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March 20, 1989

Mr. Thomas Moye
Hazardous Materials Management Division
Agency of Natural Resources
103 South Main Street
Waterbury, Vermont 05676

Re: Jones & Lamson Vermont Corp.
Site Assessment
DH 439001

Dear Tom:

Enclosed is a copy of our Site Assessment Report on the Jones & Lamson property on Clinton Street in Springfield, Vermont.

As noted in the December 27, 1988 letter from Michael Knoras to you, Dufresne-Henry will be assisting J&L in further investigations regarding certain problems we identified during the site assessment. These investigations will include; the discharge identified as Location #1 in Mr. Knoras' letter, the remaining underground storage tanks, the pipe under the chip shed and possible contamination migration from a neighboring site. In connection with this last item, I will be contacting you shortly to make arrangements to review the file on activities at Bryant Grinder.

We also plan to sample all of the monitoring wells and grab sample locations for VOC's again. We plan to use EPA Method 601/602. If, after reviewing the report, you feel other or additional tests are warranted we would be glad to discuss it with you.

We look forward to your comments and to working with you to develop an appropriate plan of action for this site.

Very truly yours,

DUFRESNE-HENRY, INC.

Dave Deane

F. David Deane
Hydrology Department

FDD/dim

cc: Michael Knoras

JONES & LAMSON MACHINE COMPANY, INC.

Clinton Street
Springfield, Vermont

SITE ASSESSMENT

JULY • 1988
REVISED MARCH • 1989

DH
Dufresne-Henry

JONES AND LAMSON MACHINE COMPANY

ENVIRONMENTAL SITE ASSESSMENT

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EXECUTIVE SUMMARY

This Environmental Site Assessment was performed by Dufresne-Henry, Inc., on behalf of the Jones & Lamson Machine Company, Inc., under an agreement dated May 19, 1988. The Assessment covered the Jones & Lamson properties on Clinton Street in Springfield, Vermont and consisted of a review of existing information, both written and recollections; a detailed site walkover; selected monitoring well installation; and groundwater and surface water sampling and analysis.

Observations made during the site walkover indicated several areas of concern both interior and exterior to the buildings. These observations guided the location and installation of monitoring wells. Specific interior concerns included several hundred gallons of oily water in the repair pit at the Springfield Terminal Railway maintenance shop and a large open tank containing "coolant" in an abandoned pit beneath the floor of Plant #1. Areas of concern outside of the plant buildings include an old discarded tank behind the railway maintenance shop, a drum disposal/storage area behind the garage attached to Plant #1, a large oily smear on the ground in front of the "chip shed" behind Plant #1, an apparent drain pipe from the chip shed floor into the adjacent ground, the catch basins adjacent to the power house, the seven (7) underground storage tanks on the site, and drainage pipes found along the river bank.

Monitoring well locations were chosen to investigate conditions beneath the exterior areas of concern noted above and at several points thought to be upgradient of the influence of Jones & Lamson activities. A total of

seventeen wells were installed. This included two at the Springfield Terminal Railway Company facility, three around Plant #2, and the remainder around Plant #1. During the drilling of the well near the "chip shed" (MW 7), a substantial layer of oily product was discovered. Wells MW 7A and MW 7B, both down gradient from well MW 7, were installed to better define the extent of the oil plume.

During the walkover, two pipes were found on the bank of the Black River. Field scanning with a portable photoionizer indicated likely contamination in the water flowing from these two pipes. The day the pipes were discovered, Jet - Line Services was contacted to construct a sorbent boom at the outfall to reduce the potential impact on the river from suspected contaminants.

The monitoring wells, the drain pipes at the river, and the catch basin at the power house, were sampled on June 16, and 17, 1988. Samples were delivered to Eastern Analytical, Inc., and analyzed by EPA Method 601/602, a gas chromatograph screen for volatile organic compounds (VOC's). Samples taken from locations where oil contamination was suspected were also tested for total oil and greases, by EPA method 413.1.

Of the seventeen groundwater samples, eleven contained measurable quantities of chlorinated hydrocarbons typical of solvents. The most significant levels were measured in samples from MW 7 and MW 15. MW 7 is located near the chip shed behind plant #1. MW 15 is located on the east side of plant #2, easterly of the existing boiler room. No VOC's were detected in samples from wells at the Springfield Terminal Railway area. Only one of the wells on the Clinton Street (upgradient) side of the property contained VOC's, MW 14, which is opposite the Bryant Grinder Company. The water sample taken from one of the pipes on the river bank

showed VOC contamination including solvents and gasoline constituents.

The assessment has identified six distinct problems on the Jones and Lamson site. These are, in order of severity:

1. The oil contamination found in the area east and south of the chip shed, as found in wells MW 7, MW 7A, and MW 7B.

2. The pipes found in the river bank near well MW 6 which are introducing VOC's and possibly traces of gasoline to the Black River.

3. The condition of the underground storage tanks, which except for the hydraulic oil tank, are all in excess of 20 years old.

4. The VOC contamination found in groundwater samples from wells MW 4, MW 5, MW 6, MW 7, and MW 7B.

5. The VOC contamination found in the samples from the wells on either side of Plant #2, MW 14 and MW 15.

6. The oily water in the repair pit at the Terminal Railway repair shed.

A DRAFT of this report was submitted to the client on July 8, 1988. Since that time several remedial actions have taken place including:

1. Removal of the 1,000 gallon underground gasoline tank.

2. Discovery and remediation of an additional pipe discharge to the Black River.

3. Limited clean-up of the Springfield Terminal Railway repair shed area.

4. Continued monitoring of the discharge and as yet unsuccessful research into the source of the remaining pipes discharging into the Black River.

1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of an Environmental Site Assessment is to determine, within certain limits and constraints, the existence of, or threat of, any environmental problems, or future problems, which could impact the current or future use and value of a particular property. Such environmental problems also have liability impacts on past, current, and future owners.

As part of the sale of commercial property, lending institutions often require a site assessment to be performed on a site, to limit their exposure to future clean-up costs or third party lawsuits as a result of an environmental problem pre-existing on the site.

1.2 Methodology

This site assessment consisted of three phases. The first phase was a review of the existing documentation and records. Sources included site plans and data on hazardous waste practices from Jones and Lamson (J&L) files, and the State file on the investigations of the Will Dean Road Landfill.

The second phase of the assessment consisted of the detailed site walkover of all areas of the plants and grounds, concentrating on the areas of likely concern identified during the data review. A portable photoionization unit (the HNU) was used during the walkover to identify the potential presence of volatile organic compounds (VOC's). Monitoring well

locations were selected during the walkover.

The last phase of the assessment site work was monitoring well installation, groundwater and surface water sampling, sample analysis, and surveying of well locations and elevations.

A substantial portion of the information for this report was supplied by current and former employees of J&L, state officials, and local persons. Some of this information relies on the memories of individuals of forty years or more. Some information cannot be, or was not, verified.

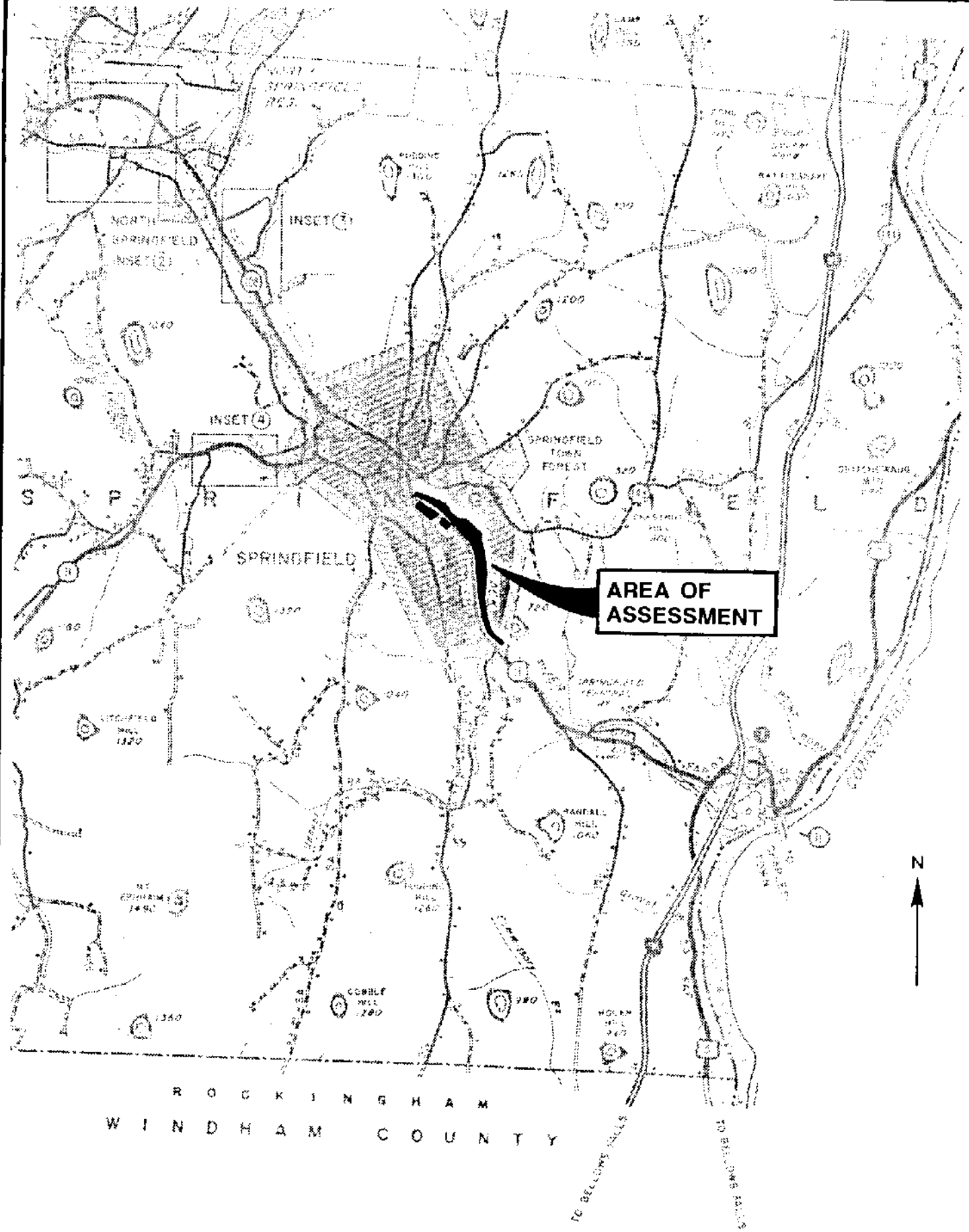
2.0 SITE DESCRIPTION

2.1 Location

The Jones & Lamson site is located south of the Village of Springfield, Vermont, on Clinton Street (Vermont Route 11) as shown in Figure 1. The site layout and surrounding area is shown in Figure 2. Clinton Street forms the entire western boundary of parcel #1, that portion of the property where Plants #1 and #2 are located. Parcel #1 is bounded on the north by Bridge Street, on the east by the Black River, and on the south by Seaver's Brook. This parcel also includes the former Springfield Terminal Railway Company maintenance shop, "salt shed" and other miscellaneous structures. Other properties considered in the assessment include those on the west side of Clinton Street; the Technical Center (formerly Woodruff Motors); and a vacant lot that is used for additional parking for Plant #1. Although all portions of the Jones & Lamson property are included in the scope of this assessment, the main focus was on parcel #1, and its contents.

2.2 Usage

Prior to the construction of the Jones & Lamson facilities, the site just south of Bridge Street was reported to be a swamp. Any prior uses of the site for residential or business use is unknown. In the early 1900's, the site was partially filled and the first portions of Plant #1 were constructed. Throughout the next half century several additions were completed including the "south shop" addition, the boilerhouse, and the "chip shed". Plant #2 was constructed in the late 1950's, and the "sheet metal shop" addition on the south end of Plant #1 was completed in the late 1970's. The former Woodruff Motors on the west side of Clinton Street, was



SCALE: 1"=1 MILE (APPROX.)

FIGURE 1

Client No.	438009	JONES & LAMSON	
Proj. Mgr.	F.D.D.	SITE LOCATION MAP	
Date	7/88	SPRINGFIELD, VERMONT	A

Dufresne-Henry Inc.

BRUNING 44-232 45337-13

COMMONWEALTH AVE

SEE ENLARGEMENT BELOW

BRIDGE STREET

MW 10A
318.92

MW 6
318.50

HW 5
319.44

MW 4
320.57

APPROXIMATE LOCATION-CLAY TILE PIPES (GS2 & GS3)

ABANDONED RAILROAD TRACKS

SPRINGFIELD TERMINAL RAILWAY COMPANY

MW 11
325.47

JONES & LAMSON PLANT 1

MW 12
328.97

MW 13
326.07

MW 15
315.27

BLACK RIVER

GS 1
HW 2
315.33

HW 1
315.22

VT. GAS CO. (ABANDONED)

JONES AND LAMSON TECHNICAL CENTER

MW 3
315.89

CLINTON STREET

VT. RTE 11

BRYANT GRINDER CO.

JONES AND LAMSON PLANT 2

MW 14
321.16

SEAVERS BROOK

N

APPROXIMATE SCALE

0 250 500 750 1000
FEET

BLACK RIVER

ABANDONED RAILROAD TRACKS

HW 9
319.49

MW 8
319.26

GS4

LOADING DOCK

PUMP ROOM

BOILER ROOM

MW 7A
314.53

MW 7B
318.84

MW 7
319.15

CHIP SHED

PLANT #1

APPROXIMATE LOCATIONS CATCH BASINS

APPROXIMATE SCALE

0 30 60 90 120
FEET

SOURCE OF SITE MAP: U.S.G.S. SPRINGFIELD VERMONT-NEW HAMPSHIRE 7.5 MIN. x 15 MIN. TOPOGRAPHIC QUAD. 1984.

● MONITORING WELL WATER ELEVATION 6/16/88

FIGURE 2

DuFresne-Henry Inc.
Precision Park
No. Springfield

JONES & LAMSON

SITE AND BORING LOCATION PLAN

SPRINGFIELD. VERMONT

Client No. 438009	Proj. Mgr. F.D.D.	Date 7.88	B 6671

RUNING 44-132 45337-3

purchased in the late 1960's or early 1970's, and is now known as the J&L Technical Center. This brought the site to its present status of approximately 25 acres with nearly 400,000 square feet of buildings.

Throughout its history J&L has shared its property with its neighbors because of its proximity to the river and the railroads. For example, drain lines from Bryant Grinder Company, and Springfield Gas Company cross the property and either discharge into the river or to the municipal sewer. When the Springfield Gas Company was in operation a siding was provided on the J&L property and a now abandoned gas pipeline installed so that tank cars of gas could be offloaded.

During the 1960's, two major projects took place, which changed the physical site. The Black River was relocated to its present course, and the Springfield Municipal Wastewater Treatment Plant was constructed on the west side of Clinton Street south of J&L. The relocation of the river provided more accessible, developable land for J&L, a larger network of railroad tracks, and the relocation and widening of Clinton Street.

The construction of the wastewater plant brought the main sewer line from the town, behind the J&L plants, along the west side of the river. It is reported that at the time the main line was constructed, all pipes except storm drains from J&L, Bryant's, and the Springfield Gas Company, were broken and tied into the new sewer to eliminate direct discharges to the Black River. It was also reported that deep pipes below the sewer line elevation could have been overlooked. Design documents for the sewer line construction could not be recovered from the Town of Springfield.

A wide variety of materials have been used by Jones & Lamson Machine Company over the more than 70 years they have operated on this site. The manufacturing processes combine many different metal shaping, treatment, and finishing processes. Several manufacturing and maintenance processes use materials which are now regulated. Examples are painting, parts cleaning and etching using various compounds, heat treating of metals, and machine cooling with water soluble oils. Other chemicals are used for boiler water treatment and "housekeeping duties". A comprehensive list of chemicals now or formerly used at J&L is included in Appendix A.

Current disposal practices follow accepted protocols and are periodically monitored by the State. Drums of regulated waste materials are removed from the site by Northeast Solvents, an approved waste hauler.

Past waste disposal methods reportedly also followed historically accepted practices. According to an in-house memo, included in Appendix A, prior to the fall of 1964 liquid wastes were piped directly to the Black River. Solid waste consisted of office rubbish, shop rubbish and "grinding swarf" Grinding swarf is a combination of metal grindings and grinding stone dust which includes traces of water soluble oil. Office rubbish was burned in an open incinerator on the river bank, shop rubbish was hauled to the local landfill and grinding swarf was dumped on the riverbank where it can still be found today.

After the drain lines from the plant were tied into the town sewer system in the fall of 1964, liquids which would disrupt the sewage treatment processes were stored on site in an above ground 1,000 gallon tank. The contents were pumped out about twice a week and trucked to the local dump by a local hauler. Paint pit sludge was also disposed of in a like manner.

Electrical power enters the plants at several sub- stations. Adjacent to the boilerhouse are two power transformation buildings, one of which is no longer used. Three other substations are located at Plant #1, and one additional substation at Plant #2. All of these substations have transformers for voltage step-down.

3.0 DESCRIPTION OF ADJACENT PROPERTIES

3.1 Neighboring Properties

The north side of the J&L property is bounded by Bridge Street. An abandoned foundry sits across Bridge Street at the northeast corner with Clinton Street.

The Black River forms the boundary along the entire easterly side of the J&L property. Beyond a wooded strip on the east bank of the river are several residential parcels on Commonwealth Avenue which ends in a cul de sac due east of the northerly end of Plant #2. The remaining east bank of the river to the south is a large wooded tract of land on a steep hillside with exposed bedrock.

The southern limit of the J&L property is Seaver's Brook. Beyond to the south there is a narrow strip of land between the river and Clinton Street occupied by the railroad right-of-way.

The west side of Clinton Street, from Seaver's Brook north, is occupied by LaValley's Building Supply, the Springfield Wastewater Treatment Plant, The Lookout Restaurant, several residential properties, the Bryant Grinder Company, the J&L Technical Center, the abandoned Springfield Gas Company, the J&L parking lot "B", and several more residential properties.

3.2 Other Local Properties

Further north on Clinton Street are the Kelley Chrysler-Plymouth dealership, Central Vermont Public Service Company, a Texaco Station, the former Clinton Street Shell, two restaurants, and several other gas stations, residential and commercial properties. This area has historically been home to car dealerships and service stations some of which have had problems with leaking underground storage tanks.

Across the Black River, along Bridge Street are Springfield Plumbing and Heating, Johnson & Dix fuel distributors, Lucas Printing, the Springfield Fire Department, and the offices of All-Seasons Construction Company.

In the spring of 1988, an oil spill was confirmed in the Bridge Street area and is still being cleaned up. A gasoline leak was confirmed at the old Clinton Street Shell in the summer of 1986, and has been cleaned up. There has been no documented long term effect on the J&L property from either of these incidents or others which may have occurred over the years.

4.0 FINDINGS

The first part of this section addresses the review of existing data and interviews with longtime personnel of J&L, which apply to the site as a whole. The second part presents the data gathered on site during the site walkover, well installation and sampling, all of which were accomplished in late May and early June of 1988.

4.1 Existing Data Review

A review of existing data was conducted to help characterize the raw material used and the waste generated by J&L. The review included government files and informal interviews with current and past plant personnel.

4.1.1 Government Files

Potential sources of information on file with the government included both the Division of Hazardous Materials and the Department of Labor and Industry within the State of Vermont, and the federal EPA.

The State is concerned with the safety of the operation of the plant and the proper handling and disposal of hazardous substances. The State inspector for hazardous materials responsible for J&L had visited the plant in early May 1988 and found only minor problems with their handling of drums that were in the process of being filled. Those problems were immediately corrected. The inspector indicated there were no apparent significant violations of State regulations mentioned in his files on J&L. Also, he indicated that J&L's paperwork on their handling of hazardous materials was up to date. Based on this information, it was decided that an actual review

of these files was not necessary. The Department of Labor and Industry was not contacted.

Files on the old Springfield Landfill, the EPA Superfund site off Will Dean Road, were also considered a likely source of data on the history of use and disposal of materials of concern in the Assessment. Conversations with J&L personnel, Town of Springfield officials, and State personnel indicated that there had been a good deal of information gathered by EPA during its research on the dump. Upon checking with EPA it was learned that this information is considered "enforcement confidential" because it was gathered for the purposes of determining Potentially Responsible Parties (PRP's) thus it was unavailable for this study.

All of the data that the State Division of Hazardous Waste had on file for the Will Dean Road dump site was reviewed. It consisted primarily of the EPA contractor reports that dealt strictly with the dump site itself. It did contain the internal State memos, also retrieved from J&L files, that present estimates of the type and quantity of waste generated by Springfield industries, and other estimates of what was disposed of at the dump. Copies of the memos are included in Appendix B.

4.1.2 Company Files

With the assistance of Don Shattuck, the plant engineer, company files containing plans of the various sections of the plants, information on the Will Dean Road dump site, records of compliance with hazardous substance regulations and underground storage tank inventory forms were located and reviewed.

The plans assisted in the selection of areas on which to concentrate during the site walkover and subsurface sampling. Plans detailing subsurface drainage features for all sections of the buildings and property could not be located.

As noted above, the J&L file on the Will Dean Road dump contained the same State memos discussing industrial waste and disposal as the State files. The file also contained the previously discussed internal memo, describing waste disposal during the 1950's and 1960's. According to the memo, until the Fall of 1964 all liquid wastes, including sewage, were disposed of by direct discharge to the river. After that time the waste was hauled off-site for disposal, except for sewage which went to the recently completed Springfield Wastewater Treatment Facility. The only on-site disposal mentioned is grinding swarf, a combination of metal and stone with a trace of water soluble oil, which hardens like stone. This material is still present along the riverbank behind Plant #1.

Company files on hazardous or regulated substances included Material Safety Data Sheets (MSDS) for a large number of products. It was not practical to reproduce and include the MSDS for this report. A list of the MSDS, as of July 30, 1979, and a list of the locations of such materials by department, are included in Appendix A.

Underground storage tank inventory forms, contained in Appendix C, describe the location and characteristics of seven (7) underground tanks located around Plants #1 and #2. The forms were submitted to the State in April of 1986, as part of the Federally mandated Underground Storage Tank Registration Program. One of the tanks, a 1,000 gallon tank used for gasoline and most recently diesel fuel was removed in late December 1988.

4.2 Interviews

Three individuals provided their recollections about the operations at J&L and surrounding properties. Given the minimal written record, those recollections played a critical role in the siting of monitoring wells and the areas that were focused upon during the site walkover. Don Shattuck is the current plant engineer responsible for overall maintenance of the physical plant. He has been with J&L for 32 years. Michael Knoras is the current plant manager who has progressed to his position from an apprentice machinist through design, manufacturing, and management, in over 39 years with J&L. Lionel "Chick" Huron started with J&L in 1931, and with only a brief absence during the 30's, stayed with the firm until his retirement in 1977. For many years Mr. Huron was in charge of plant maintenance.

The information provided by these gentlemen is discussed in the sections describing the findings for the individual areas of the J&L property.

4.3 Site Walkover

The following sections describe the observations made during the walkover of each of the individual areas of the Jones & Lamson site. A brief follow-up walkover was made on March 13, 1989. The individual areas considered are:

1. The Springfield Terminal Railway area.

2. Plant #2 - the southerly, smaller, newer plant.

3. Plant #1 - the northerly, larger, older plant.

4. Other areas - including the open land between Plant #2 and the Terminal Railway area and the smaller parcels on the west side of Clinton Street.

Throughout the site walkover, as well as during boring and sampling exercises, an HNU Model P101 photoionizer was used to screen for the presence of volatile organic compounds (VOC's) in the air above the soil and water. This device is sensitive to a wide range of compounds, some of which are on EPA's hazardous substance list (HSL) and many which are not on that list. The device was used as a tool to help choose well and sampling locations, to develop an order for well sampling in an attempt to minimize the chance for cross contamination between wells, and to give an indication to the laboratory performing the analyses about the likely level of contamination in a particular sample.

4.3.1 Springfield Terminal Railway Area

The southernmost area of the J&L property along Clinton Street is land that was leased to the Springfield Terminal Railway Company. Structures there include a maintenance shed, an elevated dump structure, a "salt shed", and several other smaller loading and storage structures. The railway is no longer in operation and most of the structures are in a state of significant disrepair.

Outside of the maintenance shed there were several empty or partially full drums, which were not labeled, but were presumed to hold oily substances probably mixed with rainwater. Some of these have been removed or moved inside since the initial walkover. There was also a steel tank on concrete cradles behind the maintenance shed. This tank was apparently empty. Another smaller tank was partially buried in the same general area behind the maintenance shop. A point in this area was designated for a monitoring well (MW 1).

Inside the maintenance shop there is a long pit used for access to the underside of railroad equipment. This pit was partially filled with several hundred gallons of oily water. It was reported by the Springfield Director of Public Works that the water in the pit was likely a result of a severe leak in the water supply caused by freezing during the winter of 1988. That leak put several inches of water on the floor of the entire building, causing water to flow into the pit and combine with the oil and grease on the pit floor. The maintenance shop in general is a mess, with partially full barrels and drums scattered throughout the structure. At the time of the follow-up walkover, the oily water remained in the pit and there were still numerous barrels and buckets of oil and grease in the building.

The interior of the salt shed was locked at the time of the initial walkover and follow-up, but could be viewed from the open south end. The shed apparently was in use by the local cable television company for storage. There was no apparent use or storage of materials which would be of concern to this assessment.

To the east of the salt shed is an elevated section of track formerly used to dump coal, salt, etc. This structure is now in disrepair to the point that it is unusable. The site is now used for storage of coal by the Johnson & Dix Fuel Corporation. Further to the east is a waste pile of soil, steel scraps and other miscellaneous debris. This area was chosen for installation of another monitoring well (MW 2).

Reportedly, some portion of the area occupied by the Terminal Railway structures was used in the past by a local fuel equipment distributor for storage of used underground tanks. No specific evidence of this use was disclosed.

4.3.2 Plant #2

The interior of Plant #2 was given a cursory inspection. Plant #2 is now in use for offices, stock storage and machine assembly. This area of the facility is currently the most active and, as a result, received the most attention from the State inspector during his May 1988 visit. Overall, he was apparently satisfied with the operation.

A rack containing a variety of lubricants in 55 gallon drums was observed near the south end of the plant. A paint pit is located at the extreme south end of the plant. There were several drums used for solvent

and paint waste located near the paint pit. The drums were observed to be properly labeled and covered. It was reported that once a drum is filled it is moved to a loading dock at the rear of Plant #1. The loading dock serves as the full drum storage area for waste materials prior to transport by the disposal contractor, Northeast Solvents, a Massachusetts company licensed to haul hazardous materials.

The surroundings of Plant #2 do not suggest anything out of the ordinary for a heavy industrial site. There were no above ground tanks or drums observed. The west side of Plant #2 is bounded by Clinton Street, with the Bryant Grinder Company on the west side of the right-of-way. For most of its length Plant #2 is several feet below pavement level. A location just to the south of the door labeled "personnel" was chosen for the installation of a monitoring well (MW 14). This location is approximately in line with the southerly end of the Bryant building.

There are four (4) underground tanks on the east side of Plant #2. All of these are now used for #2 or #4 fuel oil for space and water heating. The tanks are referred to by the numbering scheme adopted for the State inventory form included in Appendix C. Tanks #6 and #7 are both 8,300 gallon tanks which have in the past been used for #6 fuel oil. There is no recollection of any of these tanks leaking, or any major spills in the area. A location to the east of these tanks #6 and #7 was chosen for the installation of a monitoring well (MW15).

4.3.3 Plant #1

Plant #1 is cause for significantly more concern and attention than Plant #2. The plant, which is now about 320,000 square feet in size, was constructed in phases beginning in the early 1900's, through the late 1970's.

The inside of the plant was given a thorough inspection in the company of both Mr. Shattuck and Mr. Huron. The only interior features which are a cause for concern are the interior drainage system and a pit beneath the floor. The pit contains three tanks which were used in the machine coolant circulation and reclamation system. There are two cylindrical steel tanks, both empty, of approximately 2,000 and 2,500 gallon capacity. The third tank is an open rectangular tank which still contains a liquid which is apparently coolant. The tank of coolant is of relatively minor concern because the pit in which it is located would provide containment if the tank were to leak. Of more concern is the drainage system which was historically used to drain the paint pits and other plant facilities. The system was thought to be abandoned, except for roof drains, but there is evidence that the drain system may still be active to a degree, based on findings along the riverbank outside of the plant.

The condition of substation transformers was discussed during the walkover. According to Don Shattuck, the Maintenance Supervisor, all of the transformers have been recently serviced and no longer contain PCB laden oils. At the time of servicing, an amount of PCB laden soil was found and removed from one of the Plant #1 courtyards. One individual transformer was observed during the walkover on the dock where drums of hazardous waste are stored. This transformer had no labeling or indication of PCB content.

It was reported that during the mid 1960's, a fire occurred in Plant #1 near one of the courtyards, adjacent to what is now the tool room. There was some damage to the sub-station in this courtyard, but there is no recollection of damage to the transformers, or leaking of oils. One of the transformers in this same courtyard was struck by lightning in the early 1970's, and required replacement, but again, there is no recollection of oil leaks.

Outside of Plant #1 and its out buildings several features were noted during the walkover which called for further study. These included stained soil in the empty drum storage area, the 1,000 gallon underground tank (removed 12/88) near the garage and gas pump, a stained area in front of the chip shed near the filler pipe for the 70,000 gallon #6 fuel oil tank, a stained area near the "pump house" where an above ground tank for storage of hazardous waste was reportedly located in the late 1960's, and the catch basin system in the courtyard between the pump house and Plant #1. Points near all of these locations were selected for installation of monitoring wells. Other features of concern were the 70,000 gallon tank, a pipe coming from the bottom of the chip shed, and an apparent seep on the riverbank behind the empty drum storage area. The seep later proved to be clay tile pipes which are thought to be the remains of the plant drain system.

Additional points selected for well installation were near the hydraulic oil storage tank under the floor of the sheet metal shop addition, the northeast corner of the plant, the northwest corner of the plant and on the west side of the plant opposite the Technical Center. This last location was chosen to check for evidence of leakage from underground tanks associated with Woodruff Motors the former occupant of the J&L Technical Center.

It was reported that the empty drum storage area had been used for that purpose for many years. The area is labeled as such on a December 1960 plan of the site. The surface of the stained soil area was scratched and evaluated with the HNU at several locations. No positive readings were obtained.

The chip shed is a roofed concrete structure, used for storage of metal shavings, until they can be disposed of. These shavings may have a coating of cutting oil, and possibly other solvents or cleaners. There is a pipe exiting the floor of the shed which is apparently a drain line with an unknown discharge point. Mr. Huron believed that the line may discharge into a drywell, but none of those interviewed had any specific recollection about the purpose or discharge point of the pipe. It may be assumed that any liquid from the metal shavings may have drained directly to the soil.

The staining near the chip shed is thought to be associated with the filling of the 70,000 gallon tank. When the railroad was in operation, oil was delivered to the plant in tank cars. During the winter months the oil would congeal in the cars, and would have to be heated before it could be unloaded. This often included building a fire under the car. According to Mr. Huron, the car would be positioned over the tank fill which is a four inch diameter pipe in the center of the tracks in front of the chip shed. A large funnel would then be placed in the fill. A valve on the end of the tank car would be opened, and sometimes a large "slug" of congealed oil would fall into and plug the fill line. The operator on duty would then have to climb up onto the car and close the control valve, while oil continued to flow out onto the ground. Mr. Huron said he could remember the "whole area soaked with oil", referring to the area under and around the chip shed. It is not known when such an occurrence last took place. Fuel oil delivery is now by truck.

The 70,000 gallon tank reportedly contained about 1,500 gallons of #6 fuel oil at the time of the initial walkover. This tank has experienced problems in the past as noted on the inventory form submitted to the State (see Appendix C.) In 1972 the Town traced oil in the wastewater plant influent to the J&L plant. It was found that the tank was leaking and that oil was flowing into the sewage system through a manhole. The manhole, which is located between the wall of Plant #1 and the tank, was opened during the walkover and still shows evidence of a coating of oil. Following the discovery of the 1972 leak the tank was drained, cleaned and relined. There is no record or recollection of any attempt to determine the extent of contamination or any remedial action to clean up oil which escaped to the soil.

The discharge on the riverbank, initially thought to be one or more seeps from the ground, was found to be coming from two clay tile pipes. Both pipes were at least half full of sediment, and flowing at a rate of between 1 and 2 gallons per minute (gpm). Upon disturbance, the discharge produced a noticeable sheen as it flowed into the river. It should also be noted that the discharge from both pipes was very cool. The HNU showed a slightly positive reading when extended up the barrel of the southerly pipe and a reading in excess of 20 ppm in the barrel of the northerly pipe.

Because the source and the content of the discharge was unknown, it was recommended to J&L that action be taken immediately. Jet Line Services was contacted, and within 3 hours a sorbent boom had been placed around the discharge area. It is suspected that these pipes are part of the interior drainage system for Plant #1 which was thought to be abandoned when the Town sewer was built in mid 1960's.

The pipes were checked during the follow-up walkover and appeared to be issuing a discharge similar in quantity and quality to that initially observed. Attempts to determine the source of the discharge have not yet been successful and there are now some suspicions that it could even be coming from off-site. Jet Line Services has been maintaining the containment system, changing and disposing of the sorbent material, since the problem was discovered.

A second point discharge to the river was brought to the attention of J&L by the State on November 9, 1988. This location, several hundred feet upstream of the first, was found to be another clay tile pipe. Town sewer plans showed that the pipe should have been connected to the municipal sewer line. The source of the discharge included coolant water from the air compressor located in the pump room. The coolant water can contain traces of lubricating oil from the compressor. An oil separator was installed on the line which was then connected to the municipal sewer system.

4.3.4 Other Areas

The area north of the Terminal Railway salt shed and south of Plant #2 is an open area except for a hockey rink belonging to the Springfield Hockey Club. As noted in the site description the area is land which was filled during the relocation of the Black River. At least one drainage ditch runs across the area conveying water from the west side of Clinton Street to the Black River. The area is also used for snow disposal by the Town of Springfield. There are several brush piles along the railroad tracks which run along the edge of the area near the river There was nothing particularly noteworthy observed on the surface of the area. A point at the

north end of the area, centered between Clinton Street and the river, near the southerly fence around Plant #2, was selected as a location for a monitoring well (MW 3).

The walkover of the two J&L parcels on the west side of Clinton Street, did not indicate anything of particular concern. The southerly parcel is occupied by the J&L Technical Center, which was formerly the Woodruff Motors Ford Dealership. A tour of the interior of the building was made with Don Shattuck. Nothing of concern was disclosed. An old photograph of Woodruff Motors showed that at one time there were gas pumps out in front of the building. Chick Huron recalled that tanks and dispensers had been removed by J&L shortly after purchase of the property. It is likely that the pumps and possibly the tanks were located in what is now the paved area of Clinton Street. A point opposite the Technical Center, in the lawn in front of Plant #1, was chosen as a well location (MW 12) to determine if there was any evidence of leakage from the former tank(s) at Woodruff Motors. There are reportedly no tanks remaining inside or outside of the building which is electrically heated.

The northerly parcel on the west side of Clinton Street is now a paved parking area. Mr. Huron recalled that the area used to be occupied by garages and horse barns for the use of J&L executives. There is no other record or recollection of any development on this parcel which would indicate a potential for problems.

4.4 Monitoring Well Installation

A total of 15 locations were chosen for the installation of monitoring wells based on the existing data review, interviews and site walkover. The locations were chosen to obtain samples from:

1. Likely points of contamination.

2. A representative average for a large area.

3. Background or upgradient conditions.

Two additional locations were added during the course of the drilling program. The location of all of the wells is shown on Figure 2 and may be described as follows:

MW1 - Terminal Railway near the above ground tank.
MW2 - Terminal Railway across from coal bins.
MW3 - At the fence near hockey rink.
MW4 - By the hydraulic oil tank near Plant #1.
MW5 - By the buried tank near gas pump behind Plant #1.
MW6 - Empty drum storage area behind Plant #1.
MW7, 7A & 7B - Near the Chip Shed behind Plant #1.
MW8 - Near the Pump House behind Plant #1.
MW9 - Near the loading dock north of Pump House behind Plant #1.
MW10A - North end of Plant #1 near Black River
MW11 - North end of Plant #1 at corner of Clinton and Bridge Streets
MW12 - In front of Plant #1 across from Technical Center
MW13 - Toe of slope north of guard house
MW14 - Near the door labeled Personnel Office in front of Plant #2

MW15 - Towards river bank, near the storage tanks, off of the boiler room behind Plant #2

Detailed boring logs compiled by the driller and Dufresne-Henry, Inc. are included as Appendix D and Appendix E respectively.

The borings were made with a truck mounted drill rig and hollow stem augers. Split spoon soil samples were obtained at five foot intervals. In general each boring was drilled at least five (5) feet below the prevailing water table. A well of threaded, flush joint PVC pipe was placed in each boring. The .01" width manufactured screen section of each well was extended above the water level observed at the time of installation. The annular space of each well was packed with Ottawa sand to a point above the screen. A bentonite seal was placed above the sand to prevent entry of surface water. All wells are protected with a cast iron water box or a locking, steel "stick-up" casing.

The findings during the installation of MW 7 prompted immediate additional exploration. MW 7 is located immediately east of the chip shed behind Plant #1. As drilling progressed past 10 feet, an oily odor was observed. The split spoon sample obtained from a depth of 15.5 to 17 feet contained soil saturated with oil. Following placement of the well, the water level was observed to be at 12.3 feet. The tape used to measure the depth was coated with a thick oil. The obvious layer of free product was reported to J&L and the installation of MW 7A and MW 7B was authorized in an attempt to better define the extent of the contamination. MW 7A, located between MW 7 and the riverbank, was found to contain minor evidence of free oil. MW 7B, about 75 feet south of MW 7 in the gravel roadway, exhibited the same conditions encountered in MW 7. The globular characteristics of

the oil indicate that it is most likely #6 fuel oil.

After installation, most of the wells were developed by pumping in a large quantity of water. This flushed fines that may have been "plugging" the filter pack out of the well allowing better hydraulic connection with the surrounding aquifer. Wells MW 7, MW 7A, and MW 7B were not developed in this manner because they were known to contain free oil.

The elevation of each well was field surveyed and located by ties to nearby buildings to allow recovery in the future. Water levels observed at the time of sampling are given on Figure 2.

4.5 Hydrogeology

The primary purpose of the borings installed for this project was to facilitate the proper installation of monitoring wells to sample groundwater. Soil characteristics were logged during boring advancement by means of split spoon samples and material brought up on the auger flights. Boring logs are included in Appendices D and E. Published geologic data for the area is limited and generally regional in scale.

Surficial geology as observed in the borings is largely fill material to depths of ten (10) feet or more. This is not unexpected given the history of the area. Much of the J&L site is filled swampland or became usable after the relocation of the channel of the Black River. The fill material consists primarily of sand and gravel. At several locations, however, there were black sands interpreted as probable foundry waste.

Based on the observed blow counts, much of the fill material is poorly compacted. Some manmade articles were observed but they were scattered and did not indicate that any of the borings had penetrated an old dump site.

Below approximately ten (10) feet some borings showed well rounded sand and gravel sequences which likely indicate floodplain sediments or former river channels. In several of the borings, particularly those nearest the river, very silty material was found near the limit of the boring. These fine grained sediments indicate quiet water and are probably related to some stage in the history of glacial Lake Hitchcock.

Refusal was encountered at only one location, MW 11. It is not known if the refusal was a boulder or bedrock. Bedrock depths at the site are unknown. Bedrock outcrops can be observed on the easterly side of the Black River and in the vicinity of the parking lot across Clinton Street from the northwest corner of Plant #1. These outcrops and the limited published information indicate that bedrock underlying the site is likely schist or phyllite.

The two apparent local controls on groundwater flow patterns are occasionally shallow bedrock and the Black River. Monitoring well water levels were sounded during sample collection which was during an extended period of below average rainfall. The observed elevations, shown in Figure 2, are with certainty lower than normal. The elevations indicate an easterly to southeasterly groundwater flow direction across the site. Local gradients are moderately steep to the east towards the river and shallow to the south along the river, reflecting the river gradient.

4.5 Sampling and Analysis

The wells were allowed a one week period between development and sampling for natural groundwater flow to flush away the water that had been used for development and for water levels to achieve equilibrium. Prior to sampling, three well volumes of water were removed from each well to assure a sample representative of the water in the aquifer around the well.

Samples were also obtained from the two clay tile pipes discharging to the river and from the catch basin located approximately eleven feet north of the pump house. These were labeled: GS #2 - south pipe, GS #3 - north pipe and GS #4 - catch basin.

Samples for volatile organic compound (VOC) analysis were placed in 40 ml vials supplied by the laboratory and labeled. Samples for oil and grease analyses were also obtained from several locations and placed in jars supplied by the laboratory. GS #1 was an oil and grease sample obtained from MW 2. All samples were kept on ice from the time they were obtained to the time of their delivery to the laboratory on June 17.

Eastern Analytical, an EPA certified laboratory in Concord, New Hampshire, performed the sample analyses. Their report is included as Appendix F. The VOC analysis was performed using EPA Methods 601/602 and 8015. These methods utilize a gas chromatograph which requires the analyst to evaluate the results by comparison of the sample chromatograph with chromatographs for known compounds. A total of 36 compounds which appear on EPA's Hazardous Substance List are quantified in this analysis. A value for VOC's not on the list is also given. This analysis is less costly than the EPA 624 method, however the laboratory is very confident that it produces comparably accurate results.

The analyses determined the presence of VOC's above detection limits in 11 of the 17 monitoring well samples. MW 1 and MW 2 on the Terminal Railway site; MW 3 near the hockey rink; and MW 11, MW 12 and MW 13, the three wells in front of Plant #1, showed no evidence of VOC's.

A summary of the compounds detected in the samples is provided in the following table. The most recent Vermont Drinking Water or Ground Water Standards for these compounds are included as a basis for comparison.

The results, and standards, are presented in parts per billion (ppb) which is an extremely small amount of material. To put this amount in perspective, consider that 1 ppb is the equivalent of 1 second in 32 years, or 1 cent in 10 million dollars.

With the exception of GS #3, the compounds identified are limited to chlorinated hydrocarbons known to have been, or be, in use at J&L. As noted in the table, Vermont Standards are exceeded in several of the samples.

The highest concentrations were observed in GS #4 the sample obtained from the sump of the catch basin between the pump house and Plant #1. Based on the site walkover, the only avenue for contaminants to enter this system is by direct dumping.

The compounds found in GS #3, from the north pipe on the riverbank, are of more significance than those in GS #4 because several of them exceed the standards to a greater degree, and the discharge is direct to the river and continuous. GS #3 also contained compounds which are indicative of gasoline. GS #2, from the south pipe, contained similar compounds to GS #3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS
Jones & Lamson Site Assessment
June • 1988

Values without an "a" following are adopted drinking water standards or Primary Ground Water Quality Standards, whichever is more conservative.

Values with an "a" are Health Advisory Levels which are in use until other standards are adopted.

Circled values exceed the State Standards.

CONCENTRATION (PARTS PER BILLION)

COMPOUND	*MW 4*	*MW 5*	*MW 6*	*MW 7*	*MW 7A*	*MW 7B*	*MW 8*	*MW 9*	*MW 10A*	*MW 14*	*MW 15*	*GS #2*	*GS #3*	*GS #4*		*VT. STD.*
1,1-Dichloroehtene											15					7
1,1-Dichloroethane			3	7	2	8					26		14	(190)		70a
Trans-1,2-Dichloroethane	4	42	5	8		3							7			70
Cis-1,2-Dichloroethane	33	(180)	(140)	(71)	17	(380)				6	4	55	(130)			70
1,1,1-Trichloroethane			11				14	4	3		90	2		(2000)		200
Trichloroethane	5	2	(54)	(260)	(18)	(51)	4			(15)	(7)	(18)	(220)			5
Tetrachloroethane					(3)	(4)	(13)			(6)	(65)	(4)	(32)			0.7
Benzene												(9)	(32)			5
Toluene													11			2000
Ethylbenzene												2	140			680a
Total Xylenes												7	60			400a
Others (Not on HSL)				500	50	200						100	2000			NA

but in lower concentrations.

The compounds present in the wells along the east side of Plant #1 all contain similar solvent related compounds. It has been reported that the presence of cis-1,2-Dichloroethene and trans-1,2-Dichloroethene is indicative of decaying Trichloroethene and Tetrachloroethene. Comparing the relative concentrations observed in the samples indicates that the source of the contamination in this area was probably near MW 7. There may be a connection between this contamination and the apparent drain from beneath the chip shed.

The density of wells around Plant #2 precludes even preliminary conclusions about the areal extent of the contamination observed in the samples from MW 14 and MW 15, or whether the contamination in the two wells is connected. It was expected that MW 14 would be indicative of conditions upgradient of the J&L plant. The compounds in both of these wells suggest that less decay of the original substance has occurred than in the wells behind Plant #1, indicating a more recent release. There is no evidence of petroleum contamination in the sample from MW 15 which was sited near the underground fuel oil tanks.

5.0 CONCLUSIONS

The purpose of a site assessment is to determine the presence of environmental problems which could impact the current use or value of a property. Several problems have been identified on the Jones & Lamson property on Clinton Street, in Springfield, Vermont. The severity of the impact of that these problems may have on future use, or past, present and future owners can only be assessed after the information contained in this report can be reviewed by State authorities, who ultimately will determine what level of contamination is acceptable to safeguard public health and the environment.

The specific items of concern identified during the assessment were:

1. The oil contamination found in the area east and south of the chip shed, as found in wells MW 7, MW 7A, and MW 7B.

2. The pipes found in the river bank near well MW 6 from which samples GS #3 and GS #4 were obtained, and which are introducing VOC's and traces of gasoline to the Black River.

3. The VOC contamination found in groundwater samples from wells MW 4, MW 5, MW 6, MW 7, and MW 7B.

4. The VOC contamination found in the samples from the wells on either side of Plant #2, MW 14 and MW 15.

5. The oily water in the repair pit, and the general conditions at the Terminal Railway repair shed.

6. The condition of all of the underground storage tanks which, except for the hydraulic oil tank, are in excess of 20 years old.

From the time the initial assessment was performed in June of 1988 to the date of this revision in March of 1989 several of these concerns have been addressed.

1. Tank #2, a 1,000 gallon underground tank used for gasoline and more recently diesel fuel storage was removed with no evidence of problems with leakage.

2. A containment system, which has been observed by the State, has been maintained around pipes from which GS #3 and GS #4 were obtained to reduce the level of contamination introduced to the river.

3. Attempts to locate the source(s) of the discharge from the pipes, though as yet unsuccessful, have continued.

4. A second discharge to the river, upstream of the first, was discovered and eliminated.

5. A limited amount of clean-up has been accomplished at the Terminal Railway repair shed.

A characterization phase is scheduled to begin which will better define the extent of problems identified during the assessment.

APPENDIX A

LIST OF MATERIALS USED AT JONES & LAMSON

&

INTERNAL MEMORANDA

INVENTORY OF SOLVENTS & CHEMICALS

)RODUCT NAME	MANUFACTURER	LOCATION
ACETIC ACID		DEPT. 82
ACETONE		DEPT. 82
ALCOHOL (ANHYDROUS)		DEPT. 82
ALCOHOL DENATURED (SOLOX)	SHERWIN WILLIAMS	DEPT. 82
ALPHA 564	ALPHA METALS	DEPT. 76S
ALPHA 815	ALPHA METALS	DEPT. 76S
AMMONIA ANHYDROUS		DEPTS. 660, 17, 1
ARMORSOL PAINT		PUMPHOUSE
ARMORSOL REDUCER		PUMPHOUSE
CHLOROFORM		DEPT. 82
CHROMIC ACID		DEPT. 36
CIMPERIAL 1011		DEPT. 1
CORLAR EPOXY ENAMEL		PUMPHOUSE
CRANKCASE SEALER		PUMPHOUSE
CRC 3-36		PUMPHOUSE
DERUSTAL		DEPT. 30
DYNADET	OKITE	DEPT. 82
EBONOL 5-34		DEPT. 36
FREON TES	DUPONT	DEPT. 76S
FREON TF	DUPONT	DEPT. 82
FLEXIBILIZER AC-4129	HYSOL	DEPT. 21
HYDROFLOURIC ACID		DEPT. 82
HARDENER HD-3688	HYSOL	
HARDENING 120	HEATBATH	
INDUSTROCLEAN E-550		PUMPHOUSE
KENCO #2355 HYDROFLOW FLUID		DEPT. 76S
KESTER SOLDERING FLUX #108		DEPT. 76S

PRODUCT NAME	MANUFACTURER	LOCATION
LAQUER SPRAFIL D61-A12		DEPT. 84
LAQUER THINNER (NEPTOLAC)	SHERWIN WILLIAMS	DEPT. 84
LDS-3 LUBRICANT & RUST		DEPT. 84
LIQUID RARE EARTH 85		DEPT. 84
LACQUER THERMO SPRAYFIL		
MAGNESIUM FLOURIDE		DEPT. 82
MC PLUS (III TRICHLOROETHANE)	ASTRO CHEMICALS	DEPT. 1
METAL PREP 10	AMOKEM PROD.	DEPT. 1
MOLD RELEASE AC-4368		DEPT. 21
NAPTHA		DEPT. 84
NICKEL 5606		DEPT. 76S
NOX RUST	MC CHEMICAL	DEPT. 84
OKITE PK-244	OKITE PROD. INC.	DEPT. 1
PENTRATE SUPER BLACK	HEAT BATH CORP.	DEPT. 36
OKITE 32	OKITE PROD. INC.	DEPT. 36
PHOSPHORIC ACID 10%		DEPT. 36
POLANE PAINT	SHERWIN WILLIAMS	DEPT. 84
POLANE REDUCER V66V22	SHERWIN WILLIAMS	DEPT. 84
POSITIVE DEVELOPER	PITMAN	DEPT. 82
POTASSIUM HYDROXIDE		DEPT. 82
RISTON 1100-X STRIPPER CONC.	DUPONT	DEPT. 76S
RISTON PHOTOPOLYMER RESIST	DUPONT	DEPT. 76S
RISTON 2000 DEVELOPER	DUPONT	DEPT. 76S
R. M. PUTTY	RINSHED MASON	DEPT. 84
RTV CATYLIST	DOW CORNING	DEPT. 21
RTV 312 SILICONE RUBBER	DOW CORNING	DEPT. 21
SAVASOL		DEPT. 82
SILICON MONOXIDE		DEPT. 82

PRODUCT NAME	MANUFACTURER	LOCATION
SINOXIDE GREEN PRIMER		DEPT. 82
SPIRITS 2299	WHITE & BAGLEY	DEPT. 1
SURFACE COAT 4347		DEPT. 21
SURFACE COAT LE-6528		DEPT. 21
TRIM MACHINE CLEANER	MASTER CHEMICAL	DEPT. 1
TRIM SOL	MASTER CHEMICAL	DEPT. 1
TRIM 9601-WA	MASTER CHEMICAL	DEPT. 1
TURPENTINE		DEPT. 82
T925 INK	ADVANCE PROC. SUP:	DEPT. 76S
T950 RETARDER	ADVANCE PROC. SUP.	DEPT. 76S
ZOLV	DUBOIS CHEMICAL	PUMPHOUSE

JONES & LAMSON TEXTRON

Waterbury Farrel Division of Textron Inc.

To M. C. SHEVCHIK

Location J&L

From D. SHATTUCK

Date JUNE 29, 1979

Subject: INVENTORY OF SOLVENTS & CHEMICALS

THE FOLLOWING COMPANIES HAVE PROVIDED MATERIAL SAFETY DATA SHEETS:

COMPANY	MATERIAL TRADE NAME
ALPHA METALS	RELIASOLV NO. 564 ALPHA NO. 815 FLUX
ASHLAND CHEMICAL CO.	HYDROFLUORIC ACID
MUSNELL WAX CO., INC.	BIG BITE DETERGENT
DUBOIS CHEMICALS	ACTEX DIFFERENTIATED KLARIFIANT 1CF-23E-FT LUBRICLEANER #950 PEEL FILMITE PERJ SPIRIT ZOLV
MASTER CHEMICAL CORPORATION	TRIM 9106 TRIM WATER MIX MACHINE CLEANER TRIM SOL
ASTRO CHEMICALS, INC.	STAUFFER MCT TRI-ETHANE GENESOLV DE
WHITE & BAGLEY COMPANY	WEB CUTTING OIL 2190 WEB GRINDING OIL 1572 WEB GRINDING COOLANT E-55 WEB HD SOLUBLE OIL 2945 WEB SPIRITS 2299 OILZUM PARTS CLEANER 1640
E. I. DUPONT DENEMOURS & CO.	FREON TF SOLVENT FREON TES SOLVENT
HAMPDEN COHOR & CHEMICAL CO.	METALPREP 10
HYDE PARK CHEMICAL	TUFF HYDE
CINCINNATI MILACRON	CIMPERIAL 1011 CIMCOOL FINE STAR 30 CIMCOOL 54

MONROE CHEMICAL CO., INC.	CHOICE-CUT MONROE RI
ANDERSON OIL & CHEMICAL CO.	FUSOL K-7 E-Z COOL 401
MANUFACTURING CHEMICALS ASSOC.	CHROMIC ACID CHROMIUM TRIOXIDE
BARCLAY CHEMICAL CO., INC.	ALKA SPERSE POLAMINE RH-202 ENHIBITOR N OXOGON KEM-X
HEATBATH CORPORATION	HARDENING 120 PENTRATE SUPER BLACK

WE ARE STILL WAITING FOR SAFETY DATA SHEETS FOR THE FOLLOWING MATERIALS:

ACETIC ACID
ACETONE
ALCOHOL (ANHYDROUS)
ALCOHOL DENATURED
AMONIA ANHYDROUS
ARMORSOL PAINT
ARMORSOL REDUCER
CHLOROFORM
CORLAR EPOXY ENAMEL
CRANKCASE SEALER
~~GRC-3-36~~ CRC Industries USA
DERUSTAL
~~DYNADET~~ Discontinued
EBONOL
~~FLEXIBILIZER~~ Discontinued
INDUSTROCLEAN E-550
KENCO #2355 HYDROFLOW FLUID
KESTER SOLDERING FLUX #108
~~LACQUER SPRAFIL D61-A12~~
~~LACQIER THINNER~~
LDS-3 LUBRICANT & RUST
~~LACQUER THERMO SPRAYFIL~~
MAGNESIUM FLOURIDE
CHINTE PENETRANT - Oakite prod.
OAKITE SPECIAL PENETRANT 814 - Oakite prod.
VALVESOL 10 - Lucas Industries
HARDNER-3658 - HYSOL DIV. DEXTER CORP.
Hydrofluoric acid - Oakland product
DS/JR

MOLD RELEASE AC-4368
NAPTHA
~~NICKEL 560~~ Selectone, Ltd
NOX RUST
~~OKITE PK-244~~ Oakite product
~~OKITE 32~~
PHOSPHORIC ACID 10%
~~POLANE PAINT~~
~~POLANE REDUCER~~
POSITIVE DEVELOPER
POTASSIUM HYDROXIDE
~~RISTON 1100 X STRIPPER CONC~~
~~RISTON PHOTOPOLYMER RESIST~~
~~RISTON 2000 DEVELOPER~~
} E.I. DU PONT DE NEMOURS CO. INC.
~~R.M. PUTTY~~
RTV CATYLIST
RTV 312 SILICONE RUBBER
~~SAVASOL~~
SILICON MONOXIDE
SINOXIDE GREEN PRIMER
TURPENTINE
~~T925 INK~~
~~T950 RETARDER~~ adjuncts product Sprayon Co.

M. C. SHEVCHIK

J&L

DON SHATTUCK

JULY 30, 1979

SAFETY DATA SHEETS

ON JUNE 29TH, I SENT YOU A MEMO WITH A LIST OF MATERIALS THAT WE HAD SAFETY DATA SHEETS FOR. SINCE THEN, I HAVE RECEIVED DATA SHEETS FOR THE FOLLOWING MATERIALS:

CRC CHEMICALS U.S.A.	CRC 3-36
SELECTIONS, LTD.	NICKEL 560
OAKITE PRODUCTS	DYNADET OAKITE PK-244 OAKITE 32 OAKITE PENETRANT OAKITE SPEC. PROTECTIVE OIL
E. I. DUPONT DENEMOURS	RISTON 1100-X STRIPPER CONC. RISTON PHOTOPOLYMER RESIST RISTON 2000 DEVELOPER
ADVANCE PROCESS SUPPLY CO.	T-925 INK T-950 RETARDER
LUSCON INDUSTRIES	VALVESAL 10
HYSOL DIV. DEXTER CORP.	HARDNER 3688
ASHLAND PRODUCTS	HYDROFLORIC ACID
MOBIL OIL CORPORATION	MOBIL VACTRA, HEAVY MEDIUM 2, 4, EXTRA HEAVY MOBILUX EP2, EPO MOBILGEAR 632 MOBILVELOCITE 6, 10, 3K MOBILTAC E MOBILDELVAC SPECIAL MOBILUBE HD MOBIL DTE OIL HEAVY MEDIUM 25, 26 MOBILPLEX 47 600W CYLINDER OIL MOBILGREASE BRB MOBIL KEROSENE SOVASOL I AND 5

M. C. SHEVCHIK

J&L

DON SHATTUCK

JULY 30, 1979

SAFETY DATA SHEETS - PAGE 2

SHERWIN WILLIAMS

D61-A-12 THERMO SPRAYFIL LACQUER
D61-A-21 PATCHING PUTTY GRAY
D61-A-23 POLANE SPRAY-FIL
E61-G-7 IMPROVED ZINOXIDE GREEN
E65-A-4 POLANE SEALER
E65-H-B2 POLANE IVORY GEAR CASE SEALER
F63-A-13 POLANE 78GRAY
F63-A-31 POLANE ASA #61 GRAY
F63-E-3 POLANE TURBINE ORANGE
F63-G-18 POLANE VISTA GREEN
F63-G-27 POLANE HELIARC GREEN
F63-H-11 POLANE MODULAR IVORY
F63-L-14 POLANE SPECTRO BLUE
F63-L-16 POLANE CIRCUIT BLUE
F63-R-12 POLANE THERMAL RED
F63-W-13 POLANE STROBE WHITE
F63-Y-8 POLANE BETA YELLOW
F68-E-9 SUPER FAST DRI SYNTHETIC ENAMEL,MEDIUM ORANGE
F68-R-14 SUPER FAST DRI SYNTHETIC ENAMEL, RED
L99-W-N1 NITROCELLULOSE LACQUER
R1-K-3 PAINT REDUCER - LIGHT NAPHTHA
R7-K-69 POLANE REDUCER
R7-K-72 NEPTO-LAC THINNER
V66-V-27 POLANE CATALYST

THESE 60 PRODUCTS AND 10 COMPANIES BRING OUR TOTAL SAFETY DATA SHEETS TO 104 PRODUCTS FROM 26 COMPANIES.

THERE ARE STILL A FEW MORE PRODUCTS THAT WE NEED DATA SHEETS FOR, BUT THE SHEETS WE DO HAVE COVER MOST OF OUR MAJOR SUPPLIES.

DS/JR
CC: C. BAILEY

JONES & LAMSON TEXTRON

Waterbury Farrel Division of Textron Inc

To C. Bailey

From Don Shattuck

Location J&L/Springfield

Date October 12, 1983

Subject: WASTE DISPOSAL DURING THE 50's AND 60's

There were no records kept during the 50's and 60's as to the quantities of disposable waste. In order to make a realistic estimate, we will use average figures arrived at three records of more recent years.

Lionel Huron was Superintendent of Maintenance during the 50's and 60's. As such, he was responsible for seeing that all wastes were disposed of. I met with Mr. Huron on 10/7/83 and the following information was given to me, as to the best of his knowledge.

Until the Fall of 1964, all liquids were disposed of by dumping them into a drain near Dept. 36 and letting them flow to the river. In the Fall of '64, the drain was broken when the Town sewer line was put in out back of Plant I. When they could no longer use the drain, a 1000 gallon tank was installed out back and all liquids were disposed of there.

Approximately twice a week, Harry Shepard, a local rubbish collector, would come and pump out this tank and truck it to the local dump.

Grinding swarf was dumped on the river bank all thru this period and office rubbish was burned in an open incinerator on the river bank. Shop rubbish, which amounted to about 15 drums a day, went to the local dump.

The paint pits were piped to the river and were drained to the river at that time. The paint sludge was trucked to the local dump by J&L personnel until Harry Shepard took over cleaning the pits. He would pump them out and take the sludge to the local dump. The three paint pits would be cleaned at least twice a year, with at least 4 drums of sludge from each pit. Thru the 50's and 60's, we averaged at least 2 drums of paint sludge a month to the local dump.

After the Fall of '64, we were sending out about 2000 gallons of miscellaneous materials a week to the local dump. These miscellaneous materials included water soluble oils, "coolant", mineral spirits, savosal, methylene chloride, III Trichloroethane, waste oil, caustic solutions and chromic acid.

DS/jr

C. A. STEELE 1-31-84

C. P. McCORMICK

APPENDIX B

STATE OF VERMONT MEMORANDA REGARDING

THE

WILL DEAN ROAD LANDFILL

State of Vermont

AGENCY OF ENVIRONMENTAL CONSERVATION

Department of Fish and Game
Department of Forests, Parks, and Recreation
Department of Water Resources & Environmental Engineering
Natural Resources Conservation Council

Montpelier, Vermont 05602
Department of Water Resources
and
Environmental Engineering

June 24, 1983

Mr. John Blatz
Group Counsel
Emhart Corporation
P.O. Box 2730
Hartford, CT 06101

Dear Mr. Blatz:

Attached are two internal reports of the Agency of Environmental Conservation that indicate our efforts to determine the quantity and source of the materials disposed at the old Springfield Dump located near Will Dean Road. The field work and information were completed in 1981.

I advise that the figures of industrial waste were the Agency's best estimate based on interviews with former employees as well as trying to get information from the companies themselves. The data should be used with some caution but the Agency feels that it is a fair report of the situation at this site.

If I can be of any further assistance to you, feel free to contact me.

Sincerely,

Richard A. Valentinetti

Richard A. Valentinetti, Director
Air and Solid Waste Programs

RAV/car
Attachments

MEMORANDUM

TO: John A. Malter

FROM: John Sarsfield JS

DATE: March 24, 1981

RE: Interim Report - Springfield Dump Investigation

From all available information obtained to date, it appears that the abandoned Springfield Dump off Will Dean Road was the principal disposal site for the area's industrial waste from approximately 1946 until November 1968 when the dump was closed. At least half a dozen other dumps had been in use in Springfield over the years and it should be assumed that some industrial waste may have also found its way into these other dumps as well. However, prior to the appearance of effluent discharge standards, it is very likely that most liquid industrial wastes were discharged to rivers and streams.

Findings

Based on very rough estimates from notifications and other information furnished by some of the Springfield industries, it is estimated that the following amounts of waste have been disposed of in this dump during its active life:

Waste Oils:	144,000 to 1,700,000 gallons
Cutting Oils:	200,000 gallons
Solvents (incl. trichloroethane) & Sludges:	170,000 gallons
Paint Sludges:	15,000 gallons
Heat Treating Salts (NaCN, KCN, $BaCl_2$):	13,000 to 200,000 gallons
Plating Wastes ($CuCl_2$, $FeCl_2$, Cr):	45,000 gallons
Etching Wastes/Strong Acids (HNO_3, HCL, $BeSO_4$, $NiSO_4$, H_2SO_4, CrO_4, $CoSO_4$):	470,000 gallons

Within the dump site there are several specific points where wastes were dumped. Referring to the attached map, the principal disposal area for municipal as well as industrial was the leading edge of the plateau above Route 11 (area "B"). It is assumed that most of the heat treating waste, solvents, sludges and plating wastes ended up here. Area "C" was reserved for disposal of waste oils and coolant oils. Sources relate that the accumulated oil was burned from time to time. Area "A" (the precise location of which has not been determined as yet) was known as the "chemical dump". Sources report that liquid wastes, specifically the highly acidic etching wastes were disposed of here by pouring directly into the ground. For a time, this area was fenced off and posted with warning signs. Today, no traces remain of the chemical dump. It is hoped that enlargements of aerial photos taken in 1968 will help to pinpoint this area in addition to at least two trenches which were used for disposal in the waning days of

the dump. These trenches were apparently used for refuse. The first signs of groundwater contamination were noticed in April 1970 by Mr. Harold Millay whose well is located approximately 400 feet from the chemical dump and the trenches. His tap water was rust colored and had a strong odor of H_2S. This was verified by state inspectors. Subsequent lab tests performed in 1974 showed:

Iron:	0.23 mg/l	
	0.4 "	(1.3 x max. permissible level)*
Manganese:	3.7 "	(74 x " " ")*
	1.9 "	(38 x " " ")*
H_2S:	0.03 "	
Nickel:	0.012 "	
Cobalt:	0.02 "	

*National Secondary Drinking Water Regulations

In a memo to EPA, Boston, dated 4/15/76, Frank Paris, Solid Waste Geologist then with this Agency, indicated that it was possible that chemicals from the chemical dump may have influenced the pH of the groundwater and thereby rendered the natural minerals (iron, manganese, sulfur) more soluble.

In October 1973, a community spring on Seavers Brook Road below Millay's house also began showing signs of contamination--strong smell of H_2S and rust staining. Lab analysis of water samples from this spring also showed concentrations of iron and manganese comparable to Millay's well.

Soil tests performed by Southern Vermont Engineering, Inc. for the trailer park's septic system found "sandy soils with some gravel at an intermediate depth. There is no problem with groundwater, or bedrock, and percolation tests show a rate of less than one inch per minute."

Preliminary Conclusions

The contamination of Millay's well and the community spring on Seaver's Brook Road was very likely caused by the dumping of almost half a million gallons of strongly acidic wastes into what was then known as the chemical dump. Although more extensive testing should be done in order to reinforce this conclusion, the existing circumstantial evidence is pretty strong.

The principal effect of acids on soil is to decrease surface charges and attractive forces until most materials become anion exchangers and will no longer hold positively charged metals. (However, complex metal ions which are negatively charged, such as chromates, will bond under these conditions.) Manganese is more easily reducible than iron and a significant amount of manganese can accumulate in water having a slightly higher redox potential than that in which iron is stable. This may explain the high levels of manganese found in the well and spring samples. The hydrogen sulfide formed may be coming from metal sulfides in the soil or organic matter in the regular dump.

The principal potential threat to public health may be from contaminated soils, since it appears that almost everyone in the affected area is now on town water. However, both groundwater and soils may be contaminated by such exotic materials as beryllium and cyanides.

Preliminary Recommendations

1. Interview neighbors and persons involved with the dump in order to specifically locate areas where industrial wastes were known to have been dumped; i.e., the exact physical location of the "chemical dump" and whether a part of the regular dump was set aside for such wastes.

2. Interview representatives of Springfield industries to better determine types and amounts of industrial wastes dumped at the Springfield Dump.

3. Examine hill below regular dump (above Route 11) for signs of leachate, take samples if possible.

4. Take water samples of the contaminated spring on Seaver's Brook Road.

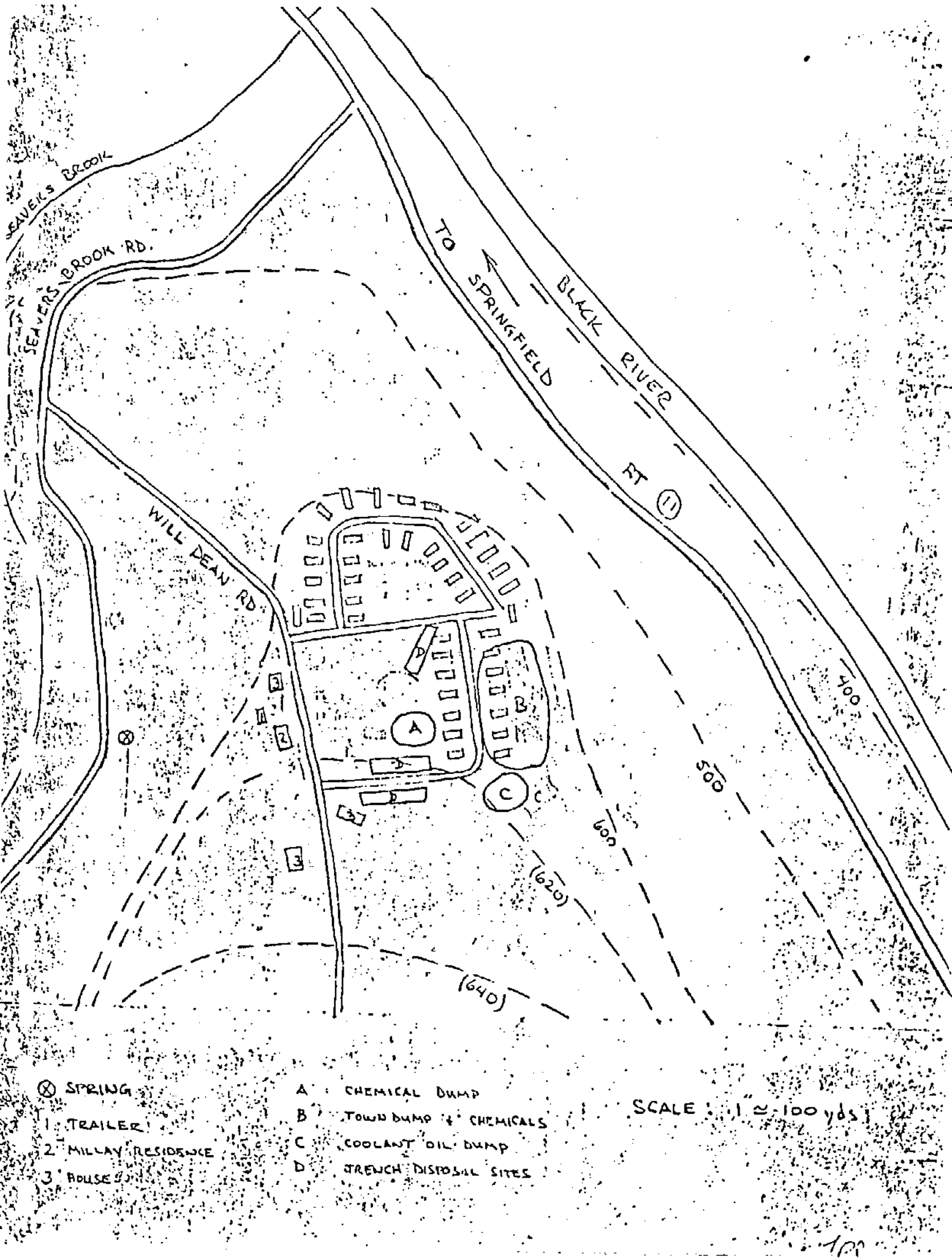
5. Take water samples from wells at residences surrounding dump site.

6. When exact dumping areas are pinpointed, take soil samples. Log soil profile.

7. For water and soil samples, analyze for: pH, Ba, Be, Co, Cu, Fe, Mn, Ni, H_2S, Cr (total), Cr (VI) and -CN.

8. Contact UVM to see what kind of assistance they can give us on soil sampling and analysis.

car


BEAVERS BROOK
SEAVERS BROOK RD.
TO SPRINGFIELD
BLACK RIVER
RT (11)
WILL DEAN RD
400
500
600
(620)
(640)
A
B
C
D
1
2
3
3
3
⊗ SPRING
1 TRAILER
2 MILLAY RESIDENCE
3 HOUSE
A : CHEMICAL DUMP
B : TOWN DUMP & CHEMICALS
C : COOLANT OIL DUMP
D : TRENCH DISPOSAL SITES
SCALE : 1" ≃ 100 yds

AGENCY OF
ENVIRONMENTAL
CONSERVATION
MONTPELIER

AGENCY MEMORANDUM

TO: John A. Malter

FROM: John Sarsfield

DATE: April 6, 1983 - done in 1981

SUBJECT

Disposal of Industrial Waste
in Windsor County, Vermont
prior to 1969

INTRODUCTION/OBJECTIVES

The objective of this study is to investigate the possibility of a threat to the public health resulting from the disposal of industrial wastes at abandoned dump sites. Windsor county was chosen as a focus for this first study for several reasons: 1) the industrial concentrations in Springfield and Windsor, 2) the homogeniety among industries, i.e. metal-working and treatment, and therefore the similarity of their waste streams, and 3) evidence of well contamination possibly caused by disposal of industrial wastes at the old Springfield Dump off of Will Dean Road.

Another objective of this study is to develop a methodology for investigating other areas in the state where industrial waste has been disposed of in the past. For this reason, the procedures and methods used to gather information will be described in this report. This report should be considered as preliminary, since background information is still being gathered at this writing.

METHODOLOGY

The first step was to gather any and all in-house information. All such information available in the Division's solid waste and hazardous waste files was examined and sorted. These included: files pertaining to municipal and private landfills, files regarding the investigation of the contamination of a private well adjacent to the now defunct Springfield Dump, Hazardous Waste Notifications and industry files. The Vermont Industrial Directory was checked for a current listing of industires in the study area.

Research was then pursued at the State Law Library. This included tracing, industiral development in the study area from its beginnings. Among the sources used were state histories, county Gazaetters and old editions of the Industrial Directories. A table was made (see App _____) from the information in the Directories which shows the existence of particular industries from 1928 to the present.

Efforts were made to obtain maps in order to locate industrial sites as well as disposal sites. Topographic maps are useful but do not provide the desired scale or detail. Highway maps are helpful in locating sites but lack elevation contours. Town maps can be furnished by the municipalities and are usually the only layout. Aerial photographs provide an excellent source for locating and identifying industries and disposal sites and especially residences and other

buildings. These photographs are available for various years and show changes which occurred to the land and to structures over a period of time. These aerial photos are available from various departments within the agency, from the State Law Library and from the Vermont Mapping Program in Waterbury. Aerial photos exist for years 1962, 1968 and 1974.

A visit was made to Springfield and the abandoned dump site was inspected. Information was obtained from discussion with Tim Blake, State Water Resources Investigator, Harry Shephard, past owner and operator of the BFI landfill and with Clifford Taft, the Director of Public Works for the Town of Springfield.

Recently letters were sent to industries in the Springfield area, requesting information regarding historical industrial waste disposal practices. This survey requested the following: 1) number of years that plant has operated at same location, 2) years in which certain processes which generate hazardous waste were used at plant, 3) quantities and types of wastes disposed of on land and 4) specific identification of disposal sites used. As of this writing, only one firm out of eight has responded. However, two others have indicated willingness to supply this information in the near future.

The next step is to take samples of soil and well water. The difficulty lies in knowing exactly where to sample and what to sample for. Other contacts will be made with persons familiar with the dump operation, e.g. neighbors, town officials, etc. to pinpoint what was dumped and where. Preliminary contacts have been made with professors at the UVM Department of Plant and Soil Science to provide technical backup in determining analytical parameters and methods. Based on the sampling and analytical results, determination of how to proceed with regard to further sampling, site clean-up etc. will then be made.

FINDINGS

Generators of significant quantities of industrial waste in the Springfield area number about ten. One of these firms - Bryant Computer Products Division moved out of the area (to Michigan) around 1977, the remaining nine are still in operation.

From information contained in the Hazardous Waste Notifications and other sources, it is suspected that the following firms generated the following waste streams:

Bryant Computer - etching acids, nitric acid, hydrochloric acid. Roughly 15000 gallons/year from 1963 to 1968.

Bryant Grinder - paint sludges (9,600 gal/yr); cutting oils (15,600 gal/yr); 30% NaCN (150 gal/yr)

Cone-Blanchard - trichloroethane (3000 gal/yr), coolant oils (200,000 gal/yr), hydraulic and lub. oils (13,000 gal/yr); heat treating salts (1000 lb/yr); paint sludge (24,000 gal/yr)

Fellows Gear Shaper - waste oil (12,000-144,000 gal/yr); spent solvents (2400 gal/yr); paint sludge (1200 gal/yr); NaCN and KCN (150 gal/yr); $BaCl_2$ (300 gal/yr) plus materials with the last two items

Goodyear Tire & Rubber - to the Windsor Dump until '71/'72 toluene/xylol (1800 gal/yr), hydraulic/lube/transformer oils (7200 gal/yr).

Jones & Lamson - plating waste containing $CuCl_2$ and $Fe\ Cl_3$ (2,500 gal/yr); solvents incl. trichloroethane (9280 gal/yr); chromic acid rinse (285 gal/yr).

Lovejoy Tool Inc. - coolant oils (2000 gal/yr); degreasing solvents (2000 gal/yr); grinding solvents (360 gal/yr).

Parks & Woolson - water soluble oil

Springfield Electroplating - plating sludge containing Cr, Ni, Cu (650 gal/yr); degreaser sludge (60 gal/yr); cyanide stripper (60 gal/yr).

Vermont Research - trivalent chromium (330 gal/yr); still bottoms, trichloroethane and epoxy resin mixed with iron oxide (110 gal/yr); oily waste (110 gal/yr).

The town of Springfield has used at least six dump sites going back to around 1935. The latest of these being the one on Will Dean Road. The sites of all of these dumps are marked on the Town of Springfield Highway map in the Appendix. When the BFI landfill in Rockingham went into operation, several of their existing dumps closed down; Among them: 1) the Bellows Falls Village Corp. Dump on Route 5 just past existing high school (dirt from excavation of foundation of Union H.S. was used to cover landfills.), closed 6/69; 2) Saxtons River Dump on Route 121, closed 6/69; 3) Springfield Dump on Will Dean Road, closed 11/68.

No information has been obtained whether any of these dumps, except for the Springfield Dump on Will Dean Road, has ever received industrial waste. Although it is possible that some industrial waste found its way into the Springfield town dumps which were in operation prior to the 1950's. It is suspected that industries located on the banks of rivers discharged their liquid wastes into the same.

APPENDIX C

UNDERGROUND STORAGE TANK REGISTRATION FORMS

VERMONT NOTIFICATION FOR UNDERGROUND STORAGE TANKS

– READ INSTRUCTION PAGE CAREFULLY BEFORE COMPLETING THIS FORM –

PLEASE TYPE OR PRINT IN INK ALL ITEMS EXCEPT "SIGNATURE" IN SECTION XI ON PAGE 2.
SEPARATE NOTIFICATION MUST BE FILED FOR TANKS OWNED AT A DIFFERENT LOCATION.
FOR ADDITIONAL INFORMATION, CALL THE VERMONT UNDERGROUND STORAGE TANK PROGRAM AT (802) 828-3395.

I. OWNERSHIP OF TANKS

NAME (CORPORATION, INDIVIDUAL, PUBLIC AGENCY OR OTHER ENTITY): JONES & LAMSON MACHINE CO. INC.
STREET ADDRESS: 160 CLINTON STREET
TOWN OR CITY: SPRINGFIELD
COUNTY: WINDSOR
STATE: VERMONT
ZIP CODE: 05156
AREA CODE / PHONE NUMBER: (802) 885-2121

II. CONTACT PERSON (PERSON RESPONSIBLE FOR DAY-TO-DAY OPERATION OF TANKS)

NAME (IF SAME AS IN SECTION I, CHECK BOX HERE ☐):
CHARLES BAILEY
JOB TITLE: PLANT ENGINEER
AREA CODE / PHONE NUMBER: (802) 885-2121
MAILING ADDRESS (IF DIFFERENT FROM SECTION I)
STREET ADDRESS:
TOWN OR CITY:
COUNTY:
STATE:
ZIP CODE:

III. SITE LEAK HISTORY (COMPLETE THIS SECTION ONLY IF APPLICABLE)

YEAR OF LEAK: 1972
ESTIMATE OF QUANTITY LEAKED IN GALLONS: UNKNOWN
SUBSTANCE LEAKED: #6 FUEL OIL

SOURCE OF LEAK (CHECK ALL THAT APPLY)
☒ TANK #1 ☐ PUMP ☐ OVERFILL
☐ PIPING ☐ TRANSFER ☐ OTHER

CONTAMINATION (CHECK ALL THAT APPLY)

	YES	NO	DON'T KNOW
SOIL	☐	☐	☒
GROUNDWATER	☐	☐	☒
SURFACE WATER	☐	☐	☒

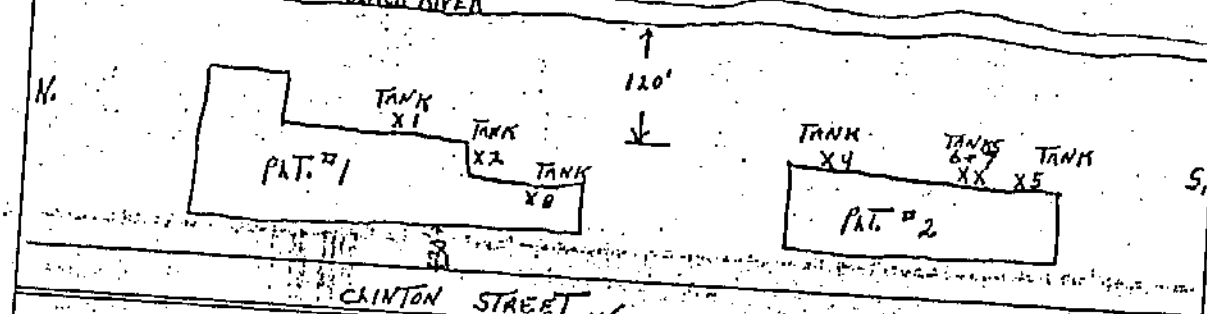
CORRECTIVE ACTION (CHECK ALL THAT APPLY)
☐ PRODUCT RECOVERY WELLS INSTALLED
☐ SURFACE WATER CONTAINMENT USED
☐ CONTAMINATED SOIL EXCAVATED
☐ TANK REPLACED
☐ PIPING REPLACED
☐ NO ACTION TAKEN
☐ OTHER (SPECIFY) TANK WAS CLEANED & RELINED

IV. LOCATION OF TANKS

FACILITY NAME OR OTHER SITE IDENTIFIER, AS APPLICABLE: JONES & LAMSON MACHINE CO. INC.
STREET ADDRESS, STATE ROAD, R.R. #, AS APPLICABLE: 160 CLINTON STREET
TOWN OR CITY: SPRINGFIELD
COUNTY: WINDSOR
STATE: VERMONT
ZIP CODE: 05156
NUMBER OF TANKS AT THIS LOCATION: 7
NAME OF LANDOWNER: JONES & LAMSON

TYPE OF FACILITY (CHECK ONE)
☐ INSTITUTIONAL ☐ RETAIL/CONVENIENCE STORE
☐ BULK PLANT ☒ INDUSTRIAL/COMMERCIAL
☐ STATE ☐ RESIDENTIAL
☐ TOWN ☐ SERVICE STATION
☐ FARM
☐ FEDERAL (GIVE FACILITY I.D. NO. 51-0283121)
☐ OTHER (SPECIFY)

USE THIS SPACE TO SKETCH AND/OR VERBALLY DESCRIBE FACILITY LOCATION. INCLUDE ESTIMATED DISTANCES TO CENTER LINE OF ROADS, BUILDINGS, STREAMS AND OTHER LANDMARKS. USE DIRECTIONAL DESCRIPTORS (NORTH, SOUTH, ETC.) WHERE APPLICABLE.



LOCAL USE ONLY

FACILITY I.D. NO. _____ WAS RECORDED ON _____ (DATE) IN BOOK NO. _____, PAGE _____ OF THE _____ (TOWN) LAND RECORDS.

SIGNATURE OF TOWN OR CITY OFFICER

STATE USE ONLY

☒ FIRST ☐ AMENDED
FACILITY IDENTIFICATION NUMBER: 8852127
DATE RECEIVED: 4/11/86
APPROVED: 5/19/86 ☐
RECEIVED BY: Ed Knapp

OWNER NAME (FROM SECTION I) JONES-CHAMSON MACHINE CO. INC. INDICATE NUMBER OF COPIES OF PAGE 2 ATTACHED 2 PAGE 2

V. TANK INFORMATION (COMPLETE FOR EACH TANK AT THIS LOCATION)

NUMBER TANKS SEQUENTIALLY (START WITH TANK CLOSEST TO BUILDING, IF POSSIBLE)		TANK NO. 1	TANK NO. 2	TANK NO. 3	TANK NO. 4	TANK NO. 5
1. STATUS OF TANK (CHECK ONE)	CURRENTLY IN USE	✓	✓	✓	✓	✓
	TEMPORARILY OUT OF USE					
	PERMANENTLY OUT OF USE					
2. ESTIMATED AGE IN YEARS		25	20	20	29	30
3. TOTAL CAPACITY (GALLONS)		10,000	1,000	5,000	3,000	5,020
4. MATERIAL OF CONSTRUCTION (CHECK ONE)	STEEL		✓	✓	✓	✓
	CONCRETE	✓				
	FIBERGLASS REINFORCED PLASTIC					
	OTHER (SPECIFY)					
	UNKNOWN					
5. INTERNAL PROTECTION (CHECK ALL THAT APPLY)	LINING (E.G. EPOXY RESINS)					
	OTHER (SPECIFY)	CONCRETE				
	NONE					
	UNKNOWN		✓	✓	✓	✓
6. EXTERNAL PROTECTION (CHECK ALL THAT APPLY)	CATHODIC PROTECTION					
	PAINTED COATING (E.G. ASPHALTIC)			✓	✓	
	FIBERGLASS REINFORCED PLASTIC COATED					
	OTHER (SPECIFY)					
	NONE					
	UNKNOWN	✓	✓	✓	✓	✓
7. SECONDARY CONTAINMENT (CHECK ONE)	DOUBLE-WALL TANK					
	CONCRETE VAULT					
	IMPERVIOUS LINER					
	OTHER (SPECIFY)					
	NONE					
	UNKNOWN	✓	✓	✓	✓	✓
8. LEAK DETECTION (CHECK ALL THAT APPLY)	DAILY INVENTORY CONTROL	✓	✓	✓	✓	✓
	CONTINUOUS SENSOR					
	ELECTRONIC IN-TANK SYSTEM					
	GROUNDWATER MONITORING WELL					
	PRECISION TEST (ENTER MO./YR. IF WITHIN LAST 5 YRS.)	/	/	/	/	/
** A PRECISION TEST IS NOT AN AIR PRESSURE TEST. BY DEFINITION, A PRECISION TEST IS ACCURATE TO .05 GAL./HR.	OTHER (SPECIFY)	WEEKLY				
	NONE			✓	✓	
9. PIPING (CHECK ALL THAT APPLY)	BARE STEEL					
	GALVANIZED STEEL					
	BLACK IRON	✓	✓	✓	✓	✓
	FIBERGLASS REINFORCED PLASTIC					
	CATHODICALLY PROTECTED					
	OTHER (SPECIFY)					
	UNKNOWN					
10. SUBSTANCE CURRENTLY OR LAST STORED IN GREATEST QUANTITY BY VOLUME (CHECK ALL THAT APPLY)	GASOLINE (INCL. ALCOHOL BLENDS)		✓			
	DIESEL					
	NOS. 2 OR 4 FUEL OIL				✓	✓
	NOS. 5 OR 6 FUEL OIL	✓				
	AVIATION FUEL					
	KEROSENE					
	USED OIL					
	OTHER PETROLEUM SUBSTANCE (SPECIFY)			HYDRAULIC OIL		
	HAZARDOUS SUBSTANCE (GIVE NAME OR CAS NO.)					
	MIXTURE OF SUBSTANCES					
	UNKNOWN					
11. ADDITIONAL INFORMATION FOR TANKS TAKEN PERMANENTLY OUT OF SERVICE	(A) ESTIMATED DATE LAST USED (MO./YR.)	/	/	/	/	/
	(B) ESTIMATED QUANTITY LEFT STORED (GAL.)					

VI. SIGNATURE

I CERTIFY UNDER PENALTY OF LAW THAT THE INFORMATION PROVIDED ON THIS FORM AND ALL ATTACHED DOCUMENTS IS TRUE, ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

MICHAEL J. KNAPP PRODUCTION CONTROL MANAGER
PRINTED NAME AND OFFICIAL TITLE OF OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE

Michael J. Knapp — April 7, 1986
SIGNATURE — DATE SIGNED

OWNER NAME (FROM SECTION I) Jones Chamsen Machine Co. Inc.

INDICATE NUMBER OF COPIES OF PAGE 2 ATTACHED [2]

V. TANK INFORMATION (COMPLETE FOR EACH TANK AT THIS LOCATION)

NUMBER TANKS SEQUENTIALLY (START WITH TANK CLOSEST TO BUILDING, IF POSSIBLE)		TANK NO. 6	TANK NO. 7	TANK NO.	TANK NO.	TANK NO.
1. STATUS OF TANK (CHECK ONE)	CURRENTLY IN USE	✓	✓			
	TEMPORARILY OUT OF USE					
	PERMANENTLY OUT OF USE					
2. ESTIMATED AGE IN YEARS		34	34			
3. TOTAL CAPACITY (GALLONS)		8,300	8,300			
4. MATERIAL OF CONSTRUCTION (CHECK ONE)	STEEL	✓	✓			
	CONCRETE					
	FIBERGLASS REINFORCED PLASTIC					
	OTHER (SPECIFY)					
	UNKNOWN					
5. INTERNAL PROTECTION (CHECK ALL THAT APPLY)	LINING (E.G. EPOXY RESINS)					
	OTHER (SPECIFY)					
	NONE					
	UNKNOWN	✓	✓			
6. EXTERNAL PROTECTION (CHECK ALL THAT APPLY)	CATHODIC PROTECTION					
	PAINTED COATING (E.G. ASPHALTIC)					
	FIBERGLASS REINFORCED PLASTIC COATED					
	OTHER (SPECIFY)					
	NONE					
	UNKNOWN	✓	✓			
7. SECONDARY CONTAINMENT (CHECK ONE)	DOUBLE-WALL TANK					
	CONCRETE VAULT					
	IMPERVIOUS LINER					
	OTHER (SPECIFY)					
	NONE					
	UNKNOWN	✓	✓			
8. LEAK DETECTION (CHECK ALL THAT APPLY)	DAILY INVENTORY CONTROL	✓	✓			
	CONTINUOUS SENSOR					
	ELECTRONIC IN-TANK SYSTEM					
	GROUNDWATER MONITORING WELL					
	# PRECISION TEST (ENTER MO./YR. IF WITHIN LAST 5 YRS.)	☐ /	☐ /	☐ /	☐ /	☐ /
# A PRECISION TEST IS NOT AN AIR PRESSURE TEST. BY DEFINITION, A PRECISION TEST IS ACCURATE TO .05 GAL./HR.	WEEKLY OTHER (SPECIFY)	✓	✓			
	NONE					
9. PIPING (CHECK ALL THAT APPLY)	BARE STEEL					
	GALVANIZED STEEL					
	BLACK IRON	✓	✓			
	FIBERGLASS REINFORCED PLASTIC					
	CATHODICALLY PROTECTED					
	OTHER (SPECIFY)					
	UNKNOWN					
10. SUBSTANCE CURRENTLY OR LAST STORED IN GREATEST QUANTITY BY VOLUME (CHECK ALL THAT APPLY)	GASOLINE (INCL. ALCOHOL BLENDS)					
	DIESEL					
	NOS. 2 OR 4 FUEL OIL					
	NOS. 5 OR 6 FUEL OIL	✓	✓			
	AVIATION FUEL					
	KEROSENE					
	USED OIL					
	OTHER PETROLEUM SUBSTANCE (SPECIFY)					
	HAZARDOUS SUBSTANCE (GIVE NAME OR CAS. NO.)					
	MIXTURE OF SUBSTANCES					
	UNKNOWN					
11. ADDITIONAL INFORMATION FOR TANKS TAKEN PERMANENTLY OUT OF SERVICE	(A) ESTIMATED DATE LAST USED (MO./YR.)	/	/	/	/	/
	(B) ESTIMATED QUANTITY LEFT STORED (GAL.)					

VI. SIGNATURE

I CERTIFY UNDER PENALTY OF LAW THAT THE INFORMATION PROVIDED ON THIS FORM AND ALL ATTACHED DOCUMENTS IS TRUE, ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Michael J. Knorr Production Control Manager

PRINTED NAME AND OFFICIAL TITLE OF OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE

Michael J. Knorr — SIGNATURE

April 7, 1986 — DATE SIGNED

APPENDIX D

SOIL BORING LOGS

SOILS ENGINEERING, INCORPORATED

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1

TO Dufresne-Henry Engineering ADDRESS North Springfield, Vt

PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt

REPORT SENT TO Bruce Cox PROJ. NO.

SAMPLE SENT TO ret by SEI OUR JOB NO. 4160-88

DATE 6/1/88

HOLE NO. MW-1

LINE & STA.

OFFSET

GROUND WATER OBSERVATIONS

At 14.5' at Immed Hours

At at Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.

DATE STARTED 6/1/88

DATE COMPL. 6/1/88

BORING FOREMAN S.Cutler & CS

INSPECTOR

SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
								4"	Sawdust			
									Loose br.silty sand w/some gravel & little silt			
5'		5' 7'	ss	14	12	11				1	24"	18"
				10				6'				
									Loose br.sand w/tr.silt & gravel			
								8.5'				
10'		10' 12'	ss	14	13				Loose to M/den.cinders, slag & rubble (fill)	2	24"	20"
								14'	Old ground ?			
15'		15' 17'	ss	2	2'	2			Loose br.sand w/tr.silt	3	24"	20"
				2				18'				
20		20' 22'	ss	15	14	15			M/den.br.gravel w/some sand	4	24"	18"
				14				22'				
									N.L.T.D			
									OBSERVATION WELL #1 Set 5' of 1½" PVC Screened 0.010 Sch.40 and 15' of 1½" Solid PVC With Ottawa Sand, Bentonite Seal, Buffalo Cap, cemented			

GROUND SURFACE TO 22.0' USED 20' "CASING: THEN drove ss 24"

Sample Type

D—Dry C—Cored W—Washed

UP—Undisturbed Piston

TP—Test Pit A—Auger V—Vane Test

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 on 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
30 +	Hard

SUMMARY

Earth Boring 22'

Rock Coring

Samples 4

HOLE NO. MW-1

BRL 40'

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1

TO Dufresne-Henry ENgineering ADDRESS Precision Park No.Spfld

PROJECT NAME J & L site assessment LOCATION Springfield, Vt

REPORT SENT TO Bruce Cox PROJ. NO.

SAMPLE SENT TO ret by SEI OUR JOB NO. 4160-88

DATE 6/1/88

HOLE NO. MW-2

LINE & STA.

OFFSET

GROUND WATER OBSERVATIONS

At 11.0' at Immed Hours

At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.

DATE STARTED 6/1/88

DATE COMPL. 6/1/88

BORING FOREMAN S.Cutler & CS

INSPECTOR

SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
								18"	M.Den.to den.br.silty sand w/some gravel & cobbles			
5'		5' 7'	ss	6 4	6	5			Loose br.silty fine sand w/tr.gravel	1	24"	24"
								8'6"				
10'		10' 12'	ss	3 2	3	2	wet		Loose br sand w/tr silt	2	24"	12"
								13'				
15'		15' 17'	ss	17 9	9	8			M/den.br.gravel & coarse sand w/tr.silt	3	24"	6"
								17'				
									No ledge to depth			
									Observation Well #2			
									Set 5', 1½" Screened 0.010 Sch.40 PVC pipe with 12' of solid With Ottawa Sand, Bentonite Seal, Buffalo Cap, cemented			

GROUND SURFACE TO 17' USED 15' "CASING; THEN drove s.s. 24"

Sample Type

D—Dry C—Cored W—Washed

JP—Undisturbed Piston

P—Test Pit A—Auger V—Vane Test

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 on 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
30 +	Hard

SUMMARY

Earth Boring 17'

Rock Coring

Samples 3

HOLE NO. MW-2

DRILLING FORM 7/82

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

TO Dufresne-Henry ENgineering ADDRESS No.Springfield,Vt

PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt

REPORT SENT TO Bruce Cox PROJ. NO.

SAMPLE SENT TO ret by SEI OUR JOB NO. 4160-88

SHEET 1 OF 1

DATE MW-3 6/3/88

HOLE NO. MW-3

LINE & STA.

OFFSET

GROUND WATER OBSERVATIONS

At 12.5' at Immed Hours

At at Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.

DATE STARTED 6/3/88

DATE COMPL. 6/3/88

BORING FOREMAN S.Cutler, CS

INSPECTOR

SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
									M/den.br.silt & sand & gravel w/occasional cobble, little wood & cinders (fill)			
5'		5' 7'	ss	15 14	14	15				1	24"	18"
10'		10' 12'	ss	19 8	10	7	moist		Ditto	2	24"	12"
15'		15' 16.5'	ss	20	30	25	wet		M/den.gr.br.sand & gravel w/tr.silt & cinders	3	18"	12"
								19.5'				
20'		20' 22'	ss	7 5	7	5	wet	22'	Loose gr.silt & fine sand	4	24	24"
									N.L.T.D			
									Observation Well #3			
									Set 5' 1½" Screened 0.010 Sch 40 PVC Pipe with 15' solid. With Ottawa Sand, Bentonite Seal, Buffalo Cap, cemented			

GROUND SURFACE TO 22' USED 20' "CASING: THEN drove ss 24"

Sample Type

D—Dry C—Cored W—Washed

UP—Undisturbed Piston

TP—Test Pit A—Auger V—Vane Test

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 on 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
30 +	Hard

SUMMARY

Earth Boring 22'

Rock Coring

Samples 4

HOLE NO. MW-3

BRL 40-F

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1
DATE 6/2/88
HOLE NO. MW-4
LINE & STA.
OFFSET

TO Dufresne-Henry ENgineering ADDRESS No Springfield, Vt
PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt
REPORT SENT TO Bruce Cox PROJ. NO.
SAMPLE SENT TO Ret by SEI OUR JOB NO. 4160-88

GROUND WATER OBSERVATIONS
At 11.0' at Immed Hours
At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	hsa	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.
DATE STARTED 6/2/88
DATE COMPL. 6/2/88
BORING FOREMAN S.Cutler & CS
INSPECTOR
SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	To 6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
									M/den.br.sand & gravel with some silt 7 occasional cobble			
5'		5' 7'	ss	7 4	4	4		6'		1	24"	24"
									Loose br.silty fine sand w/little gravel & tr.of organics			
10'		10' 12'	ss	1 2	1	2	wet	9.5'	Loose br sand w/tr silt	2	24"	22"
								14.5'				
15'		15' 17'	ss	15 15	17	15			M/den.gr.br.gravel w/some sand & little silt	3	24"	18"
								17.5	N.L.T.D			
									Observation Well #4			
									Set 5', PVC 1½" Screened 0.010 with 12' 1½" Solid PVC Pipe			
									Ottowa Sand, Bentonite Seal Buffalo Cap, cemented			

GROUND SURFACE TO 17.5' USED 15' "CASING: THEN drove SS 24"

Sample Type
D—Dry C—Cored W—Washed
UP—Undisturbed Piston
TP—Test Pit A—Auger V—Vane Test
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 on 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
30 +	Hard

SUMMARY
Earth Boring 17.5
Rock Coring
Samples 3

HOLE NO. MW-4

BRUNING 40-5

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1

TO Dufresne-Henry Engineering ADDRESS No. Springfield, Vt

PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt

REPORT SENT TO Bruce Cox PROJ. NO.

SAMPLE SENT TO Ret.by SEI OUR JOB NO. 4160-88

DATE 6/2/88

HOLE NO. M W-5

LINE & STA.

OFFSET

GROUND WATER OBSERVATIONS

At 11.0' at Immed Hours

At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	hsa	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.

DATE STARTED 6/2/88

DATE COMPL. 6/2/88

BORING FOREMAN S.Cutler & CS

INSPECTOR

SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	To 6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
									M/den.br.sand & gravel w/little silt			
								5'6"				
5'		5' 7'	ss	10	7	5				1	24"	18"
				7			moist		Loose br.sand w/some silt & little gravel			
								9'				
10		10' 12'	s	3	3	4				2	24"	23"
				4			wet		Loose br.sand w/tr.silt & gravel			
								13.5'				
15'		15' 17'	ss	19	32	23	wet		M/den.br.gravel w/some sand & little silt	3	24"	12"
								17'				
									N.L.T.D			
									Observation Well #5 Set 5', 1½" PVC Screened 0.010 with 12' Solid 1½" PVC pipe Ottowa sand, Bentonite Seal Buffalo Cap, cemented			

GROUND SURFACE TO 17' USED 15' "CASING" THEN drove ss 24"

Sample Type
D—Dry C—Cored W—Washed
UP—Undisturbed Piston
TP—Test Pit A—Auger V—Vane Test
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 on 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 17'
Rock Coring
Samples 3

HOLE NO. MW-5

BRU-'92 40-5

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1

TO Dufresne-Henry Engineering ADDRESS No.Springfield, Vt

DATE 6/3/88

PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt

HOLE NO. MW-6

REPORT SENT TO Bruce Cox PROJ. NO.

LINE & STA.

SAMPLE SENT TO taken by D & H OUR JOB NO. 4160-88

OFFSET

GROUND WATER OBSERVATIONS

At 10'8" at Immed Hours

At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.

DATE STARTED 6-3-88

DATE COMPL. 6-3-88

BORING FOREMAN S.Cutler & CS

INSPECTOR

SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	To 6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
		0 2'	ss	6	8	7			Loose br.silty sand w/some gravel & occasional cobbles	1	24"	12"
				8				3.0'				
5'		5' 7'	ss	2	2	2			Loose br.sand w/tr.silt & gravel	2	24"	16"
				2				9'2"				
10'		10' 12'	ss	6	5	4			Loose br.coarse sand & gravel w/tr.silt & occasionalcobbles	3	24"	12"
				3								
15'		15' 17'	ss	12	18	10				4	24"	12"
				8				17'				
									NLTD			
									Observation Well #6 Set 5' of 1½" PVC Screened 0.010 Sch.40 and 12' Solid PVC pipe Ottowa Sand, Bentonite Seal Protective casing, cemented with cap and lock			

GROUND SURFACE TO 17.0' USED "CASING" THEN

Sample Type

D—Dry C—Cored W—Washed

UP—Undisturbed Piston

TP—Test Pit A—Auger V—Vane Test

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 on 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 17'

Rock Coring

Samples 4

HOLE NO. MW-6

12

10-SU

BRUN

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1

TO Dufresne-Henry Engineering ADDRESS No. Springfield, Vt

PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt

REPORT SENT TO Bruce Cox PROJ. NO.

SAMPLE SENT TO taken by D&H OUR JOB NO. 4160-88

DATE 6/2/88

HOLE NO. MW-7

LINE & STA.

OFFSET

GROUND WATER OBSERVATIONS

At 13.0' at Immed. Hours

At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.

DATE STARTED 6/2/88

DATE COMPL. 6/2/88

BORING FOREMAN S.Cutler & CS

INSPECTOR

SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	To 6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
									M/den.br.gravel & sand with some silt & occasional cobbles			
								3.5'				
		5' 7'	ss	5	4	4			Loose br sand w/tr.silt & gravel	1	24"	20"
				4								
10'		10' 12'	ss	6	2	5				2	24"	6"
				5			wet					
									Oil @ 13'			
15'								15'2"				
		15.5' 17'	ss	1	2	4		17'	Soft gr.silt w/tr.clay	3	18"	6"
							—		NLTD			
									Observation Well #7			
									Set 5' of 1½" PVC Screened 0.010 Sch.40 and 12' Solid PVC Pipe			
									Ottowa Sand, Bentonite Seal Buffalo Cap, cemented			

GROUND SURFACE TO 17.0' USED "CASING: THEN

140 lb. Wt. x 30" fall on 2" O. D. Sampler

Sample Type

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

Proportions Used

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

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
30 +	Hard

SUMMARY

Earth Boring 17.0'
Rock Coring
Samples 3

HOLE NO. MW-7

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1
DATE 6-8-88
HOLE NO. MW-7A
LINE & STA.
OFFSET

TO Dufresne-Henry Engineering ADDRESS No.Springfield, Vt
PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt
REPORT SENT TO Bruce Cox PROJ. NO.
SAMPLE SENT TO taken by D&H OUR JOB NO. 4160-88

GROUND WATER OBSERVATIONS

At 12.5' at Immed. Hours
At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. b.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.
DATE STARTED 6-8-88
DATE COMPL. 6-8-88
BORING FOREMAN S.Cutler & CS
INSPECTOR
SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	To 6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
									M/den.br.sand & gravel w/some silt & few cobbles			
5'		5' 7'	ss	2	2	2		4.5'		1	24"	24"
				3					Loose br.sand w/tr.gravel & silt			
10'		10' 12'	ss	13	8	8		11.0		2	24"	18"
				13					Oil @ 13'			
15'		15' 17'	ss	1	4	5			M/den.br.sand & gravel w/ little silt & occasional cobbles	3	24"	24"
				5				16.5				
								17.0'	Soft gr.silt & fine sand			
									NLTD			
									Observation Well 7A			
									Set 10' of 1½" PVC Sch.40 Screened 0.010 and 7' Solid PVC Pipe			
									Ottowa sand, Bentonite Seal Buffalo Cap, cemented			

GROUND SURFACE TO 17' USED "CASING" THEN

Sample Type
D—Dry C—Cored W—Washed
UP—Undisturbed Piston
TP—Test Pit A—Auger V—Vane Test
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 on 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 17'
Rock Coring
Samples 3

HOLE NO. MW-7A

40-E
BRL

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1

TO Dufresne-Henry Engineering ADDRESS No. Springfield, Vt

PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt

REPORT SENT TO Bruce Cox PROJ. NO.

SAMPLE SENT TO taken by D&H OUR JOB NO. 4160-88

DATE 6/8/88

HOLE NO. MW-7B

LINE & STA.

OFFSET

GROUND WATER OBSERVATIONS

At 12.0' at Immed. Hours

At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.

DATE STARTED 6/8/88

DATE COMPL. 6/8/88

BORING FOREMAN S. Cutler & CS

INSPECTOR

SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
								18"	M/den.br.sand & gravel w/some silt & occasional cobbles			
5'		5' 7'	ss	3 4	4	3			Loose br.sand w/tr.silt & gravel	1	24"	24"
10'		10' 12'	ss	2 4	2	2	wet		Oil @ 11'6"	2	24"	24"
								13'				
15'		16' 18'	ss	5 17	4	10			M/den.br.coarse sand & gravel w/some cobbles	3	24"	16"
								19.5'				
20'		20' 22'	ss	8 5	5	5			Soft gr.silt & fine sand	4	24"	18"
								22.0'				
									NLTD			
									Observation Well #7B			
									Set 10' 1½" PVC Screened 0.010 Sch.40 with 9' Solid Pipe			
									Ottawa Sand, Bentonite Seal			
									Buffalo Cap, cemented			

GROUND SURFACE TO 22.0' USED "CASING: THEN

140 lb. Wt. x 30" fall on 2" O. D. Sampler

Sample Type

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

Proportions Used

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

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
30 +	Hard

SUMMARY

Earth Boring 22'
Rock Coring
Samples 4

HOLE NO. MW-7B

.792 10-50 BRUA

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1
DATE 6/3/88
HOLE NO. MW-8
LINE & STA.
OFFSET

TO Dufresne-Henry ENgineering ADDRESS No.Springfield, Vt
PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt
REPORT SENT TO Bruce Cox PROJ. NO.
SAMPLE SENT TO taken by D & H OUR JOB NO. 4160-88

GROUND WATER OBSERVATIONS

At 14.0' at Immed Hours
At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.
DATE STARTED 6/3/88
DATE COMPL. 6/3/88
BORING FOREMAN S.Cutler & CS
INSPECTOR
SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
								2.5'	M/den.gravel w/some cobbles & sand tr.silt			
5'		5' 7'	ss	5 4	5	5			Loose br.sand w/tr.silt & gravel	1	24"	18
10'		10' 12'	ss	6 7	5	5		13'		2	24"	2"
15'		15.5' 17.5'	ss	8 5	6	6		16'5"	M/den.to loose br.gravel & sand w/occ.cobble & sm.blders			
								18'	Soft gr.silt w/little fine sand			
									NLTD			

Observation Well #8

Set 5' 1½" PVC Screened 0.010
Sch.40 with 10' Solid 1½" PVC
Ottowa sand, Bentonite Seal
Buffalo Cap, cemented

GROUND SURFACE TO 18' USED "CASING" THEN

Sample Type
D—Dry C—Cored W—Washed
UP—Undisturbed Piston
TP—Test Pit A—Auger V—Vane Test
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 on 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 18'
Rock Coring
Samples 2

HOLE NO MW-8

NG 4
8
C 70

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1

TO Dufresne-Henry ENgineering ADDRESS No.Springfield, Vt

DATE 6/3/88

PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt

HOLE NO. MW-9

REPORT SENT TO Bruce Cox PROJ. NO.

LINE & STA.

SAMPLE SENT TO Taken by D & H OUR JOB NO. 4160-88

OFFSET

GROUND WATER OBSERVATIONS

At 13.5' at Immed Hours

At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.

DATE STARTED 6/3/88

DATE COMPL. 6/3/88

BORING FOREMAN S.Cutler & CS

INSPECTOR

SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	To 6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
								12"	M/den.br.sand & gravel w/some silt & occasional cobbles			
5'		5' 7'	ss	2	2	2			Loose br.silty fine sand	1	24"	2"
				4								
10'		10' 12'	ss	3	3	3		10.5'		2	24"	22"
				3			wet	11'	Loose br.coarse sand, tr.gravel			
								14'	Loose br silty fine sand			
15'		15.5' 16.5'	ss	22	35	(on bldr)			M/den.br.sand & gravel w/tr. of silt & occasional cobble & sm.bldr.	3	12"	6"
								16.5'	NLTD			

Observation Well #9

Set 5' 1½" PVC Screened 0.010 Sch.40 w/11.5' Solid 1½ PVC Ottowa sand, Bentonite SEal Buffalo Cap, cemented

GROUND SURFACE TO 16.5' USED "CASING" THEN

Sample Type

D—Dry C—Cored W—Washed
UP—Undisturbed Piston
TP—Test Pit A—Auger V—Vane Test
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 on 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
30 +	Hard

SUMMARY

Earth Boring 16.5'
Rock Coring
Samples 3

HOLE NO. MW-9

BRI [illegible] 40-[illegible] 7079"

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1
DATE 6/6/88
HOLE NO. MW-10
LINE & STA.
OFFSET

TO Dufresne-Henry Engineering ADDRESS No. Springfield, Vt
PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt
REPORT SENT TO Bruce Cox PROJ. NO.
SAMPLE SENT TO taken by D & H OUR JOB NO. 4160-88

GROUND WATER OBSERVATIONS

At 14.0' at Immed. Hours
At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.
DATE STARTED 6/6/88
DATE COMPL. 6/6/88
BORING FOREMAN SC & Cs
INSPECTOR Bruce Cox
SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	To 6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
								18"	M/den.br.silty sandy gravel			
									Loose black sand & silt w/ some (fill)			
5'		5' 7'	ss	2 4	3	3		5'		1	24"	24"
									Loose br.sand w/tr.silt			
10'		10' 12'	ss	3 3	3	3				2	24"	18"
								13.5				
							wet	14'9"	Loose br.sand w/tr.silt			
									Refusal on bldr.			

GROUND SURFACE TO 14'9" USED "CASING" THEN

Sample Type
D—Dry C—Cored W—Washed
UP—Undisturbed Piston
TP—Test Pit A—Auger V—Vane Test
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 on 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
30 +	Hard

SUMMARY
Earth Boring 14'9"
Rock Coring
Samples 2

HOLE NO. MW-10

G 4C
BI
707

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1

TO Dufresne-Henry Engineering ADDRESS No.Springfield, Vt

DATE 6/6/88

PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt

HOLE NO. MW-10A

REPORT SENT TO Bruce Cox PROJ. NO.

LINE & STA.

SAMPLE SENT TO taken by D & H OUR JOB NO. 4160-88

OFFSET

GROUND WATER OBSERVATIONS

At ..... at ..... Hours

At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	4" Probe		
Size I. D.			
Hammer Wt.			BIT
Hammer Fall			

SURFACE ELEV.

DATE STARTED 6/6/88

DATE COMPL. 6/6/88

BORING FOREMAN S.Cutler & CS

INSPECTOR Bruce Cox

SOILS ENGR.

LOCATION OF BORING: Moved 4' down stream paralell to River

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata-s Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
								18"	M/den.br.silty sandy gravel			
5'								5'	Loose black sand & silt w/ some rubble (fill)			
10'									Loose br.sand w/tr.silt			
15'								17'				
20'								20'	Soft gr.silt w/some fine sand			
									NLTD			
									Set 5' of 1½" PVC Screened 0.010 SCh. 40 w/ 12' solid 1½" PVC Pipe Ottowa sand, Bentonite Seal, Buffalo Cap, cemented			

GROUND SURFACE TO 20'. USED ..... "CASING: THEN .....

Sample Type

D—Dry C—Cored W—Washed
UP—Undisturbed Piston
TP—Test Pit A—Auger V—Vane Test
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 on 2" O. D. Sampler

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

SUMMARY

Earth Boring 20'
Rock Coring
Samples 0

HOLE NO. MW10A

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1

TO Dufresne-Henry Engineering ADDRESS No. Springfield, Vt

PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt

REPORT SENT TO Bruce Cox PROJ. NO.

SAMPLE SENT TO taken by D & H OUR JOB NO. 4160-88

DATE 6/6/88

HOLE NO. MW-11

LINE & STA.

OFFSET

GROUND WATER OBSERVATIONS

At 10.0' at Hours

At at Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.

DATE STARTED 6/6/88

DATE COMPL. 6/6/88

BORING FOREMAN S. Cutler & CS

INSPECTOR B. Cox

SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
								6"	Topsoil			
		5' 7'	ss	6	3	3	moist		Loose Br. sand w/tr. silt & gravel	1	24"	18"
				4				7'				
								9.5'	Loose br. silty fine sand w/some organics (peat)			
10		10' 12'	ss	6	6	5	wet		Loose br. med. to coarse sand w/tr. gravel	2	24"	13"
				4								
15		15' 15'6"	ss	13/6"		30/N 6in Bldr	Penet.	15.5'	Refusal on spoon	3	6"	6"
									Observation Well #11 Set 8' of 1½" PVC Screened 0.010 Sch. 40 w/7' Solid 1½" PVC pipe Ottowa sand, Bentonite Seal Buffallo Cap, cemented			

GROUND SURFACE TO 15.5' USED "CASING" THEN

Sample Type

D—Dry C—Cored W—Washed

UP—Undisturbed Piston

TP—Test Pit A—Auger V—Vane Test

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 on 2" O. D. Sampler

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

SUMMARY

Earth Boring 15.5'

Rock Coring

Samples 3

HOLE NO MW-11

BR 340-7075

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1
DATE 6/6/88
HOLE NO. MW-12
LINE & STA.
OFFSET

TO Dufresne-Henry Engineering ADDRESS No.Springfield, Vt
PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt
REPORT SENT TO Bruce Cox PROJ. NO.
SAMPLE SENT TO taken by D&H OUR JOB NO. 4160-88

GROUND WATER OBSERVATIONS

At 6'8" at mined Hours
At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.
DATE STARTED 6/6/88
DATE COMPL. 6/6/88
BORING FOREMAN S.Cutler & CS
INSPECTOR
SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
								6"	Topsoil			
								3'	Loose br.silty sand w/some gravel & occ.cobble & sm blds			
5'		5' 7'	ss	2	3	3	wet		Loose br.fine sandy silt	1	24"	24"
				1				6'				
									Loose gr.fine sandy silt			
10'		10' 12'	ss	WH	1	1				2	24"	24"
				2				12'				
									No ledge to depth			

Observation Well #12

Set 5' of 1½" PVC Screened 0.010 Sch.40 w/5' Solid PVC pipe

Ottowa sand, Bentonite Seal Buffalo Cap, cemented

GROUND SURFACE TO 12' USED 10' "CASING, THEN drove ss 24"

Sample Type
D—Dry C—Cored W—Washed
UP—Undisturbed Piston
TP—Test Pit A—Auger V—Vane Test
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 on 2" O. D. Sampler

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

SUMMARY
Earth Boring 12'
Rock Coring
Samples 2

HOLE NO. MW-12

Main St. Charlestown, N. H. 03603

TO Dufresne-Henry Engineering ADDRESS No.Springfield, Vt

PROJECT NAME J & L Site Assessment LOCATION Springfield, Vt

REPORT SENT TO Bruce Cox PROJ. NO.

SAMPLE SENT TO taken by D&H OUR JOB NO. 4160-88

DATE 6/6/88

HOLE NO. MW-13

LINE & STA.

OFFSET

GROUND WATER OBSERVATIONS

At 6'4" at 24 Hours

At ..... at ..... Hours

	CASING	SAMPLER	CORE BAR.
Type	HSA	2"	
Size I. D.	2 3/4"	1½"	
Hammer Wt.		140#	BIT
Hammer Fall		30"	

SURFACE ELEV.

DATE STARTED 6/6/88

DATE COMPL. 6/6/88

BORING FOREMAN S.Cutler & CS

INSPECTOR

SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
								18"	M/den.br.sand & gravel with some silt			
5'		5' 7'	ss	1 2	2	2	wet		Loose br.silty fine sand with some silt & organics	1	24"	3"
10'		10' 12'	ss	2 1	1	1		10.5'		2	24"	6"
								13'	Loose gr.silty sand w/organics			
									NLTD			
									Observation Well #13			
									Set 5' 1½" PVC Screened 0.010 Sch 40 w/8' Solid PVC pipe			
									Ottowa sand, Bentonite Seal Buffalo Cap, cemented			

GROUND SURFACE TO 13.0' USED "CASING" THEN

Sample Type

D—Dry C—Cored W—Washed

UP—Undisturbed Piston

TP—Test Pit A—Auger V—Vane Test

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 on 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
30 +	Hard

SUMMARY

Earth Boring 13'

Rock Coring

Samples 2

HOLE NO. MW-13

Soils Engineering Inc.

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1
DATE 6/7/88
HOLE NO. MW-14
LINE & STA.
OFFSET

TO Dufresne-Henry Engineering ADDRESS No. Springfield, Vt
PROJECT NAME J. & L. Site Assessment LOCATION Springfield, Vt
REPORT SENT TO Bruce Cox PROJ. NO.
SAMPLE SENT TO taken by D & H OUR JOB NO. 4160-88

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR.
At 13'8" at Immed Hours	Type	HSA	2"	
	Size I. D.	2 3/4"	1½"	
At ... at ... Hours	Hammer Wt.		140#	BIT
	Hammer Fall		30"	

SURFACE ELEV.
DATE STARTED 6/7/88
DATE COMPL. 6/7/88
BORING FOREMAN S. Cutler &CS
INSPECTOR B. Cox
SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
									M/den.black sand & silt & gravel w/occasional cobbles & sm.boulders			
								4.5				
5'		5' 7'	ss	4 6	4	6			Loose br.sand w/little silt & gravel occasional bldr	1	24"	16"
10'		10' 12'	SS	4 4	3	3	wet		Ditto	2	24"	24"
15'		15' 17'	ss	1 7	1	4	wet		Loose br.silty sand w/some gravel, wood & occasional boulders	3	24"	14"
								17'				
									NLTD			
									Observation Well #14			
									Set 5' of 1½" PVC Screened 0.010 & 10' Solid 1½" PVC pipe			
									Ottowa sand, Bentonite Seal Buffalo Cap, cemented			

GROUND SURFACE TO 17.0' USED "CASING" THEN

Sample Type
D—Dry C—Cored W—Washed
UP—Undisturbed Piston
TP—Test Pit A—Auger V—Vane Test
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 on 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
30 +	Hard

SUMMARY
Earth Boring 17.0'
Rock Coring
Samples 3

HOLE NO. MW-14

NG 4 0 70 B

Main St. Charlestown, N. H. 03603

SHEET 1 OF 1

TO Dufresne-Henry ENgineering ADDRESS NO. Springfield, Vt DATE 6/7/88

PROJECT NAME J. & L. Site Assessment LOCATION Springfield, Vt HOLE NO. MW-15

REPORT SENT TO Bruce Cox PROJ. NO. LINE & STA.

SAMPLE SENT TO taken by D&H OUR JOB NO. 4160-88 OFFSET

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR.
At 14'10" at Immed Hours	Type	HSA	2"	
	Size I. D.	2 3/4"	1½"	
At ... at ... Hours	Hammer Wt.		140#	BIT
	Hammer Fall		30"	

SURFACE ELEV.
DATE STARTED 6/7/88
DATE COMPL. 6/7/88
BORING FOREMAN S.Cutler CS
INSPECTOR
SOILS ENGR.

LOCATION OF BORING:

Depth	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	Sample No.	Pen	Rec.
								2"	Loose br silty fine sand			
5'		5' 6.5'	ss	25	33	31			Loose to M/den.br.sand & gravel w/some silt & occasional cobbles	1	18"	12"
10'		10'	ss	10	13	16				2	24"	18"
				19								
15'		15' 17'	ss	19	21	20			M/den.br.coarse sand & gravel	3	24"	3"
				26								
20'		20' 22'	ss	14	6	4		20.5		4	24"	12"
				7					Soft gr.silt & fine sand			
								22'	N.L.T.D			

Observation Well #15

Set 5', 1½" PVC Screened 0.010 & 10' Solid 1½" PVC Pipe

Ottowa Sand, Bentonite SEal
Buffalo Cap, cemented

GROUND SURFACE TO 22.0' USED CASING: THEN

140 lb. Wt. x 30" fall on 2" O. D. Sampler

Sample Type
D—Dry C—Cored W—Washed
UP—Undisturbed Piston
TP—Test Pit A—Auger V—Vane Test
UT—Undisturbed Thinwall

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

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
30 +	Hard

SUMMARY
Earth Boring 22'
Rock Coring
Samples 4

HOLE NO. MW-15

APPENDIX E

SOIL BORING LOGS

DUFRESNE-HENRY, INC.

BORING LOCATION MW1 INCLINATION V BEARING _____ DATE START/FINISH 6/1/88 / 6/1/88

CASING ID _____ CORE SIZE _____ TOTAL DEPTH 22 FT DRILLED BY SOILS ENG. INC

GROUND EL (MSL) 732.02 DEPTH TO WATER/DATE 16.80 FT/ 6/16/88 LOGGED BY B. COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		MEDIUM BROWN SAND. VERY FINE - MEDIUM GRAINED SAND 10% ± NON PLASTIC FINES. TRACE FINE GRAVEL TO ¼". VERY SLIGHTLY DAMP AT ABOUT 4'-5'. 0 PPM
	7	1	14 12 11 10	2		24	SS		5'-6'4" MEDIUM BROWN SAND AS ABOVE. LAST 1" IS WHITE - LIGHT GRAY FINE - MEDIUM GRAINED SAND. 6'4"-7' LIGHT - MEDIUM GRAY BROWN SAND. FINE - MEDIUM GRAINED SAND. 10% ± NON PLASTIC FINES. OCCASIONAL THIN (TO ¼") MEDIUM GRAY SILTY SAND LAYERS. DAMP AT BOTTOM. 0 PPM
	10						SSA/HSA		7'-8.0' ± SAND AS ABOVE 8.0'-8.5' COBBLES 8.5' ± - 10' BLACK GRAVELLY SAND. 0 PPM
	12	2	14 12 9 9	2	24	24	SS		BLACK SAND WITH 2" LAYER OF CINDERS OR SLAG NEAR TOP. SLIGHTLY DAMP. 0 PPM
	15						HSA		BLACK SAND.
	17	3	2 2 2 2	2	24	24	SS		15'-15'6" BLACK SAND AS ABOVE 15'6" - 17' BROWN AND GRAY SAND. VERY FINE - MEDIUM GRAINED SAND. 10% - 20% NON PLASTIC FINES. MOTTLED LAYERS THROUGHOUT. SATURATED. 0 PPM.
	20						HSA		SAND BECOMING GRAVELLY
	22	4	15 14 15 14	2		24	SS		BROWN AND GRAY SAND AND GRAVEL. SATURATED. 0 PPM
									NO REFUSAL TO DEPTH SET 5' OF .010" SLOTTED 1½" SCH 40 PVC AT 20.76' BENTONITE SEAL AT 1.5' & 12.5' GROUTED IN GATEBOX

LEGEND

N - Standard penetration resistance. Blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler

REC - Length of sample recovered

S - Split spoon sample ▽ Groundwater

U - Undisturbed Samples

S - Shelby tube N - Denison

F - Fixed piston P - Pitcher

O - Osterberg

SAMP OD - Outside diameter of sampling spoon

NOTES

SSA = SOLID STEM AUGER

HSA = HOLLOW STEM AUGER

SS = SPLIT SPOON

PPM = HNU READING (BENZENE READING)

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT

DATE: 6/1/88 PROJECT: 438009

PAGE 1 OF 1 LOG OF BORING: MW 1

DH Dufresne-Henry Inc.

BORING LOCATION MW 2 INCLINATION V BEARING _____ DATE START/FINISH 6/1/88 / 6/1/88

CASING ID _____ CORE SIZE _____ TOTAL DEPTH 17 FT DRILLED BY SOILS ENG. INC

GROUND EL (MSL) 327.41 DEPTH TO WATER/DATE 12.06 FT / 6/16/88 LOGGED BY B. COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS OR ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		0'-2'6" MEDIUM BROWN SAND FILL. 2'6"-5' MEDIUM GRAY BROWN SAND. FINE-MEDIUM GRAINED SAND. 10%± NON PLASTIC FINES. TRACE FINE GRAVEL. OCCASIONAL ORGANIC CONTENT. 0 PPM
	7	1	6 6 5 4	2		24	SS		MEDIUM BROWN SAND. FINE-MEDIUM GRAINED SAND. 10%± NON PLASTIC FINES. TRACE OF SLAG AT 6.5'±. 0 PPM
	10						SSA/HSA		7'-9'6" SAND AS ABOVE. 0 PPM 9'6"-10' MEDIUM GRAY SAND. 0 PPM
	12	2	3 3 2 2	2		24	SS		10'-10'9" DARK GRAY BROWN SILTY SAND. FINE-MEDIUM GRAINED SAND. 10%± NON PLASTIC FINES. DAMP. 0 PPM 10'9"-12' MEDIUM BROWN SAND. VERY FINE-MEDIUM GRAINED SAND. 10%-20% NON PLASTIC FINES. VERY WET - SATURATED. 0 PPM
	15						HSA		SAND AS ABOVE. COBBLET LAST 6"-12".
	17	3	17 9 8 9	2		24	SS		GRAY SAND AND GRAVEL. VERY FINE-VERY COARSE GRAINED SAND. SAND BECOMES COARSER WITH DEPTH. 10% NON PLASTIC FINES. SATURATED 0 PPM
									NO REFUSAL TO DEPTH SET 5' OF .010" SLOTTED 1¼" SCH 40 PVC AT 17.43 BENTONITE SEALS AT 2' + 10' GROUTED IN GATEBOX

LEGEND

N - Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler

REC - Length of sample recovered

S - Split spoon sample ▽ Groundwater

U - Undisturbed Samples

T - Shelby tube R - Denison

F - Fixed piston P - Pitcher

O - Osterberg

SAMP OD - Outside diameter of sampling spoon

NOTES

SSA = SOLID STEM AUGER

HSA = HOLLOW STEM AUGER

SS = SPLIT SPOON

PPM = HNU READING (BENZENE CALIBRATION)

JONES + LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT

DATE: 6/1/88 PROJECT: 436009

PAGE 1 OF 1 LOG OF BORING: MW 2

DH Dufresne-Henry Inc.

BORING LOCATION MW 3 INCLINATION V BEARING ____ DATE START/FINISH 6/1/88 / 6/2/88

CASING ID ____ CORE SIZE ____ TOTAL DEPTH 22 FT ____ DRILLED BY SOILS ENG. INC

GROUND EL (MSL) 330.20 DEPTH TO WATER/DATE 14.31 FT/ 6/6/88 LOGGED BY B. COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		0'-1½ MEDIUM GRAY SAND. FINE - MEDIUM GRAINED SAND. 10% - 20% NON PLASTIC FINES. TRACE FINE GRAVEL. 1½-5' MEDIUM - DARK BROWN SAND AS ABOVE. SILTY AND COBBLEY AT BOTTOM. .2PPM
	7	1	14 15 14 15	2	24	24	SS		MEDIUM BROWN AND GRAY OCCASIONALLY GRAVELLY SILTY SAND. FINE - MEDIUM SAND. 20% NON PLASTIC FINES. OCCASIONALLY SANDY, OCCASIONALLY TILL-LIKE. OPPM
	10						SSA/HSA		SILTY, GRAVELLY SAND AS ABOVE. OPPM
	12	2	19* 10 7 6	2	16	24	* DRIVEN A COBBLE SS		MEDIUM GRAY BROWN GRAVELLY SILTY SAND. VERY FINE - MEDIUM GRAINED SAND. 10% + NON PLASTIC FINES. OCCASIONAL LENSES OF BLACK SAND. DAMP. OPPM
	15						HSA		SAND BECOMING MORE GRAVELLY.
	16.5	3	20 30 25	2	14	18	SS		GRAY SANDY GRAVEL, COBBLES. SATURATED. OPPM
	20						HSA		16.5'-19.5' AS ABOVE 19.5'-20' SILTY SAND.
	22	4	7 7 5 5			24	SS		MEDIUM GRAY SILTY SAND. VERY FINE - FINE GRAINED SAND. 30% + NON PLASTIC FINES. SATURATED. OPPM.

NO REFUSAL TO DEPTH

SET 5' OF .010" SLOTTED 1½" SCH 40 PVC AT 20.33'

BENTONITE SEALS AT 2.5' & 12'

GROUTED IN GATE BOX

6/1/8
6/2/8

LEGEND

N - Standard Penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler

REC - Length of sample recovered

S - Split spoon sample ☿ Groundwater

U - Undisturbed Samples
S - Shelby tube B - Denison
F - Fixed piston P - Pitcher
O - Osterberg

SAMP OD - Outside diameter of sampling spoon

NOTES
SSA = SOLID STEM AUGER
HSA = HOLLOW STEM AUGER
SS = SPLIT SPOON
PPM = HNU READING (BENZENE CALIBRATION)

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT

DATE: 6/7/88 PROJECT: 438009

PAGE 1 OF 1 LOG OF BORING: MW 3

DH Dufresne-Henry Inc.

BORING LOCATION MW 4 INCLINATION V BEARING ____ DATE START/FINISH 6/2/88 / 6/2/88

CASING ID ____ CORE SIZE ____ TOTAL DEPTH 17 FT DRILLED BY SOILS ENG. INC

GROUND EL (MSL) 332.15 DEPTH TO WATER/DATE 11.50 FT/6/16/88 LOGGED BY B. COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		BROWN AND OCCASIONALLY GRAY BROWN SLIGHTLY GRAVELLY SILTY SAND. FINE-MEDIUM GRAINED SAND. 10% ± NON PLASTIC FINES. OPPM
	7	1	7 4 4 4	2	24	24	SS		5'-5'4" MEDIUM GRAY BROWN GRAVELLY SAND AS ABOVE. 5'4"-6' LIGHT-MEDIUM BROWN SAND. FINE-MEDIUM GRAINED SAND. 10%± NON PLASTIC FINES. 6'-6'6" MEDIUM-DARK BROWN SILTY SAND WITH A SLIGHT ORGANIC APPEARANCE. ABUNDANT VERY SMALL LENSES OF OXIDIZED MATERIAL. 6'6"-7' MEDIUM GRAY SILTY SAND. 20%± NON PLASTIC FINES. OXIDIZED LENSES AS ABOVE. OPPM
	10						SSA/HSA		GRAY SAND AS ABOVE OPPM
	12	2	1 1 2 2	2	20	24	SS		MEDIUM GRAY SILTY SAND. VERY FINE-OCCASIONALLY MEDIUM GRAINED SAND. 10%-20% NON PLASTIC FINES. SATURATED. OPPM.
	15						HSA		SAND AS ABOVE. GRAVELLY BOTTOM 6".
	17	3	15 17 15 15	2	12	24	SS		GRAY SANDY GRAVEL. FINE-VERY COARSE GRAINED SAND. ABUNDANT FINE GRAVEL. SATURATED. OPPM.
									NO REFUSAL TO DEPTH SET 6' OF .010" SLOTTED 1½" SCH 40 PVC AT 17.71' BENTONITE SEALS AT 2.5' & 10' GROUTED IN GATEBOX

LEGEND

N - Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler

REC - Length of sample recovered

S - Split spoon sample ▽ Groundwater

U - Undisturbed Samples

S - Shelby tube N - Denison

F - Fixed piston P - Pitcher

O - Osterberg

SAMP OD - Outside diameter of sampling spoon

NOTES

SSA = SOLID STEM AUGER

HSA = HOLLOW STEM AUGER

SS = SPLIT SPOON

(PPM = HNU READING (BENZENE CALIBRATION)

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT

DATE: 6/2/88 PROJECT: 438009

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DH Dufresne-Henry Inc.

BORING LOCATION MW 5 INCLINATION V BEARING _____ DATE START/FINISH 6/2/88 / 6/2/88
CASING ID _____ CORE SIZE _____ TOTAL DEPTH 16.5 FT DRILLED BY SAILS ENG. INC
GROUND EL (MSL) 331.32 DEPTH TO WATER/DATE 11.88 FT/ 6/16/88 LOGGED BY D COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		0'-4' MEDIUM BROWN SILTY GRAVELLY SAND. .2-.4 PPM FROM THIN DARK GRAY SAND JUST UNDER SURFACE. DIESEL-LIKE ODOR 4'-5' BROWN SAND. 0 PPM
	7	1	10 7 5 7	2	16	24	SS		MEDIUM BROWN SILTY SAND. VERY FINE-MEDIUM GRAINED SAND 10%-20% NON PLASTIC FINES. 10% FINE GRAVEL. SLIGHTLY DAMP. 0 PPM.
	10						SSA/HSA		SAND AS ABOVE BECOMING GRAY. 0 PPM
	12	2	3 3 4 4	2	20	24	SS		MEDIUM BROWN GRAY - GRAY SAND. VERY FINE - OCCASIONALLY MEDIUM GRAY SAND. 10%-20% NON PLASTIC FINES. MEDIUM ORANGE MOTTLES AT 11'±. VERY DAMP. 0 PPM.
	15						HSA		SAND AS ABOVE
	16.5	3	19 32 23	2	12	18	SS		GRAY SAND AS ABOVE GRADING INTO SANDY GRAVEL. SAND FRACTION BECOMES COARSER WITH DEPTH. SUBROUNDED - ROUNDED GRAVEL. 0 PPM
									NO REFUSAL TO DEPTH SET 5' OF .010" SLOTTED 1¼" SCH 40 PVC AT 17.46' BENTONITE SEAL AT 10' GROUTED IN GATEBOX

LEGEND
N - Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler
REC - Length of sample recovered
S - Split spoon sample ⏚ Groundwater
U - Undisturbed Samples
S - Shelby tube N - Denison
F - Fixed piston P - Pitcher
O - Osterberg
SAMP OD - Outside diameter of sampling spoon

NOTES
SSA = SOLID STEM AUGER
HSA = HOLLOW STEM AUGER
SS = SPLIT SPOON
PPM = HNU READING (BENZENE CALIBRATION)

JONES & LAMSON MACHINE COMPANY
SPRINGFIELD, VERMONT
DATE: 6/7/88 PROJECT: 438009
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DH Dufresne-Henry Inc.

BORING LOCATION MW 6 INCLINATION V BEARING ____ DATE START/FINISH 6/2/88 / 6/3/88

CASING ID ____ CORE SIZE ____ TOTAL DEPTH 17 FT ____ DRILLED BY SOILS ENG. INC

GROUND EL (MSL) 332.57 DEPTH TO WATER/DATE 12.07 FT/ 6/16/88 LOGGED BY B. Cox

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	2	1	6 8 7 8	2	12	24	SS		MULTI COLORED MISC. FILL MATERIAL 0 PPM
	5						HSA		PROBABLE MATERIAL AS ABOVE. OCCASIONAL COBBLES. 0 PPM
	7	2	2 2 2 2	2	24	24	SS		LIGHT - MEDIUM BROWN SILTY SAND. VERY FINE - MEDIUM GRAINED SAND. 10% - 20% NON PLASTIC FINES. OCCASIONAL ORGANIC APPEARING LAYERS. 0 PPM
	10						SSA/HSA		PROBABLE SAND AS ABOVE. .2 - .4 PPM FROM SSA BOREHOLE
	12	3	6 5 4 3	2	10	24	SS		DARK RUSTY BROWN GRAVELLY VERY COARSE SAND. VERY FINE - VERY COARSE GRAINED (PREDOMINATELY COARSE - VERY COARSE) SAND. 10% NON PLASTIC FINES. 30% ± ROUNDED GRAVEL TO ¼". SATURATED. 0 PPM.
	15						HSA		GRAVEL AS ABOVE WITH COBBLES
	17	4	12 18 10 8	2	24	24	SS		MEDIUM GRAY AND BROWN SAND AND GRAVEL. SIMILAR TO ABOVE BUT FOR COLOR. BOTTOM 6" DENSER THAN BLOW COUNT INDICATES. .2 PPM
									NO REFUSAL TO DEPTH SET 5' OF .010" SLOTTED 1½" SCH 40 PVC AT 17.80' BENTONITE SEALS AT 3' & 10' GROUTED IN LOCKING STEEL RISER

LEGEND

N - Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler

REC - Length of sample recovered

S - Split spoon sample ▽ Groundwater

U - Undisturbed Samples
S - Shelby tube N - Denison
F - Fixed piston P - Pitcher
B - Osterberg

SAMP OD - Outside diameter of sampling spoon

NOTES
SSA = SOLID STEM AUGER
HSA = HOLLOW STEM AUGER
SS = SPLIT SPOON
PPM = HNU READING (BENZENE CALIBRATION)

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT

DATE: 6/3/88 PROJECT: 436009

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DH Dufresne-Henry Inc.

BORING LOCATION MW 7 INCLINATION V BEARING _____ DATE START/FINISH 6/2/88 / 6/2/88

CASING ID _____ CORE SIZE _____ TOTAL DEPTH 17 FT DRILLED BY SOILS ENG. INC.

GROUND EL (MSL) 334.41 DEPTH TO WATER/DATE 12.26 FT / 6/16/88 LOGGED BY B. COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		0'-6" GRAY FINE-MEDIUM GRAINED SILTY GRAVELLY SAND 6"-5' BROWN SAND AS ABOVE. .6 PPM FROM BOREHOLE.
	7	1	5 4 4 4	2	18	24	SS		5'-5'6" MEDIUM SLIGHTLY REDDISH BROWN SILTY SAND. 10%+ NON PLASTIC FINES. 5'6"-6' MEDIUM BROWN SAND AS ABOVE 6'-6'2" BLACK SAND (NOT OILY) 6'2"-7' LIGHT-MEDIUM GRAY BROWN SAND. FINE-MEDIUM GRAINED SAND. OCCASIONAL LIGHT-MEDIUM GRAY FINER SAND LAYERS. OCCASIONAL LAYERS OF OXIDIZED MATERIAL. .2-.4 PPM (POSSIBLY FROM CAVED MATERIAL IN TOP OF SPOON)
	10						SSA/HSA		SAND AS ABOVE
	12	2	6 2 5 5	2	12	24	SS		MEDIUM BROWN SILTY SAND. VERY FINE-MEDIUM GRAINED SAND. 10%+ NON PLASTIC FINES. 0 PPM. SLIGHT OILY ODOR
	15.5						HSA		WHILE AUGERING FROM 12'-15.5' DAMP-WET MEDIUM-DARK GRAY SAND WITH A DISTINCT OIL ODOR CAME UP ON THE AUGER FLIGHTS 1.5-1.8 PPM
	17	3	1 2 4	2	18	18	SS		15.5'-16.5' DARK GRAY-BLACK SAND AND FINE GRAVEL. OIL SATURATED. 3 PPM 16.5'-17' MEDIUM BLUE GRAY-GRAY SILTY SAND. VERY FINE-FINE GRAINED SAND. 30%± NON PLASTIC FINES. SATURATED. 0 PPM (INTERIOR OF SAMPLE). OIL ODOR BUT PROBABLY FROM WALLS OF SPLIT SPOON
									NO REFUSAL TO DEPTH SET 5' OF .010" SLOTTED 1¼" SCH 40 PVC AT 17.5'± BENTONITE SEAL AT 10' GROUTED IN GATEBOX

LEGEND

N - Standard Penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler

REC - Length of sample recovered

S - Split spoon sample ▽ Groundwater

U - Undisturbed Samples

S - Shelby tube B - Denison

F - Fixed piston P - Pitcher

O - Osterberg

SAMP OD - Outside diameter of sampling spoon

NOTES

SSA = SOLID STEM AUGER

HSA = HOLLOW STEM AUGER

SS = SPLIT SPOON

PPM = HNU READING (BENZENE CALIBRATION)

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT

DATE: 6/2/88 PROJECT: 438009

PAGE 1 OF 1 LOG OF BORING: MW 7

DH Dufresne-Henry Inc.

BORING LOCATION MW 7B INCLINATION V BEARING _____ DATE START/FINISH 6/7/88 / 6/7/88

CASING ID _____ CORE SIZE _____ TOTAL DEPTH 22 FT DRILLED BY SOILS ENG. INC

GROUND EL (MSL) 331.09 DEPTH TO WATER/DATE 12.25 FT/ 6/17/88 LOGGED BY B. COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	SAMPLE N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
									AT ABOUT 6" HIT RAILROAD RAIL. MOVED BORING ABOUT 2' TOWARD PLANT.
	5						SSA		MEDIUM - DARK BROWN AND OCCASIONALLY DARK RED BROWN SILTY SAND. 10% - 20% NON PLASTIC FINES. ABUNDANT GRAVEL TOP 1'±. .4 PPM FROM BOREHOLE
	7	1	3 4 3 4	2	24	24	SS		5'-6' MEDIUM - DARK BROWN SILTY SAND AS ABOVE. OCCASIONAL LAYERS OF OXIDIZED MATERIAL. 0 PPM 6'-7' LIGHT BROWN SAND. PREDOMINATELY FINE-MEDIUM GRAINED SAND. 10% + NON PLASTIC FINES. OCCASIONAL DARK BROWN SILTY LAYERS. DRY. CLEAN. 0 PPM
	10						SSA/HSA		SAND AS ABOVE. .4 PPM FROM SSA BOREHOLE.
	12	2	2 2 2 4	2	18	24	SS		10'-11'6" MEDIUM BROWN - MEDIUM GRAY BROWN SAND. FINE - MEDIUM GRAINED SAND WITH OCCASIONAL MEDIUM - VERY COARSE GRAINED LAYERS. WET 11'6"- 12' GRAY FINE - MEDIUM GRAINED SAND. SATURATED WITH OIL. VERY SHARP INTERFACE BETWEEN OIL SATURATED SAND AND THAT OVERLYING .4 PPM. JP PUT IN JAR AND SHAKEN 4 PPM.
	16						HSA		SAND BECOMING VERY COBBLEY 13'-16'
	18	3	5 4 10 7	2	24	24	SS		MEDIUM BROWN COARSE SAND AND FINE GRAVEL. 10% NON PLASTIC FINES. OILY 1.6 PPM
	20						HSA		SAND, GRAVEL, COBBLES TO 19'± PROBABLE GRAVELLY SD 19'-20'
	22	4	8 5 5 5	2	24	24	SS		20'-21'2" BROWN COARSE SAND AND FINE GRAVEL AS ABOVE. OILY. .4 PPM 21'2"- 22' MEDIUM - DARK GRAY SILTY SAND. VERY FINE GRAINED SAND. 30%± NON PLASTIC FINES. 2" FROM BOTTOM IS A ½" LAYER OF DARK GRAY SILT (SLIGHTLY PLASTIC) 0 PPM
									NO REFUSAL TO DEPTH SET 10' OF .010" SLOTTED 2" SCH 40 PVC AT 12.25' BENTONITE SEAL AT 7' GROUTED IN GATE BOX

LEGEND

N - Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler
REC - Length of sample recovered
S - Split spoon sample ▽ Groundwater
U - Undisturbed Samples
T - Shelby tube R - Denison
F - Fixed piston P - Pitcher
O - Osterberg
SAMP OD - Outside diameter of sampling spoon

NOTES
SSA = SOLID STEM AUGER
HSA = HOLLOW STEM AUGER
SS = SPLIT SPOON
PPM = HNU READING (BENZENE CALIBRATION)

JONES & LAWSON MACHINE COMPANY
SPRINGFIELD, VERMONT
DATE: 6/7/88 PROJECT: 436009
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DH Dufresne-Henry Inc.

BORING LOCATION MW 8 INCLINATION V BEARING _____ DATE START/FINISH 6/3/88 | 6/3/88

CASING ID _____ CORE SIZE _____ TOTAL DEPTH 17.5 FT DRILLED BY SOILS ENG. INC

GROUND EL (MSL) 332.61 DEPTH TO WATER/DATE 13.35 FT/ 6/16/88 LOGGED BY B. COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		MEDIUM BROWN SLIGHTLY GRAVELLY SILTY SAND. VERY FINE- OCCASIONALLY MEDIUM GRAINED SAND. 20% ± NON PLASTIC FINES. RARE COBBLES. OPPM
	7	1	5 5 5 4	2	24	24	SS		5'-5.5' SAND AS ABOVE WITH MEDIUM - DARK ORANGE MOTTLES AT 5.4'. 5.5'-7' LIGHT - MEDIUM BROWN SAND. VERY FINE- MEDIUM GRAINED SAND. 10%-20% NON PLASTIC FINES OCCASIONAL DARKER BROWN (POSSIBLY ORGANIC) LENSES AT BOTTOM. OCCASIONAL LENSES OF WHITE BROWN SAND. VERY SLIGHTLY DAMP. OPPM
	10						SSA/HSA		MEDIUM - DARK BROWN SILTY SAND. SLIGHTLY MOIST. OPPM
	12	2	6 5 5 7	2	3	24	SS		LIMITED RECOVERY MATERIAL APPEARS TO BE AS ABOVE BUT WITH INCREASED GRAVEL CONTENT
	15.5						HSA		GRAVELLY TO 16'. COBBLES TO 16.5'
	17.5	3	8 6 6 5	2	24	24	SS		15.5'-16.5' MEDIUM BROWN GRAVELLY SAND. FINE - COARSE GRAINED SAND. 10%-20% NON PLASTIC FINES. 10%-20% FINE GRAVEL. 16.5'-17.5' MEDIUM - DARK BLUE GRAY SILTY SAND. VERY FINE - FINE GRAINED SAND. 30% ± NON PLASTIC FINES. OCCASIONAL LAYERS OF DARK GRAY MEDIUM GRAINED SAND. TOP 1" DARKER AND SILTIER. OPPM
									NO REFUSAL TO DEPTH SET 5' OF .010" SLOTTED 1½" SCH 40 PVC AT 18.73' BENTONITE SEAL AT 10' GROUTED IN GATEBOX

LEGEND

N - Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler

REC - Length of sample recovered

S - Split spoon sample ▽ Groundwater

U - Undisturbed Samples

S - Shelby tube D - Denison

F - Fixed piston P - Pitcher

O - Osterberg

SAMP OD - Outside diameter of sampling spoon

NOTES

SSA = SOLID STEM AUGER

HSA = HOLLOW STEM AUGER

SS = SPLIT SPOON

AM = HNU READING (BENZENE CALIBRATION)

JONES + LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT

DATE: 6/3/88 PROJECT: 435009

PAGE 1 OF 1 LOG OF BORING: MW 8

DH DufresneHenry Inc.

BORING LOCATION MW 9 INCLINATION V BEARING _____ DATE START/FINISH 6/3/88 / 6/3/88
CASING ID _____ CORE SIZE _____ TOTAL DEPTH 22 FT DRILLED BY SOILS ENG. INC.
GROUND EL (MSL) 333.5 DEPTH TO WATER/DATE 14.02 FT/ 6/16/88 LOGGED BY B COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		MEDIUM BROWN SLIGHTLY GRAVELLY SILTY SAND. VERY FINE - FINE GRAINED SAND, TRACE FINE ROUNDED GRAVEL TO ¼". 20%± NON PLASTIC FINES. NO ODOR.
	7	1	2 2 2 4	2	2	24	SS		SAND AS ABOVE. NO ODOR
	10						SSA/HSA		PROBABLE SAND AS ABOVE. NO ODOR.
	12	2	3 3 3 3	2	24	24	SS		10'-10'9" MEDIUM BROWN SAND. VERY FINE - FINE GRAINED SAND. 20%± NON PLASTIC FINES. 10'9"- 11' LIGHT BROWN SAND. MEDIUM - COARSE GRAINED SAND. FINE GRAVEL TO ¾" BOTTOM 11'-12' MEDIUM BROWN SAND. FINE GRAINED SAND. 10%± NON PLASTIC FINES. FINE LIGHT ORANGE MOTTLES THROUGHOUT. DAMP. NO ODOR.
	15.5						HSA		SAND AS ABOVE.
	16.5	3	23 35	2	12	12	SS		BROWN SAND AND GRAVEL WITH SOME SILT. PREDOMINATELY MEDIUM - VERY COARSE GRAINED SAND. ABUNDANT FINE ROUNDED GRAVEL. SATURATED. 0 PPM
	20						HSA		BECOMES LESS GRAVELLY AND COBBLEY BELOW 17'
	22	4	4 4 4 5	2	18	24	SS		MEDIUM - DARK BLUE GRAY SILTY SAND. VERY FINE - FINE GRAINED SAND. 30%± NON PLASTIC FINES. SATURATED. 0 PPM
									NO REFUSAL TO DEPTH SET 5' OF .010" SLOTTED 1¼" SCH 40 PVC AT 20.94' BENTONITE SEALS AT 4' & 15' GROUTED IN GATEBOX

LEGEND
N - Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler
REC - Length of sample recovered
S - Split spoon sample ▽ Groundwater
U - Undisturbed Samples
S - Shelby tube N - Denison
F - Fixed piston P - Pitcher
O - Osterberg
SAMP OD - Outside diameter of sampling spoon

NOTES
SSA = SOLID STEM AUGER
HSA = HOLLOW STEM AUGER
SS = SPLIT SPOON
PPM = HNU READING (BENZENE CALIBRATION)

JONES & LAMSON MACHINE COMPANY
SPRINGFIELD, VERMONT
DATE: 6/3/88 PROJECT: 438009
PAGE 1 OF 1 LOG OF BORING: MW 9

DH Dufresne-Henry Inc.

BORING LOCATION MW 10 INCLINATION V BEARING _____ DATE START/FINISH 6/6/88 / 6/6/88

CASING ID _____ CORE SIZE _____ TOTAL DEPTH 14.75 FT± DRILLED BY SOILS ENG. INC

GROUND EL (MSL) _____ DEPTH TO WATER/DATE _____ FT/_____ LOGGED BY B. Cox

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		0'-3'± BROWN GRAVELLY SAND FILL 3'±-5' BLACK SAND. MEDIUM GRAINED. 10%± NON PLASTIC FINES. FILL MATERIAL (FOUNDRY WASTE). METAL TOOL HANDLE AND BENT PIECE OF REBAR. OPPM.
	7	1	2 3 3 4	2	24	24	SS		5'-5'2" BLACK SAND AS ABOVE 5'2"-6'9" MEDIUM BROWN SAND. FINE-MEDIUM GRAINED SAND. 10% NON PLASTIC FINES. DECAYING WOOD FRAGMENT 2" FROM TOP. 6'9"-7' LIGHT-MEDIUM GRAINED SAND. PREDOMINATELY MEDIUM GRAINED. 10%± NON PLASTIC FINES. OPPM
	10						SSA/HSA		BROWN SILTY SAND.
	12	2	3 3 3 3	2	18	24	SS		MEDIUM BROWN SILTY SAND. FINE-MEDIUM GRAINED SAND. 10%-20% NON PLASTIC FINES. 2" LAYER OF LIGHT BROWN MEDIUM GRAINED SAND AT 11'2"±. MOIST BOTTOM 6". OPPM
	14.75								PROBABLE SAND AS ABOVE COBBLEY FROM 12.5'
									REFUSAL AT 14'9" ON PROBABLE LARGE BOULDER. MOVE SOUTHERLY 4'±. SEE LOG FOR BORING MW 10 A

LEGEND

N - Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler

REC - Length of sample recovered

S - Split spoon sample ♀ Groundwater

U - Undisturbed Samples

T - Shelby tube R - Denison

F - Fixed piston P - Pitcher

O - Osterberg

SAMP OD - Outside diameter of sampling spoon

NOTES

SSA = SOLID STEM AUGER

HSA = HOLLOW STEM AUGER

SS = SPLIT SPOON

PPM = HNU READING (BENZENE CALIBRATION)

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT

DATE: 6/6/88 PROJECT: 438809

PAGE 1 OF 1 LOG OF BORING: MW 10

DH Dufresne-Henry Inc.

BORING LOCATION MW 10 A INCLINATION V BEARING ____ DATE START/FINISH 6/6/86 / 6/6/86

CASING ID ____ CORE SIZE ____ TOTAL DEPTH 20 FT DRILLED BY SOILS ENG. INC

GROUND EL (MSL) 334.02 DEPTH TO WATER/DATE 15.10 FT/ 6/16/86 LOGGED BY ____

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	SAMPLE N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
									SEE MW10 FOR DETAILED LOG TO 14.9'. DUE TO REFUSAL IN MW10 RAN IN WITH SOLID STEM AUGERS. OUT OF COBBLES AT 17'. DRILLED TO 20'. BASED ON SAMPLES FROM BOTTOM AUGER FLIGHTS 17'-20' IS MEDIUM - DARK BLUE GRAY SILTY SAND. NO REFUSAL TO DEPTH SET 5' OF .010" SLOTTED ½" SCH 40 PVC AT 17.83' BENTONITE SEALS AT 4' & 9.5' GROUTED IN GATE BOX

LEGEND

N - Standard penetration resistance. Blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler

REC - Length of sample recovered

S - Split spoon sample ▽ Groundwater

U - Undisturbed Samples

S - Shelby tube M - Denison

F - Fixed piston P - Pitcher

O - Osterberg

SAMP OD - Outside diameter of sampling spoon

NOTES

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT

DATE: 6/6/86 PROJECT: 436009

PAGE 1 OF 1 LOG OF BORING: MW10A

Dufresne-Henry Inc.

BORING LOCATION MW 11 INCLINATION V BEARING ____ DATE START/FINISH 6/6/88 / 6/6/88

CASING ID ____ CORE SIZE ____ TOTAL DEPTH 15.5 FT DRILLED BY SOILS ENG. INC.

GROUND EL (MSL) 336.75 DEPTH TO WATER/DATE 11.28 FT / 6/14/88 LOGGED BY B. COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		MEDIUM - VERY DARK BROWN GRAVELLY SILTY SAND. VERY FINE - MEDIUM GRAINED SAND. 10% - 20% NON PLASTIC FINES. TRACE FINE GRAVEL. OPPM
	7	1	6 3 3 4	2	24	24	SS		5' - 6'2" DARK ORANGE SAND (NOT LITLE MOTTLES). LAYERS OF COAL AND CINDERS 6'2" - 7' MEDIUM - DARK GRAY SILTY SAND. VERY FINE - FINE GRAINED SAND. 20% - 30% NON PLASTIC - SLIGHTLY PLASTIC FINES. FINE LAYERS AND LENSES OF MOTTLES THROUGH OUT. VERY DAMP. OPPM
	10						SSA/HSA		PROBABLY AS ABOVE. VERY WET. BECOMES ORGANIC AT SOME DEPTH. WOOD STUCK IN BIT.
	12	2	6 5 4 4	2	10	24	SS		10'-12' MEDIUM - DARK GRAY SILTY SAND. FINE - OCCASIONALLY MEDIUM GRAINED SAND. 10% + NON PLASTIC FINES. LIGHT - MEDIUM ORANGE MOTTLES AT 10'6" - 10'9". BOTTOM 3" PREDOMINATELY MEDIUM - COARSE GRAINED. DAMP. OPPM
	15						HSA		SAND AS ABOVE WITH INCREASING GRAVEL CONTENT.
	15.5	3	13 30*	2	6	6	*30/0" PENETRATION SS		LIGHT - MEDIUM GRAY SAND. MEDIUM - VERY COARSE GRAINED SAND. ≤ 10% NON PLASTIC FINES. 10% ± FINE GRAVEL. OPPM
									REFUSAL AT 15.5 FT SET 6' OF .010" SLOTTED 1½" SCH 40 PVC AT 15.38' BENTONITE SEAL AT 5' GROUTED IN GATE BOX

LEGEND

N - Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler

REC - Length of sample recovered

S - Split spoon sample ▽ Groundwater

U - Undisturbed Samples

S - Shelby tube N - Denison

F - Fixed piston P - Pitcher

O - Osterberg

SAMP OD - Outside diameter of sampling spoon

NOTES

SSA = SOLID STEM AUGER

HSA = HOLLOW STEM AUGER

SS = SPLIT SPOON

PPM = HNU READING (BENZENE CALIBRATION)

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT

DATE: 6/6/88 PROJECT: 438009

PAGE 1 OF 1 LOG OF BORING: MW 11

DH DufresneHenry Inc.

BORING LOCATION MW12 INCLINATION V BEARING ____ DATE START/FINISH 6/6/88 1 6/6/88

CASING ID ____ CORE SIZE ____ TOTAL DEPTH 12 FT ____ DRILLED BY SOILS ENG INC.

GROUND EL (MSL) 337.10 DEPTH TO WATER/DATE 8.13 FT/ 6/6/88 LOGGED BY B. COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	SAMPLE N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		0'-3½ MEDIUM BROWN SILTY SAND. DRY 3½-5' MEDIUM BROWN GRAY SILTY SAND. SATURATED. 0PPM
	7	1	2 2 2 1	2	24	24	SS		5'-6' MEDIUM BROWN SILTY SAND. VERY FINE-FINE GRAINED SAND. 20%± NON PLASTIC FINES 6'-7' MEDIUM GRAY SILTY SAND. VERY FINE-FINE GRAINED (SLIGHTLY FINER THAN ABOVE). 20%± NON PLASTIC FINES. RAPID-VERY RAPID DILATANCY. 0PPM
	10						SSA/HSA		SILTY SAND AS ABOVE.
	12	2	WOH 1 1 2	2	24	24	SS		MEDIUM-DARK GRAY SILTY SAND AS ABOVE. BOTTOM 4" MUCH SILTIER (40%± NON PLASTIC FINES. 0PPM
									NO REFUSAL TO DEPTH SET 5' OF .010" SLOTTED 1¼" SCH 40 PVC AT 10.53' BENTONITE SEAL AT 3' GROUTED IN GATEBOX

LEGEND

N - Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler

REC - Length of sample recovered

S - Split spoon sample ☿ Groundwater

U - Undisturbed Samples

S - Shelby tube N - Denison

F - Fixed piston P - Pitcher

O - Osterberg

SAMP OD - Outside diameter of sampling spoon

NOTES

SSA = SOLID STEM AUGER

HSA = HOLLOW STEM AUGER

SS = SPLIT SPOON

WOH = WT OF HAMMER

RPM = HAND REAMING

(BENTONITE CALIBRATION)

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT

DATE: 6/6/88 PROJECT: 438007

PAGE 1 OF 1 LOG OF BORING: MW12

DH Dufresne-Henry Inc.

BORING LOCATION MW 13 INCLINATION V BEARING ____ DATE START/FINISH 6/6/88 / 6/6/88
CASING ID ____ CORE SIZE ____ TOTAL DEPTH 13 FT ____ DRILLED BY SOILS ENG. INC.
GROUND EL (MSL) 232.84 DEPTH TO WATER/DATE 6.77 FT/ 6/16/88 LOGGED BY B. COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	SAMPLE N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		0'-1.5' MEDIUM BROWN SAND AND GRAVEL. 1.5'-5' MEDIUM BROWN SLIGHTLY GRAVELLY SAND. 10%+ NON PLASTIC FINES. OPPM
	7		1 2 2 2	2	0+	24	¥ STONE IN NOSE SS		NO RECOVERY. PROBABLE GRAVELLY, SILTY SAND.
	10						SSA/HSA		SOMEWHERE IN INTERVAL BECOMES WET DARK BROWN - VERY DARK BROWN ORGANIC SOIL. FROM AUGER FLIGHTS: PIECE OF A SHOE? OPPM
	12	1	2 1 1 1	2	6	24	SS		MEDIUM GRAY SILTY SAND. VERY FINE - MEDIUM GRAINED SAND. 10%-20% NON PLASTIC FINES. OCCASIONAL ORGANIC SOIL. OPPM
	13						HSA		
									NO REFUSAL TO DEPTH SET 5' OF .010" SLOTTED 1½" SCH 40 PVC AT 13.20' BENTONITE SEAL AT 6' GROUTED IN GATEBOX

LEGEND
N - Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler
REC - Length of sample recovered
S - Split spoon sample ¥ Groundwater
U - Undisturbed Samples
S - Shelby tube B - Denison
F - Fixed piston P - Pitcher
O - Osterberg
SAMP OD - Outside diameter of sampling spoon

NOTES
SSA = SOLID STEM AUGER
HSA = HOLLOW STEM AUGER
SS = SPLIT SPOON
PPM = HNU READING (BENZENE CALIBRATION)

JONES & LAMSON MACHINE COMPANY
SPRINGFIELD, VERMONT
DATE: 6/6/88 PROJECT: 438009
PAGE 1 OF 1 LOG OF BORING: MW 13

DH DufresneHenry Inc.

BORING LOCATION MW 14 INCLINATION V BEARING ____ DATE START/FINISH 6/7/88 / 6/7/88
CASING ID ____ CORE SIZE ____ TOTAL DEPTH 17 FT DRILLED BY SOILS ENG. INC
GROUND EL (MSL) 332.11 DEPTH TO WATER/DATE 10.95 FT/ 6/10/88 LOGGED BY B. COX

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	SAMPLE N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS ON ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		DARK BROWN - DARK GRAY BROWN SAND. FINE - MEDIUM GRAINED SAND. 10%+ NON PLASTIC FINES. TRACE FINE GRAVEL. 0 PPM
	7	1	4 4 6 6	2	15	24	SS		5'-5'3" SAND AS ABOVE 5'3"- 7' MEDIUM GRAY BROWN SAND. VERY FINE COARSE GRAINED SAND 10%-20% NON PLASTIC FINES. COARSER SAND AND FINE ROUNDED GRAVEL BOTTOM 6". 0 PPM
	10						SSA/HSA		PROBABLE SAND AS ABOVE. GRAVELLY WITH COBBLES. .8 PPM FROM SSA BOREHOLE. COULD NOT GET HSA BEYOND 9.5'± 3.0 PPM FROM HSA BOREHOLE. 4.5 PPM IF HOLE COVERED FOR SEVERAL MINUTES.
	12	2	4 3 2 4	2	24	24	SS		MEDIUM GRAY GRAVELLY SILTY SAND. VERY FINE - OCCASIONALLY MEDIUM GRAINED SAND 10%-20% NON PLASTIC FINES. TRACE GRAVEL MEDIUM - DARK ORANGE MOTTLES AT 11'± .4 PPM TOP 1'. DAMP.
	15						SSA		SAND AS ABOVE. 1.0 PPM FROM BOREHOLE
	17	3	1 1 4 7	2	15	24	SS		15'- 16'10" MEDIUM - DARK GRAY AND GRAY BROWN SILTY SAND. ABUNDANT ORGANIC MATTER AND TRACE OF WOOD FRAGMENTS. 16'10"- 17' MEDIUM - DARK GRAY GRAVELLY SAND. FINE - MEDIUM GRAINED SAND.

NO REFUSAL TO DEPTH

SET 5' OF .010" SLOTTED 1¼" SCH 40 PVC AT 15.41'

BENTONITE SEAL AT 6.5'

GROUTED IN GATE BOX

LEGEND

N = Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler
REC = Length of sample recovered
S = Split spoon sample ♀ Groundwater
U = Undisturbed Samples
S = Shelby tube B = Denison
F = Fixed piston P = Pitcher
O = Osterberg
SAMP OD = Outside diameter of sampling spoon

NOTES
SSA = SOLID STEM AUGER
HSA = HOLLOW STEM AUGER
SS = SPLIT SPOON
PPM = HNU READINGS (BENZENE CALIBRATION)

JONES & LAMSON MACHINE COMPANY
SPRINGFIELD, VERMONT
DATE: 6/7/88 PROJECT: 438009
PAGE 1 OF 1 LOG OF BORING: MW 14

DH DufresneHenry Inc.

BORING LOCATION MW 15 INCLINATION V BEARING _____ DATE START/FINISH 6/7/89 1 6/7/89

CASING ID _____ CORE SIZE _____ TOTAL DEPTH 22 FT DRILLED BY JONES EMP. INC.

GROUND EL (MSL) 334.17 DEPTH TO WATER/DATE 14.70 FT/6/14/89 LOGGED BY A. COY

EL MSL FT	SAMPLE DEPTH FT	SAMPLE TYPE AND NO.	N	SAMP OD IN.	LENGTH REC IN.	LENGTH PENETRATION IN.	REMARKS OR ADVANCE OF BORING	SIZE/TYPE BIT USED TO ADVANCE BORING	SOIL AND ROCK DESCRIPTION (ASTM D2487-69 AND D2488-69)
	5						SSA		MEDIUM BROWN SILTY SAND. FINE - MEDIUM GRAINED SAND. 10% - 20% NON PLASTIC FINES. TRACE FINE GRAVEL. 0 PPM
	6.5	1	25 33 31	2	15	18	SS		MEDIUM GRAY AND BROWN MISC. FILL MATERIAL WITH ABUNDANT STONES. HIGH BLOW COUNTS DUE TO STONES. 0 PPM
	10						SSA/HSA		SOIL BECOMES MEDIUM - DARK GRAY WITH DECREASING GRAVEL. 0 PPM FROM BOREHOLE
	12	2	10 13 16 19	2	13	24	SS		11'-11'9" MEDIUM BROWN SILTY SAND. FINE-MEDIUM GRAINED SAND. 10%+ NON PLASTIC FINES. SOME FINE GRAVEL. 0 PPM 11'9"-12' MEDIUM GRAY SILTY SAND. 20%± NON PLASTIC FINES. SLIGHTLY DAMP. 0 PPM
	15						HSA		SAND AS ABOVE. BECOMES COARSER AT SOME DEPTH.
	17	3	19 21 20 26	2	1*	24	* STONE IN NOSE SS		BASED ON VERY LIMITED RECOVERY: BROWN GRAY SAND. PREDOMINATELY MEDIUM-VERY COARSE GRAINED SAND. 10% NON PLASTIC FINES. 10%+ FINE GRAVEL. SATURATED. 0 PPM
	20						HSA		ABUNDANT GRAVEL AND COBBLES. SLOW DRILLING.
	22	4	14 6 4 7	2	15	24	SS		20'-21' SANDY GRAVEL. 70% FINE GRAVEL OCCASIONALLY TO 1½". 0 PPM 21'-22' MEDIUM - DARK BLUE GRAY SILTY SAND VERY FINE - FINE GRAINED SAND. 30%+ NON - SLIGHTLY PLASTIC FINES.
									NO REFUSAL TO DEPTH SET 5' OF .010" SLOTTED 1" SCH 40 PVC AT 20.23' BENTONITE SEALS AT 4' & 13' GROUTED IN GATEBOX

LEGEND

N - Standard penetration resistance, blows/ft of a 140-lb. hammer falling 30 in. to drive a split-spoon sampler

REC - Length of sample recovered

S - Split spoon sample ▽ Groundwater

U - Undisturbed Samples

S - Shelby tube B - Denison

F - Fixed piston P - Pitcher

O - Osterberg

SAMP OD - Outside diameter of sampling spoon

NOTES

SSA = SOLID STEM AUGER

HSA = HOLLOW STEM AUGER

SS = SPLIT SPOON

PPM = HNU READINGS (BENZENE CALIBRATION)

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT

DATE: 6/7/89 PROJECT: 438009

PAGE 1 OF 1 LOG OF BORING: MW15

DH DufresneHenry Inc.

APPENDIX F

WATER QUALITY RESULTS

EASTERN ANALYTICAL, INC.

Eastern Analytical, Inc. 130 Hall St, Concord, NH 03301 (603) 228-0525

July 1, 1988

David Dean
Dufresne-Henry
Precision Park
N. Springfield, VT 05150

Sample Identification:
Client ID: DH438009/J&L Assesment
Sample Qty/Type: 20 water
Date Recv'd: Jun 17, 1988
EAI ID: 5552B DUF

Dear Mr. Dean:

Enclosed, please find the Oil & Grease analysis of the sample(s) identified above. This report contains the following sections:

ANALYSIS TYPE	NO OF PAGES
• Organics	1

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 limits

If you have any questions regarding the results contained within, feel free to directly contact the chemist who performed the analysis. We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

John J. Godfrey
QA/QC Coordinator

LABORATORY REPORT

Eastern Analytical, Inc. Designation: 5552 DUF

Client: Dufresne-Henry
Sample Qty/Type: 20 water

Client Designation: **DH438009/J&L Assesment**
Date Received: Jun 17, 1988

Hazardous Substance List (HSL) Volatile Organic Compounds

Sample ID:	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	
Matrix:	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	
Date of Analysis:	6/22/88	6/22/88	6/22/88	6/22/88	6/22/88	6/22/88	
Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	EPA
Analyst:	WEB	WEB	WEB	WEB	WEB	WEB	Method
Dilution Factor	1	1	1	1	1	1	
Chloromethane	<5	<5	<5	<5	<5	<5	601
Bromomethane	<5	<5	<5	<5	<5	<5	601
Vinyl Chloride	<5	<5	<5	<5	<5	<5	601
Chloroethane	<5	<5	<5	<5	<5	<5	601
Methylene Chloride	<2	<2	<2	<2	<2	<2	601
Acetone	<20	<20	<20	<20	<20	<20	8015
Carbon Disulfide	<2	<2	<2	<2	<2	<2	601
1,1-Dichloroethene	<2	<2	<2	<2	<2	<2	601
1,1-Dichloroethane	<2	<2	<2	<2	<2	3	601
Trans-1,2-Dichloroethene	<2	<2	<2	4	42	5	601
Cis-1,2-Dichloroethene	<2	<2	<2	33	180	140	601
Chloroform	<2	<2	<2	<2	<2	<2	601
1,2-Dichloroethane	<2	<2	<2	<2	<2	<2	601
2-Butanone (MEK)	<20	<20	<20	<20	<20	<20	8015
1,1,1-Trichloroethane	<2	<2	<2	<2	<2	11	601
Carbon Tetrachloride	<2	<2	<2	<2	<2	<2	601
Vinyl Acetate	<20	<20	<20	<20	<20	<20	8015
Bromodichloromethane	<2	<2	<2	<2	<2	<2	601
1,2-Dichloropropane	<2	<2	<2	<2	<2	<2	601
Trans-1,3-Dichloropropene	<2	<2	<2	<2	<2	<2	601
Trichloroethene	<2	<2	<2	5	2	54	601
Dibromochloromethane	<2	<2	<2	<2	<2	<2	601
1,1,2-Trichloroethane	<2	<2	<2	<2	<2	<2	601
Benzene	<1	<1	<1	<1	<1	<1	602
cis-1,3-Dichloropropene	<2	<2	<2	<2	<2	<2	601
2-Chloroethylvinylether	<2	<2	<2	<2	<2	<2	601
Bromoform	<2	<2	<2	<2	<2	<2	601
4-Methyl-2-Pentanone (MIBK)	<20	<20	<20	<20	<20	<20	8015
2-Hexanone	<20	<20	<20	<20	<20	<20	8015
Tetrachloroethene	<2	<2	<2	<2	<2	<2	601
1,1,2,2-Tetrachloroethane	<2	<2	<2	<2	<2	<2	601
Toluene	<1	<1	<1	<1	<1	<1	602
Chlorobenzene	<2	<2	<2	<2	<2	<2	602
Ethylbenzene	<1	<1	<1	<1	<1	<1	602
Styrene	<1	<1	<1	<1	<1	<1	602
Total Xylenes	<1	<1	<1	<1	<1	<1	602
Others (Not HSL Compounds)	ND	ND	ND	ND	ND	ND	8015

Approved By : William Brunkhorst

William Brunkhorst. Organics Supervisor

LABORATORY REPORT

Eastern Analytical, Inc. Designation: 5552 DUF

Client: Dufresne-Henry
Sample Qty/Type: 20 water

Client Designation: **DH438009/J&L Assesment**
Date Received: Jun 17, 1988

Hazardous Substance List (HSL) Volatile Organic Compounds

Sample ID:	MW-7	MW-7A	MW-7B	MW-8	MW-9	MW-10A	
Matrix:	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	
Date of Analysis:	6/22/88	6/22/88	6/22/88	6/22/88	6/22/88	6/22/88	
Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	EPA
Analyst:	WEB	WEB	WEB	WEB	WEB	WEB	Method
Dilution Factor	1	1	1	1	1	1	
Chloromethane	<5	<5	<5	<5	<5	<5	601
Bromomethane	<5	<5	<5	<5	<5	<5	601
Vinyl Chloride	<5	<5	<5	<5	<5	<5	601
Chloroethane	<5	<5	<5	<5	<5	<5	601
Methylene Chloride	<2	<2	<2	<2	<2	<2	601
Acetone	<20	<20	<20	<20	<20	<20	8015
Carbon Disulfide	<2	<2	<2	<2	<2	<2	601
1,1-Dichloroethene	<2	<2	<2	<2	<2	<2	601
1,1-Dichloroethane	**7**	**2**	**8**	<2	<2	<2	601
Trans-1,2-Dichloroethene	**8**	<2	**3**	<2	<2	<2	601
Cis-1,2-Dichloroethene	**71**	**17**	**380**	<2	<2	<2	601
Chloroform	<2	<2	<2	<2	<2	<2	601
1,2-Dichloroethane	<2	<2	<2	<2	<2	<2	601
2-Butanone (MEK)	<20	<20	<20	<20	<20	<20	8015
1,1,1-Trichloroethane	<2	<2	<2	**14**	**4**	**3**	601
Carbon Tetrachloride	<2	<2	<2	<2	<2	<2	601
Vinyl Acetate	<20	<20	<20	<20	<20	<20	8015
Bromodichloromethane	<2	<2	<2	<2	<2	<2	601
1,2-Dichloropropane	<2	<2	<2	<2	<2	<2	601
Trans-1,3-Dichloropropene	<2	<2	<2	<2	<2	<2	601
Trichloroethene	**260**	**18**	**51**	**4**	<2	<2	601
Dibromochloromethane	<2	<2	<2	<2	<2	<2	601
1,1,2-Trichloroethane	<2	<2	<2	<2	<2	<2	601
Benzene	<1	<1	<1	<1	<1	<1	602
cis-1,3-Dichloropropene	<2	<2	<2	<2	<2	<2	601
2-Chloroethylvinylether	<2	<2	<2	<2	<2	<2	601
Bromoform	<2	<2	<2	<2	<2	<2	601
4-Methyl-2-Pentanone (MIBK)	<20	<20	<20	<20	<20	<20	8015
2-Hexanone	<20	<20	<20	<20	<20	<20	8015
Tetrachloroethene	<2	**3**	**4**	**13**	<2	<2	601
1,1,2,2-Tetrachloroethane	<2	<2	<2	<2	<2	<2	601
Toluene	<1	<1	<1	<1	<1	<1	602
Chlorobenzene	<2	<2	<2	<2	<2	<2	602
Ethylbenzene	<1	<1	<1	<1	<1	<1	602
Styrene	<1	<1	<1	<1	<1	<1	602
Total Xylenes	<1	<1	<1	<1	<1	<1	602
Others (Not HSL Compounds)	**500**	**50**	**200**	ND	ND	ND	8015

Approved By : William Brunkhorst

William Brunkhorst, Organics Supervisor

LABORATORY REPORT

Eastern Analytical, Inc. Designation: 5552 DUF

Client: Dufresne-Henry
Sample Qty/Type: 20 water

Client Designation: **DH438009/J&L Assesment**
Date Received: Jun 17, 1988

Hazardous Substance List (HSL) Volatile Organic Compounds

Sample ID:	MW-11	MW-12	MW-13	MW-14	MW-15	
Matrix:	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	
Date of Analysis:	6/22/88	6/22/88	6/22/88	6/22/88	6/22/88	
Units:	µg/L	µg/L	µg/L	µg/L	µg/L	
Analyst:	WEB	WEB	WEB	WEB	WEB	EPA
Dilution Factor	1	1	1	1	1	Method
Chloromethane	<5	<5	<5	<5	<5	601
Bromomethane	<5	<5	<5	<5	<5	601
Vinyl Chloride	<5	<5	<5	<5	<5	601
Chloroethane	<5	<5	<5	<5	<5	601
Methylene Chloride	<2	<2	<2	<2	<2	601
Acetone	<20	<20	<20	<20	<20	8015
Carbon Disulfide	<2	<2	<2	<2	<2	601
1,1-Dichloroethene	<2	<2	<2	<2	**15**	601
1,1-Dichloroethane	<2	<2	<2	<2	**26**	601
Trans-1,2-Dichloroethene	<2	<2	<2	<2	<2	601
Cis-1,2-Dichloroethene	<2	<2	<2	**6**	**4**	601
Chloroform	<2	<2	<2	<2	<2	601
1,2-Dichloroethane	<2	<2	<2	<2	<2	601
2-Butanone (MEK)	<20	<20	<20	<20	<20	8015
1,1,1-Trichloroethane	<2	<2	<2	<2	**90**	601
Carbon Tetrachloride	<2	<2	<2	<2	<2	601
Vinyl Acetate	<20	<20	<20	<20	<20	8015
Bromodichloromethane	<2	<2	<2	<2	<2	601
1,2-Dichloropropane	<2	<2	<2	<2	<2	601
Trans-1,3-Dichloropropene	<2	<2	<2	<2	<2	601
Trichloroethene	<2	<2	<2	**15**	**7**	601
Dibromochloromethane	<2	<2	<2	<2	<2	601
1,1,2-Trichloroethane	<2	<2	<2	<2	<2	601
Benzene	<1	<1	<1	<1	<1	602
cis-1,3-Dichloropropene	<2	<2	<2	<2	<2	601
2-Chloroethylvinylether	<2	<2	<2	<2	<2	601
Bromoform	<2	<2	<2	<2	<2	601
4-Methyl-2-Pentanone (MIBK)	<20	<20	<20	<20	<20	8015
2-Hexanone	<20	<20	<20	<20	<20	8015
Tetrachloroethene	<2	<2	<2	**6**	**65**	601
1,1,2,2-Tetrachloroethane	<2	<2	<2	<2	<2	601
Toluene	<1	<1	<1	<1	<1	602
Chlorobenzene	<2	<2	<2	<2	<2	602
Ethylbenzene	<1	<1	<1	<1	<1	602
Styrene	<1	<1	<1	<1	<1	602
Total Xylenes	<1	<1	<1	<1	<1	602
Others (Not HSL Compounds)	ND	ND	ND	ND	ND	8015

Approved By : William Brunkhorst

William Brunkhorst, Organics Supervisor

LABORATORY REPORT

Eastern Analytical, Inc. Designation: 5552 DUF

Client: Dufresne-Henry
Sample Qty/Type: 20 water

Client Designation: **DH438009/J&L Assesment**
Date Received: Jun 17, 1988

Hazardous Substance List (HSL) Volatile Organic Compounds

Sample ID:	GS #2	GS #3	GS #4	
Matrix:	Aqueous	Aqueous	Aqueous	
Date of Analysis:	6/22/88	6/22/88	6/22/88	
Units:	µg/L	µg/L	µg/L	EPA
Analyst:	WEB	WEB	WEB	Method
Dilution Factor	1	1	10	
Chloromethane	< 5	< 5	< 50	601
Bromomethane	< 5	< 5	< 50	601
Vinyl Chloride	< 5	< 5	< 50	601
Chloroethane	< 5	< 5	< 50	601
Methylene Chloride	< 2	< 2	< 20	601
Acetone	< 20	< 20	< 200	8015
Carbon Disulfide	< 2	< 2	< 20	601
1,1-Dichloroethene	< 2	< 2	< 20	601
1,1-Dichloroethane	< 2	**14**	**190**	601
Trans-1,2-Dichloroethene	< 2	**7**	< 20	601
Cis-1,2-Dichloroethene	**55**	**630**	< 20	601
Chloroform	< 2	< 2	< 20	601
1,2-Dichloroethane	< 2	< 2	< 20	601
2-Butanone (MEK)	< 20	< 20	< 200	8015
1,1,1-Trichloroethane	**2**	< 2	**2,000**	601
Carbon Tetrachloride	< 2	< 2	< 20	601
Vinyl Acetate	< 20	< 20	< 200	8015
Bromodichloromethane	< 2	< 2	< 20	601
1,2-Dichloropropane	< 2	< 2	< 20	601
Trans-1,3-Dichloropropene	< 2	< 2	< 20	601
Trichloroethene	**18**	**220**	< 20	601
Dibromochloromethane	< 2	< 2	< 20	601
1,1,2-Trichloroethane	< 2	< 2	< 20	601
Benzene	**9**	**32**	< 10	602
cis-1,3-Dichloropropene	< 2	< 2	< 20	601
2-Chloroethylvinylether	< 2	< 2	< 20	601
Bromoform	< 2	< 2	< 20	601
4-Methyl-2-Pentanone (MIBK)	< 20	< 20	< 200	8015
2-Hexanone	< 20	< 20	< 200	8015
Tetrachloroethene	**4**	**32**	< 20	601
1,1,2,2-Tetrachloroethane	< 2	< 2	< 20	601
Toluene	< 1	**11**	< 10	602
Chlorobenzene	< 2	< 2	< 20	602
Ethylbenzene	**2**	**140**	< 10	602
Styrene	< 1	< 1	< 10	602
Total Xylenes	**7**	**60**	< 10	602
Others (Not HSL Compounds)	**100**	**2,000**	ND	8015

Approved By : William Brunkhorst

William Brunkhorst, Organics Supervisor

Eastern Analytical, Inc. 130 Hall St. Concord, NH 03301 (603) 228-0525

June 28, 1988

David Dean
Dufresne-Henry
Precision Park
N. Springfield, VT 05150

Sample Identification:
Client ID: DH438009/J&L Assesment
Sample Qty/Type: 20 water
Date Recv'd: Jun 17, 1988
EAI ID: 5552A DUF

JUN 30 1988

DUFRESNE-HENRY, INC.

Dear Mr. Dean:

Enclosed, please find the partial results of the analysis of the sample(s) identified above. The Oil and Grease results requested will be sent under separate cover once the analysis is complete. This report contains the following sections:

ANALYSIS TYPE	NO OF PAGES
• Hazardous Substance List (HSL) VOCs	4

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 limits

If you have any questions regarding the results contained within, feel free to directly contact the chemist who performed the analysis. We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

John J. Godfrey
QA/QC Coordinator

LABORATORY REPORT

Eastern Analytical, Inc. Designation: 5552 DUF

Client: Dufresne-Henry
Sample Qty/Type: 7 water

Client Designation: **DH438009/J&L Assesment**
Date Received: Jun 17, 1988

Organics

Sample ID: **Matrix:**	GS-1 Aqueous	GS-2 Aqueous	GS-3 Aqueous	GS-4 Aqueous	Date of Analysis	Analyst	EPA Method
Organics: (mg/L)							
Oil & Grease	<5	<5	<5	18	06/28/88	NZM	413.1

Sample ID: **Matrix:**	MW-7 Aqueous	MW-7A Aqueous	MW-7B Aqueous		Date of Analysis	Analyst	EPA Method
Organics: (mg/L)							
Oil & Grease	570	10	590		06/28/88	NZM	413.1

Approved By: Lorraine Okashaw

Lorraine Okashaw, Inorganics Supervisor