

Phase (check one)	Type (check one)
<input checked="" type="checkbox"/> Initial 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

**INITIAL  
SITE INVESTIGATION**

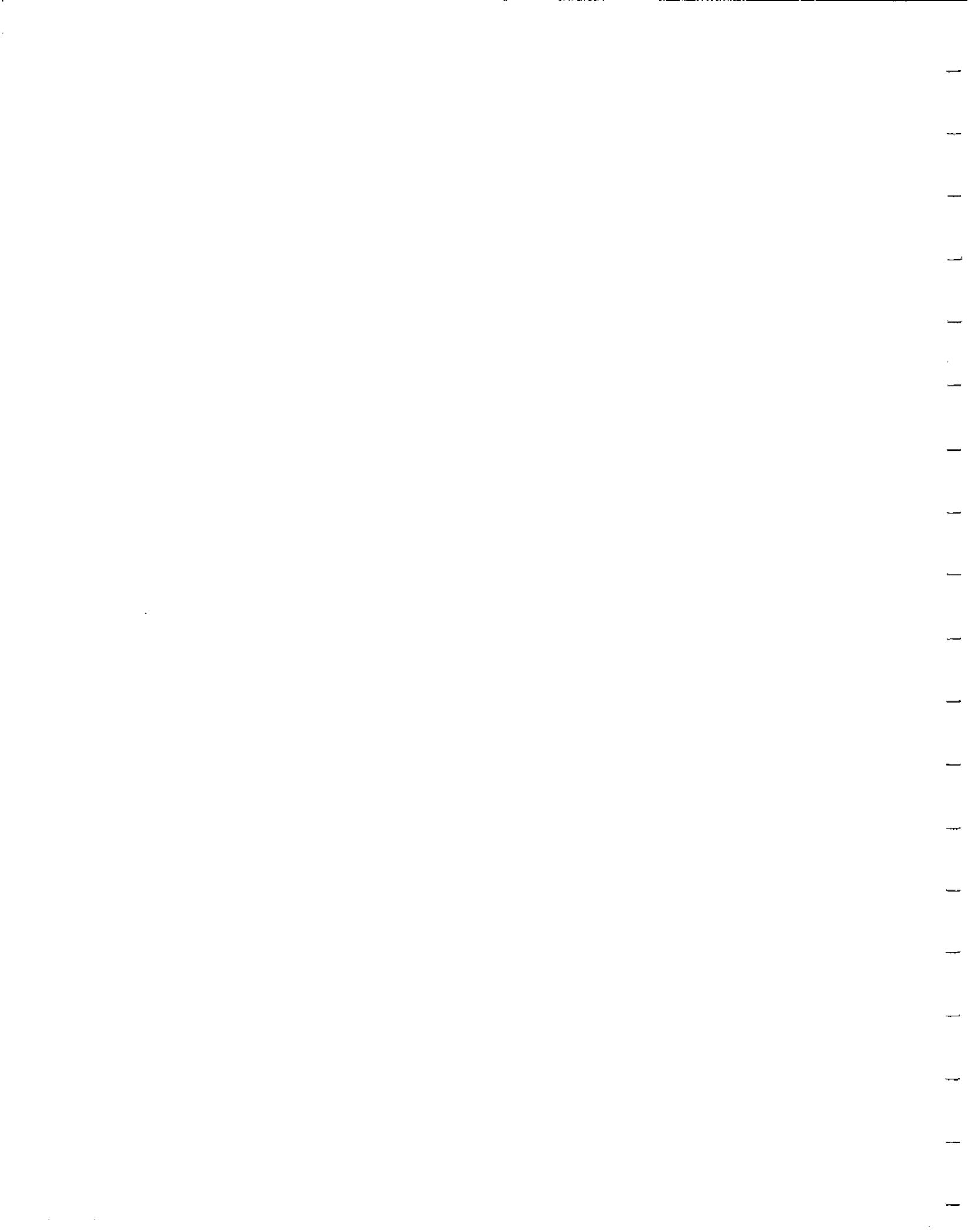
**Wastewater Treatment Facility  
Springfield, VT 05156**

**SMS Site #98-2513**

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

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

**July 26, 1999**



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### APPENDICES

- A - Site Location Map
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- C - Site Plans
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- E - Contract Laboratory Analytical Report
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## EXECUTIVE SUMMARY

An Initial Site Investigation has been completed at the Wastewater Treatment Facility in Springfield, Vermont. The investigation was in response to the discovery of a petroleum product release during a Tank Closure Assessment in July 1998. The subject was one (1) 1,500 gallon #2 fuel oil UST. The tank and piping were found to be in fair condition. The release was attributed to spills and overfills. The tank grave was overexcavated to allow installation of a new 1,000 gallon UST. Approximately 10 cubic yards of contaminated soil were polyencapsulated on site.

One shallow groundwater monitoring well was installed on June 1, 1999 as near as practical to the former UST. No evidence of contamination was observed in the boring soil samples. The well was sampled on June 20, 1999 and analyzed for VOC's by EPA Method 8021B (modified to include Naphthalene and Trimethylbenzenes) and for TPH by EPA Method 8100(mod). No compounds above method detection limits were found.

The direction of groundwater flow could not be determined, but is likely to be to the east toward the Black River.

The great majority of the properties within a half mile radius of the site are on the municipal water supply system. Those that are not are topographically higher (by as much as 200 feet) and often separated from the site by Seavers Brook. The nearest surface waters are Seavers Brook approximately 350 feet to the south and the Black River approximately 300 feet to the east. The nearest structure is the anaerobic digester building which has a full basement. No petroleum vapors have been reported in this building. The nearest off site structures are slab on grade commercial buildings several hundred feet to the south. Impacts to these potential receptors are unlikely.

Based on these findings, the site does not meet the SMS criteria for corrective actions. It is our opinion that a confirmatory round of sampling be done during high water table conditions in the spring of 2000. The need for additional monitoring will be re-evaluated at that time. The polyencapsulated soil will be monitored periodically to track natural attenuation. There may be a small amount of petroleum contaminated soil that remains in place. A major upgrade to the facility is planned within the next 2 - 3 years. Any remaining contaminated soil will be removed and appropriately treated or disposed of at that time. Upon compliance with SMS guidelines, a request will be made to give the site a Site Management Activity Completed (SMAC) designation.

**INITIAL SITE INVESTIGATION  
WASTEWATER TREATMENT FACILITY  
SPRINGFIELD, VERMONT**

**Introduction**

The Springfield Wastewater Treatment is located on Clinton Street in Springfield, Vermont. A site location map is included as Appendix A.

Dufresne-Henry, Inc., in conjunction with Gurney Brothers Construction and MacIntyre Fuels, performed an Underground Storage Tank (UST) Closure Assessment at the site on July 21, 1998. The subject was one (1) 1,500 gallon #2 fuel oil, single wall, steel UST. Both the tank and piping were found to be in fair condition. PID readings up to 343 ppm were observed in soil samples from just under the filler pipe. At 9 feet PID readings were 0.0 ppm. Contamination was attributed to overfills and spills. The tank grave was overexcavated for the installation of a new 1,000 gallon UST. Approximately 10 cubic yards of contaminated soil were polyencapsulated on site. Due to the presence of an underground electrical line most, but not all, of the contaminated soil was removed.

**Work and Health and Safety Plans**

As a result of the findings of the Tank Closure Assessment, the Sites Management Section (SMS) requested that a Site Investigation be conducted in a letter dated December 22, 1998. Dufresne-Henry forwarded work plans to conduct a limited Site Investigation to the SMS on January 14 and 15, 1999. SMS approval of the work plan was received via e-mail on February 1, 1999. The approval specifically stated that if contamination was detected in the monitoring well, a full site investigation may be necessary. Dufresne-Henry prepared 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 of the investigation.

### **Site Description**

The Springfield Wastewater Treatment Facility is located on the west side of Clinton Street (Vermont Route 11) in Springfield, Vermont. The facility includes a control building with attached anaerobic digesters, and separate primary clarifiers, aeration tanks, secondary clarifiers, sludge holding tanks, a grit building, a control building, and a garage to the north. Southwesterly of the main control building are sludge drying beds that are no longer being used. A sludge composting facility is located on the same property at a higher elevation to the northwest. The former heating oil tank was oriented in an east-west direction approximately 20 feet west of the anaerobic digesters. The property is served by the municipal water supply system. The Black River is located approximately 300 feet to the east on the opposite side of VT Route 11 and a former railroad grade. Land use in the vicinity is a mix of residential, commercial and industrial properties. A site plan is included as Appendix C.

### **Site History**

The Springfield Wastewater Treatment Facility was originally constructed in 1959. The tank was installed at that time and had been in service until its removal. There are no other known UST's on the site. The facility has been periodically upgraded over the years.

The First Quarter 1999 Update (April 12, 1999) Vermont Hazardous Waste Sites List maintained by the Hazardous Materials Management Division (HMMD) contains 29 other sites in Springfield. Four (4) of the sites are within or just over a one-half mile radius of the subject property. The sites are the Old Springfield Landfill (SMS 77-0023), Jones & Lamson (SMS 77-0122), Bryant Grinder (SMS 77-0123), and the former Springfield Gas property (SMS 98-2399). The Old Springfield Landfill is a National Priority List (Superfund) site. A remediation system has been in operation since 1992. Pre-treated groundwater from the Old Springfield Landfill receives final treatment at the Springfield WWTF. That site is separated from the subject property by Seavers Brook. Beyond this, none of these sites are likely to have an impact on the subject property.

### Monitoring Well Installation

One (1) shallow groundwater monitoring well was installed on June 1, 1999 by M & W Soils Engineering, Inc. of Charlestown, New Hampshire. The boring and well installation was under the field observation of Dufresne-Henry personnel. The well, designated MW-1, is located just northeast of the former UST. The boring location was significantly influenced by the new UST, underground WWTF yard piping, underground electrical lines, and a culvert. The boring location is noted on the site plans in Appendix C. A log of the boring and a daily inspection report are included as Appendix D.

Our work plan included a series of manual borings or test pits to further define the extent and degree of any remaining contaminated soil. Due to the presence, but unknown locations, of subsurface utilities, this work was not undertaken. Only a few of the utilities are shown on the site plan.

During boring advancement continuous split spoon soil samples were taken starting at the surface. 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 ambient temperatures in the headspace of the sample jars.

No evidence of soil contamination by visual or olfactory sense was observed. Peak PID readings ranged from 0.0 ppm to 2.5 ppm. The general geologic column is topsoil to approximately 6", silty and gravelly sand to 10'6", sandy gravel to 17', and peaty sand to the limit of the boring. Bedrock was not encountered.

A 10' long, 0.010" machine slotted, two-inch diameter PVC monitoring well was installed in the boring. The well was backfilled with clean silica sand to a point above the screen and a bentonite seal installed. The well was protected at the ground surface by grouting in a watertight cast iron monitoring well box. The well was developed with a manually operated PVC pump. Evacuated water was dumped into the treatment plant aeration tanks

### **Monitoring Well Sampling**

The monitoring well was sampled on June 10, 1999. The sampling was performed by Dufresne-Henry personnel. Three well volumes were purged prior to drawing a sample. No odor or sheen was observed. The refrigerated samples were shipped to Eastern Analytical, Inc. of Concord, New Hampshire on June 10, 1999 via overnight carrier. The samples were analyzed for VOC's by EPA Method 8021B (modified to include Naphthalene and Trimethylbenzenes) and for Total Petroleum Hydrocarbons (TPH) by EPA method 8100(mod). No compounds above method detection limits were found. A copy of the contract laboratory analytical report is included as Appendix E.

### **Site Geology**

Surficial geology at the site is published as lacustrine sand and gravel. These are sediments deposited in glacial Lake Hitchcock at the close of the Pleistocene Epoch. The boring generally corroborates the mapping. However, the presence of two organic layers (8'± and 17'±) suggests the upper soil may be recent alluvium postdating Lake Hitchcock.

Published mapping indicates bedrock on the site is likely to be the Gile Mountain Formation. The Gile Mountain is generally described as gray quartz-muscovite phyllite or schist, interbedded and intergradational with gray micaceous quartzite. Contacts with the Waits River Formation are to the east and west. The age of the formation is Lower Devonian. No bedrock outcrops were observed in the immediate vicinity, although they are likely at higher elevations above the valley floor.

### **Site Hydrogeology**

At the time the monitoring well was sampled on June 10, 1999, the depth to the water table was approximately 13.4'. With only one well the direction of groundwater flow could not be ascertained. However, it is reasonable to assume that the overall direction of flow is to the east toward the Black River.

## **Potential Receptors**

With the exception of less than two dozen sites, all of the properties within a half mile radius of the site are on the municipal water supply system. Those that are not are topographically upgradient to the west and southwest, and often separated from the site by Seavers Brook. None of these properties are likely to be impacted by the WWTF site. The nearest surface waters are Seavers Brook approximately 350 feet to the south and the Black River approximately 300 feet to the east. The nearest structure is the digester and control building approximately 25 feet to the east. The digester portion has a full basement which houses pumps and other wastewater process equipment. The foundation wall is poured concrete. A combustible gas meter monitors ambient air in a portion of this structure. We are not sure whether or not this equipment could sense fuel oil vapors, and we are quite certain it would not discriminate between petroleum vapors and process vapors, and are not aware of any record of petroleum vapors within the building. The removal of the bulk of the contaminated soil associated with the former oil tank significantly reduces the likelihood of future vapor impacts. The nearest offsite structures are slab on grade commercial buildings several hundred feet to the south, and are separated from the subject site by a perennial stream. Impacts to these structures from the WWTF release are unlikely. A copy of the Springfield water system base map is included as Appendix F.

## **Summary and Recommendations**

The Springfield Wastewater Treatment Facility has occupied the site since 1959. A 1,500 gallon #2 heating oil tank was installed at that time. The tank was removed in July 1998 and replaced with a 1,000 gallon UST. Other upgrades at the plant have been completed over the years.

One (1) shallow groundwater monitoring well was installed on June 1, 1999. No evidence of contamination was observed in the boring. The well has been sampled once, on June 10, 1999. No compounds above detection limits were found when analyzed by EPA Methods 8021B and 8100(mod).

There are four (4) sites on the Vermont Hazardous Waste Sites List within a half mile radius of the site. One of these, the Old Springfield Landfill, is a National Priority List (Superfund)

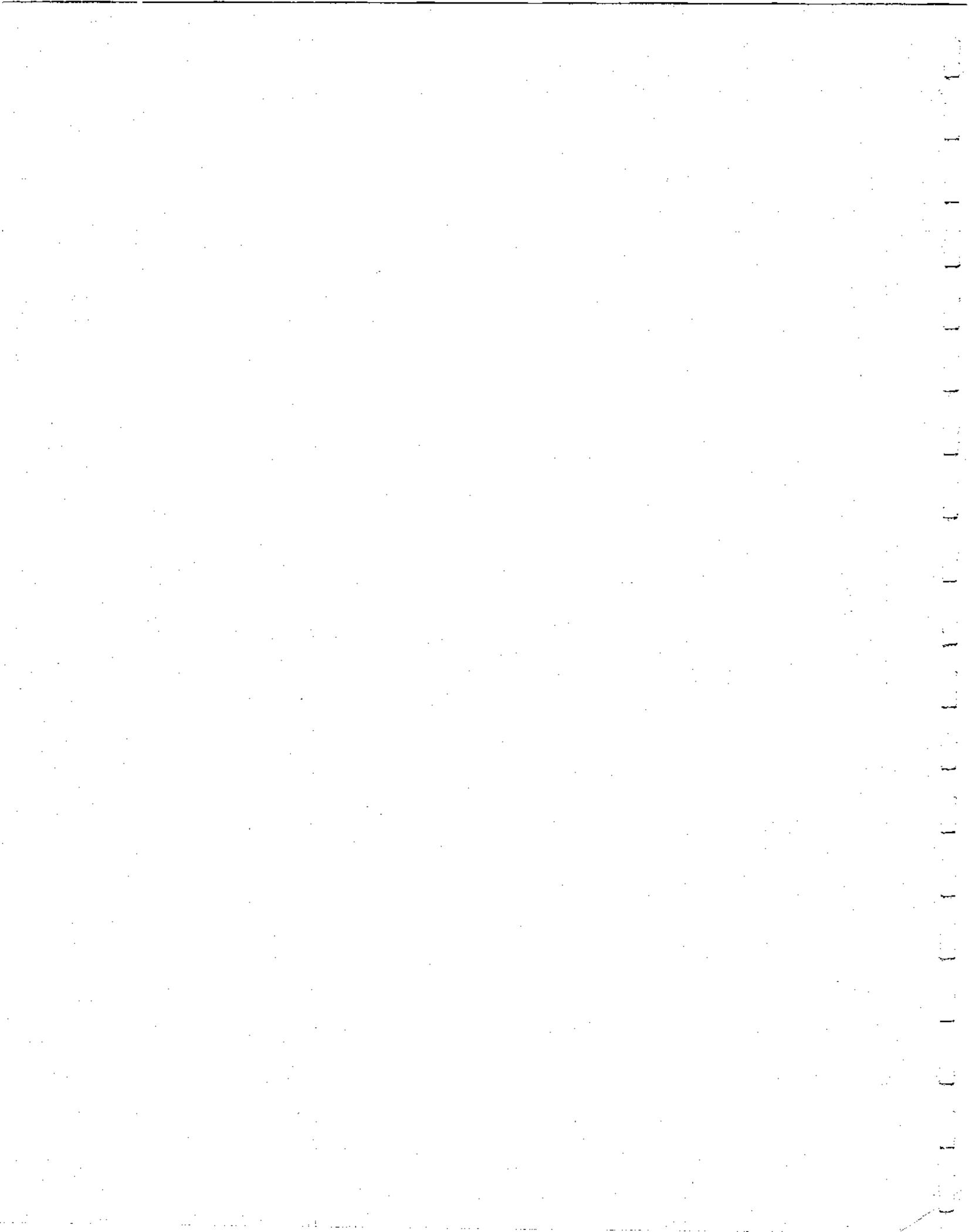
site. It is separated from the subject property by Seavers Brook. None of the sites are likely to have an impact on the subject property.

The great majority of the properties within a half mile radius of the site are on the municipal water supply system. Those that are not, are topographically higher (by as much as 200 feet) and often separated from the site by Seavers Brook. The nearest surface waters are Seavers Brook approximately 350 feet to the south and the Black River approximately 300 feet to the east. The nearest structure is the anaerobic digester building which has a full basement. No petroleum vapors have been reported in this building. The nearest off site structures are slab on grade commercial buildings several hundred feet to the south. Impacts to these potential receptors are unlikely.

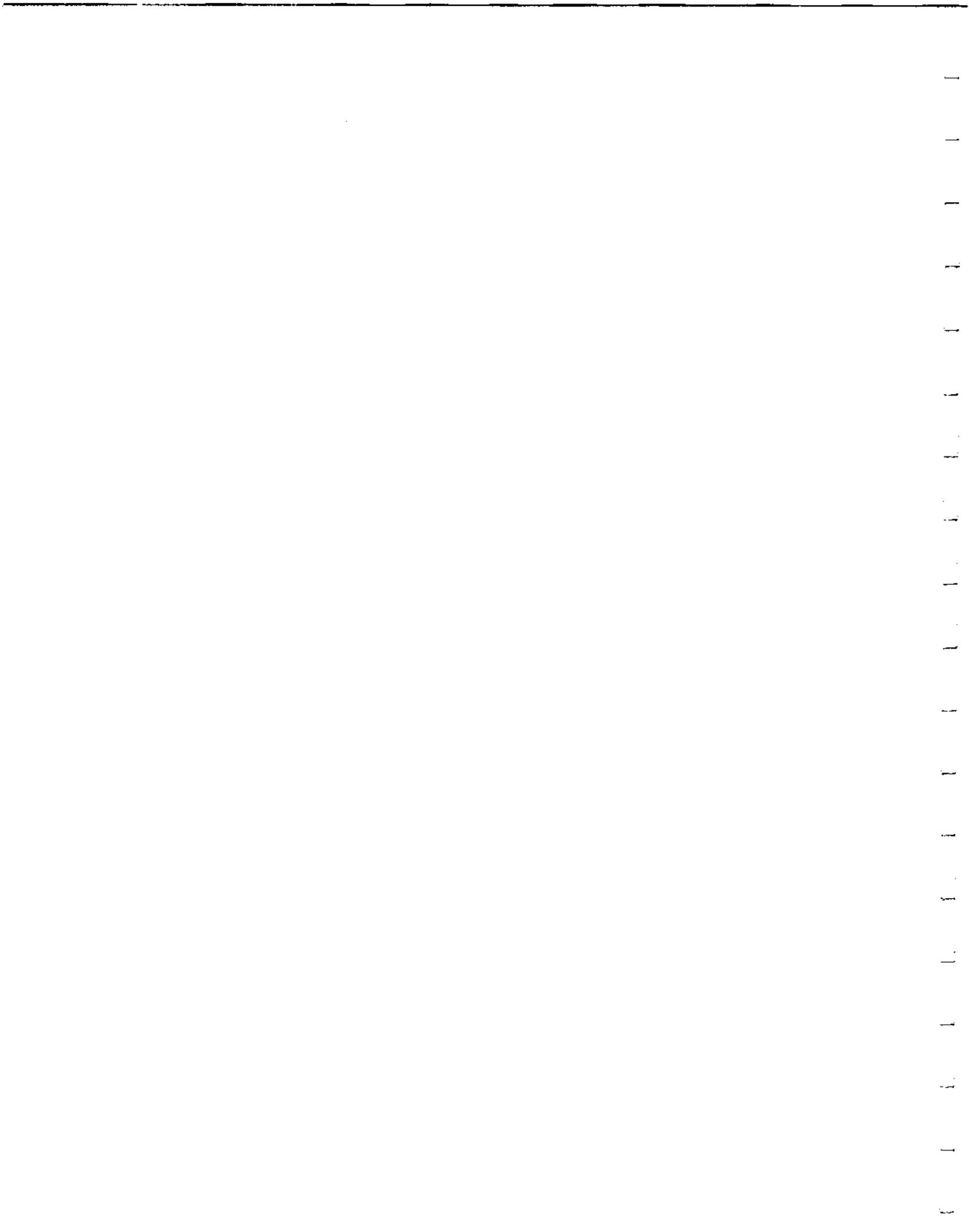
ok  
Based on these findings, the site does not meet the SMS criteria for corrective actions. It is our opinion that a confirmatory round of sampling be done during high water table conditions in the spring of 2000. The need for additional monitoring will be re-evaluated at that time. The polyencapsulated soil will be monitored periodically to track natural attenuation. There may be a small amount of petroleum contaminated soil that remains in place. A major upgrade to the facility is planned within the next 2 - 3 years. Any remaining contaminated soil will be removed and appropriately treated or disposed of at that time. Upon compliance with SMS guidelines, a request will be made to give the site a Site Management Activity Completed (SMAC) designation.

Sub. mgmt. plan required.

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







**APPENDIX B**

**WORK PLANS, SMS APPROVAL LETTER,  
SITE HEALTH AND SAFETY PLAN**



**APPENDIX C**

**SITE PLANS**



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

December 22, 1998

Mr. Jeffery Strong  
Town of Springfield  
96 Main Street  
Springfield, Vermont 05156

RE: Petroleum Contamination at Springfield Treatment Plant  
Springfield, Vermont  
SMS Site # 98-2513

Dear Mr. Strong:

The Sites Management Section (SMS) has received the Underground Storage Tank (UST) closure site report outlining subsurface conditions for the above referenced site. The fieldwork was conducted by Dufresne-Henry, Inc. on July 21, 1998. This report, dated July 22, 1998 and summarizes the degree and extent of contamination encountered. The USTs removed include:

- UST #1 - 1,500 gallon No. 2 fuel oil UST

During the site activities, soils screened had concentrations up to 343 parts per million (ppm) as measured by a photoionization detector (PID). The peak PID reading was measured at a depth of 1- 5 feet below ground surface (fbgs) in the excavation. Approximately 10 cubic yards of excavated soil were stockpiled on-site due to the presence of PID elevated headspace readings. The limits of soil contamination were not defined.

Site soils consisted gravel. Groundwater was not encountered at (maximum) depth of approximately 9 fbgs.

The Springfield Treatment Plant was not reported to have been inspected for potentially sensitive receptors.

Based on the report information, the SMS has determined that additional work is necessary at the site in order to determine the severity of contamination present. Due to the possibility of contaminant impact to nearby receptors, the SMS is requesting that Town of Springfield retain the services of a qualified environmental consultant to perform the following:

- Further define the degree and extent of contamination to the soil.
- As appropriate, determine if the airspace beneath the site building(s) or site adjacent buildings has been impacted by the release using a PID. Wall and floor construction as well as susceptibility to vapor migration should be noted. If the ambient airspace has been impacted, SMS requests that confirmatory sampling and laboratory analyses be performed using EPA Method TO-2.
- Determine the degree and extent of contamination, if any, to groundwater. A sufficient number of monitoring sites should be installed to adequately define the severity of contamination. All groundwater samples taken should be analyzed for TPH and BTEX compounds. At sites with nearby water supply sources, data should be collected to determine the hydrologic relationship of the contaminated area to the water supply source. Pumping influences should be considered in the evaluation.
- Assess the potential for sensitive receptors to be impacted by the contamination. Base this update on all

available information. This assessment should include basements of adjacent buildings, nearby surface water, any public or private drinking water wells which are located within the vicinity of the site, wetlands, sensitive ecologic areas, outdoor or indoor air, sewers, or utility corridors. If any water supplies appear at risk from this contamination, they should be sampled and analyzed for TPH and BTEX compounds.

- ☐ Determine the need for a long term treatment and/or monitoring plan which addresses the groundwater contamination.
- ☐ Develop a plan to treat and/or monitor the stockpiled soils. The soils must remain located in an area such that they have a low potential to impact nearby receptors. The soils must also remain properly encapsulated in plastic. The plan should demonstrate that child access to the soils is sufficiently restricted. If the soil is located in an area subject to public activity and where public access is not restricted, the soil pile should be surrounded by fence. The fence should be not less than 3 feet in height and of durable construction.
- ☐ Submit to the SMS a summary report which outlines the work performed, as well as provides conclusions and recommendations. Included should be analytical data, a site map showing the location of any potential sensitive receptors, stockpiled soils and monitoring or sample locations, an area map, detailed well logs (if appropriate) and a groundwater contour map.
- ☐ With the Workplan or Expressway notification, please submit a site location map at an approximate scale of 1:24000 showing the location of the site. The map should also contain a scale, a north arrow, the SMS site number, and a citation of the source map. The purpose of this map is to enable the SMS to enter the site location into a Geographical Information Systems database.

Please have your consultant submit a preliminary work plan and cost estimate or a site investigation expressway notification form within fifteen days of your receipt of this letter so that it may be approved prior to the initiation of onsite work. Enclosed please find a list of consultants who perform this type of work in the area as well as the brochure "*Selecting Your UST Clean up Contractor*," which will help you in choosing an environmental consultant.

Based on current information, the underground storage tanks at Springfield Treatment Plant are eligible for participation in the Petroleum Cleanup Fund (PCF). You must provide written proof to the SMS that you hold no other applicable insurance in order to receive reimbursement from the PCF. The owner or permittee must pay for the removal and/or repair of the failed tank(s), and for the initial \$10,000.00 of the cleanup. The fund will reimburse the tank owner or permittee for additional eligible cleanup costs of up to \$1 million. All expenditures must be pre-approved by the Agency or performed in accordance with the "*Site Investigation Guidance*" expressway program. Please refer to the enclosed guidance document titled, "*Procedures for Reimbursement from the Petroleum Cleanup Fund*" for additional information concerning the PCF.

The Secretary of the Agency of Natural Resources reserves the right to seek cost recovery of fund monies spent at the Springfield Treatment Plant site if the Secretary concludes that Town of Springfield is in significant violation of the Vermont Underground Storage Tank Regulations or the Underground Storage Tank statute (10 V.S.A., Chapter 59).

We realize that this is a lot to absorb and respond to. We are here to help make this process as effective and uncomplicated as possible. Please review the enclosed documents and call me with any questions you may have. I can be reached at (802) 241-3876.

Sincerely,

Chuck Schver, Supervisor  
Sites Management Section

Enclosures (3)

cc: Springfield Selectboard w/o enclosure  
Springfield Health Officer w/o enclosure

FILE



Precision Park . North Springfield, Vermont 05150-0029 . Tel: 802.886.2261 . Fax: 802.886.2260 . E-mail: dh@d-hinc.com

January 14, 1999

Chuck Schwer, Supervisor  
WMD/SMS  
103 S. Main St/West Office  
Waterbury, VT 05671-0404

Re: Springfield Treatment Plant  
SMS site # 98-2513

Dear Mr. Schwer:

On behalf of Jeffrey Strong we are responding to your letter of December 22, 1998 regarding the need for additional investigation to determine the degree and extent of petroleum contamination associated with a former fuel oil UST at the Springfield Wastewater Treatment Plant.

As stated in the memorandum on site activities, which was part of our July 29, 1998 Closure Assessment Report, we concluded that the residual fuel oil contamination present at this site was most likely a result of surface spills or overfills. To the extent possible, contaminated soil was excavated and polyencapsulated on site. The soil which was removed included that with the highest PID reading of 343 ppm. The tank grave was excavated roughly 2' below the former tank bed to accommodate placement of the pad and structural fill for the new UST. At a depth of 9' PID readings were 0 ppm. This demonstrates that within the limits of the tank excavation there is no evidence that contamination is likely to have affected groundwater, which is at a greater but undetermined depth.

There is a quantity of contaminated soil that was left in place to the east of the former tank location. It could not be excavated without disturbance of an electrical conduit and associated overhead light pole. Although a composite sample in this area obtained from a 5' depth produced a PID reading of 61 ppm, we concluded that effort and expense required to remove of this soil was not warranted when balanced against the threat of exposure by direct contact or other possible receptor exposure.

The nearby digester building does have a full basement which houses pumps and other equipment associated with the wastewater treatment process. The foundation wall is poured concrete. A combustible gas meter monitors ambient air conditions in a portion of this structure, although we are not sure whether or not this equipment would sense fuel oil vapors, and we are quite sure that it would not discriminate between petroleum vapors and process vapors. We are aware of no record of petroleum vapors within the building. With the removal of the bulk of the contaminated soil associated with the former fuel oil tank the likelihood of future impact from associated vapors is significantly diminished.

The closest other structures are slab on grade commercial buildings which are several hundred feet to the south, and are separated from the subject site by a perennial stream. These properties, and the wastewater treatment plant are served by the municipal water supply.

Chuck Schwer  
January 14, 1999  
Page 2

Were groundwater to be affected by a release at this location, the nearest natural receptor to the site is the Black River which is located approximately 300' to the east, and is separated from the site by Vermont Route 11 and a former railroad grade.

The contaminated soil which was removed was polyencapsulated in a former sludge drying bed, a concrete structure which is no longer used as a part of the wastewater treatment process. It is anticipated that it will remain at that location until PID screening and subsequent analytical testing indicates that biodegradation of the contamination is complete. Should it become necessary to move the soil offsite, it will likely be for thermal treatment at an approved New Hampshire facility.

We maintain our opinion that no further investigation or remedial action is needed at this site. If the SMS still feels that further work is necessary, we propose that the investigation of the residual contamination at this site can be limited to a series of shallow borings or excavations to determine the extent of the contaminated soil that was left in place when the UST was removed. A hand operated, or hand held power augur would be used to obtain soil samples for PID screening. If this method is unsuccessful, a small excavator may be used. The borings or test pits would be taken on a 5' grid, and extend outward and downward until headspace PID readings of 10 ppm or less are obtained. A sketch and table summarizing the results would be prepared.

A copy of the appropriate section of the Springfield, Vermont - New Hampshire USGS quadrangle sheet is attached to the hard copy of this letter as a site location map.

Very truly yours,

DUFRESNE-HENRY, INC.

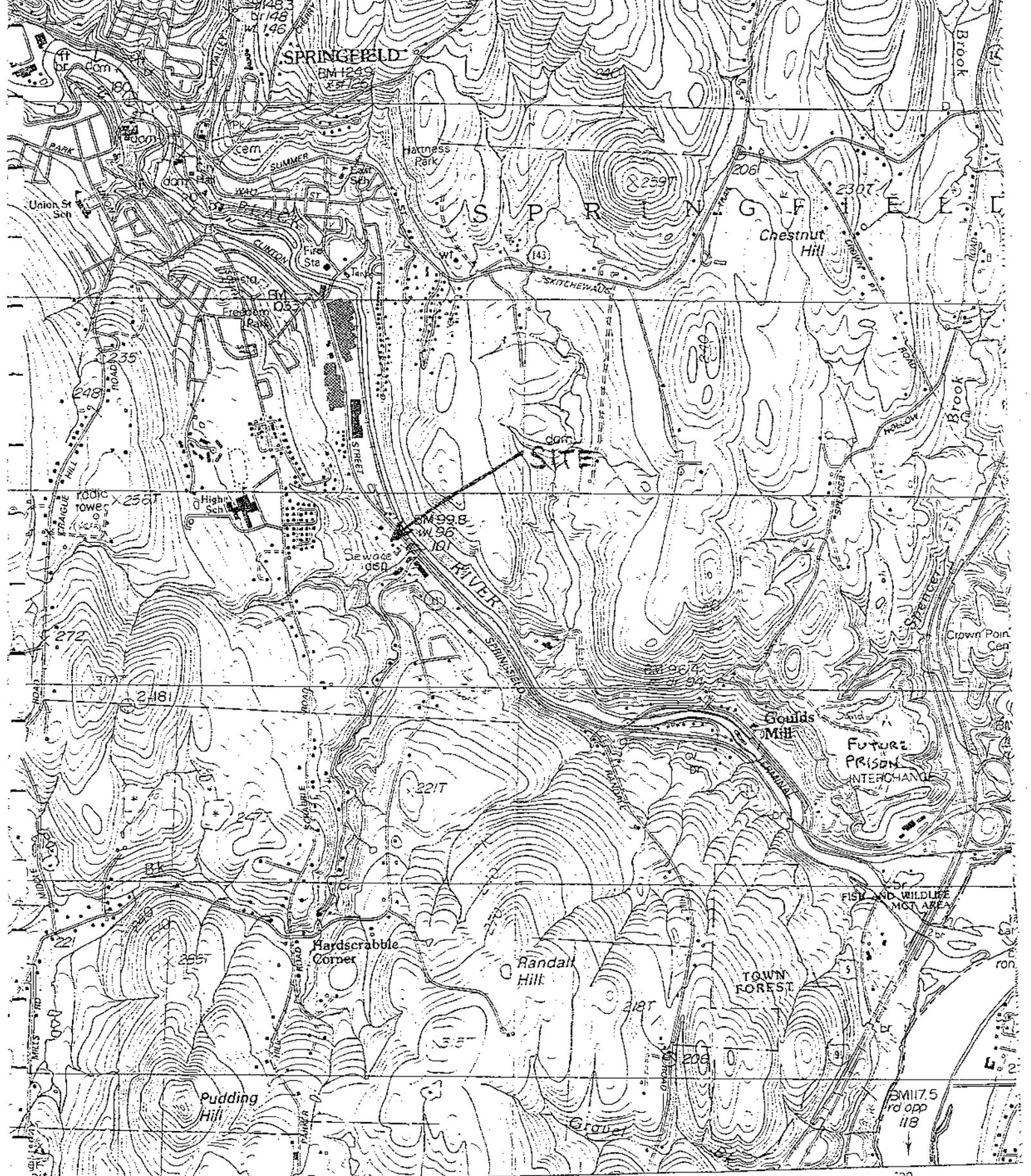
F. David Deane, P.E.  
Environmental Services

FDJ/dim

cc Jeff Strong

Attachment

OSI.SMS010898



10 FEET (N. H.)

05 106 27' 30" 107 108

KILOMETERS 1 .5 0

MILES 1 .5 0

# Springfield

## VERMONT - NEW HAMPSHIRE

1:25 000-scale *metric*  
topographic map



7.5 X 15 MINUTE QUADRANGLE  
SHOWING

- Contours and elevations in meters
- Highways, roads and other manmade structures
- Water features
- Woodland areas
- Geographic names

PRODUCED BY THE UNITED STATES GEOLOGICAL SURVEY  
CONTROL BY USGS, NOS. NOAA, AND STATES OF  
NEW HAMPSHIRE AND VERMONT AGENCIES  
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1977  
FIELD CHECKED 1980. MAP EDITED 1984  
PROJECTION UNIVERSAL TRANSVERSE MERCATOR  
GRID: 1000-METER UNIVERSAL TRANSVERSE MERCATOR ZONE 18  
10,000-FOOT STATE GRID TICKS NEW HAMPSHIRE AND VERMONT  
UTM GRID DECLINATION 1°48' EAST  
1984 MAGNETIC NORTH DECLINATION 15°30' WEST  
VERTICAL DATUM NATIONAL GEODETIC VERTICAL DATUM OF 1929  
HORIZONTAL DATUM 1927 NORTH AMERICAN DATUM

To place on the predicted North American Datum of 1983, move the projection lines as shown by dashed corner ticks (4 meters south and 38 meters west)

There may be private inholdings within the boundaries of any National or State reservations shown on this map  
Gray tint indicates area in which selected buildings are shown

CONTOUR INTERVAL 6 METERS

CONTROL ELEVATIONS SHOWN TO THE NEAREST 0.1 METER  
OTHER ELEVATIONS SHOWN TO THE NEAREST METER

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS

#### CONVERSION TABLE

Meters	Feet
1	3.2808
2	6.5617
3	9.8425
4	13.1234
5	16.4042
6	19.6850
7	22.9659
8	26.2467
9	29.5276
10	32.8084

To convert meters to feet  
multiply by 3.2808

To convert feet to meters  
multiply by 0.3048

NORTH ↑

#### ADJOINING MAPS

1	2	3
4		5
6	7	8
1 Cavendish (7½') 2 Mt. Ascutney 3 Sunapee 4 Chester (7½') 5 Newport 6 Saxtons River 7 Bellows Falls 8 Lovell Mountain		

U.S. GEOLOGICAL SURVEY

PROVISIONAL EDITION 1984

FOR SALE BY U. S. GEOLOGICAL SURVEY  
FESTON, VIRGINIA 22092



January 15, 1999

Chuck Schwer, Supervisor  
WMD/SMS  
103 S. Main St/West Office  
Waterbury, VT 05671-0404

Re: Springfield Treatment Plant  
SMS site # 98-2513

Dear Mr. Schwer:

Based on discussions with Bob Butler of your staff in response to my letter of January 14, 1999, the following investigations will be undertaken at the Springfield Wastewater Treatment Plant to investigate potential petroleum contamination from the former underground storage tank.

One standard soil boring will be advanced to the water table in close proximity, and on the downgradient side, of the replacement UST. Continuous split spoon samples will be taken and screened with a PID. The boring will be advanced 5' into the prevailing water table and a 2" diameter PVC monitoring well installed following standard construction procedures. A groundwater sample will be obtained from the monitoring well and analyzed for the presence of fuel oil compounds, including naphthalene, by EPA Method 8021B modified; and for TPH by EPA Method 8100 modified.

At the location where petroleum contaminated soil is suspected to remain, obtain and PID screen soil samples of a sufficient number, depth and areal extent to reasonably determine the volume and relative strength of the remaining contamination. These samples may be obtained by hand or mechanical auguring, or by backhoe sampling. If practical, additional soil may be removed. If an attempt is made to remove all of the remaining contaminated soil, a confirmatory composite sample to so demonstrate will be obtained.

It is understood that should the single groundwater monitoring well indicate that contamination of the groundwater has occurred at this site, a full site investigation will be necessary.

Because there are judged to be no potentially sensitive receptors at risk, the work proposed above will not take place until the Spring of 1999; most likely late April.

Very truly yours,

DUFRESNE-HENRY, INC.

F. David Deane, P.E.  
Environmental Services

FDD/dim

cc Jeff Strong

SpfldWWTPSMS011598

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

February 1, 1999

Mr. Jeffrey Strong  
Town of Springfield  
96 Main Street  
Springfield, Vermont 05156

RE: Petroleum Contamination at Springfield Treatment Plant  
Springfield, Vermont  
SMS Site # 98-2513

Dear Mr. Strong:

The Sites Management Section (SMS) has received and reviewed the workplan to address petroleum contamination at the above referenced site. The workplan was submitted by Dufresne-Henry, Inc. and is dated January 15, 1999.

The SMS concurs with the elements of the workplan and approves its implementation subject to the following caveats:

- SMS requests that the monitoring well be developed in accordance with industry standards;
- If you elect to excavate all the contaminated soil a minimum of two confirmatory soil samples are necessary; and
- If contamination is detected in the monitoring well, a full site investigation may be necessary.

Please note that reimbursement of the costs associated with this work is subject to:

- an initial deductible of \$10,000 deductible;
- stipulations of the Consultants Fee Schedule contained in the *Sites Investigation Guidance Document* dated August 1996; and
- the provisions of the *Procedures for Reimbursement from the Petroleum Cleanup Fund* dated September 1995.

If you have any questions, please feel free to call me at (802) 241-3876.

Sincerely,

Chuck Schwer, Supervisor  
Sites Management Section

cc: Dave Deane, Dufresne-Henry, Inc. w/o enclosure (transmitted electronically) ✓  
wp2513.WPD

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PROJECT: SPRINGFIELD, VT WWTF SITE INVESTIGATION  
JOB NO.:

HEALTH AND SAFETY PLAN  
FOR

SITE INVESTIGATION

SPRINGFIELD WASTEWATER TREATMENT FACILITY

SPRINGFIELD, VERMONT

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

PROPOSED ON-SITE ACTIVITIES:

Installation of one (1) groundwater monitoring well, decontamination, and groundwater sampling.

PROPOSED DATE(S) OF WORK: Well: June 1, 1999  
Sampling: Week of May 31 or June 7, 1999

ANTICIPATED WEATHER CONDITIONS: temperatures in the 50's - 80's, possible rain or thunderstorms.

PROPOSED SITE INVESTIGATION TEAM:

<u>Personnel</u>	<u>Responsibilities</u>
David Deane	Project Manager
Bruce Cox	Site Safety Officer
Bruce Cox/Oscar Garcia	Field Team Leader (Monitoring Wells/Sampling)
Jeff Strong/Harry Henderson	Site Representative
Chuck Schwer	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.

PROJECT: SPRINGFIELD, VT WWTF SITE INVESTIGATION  
JOB NO.:

Background Information

Site Status:     Active     Inactive     Unknown

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

The Springfield WWTF is located on Clinton Street. The Black River is located approximately 350 feet to the northeast on the opposite side of the road. Known on-site utilities include underground water, sewer lines, and stormwater pipes. Overhead power lines exist. The water table was not observed to a depth of approximately 9'. The former tank was located in a grass area on the south side of the operations building.

A representative of the WWTF will be on hand to mark the former tank location and the location of underground utilities.

Site History:

The site history is not known at this time. The treatment plant has occupied the site since at least 1959.

Monitoring or Sampling Data From Previous Site work:

On July 21, 1998 one (1) 1,500 gallon #2 heating oil UST was removed from the site. Oil odors were observed in the soil (particularly near the surface at the fill pipe) with PID readings up to 61 ppm. Approximately 10 cubic yards of contaminated soil were polyencapsulated on site.

No other site investigations are known.

PROJECT: SPRINGFIELD, VT WWTF SITE INVESTIGATION  
JOB NO.:

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): #2 oil

Hazard Evaluation:

Task: Mon. Well Install.       Low       Medium       High

Identification of Hazards: #2 oil

---

Task: Decontamination       Low       Medium       High

Identification of Hazards: #2 oil

---

Task: Sampling       Low       Medium       High

Identification of Hazards: #2 oil

---

Task:       Low       Medium       High

Identification of Hazards:

---

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

PROJECT: SPRINGFIELD, VT WWTF SITE INVESTIGATION  
JOB NO.:

Hazard Assessment:

OVERALL HAZARD:  Serious  Moderate  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 WWTF parking lot.

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

The WWTF parking lot.

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 location of the former UST.

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.

PROJECT: SPRINGFIELD, VT WWTF SITE INVESTIGATION  
JOB NO.:

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.

PROJECT: SPRINGFIELD, VT WWTF SITE INVESTIGATION  
JOB NO.:

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 obtained at 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.

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.

PROJECT: SPRINGFIELD, VT WWTF SITE INVESTIGATION  
JOB NO.:

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.

PROJECT: SPRINGFIELD, VT WWTF SITE INVESTIGATION  
JOB NO.:

#### 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.

PROJECT: SPRINGFIELD, VT WWTF SITE INVESTIGATION  
JOB NO.:

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

CORPORATE:

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

Project Manager: David Deane Ext 431

NEAREST PHONE: On site

LOCATION OF ON-SITE FIRST AID KIT: On site

EMERGENCY VEHICLE:

PROJECT: SPRINGFIELD, VT WWTF SITE INVESTIGATION  
JOB NO.:

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>
<u>Bruce Cox</u>	<u>Dufresne-Henry, Inc.</u>
<u>Oscar Garcia</u>	<u>Dufresne-Henry, Inc.</u>
<u>Myror Domingue</u>	<u>M &amp; W Soils Engineering, Inc.</u>
<u>Michael Hitchcock</u>	<u>M &amp; W Soils Engineering, Inc.</u>
<u>William Morway</u>	<u>M &amp; W Soils Engineering, Inc.</u>
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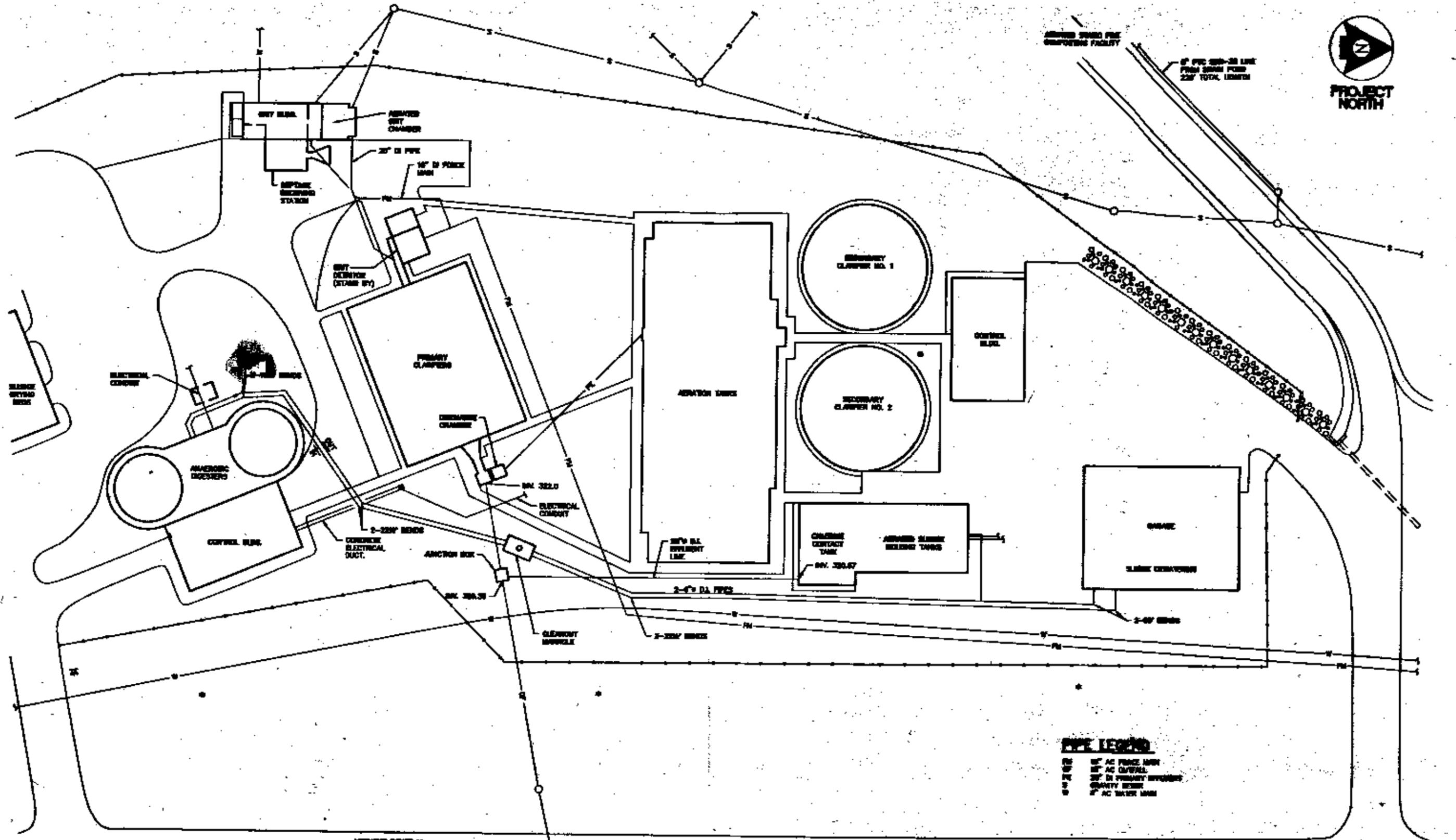
Copies of this SSP have been given to:

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

Approval Signatures:

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

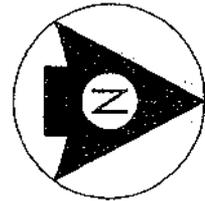
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**PIPE LEGEND**

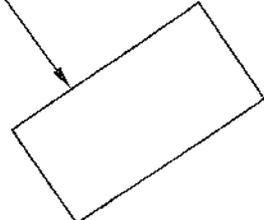
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 <b>Dufresne-Henry, Inc.</b> Consulting Engineers North Springfield, Vermont	<b>SITE PLAN</b> <b>WASTEWATER TREATMENT FACILITY</b>	Project No. 4080008 Proj. Mgr. F.D.D. Scale 1"=40' Date JUNE 1989
	SPRINGFIELD, VERMONT	B



**PROJECT  
NORTH**

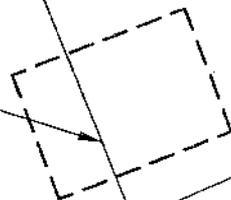
CONCRETE PAD  
FOR NEW UST



MW-1

2-11¼" BENDS

ELECTRICAL  
CONDUIT



ANAEROBIC  
DIGESTERS

CONTROL BLDG.

SITE PLAN DETAIL

WASTEWATER TREATMENT FACILITY



**Dufresne-Henry, Inc.**  
Consulting Engineers  
North Springfield, Vermont

SPRINGFIELD,

VERMONT

Project No.	4080008
Proj. Mgr.	F.D.D.
Scale	1" = 10'
Date	JUNE 1999
	A

**APPENDIX D**

**BORING LOGS**  
**AND**  
**MONITORING WELL INSTALLATION REPORT**

BORING LOCATION MW-1      INCLINATION V      BEARING      DATE START/FINISH JUNE 1, 1999 / JUNE 1, 1999  
 CASING ID      CORE SIZE      TOTAL DEPTH 20.5 FT      DRILLED BY: M & W SOILS ENGINEERING, INC. (M.H.)  
 GROUND EL (AD)      DEPTH TO WATER/DATE 13± 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)	PENETRATION (IN)			
	2.0	SS-1	2 3 3 3	2	16	24			0" - 6" Medium - dark brown, sandy, silty ORGANIC SOIL. 6" - 2' Medium brown, loose, silty, gravelly SAND. Very fine - fine grained, well sorted sand. 20% - 30% non plastic fines. 10%± fine rounded gravel to 1/2". Slightly moist. No odor or staining. 1.6 ppm	
	4.0	SS-2	6 8 8 6	2	20	24			Medium brown gray, medium dense, gravelly, silty SAND similar to above, but slightly coarser grained overall. Occasional cobbles. Dry - slightly moist. No odor or staining. 2.5 ppm.	
	5.0	SS-3	6 11 50*	2	10	12		* 50/0"	Medium brown, medium dense, silty, gravelly SAND as above, but browner and with a trace of fine gravel. Very slightly moist. No odor or staining. 1.1 ppm.	
	7.0	SS-4	5 14 13 12	2	17	24			Medium brown, medium dense, silty, gravelly SAND. Very fine - rarely medium grained, moderately well sorted sand. 20% - 30% non plastic fines. 20%± gravel 1/8"+. Moist. No odor or staining. 0.1 ppm.	
	9.0	SS-5	5 8 8 7	2	14	24			Medium - dark brown, medium dense, till-like, silty, gravelly SAND similar to above. Occasional organic matter (very fine roots, etc). Occasional medium - dark orange mottles between 8' and 8'9"±. Damp. No odor or staining. 0.0 ppm.	
	11.0	SS-6	9 7 8 27	2	16	24			9' - 10'6" Medium brown, medium dense, silty SAND. Very fine - fine grained, well sorted sand. 40%± non plastic, inorganic fines. Trace of fine gravel. 10'6" - 11' Medium brown, dense, sandy GRAVEL. Damp - nearly wet at bottom. No odor or staining. 0.0 ppm.	
	13.0	SS-7	9 13 13 21	2	13	24			Medium brown gray, medium dense - dense, sandy GRAVEL. Very fine - very coarse grained, poorly sorted sand of quartz and rock fragments. Trace - 10% non plastic fines. 60%+ gravel 1/8" - probable cobbles. Very dry. No odor or staining. 0.0 ppm.	
	15.0	SS-8	14 12 11 5	2	12	24			Medium brown gray, medium dense, sandy GRAVEL similar to above. Abundant platy fragments of gray schist or phyllite. Occasional medium - dark orange oxidation. Saturated. No odor or staining. 0.0 ppm.	
	17.0	SS-9	3 3 3 2	2	6	24			Medium gray, loose, sandy, fine GRAVEL. Very fine - very coarse grained (predominately medium - coarse grained), poorly sorted sand. Trace of non plastic fines. 60%± fine rounded gravel 1/8" - 1/2". "Clean" gravel. Trace of mica. Saturated. No odor or staining. 0.0 ppm.	
									Medium - dark gray and brown, loose, PEATY SAND. Very fine	

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 =

TOWN OF SPRINGFIELD  
 WASTEWATER TREATMENT FACILITY  
 SITE INVESTIGATION

SPRINGFIELD, VERMONT  
 DATE: JUNE 1, 1999      PROJECT: 4080008  
 PAGE 1 OF 2      LOG OF BORING: MW-1



BORING LOCATION MW-1 INCLINATION V BEARING DATE START/FINISH JUNE 1, 1999 / JUNE 1, 1999  
 CASING ID CORE SIZE TOTAL DEPTH 20.5 FT DRILLED BY: M & W SOILS ENGINEERING, INC. (M.H.)  
 GROUND LEVEL (AD) DEPTH TO WATER/DATE 13± FT/ IMMED. LOGGED BY: B. COX

ELEV AD (FT)	SAMPLE			SAMP OD (IN)	LENGTH		REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION
	DEPTH (FT)	TYPE AND NO.	B		REC (IN)	PENE- TRATION (IN)			
	19.0	SS-10	4 3 4 5	2	11	24			- medium grained, moderately well sorted sand. 20%+ non plastic fines. Trace of mica and mafic minerals. The deposit has alternating layers of sand and peat. Slight organic odor, no staining. 0.0 ppm.
	20.5						4 1/4" HSA	8" CCH	Probable SAND similar to above.
									No refusal to depth.  Installed 10' of 2" diameter, .010" slot, Schd 40 PVC at 20.5'. Sand backfill to 7.7'. Bentonite seal 6.7' - 7.7'. Grouted in flush, 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  
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NOTES  
 HSA = Hollow Stem Auger  
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TOWN OF SPRINGFIELD  
 WASTEWATER TREATMENT FACILITY  
 SITE INVESTIGATION  
 SPRINGFIELD, VERMONT  
 DATE: JUNE 1, 1999 PROJECT: 4080008  
 PAGE 2 OF 2 LOG OF BORING: MW-1



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

TO DUFRESNE-HENRY, INC. ADDRESS NORTH SPRINGFIELD, VT  
PROJECT NAME SPRINGFIELD TREATMENT PLANT LOCATION SPRINGFIELD, VT  
REPORT SENT TO BRUCE COX PROJ. NO. \_\_\_\_\_  
SAMPLES RETAINED BY DUFRESNE-HENRY, INC. OUR JOB NO. 7774-99

SHEET 1 OF 1  
DATE 6/1/99  
HOLE NO. MW-1  
LINE & STA. \_\_\_\_\_  
OFFSET \_\_\_\_\_

GROUND WATER OBSERVATIONS		Type	CASING	SAMPLER	CORE BAR	SURFACE ELEV.
AT <u>14'8"</u>	AT <u>IMMEDIATELY</u>	HSA	SS			DATE STARTED <u>6/1/99</u>
	HOURS	Size I. D.	<u>4 1/4"</u>	<u>1 1/2"</u>		DATE COMPL. <u>6/1/99</u>
		Hammer Wt.		<u>140#</u>	BIT	BORING FORMAN <u>M.H. &amp; C.C.</u>
AT _____	AT _____	Hammer Fall		<u>30"</u>		INSPECTOR <u>B. COX</u>
	HOURS					SOILS ENGR.

LOCATION OF BORING AS STAKED, NEAR NEW FUEL TANK PAD

Depth	SAMPLE DEPTHS FROM-TO	TYPE OF SAMPLE	Blows per 6"		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		
			on sampler					NO.	PEN	REC
5'	0' - 2'	SS	2	3	LOOSE	7"	TOPSOIL	1	24"	16"
	2' - 4'	SS	6	8	MED. DENSE	8'	BROWN FINE SAND - TRACE OF SILT AND FINE GRAVEL WITH COBBLES	2	24"	20"
	4' - 5'	SS	6	11				3	12"	10"
	5' - 7'	SS	5	14				4	24"	17"
	10'	7' - 9'	SS	5	8	MED. DENSE	8'9"	ORGANICS AND ROOTS	5	24"
9' - 11'		SS	9	7	MED. DENSE WET	18'	BROWN FINE TO COARSE SANDY GRAVEL	6	24"	16"
11' - 13'		SS	9	13				7	24"	13"
13' - 15'		SS	13	12				8	24"	12"
20'		15' - 17'	SS	3	3	LOOSE	20'6"	BROWN MEDIUM SAND - TRACE OF ROOTS AND ORGANICS	9	24"
	17' - 19'	SS	4	3	10				24"	11"
			4	5						
25'							NO BEDROCK TO DEPTH			
							SET 2" WELL AT 20'6"			
							TOP OF WELL AT 10'6"			
							SAND TO 7'7"			
							BENTONITE TO 6'8"			
							MATERIALS USED:			
							10' OF 2" PVC 0.010" SLOT SCREEN			
							10' OF 2" PVC SOLID			
							25# OF BENTONITE CHIPS			
							250# OF SAND			
						40# OF CEMENT MIX				
						1 2" GRIPPER				
						1 2" PVC CAP				
						1 6" CAST IRON MANHOLE				

RECEIVED  
JUN 2 4 1999  
MHW-1

GROUND SURFACE TO 20'6"

USED HSA CASING THEN

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  
Cohesionless Density  
0-10 Loose  
10-30 Med. Dense  
30-50 Dense  
50+ Very Dense  
Cohesive Consistency  
0-4 Soft  
4-8 M/Stiff  
8-15 Stiff  
15-30 V-Stiff

summary

EARTH BORING 20'6"  
ROCK CORING \_\_\_\_\_  
SAMPLES 10  
HOLE NO. MW-1

WASTEWATER TREATMENT FACILITY  
SITE INVESTIGATION  
SPRINGFIELD, VERMONT

June 1, 1999

Dufresne-Henry, Inc. - Bruce Cox on site at 8:50 am.

M. & W Soils Engineering, Inc. - Michael Hitchcock and Christopher Conant on site at 9:00 am.

Met with Brian who showed me the location of the former tank as well as underground utilities (from plant design drawings).

MW-1

MW-1 is located northeast of the former UST location. The location was significantly influenced by the new UST, treatment plant yard piping, electrical lines, and a culvert. The boring was started at 9:15 am. The rig and tools had been steam cleaned prior to arrival on site. All water used for cleaning split spoons and other tools was obtained at the site. Drilled with 4 1/4" hollow stem augers taking continuous split spoon samples between the surface and 19 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 20.5' with no refusal. The general geologic column is topsoil to 6"±, silty gravelly sand to 10.5', gravel to 17', and peaty sand to the limit of the boring. The water table was encountered at approximately 13'. No evidence of contamination was observed by visual or olfactory sense. Peak PID readings ranged from 0.0 ppm to 2.5 ppm. Installed a 10' long, 2" diameter, .010" machine slotted, threaded, flush joint, Schedule 40 PVC well at 20.5'. All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 7.7'. A bentonite seal was installed from 6.7' - 7.7'. A 6" diameter cast iron, watertight, monitoring well box was grouted in at the surface. The well was developed with a manually operated PVC pump. Evacuated water was dumped into the treatment plant aeration tanks.

Materials: 10' of 2", .010" slot, threaded, flush joint, Schd 40 PVC.  
9'9" of 2", solid wall, threaded, flush joint, Schd 40 PVC.  
250 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: Various WWTF employees.

Weather: Mostly sunny, 60's - 70's, light wind.

Off site: 2:30± pm.

**APPENDIX E**

**CONTRACT LABORATORY ANALYTICAL REPORT**



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

CONFIDENTIAL  
PROPERTY OF EASTERN ANALYTICAL  
NOT TO BE REPRODUCED OR DISTRIBUTED

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 17194 DUFVT  
Client Identification: Springfield WWTF 4080008  
Date Received: 6/11/99

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,

Susan C. Uhler  
Susan C. Uhler, Lab Director

6/23/99  
Date



# LABORATORY REPORT

Eastern Analytical, Inc. ID#: 17194

Client: Dufresne-Henry

Client Designation: Springfield WWTF 4080008

Sample ID: MW-1  
Analytical Type: Sample  
Matrix: aqueous  
Date Sampled: 6/10/99  
Date Received: 6/11/99  
Units: µg/l  
Date of Analysis: 6/16/99  
Analyst: JDS  
Method: 8021B  
Dilution Factor: 1

Chloromethane	< 10
Vinyl chloride	< 2
Bromomethane	< 10
Chloroethane	< 10
1,1-Dichloroethene	< 1
Methylene chloride	< 2
trans-1,2-Dichloroethene	< 2
1,1-Dichloroethane	< 2
cis-1,2-Dichloroethene	< 2
Chloroform	< 2
1,1,1-Trichloroethane	< 2
Carbon tetrachloride	< 2
1,2-Dichloroethane	< 2
Trichloroethene	< 2
1,2-Dichloropropane	< 2
Bromodichloromethane	< 2
cis-1,3-Dichloropropene	< 2
trans-1,3-Dichloropropene	< 2
1,1,2-Trichloroethane	< 2
Tetrachloroethene	< 2
Dibromochloromethane	< 2
Chlorobenzene	< 2
Bromoform	< 2
1,1,2,2-Tetrachloroethane	< 2
Methyl-t-butyl ether(MTBE)	< 10
Benzene	< 1
Toluene	< 1
Ethylbenzene	< 1
m-p-Xylene	< 1
o-Xylene	< 1
1,3,5-Trimethylbenzene	< 1
1,2,4-Trimethylbenzene	< 1
Naphthalene	< 5



# LABORATORY REPORT

Eastern Analytical, Inc. ID#: 17194

Client: Dufresne-Henry

Client Designation: Springfield WWTF 4080008

Sample ID: MW-1

Analytical Type: Sample

Matrix: aqueous

Date Sampled: 6/10/99

Date Received: 6/11/99

Units: mg/l

Date of Extraction/Prep: 6/13/99

Date of Analysis: 6/15/99

Analyst: KH

Method: 8100 Mod

Dilution Factor: 1

TPH (C9-C40) < 0.5



**APPENDIX F**

**SPRINGFIELD, VT WATER SYSTEM MAP**

