" = 60'
Date	FEB. 1999
	A
	SP

**SPRINGFIELD RECYCLING CENTER - SPRINGFIELD, VERMONT**  
**Groundwater Elevation Summary**

Location	Elevation of PVC	Water Elevation					
		01/12/99	02/25/99				
MW-1	Bot. @ 84.7 99.47	92.83	FP = 1/16" 93.86				
MW-2	Bot. @ 85.1 99.62	93.27	Snow Covered				
MW-3	Bot. @ 84.8 99.55	92.39	93.20				
MW-4	Bot. @ 85.2 99.53	92.19	93.09				

**APPENDIX G**

**NORTH SPRINGFIELD, VT WATER SYSTEM MAP**



- LEGEND**
- JUNCTION NODE
  - PIPE NUMBER
  - 2" and smaller
  - 4" and 6"
  - 8" and 10"
  - 12"
  - 16"
  - VALVE
  - HYDRANT
  - PUMP STATION
  - STORAGE TANK

**WATER SYSTEM BASE MAP  
COMPUTER SIMULATION**

NORTH SPRINGFIELD, VERMONT

 <b>Dunham-Henry</b> <small>INCORPORATED</small> <small>100 Spring Street          North Springfield, Vermont 05160</small>	Client No. 101414	Sheet 2 of 2 D
	Proj. Manager R.E. DOPPELBERG	
	Proj. Designer	
	Drawn By M.B./C.T.B./O.R.P.	
	Checked By	
Scale 1" = 500'	Approved	
Date	Date	

MATCH LINE SHEET 1 of 2

Rev.	Description	By	Date