

DUFRESNE-HENRY, INC.
 Precision Park
 NORTH SPRINGFIELD, VERMONT 05150

LETTER OF TRANSMITTAL

(802) 886-2261

Nov 12

| | |
|-----------------------------------|--------------------|
| DATE 11/11/96 | JOB NO. 4160053 |
| ATTENTION MR. MATT MORAN | |
| RE: INITIAL SITE INVESTIGATION | |
| FORMER POLICE, FIRE, RESCUE | |
| | |
| | |
| | |

TO AGENCY OF NATURAL RESOURCES
DEC, WIND, SMS
103 SOUTH MAIN ST / WEST OFFICE
WATERBURY, VT 05671-0404

GENTLEMEN:

WE ARE SENDING YOU Attached Under separate cover via _____ the following items:
 Shop drawings Prints Plans Samples Specifications
 Copy of letter Change order _____

| COPIES | DATE | NO. | DESCRIPTION |
|--------|------|-----|---|
| 1 | | | REPORT - INITIAL SITE INVESTIGATION FORMER POLICE, FIRE, RESCUE SMS # 96-2033 |
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THESE ARE TRANSMITTED as checked below:

- For approval
- For your use
- As requested
- For review and comment
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REMARKS _____

COPY TO JEFF WILSON

SIGNED: Bruce Cox

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

**INITIAL
SITE INVESTIGATION**

**Former Police, Fire, and Rescue Complex
Manchester, VT 05255**

SMS Site #96-2033

**A Facility Owned By:
Town of Manchester
P.O. Box 909
Manchester Center, VT 05255
(802) 362-1313
Contact: Jeffrey Wilson**

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

November 11, 1996

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EXECUTIVE SUMMARY

An Initial Site Investigation has been completed at the former Police, Fire, and Rescue complex in Manchester, Vermont. The investigation was in response to the discovery of two separate #2 heating oil releases during a Tank Closure Assessment in June 1996. Two of the three UST's on the site were perforated and had failed. All soil excavated from the tank beds was backfilled pending additional investigation.

Four shallow groundwater monitoring wells were installed on the site in September 1996. The monitoring wells were sampled and analyzed for VOC's by EPA Method 8015/8020. No compounds above detection limits for those methods were found.

All of the properties in the vicinity of the site are connected to the municipal water system. The direction of groundwater flow appears to be to the southwest toward a stream approximately 300 feet from the site. The nearest surface water body is a drainage swale across Routes 11 and 30 from the site. No evidence of contamination was observed in the swale. Buildings in the vicinity are likely to have slab on grade construction. It is not expected that any sensitive receptors have been, or will be, impacted by leakage at the site.

Based on these findings, it is recommended that the site be considered for a Site Monitoring Activity Complete (SMAC) designation.

**INITIAL SITE INVESTIGATION
FORMER POLICE, FIRE, AND RESCUE COMPLEX
MANCHESTER, VERMONT**

Introduction

The former Police, Fire, and Rescue complex is located on Vermont Routes 11 and 30 in Manchester, Vermont. A site location map is included as Appendix A.

Dufresne-Henry, Inc., in conjunction with Dorr Oil Company, performed a Tank Closure Assessment at the site on June 26, 1996. The subjects were one (1) 550 gallon diesel double wall UST, and two (2) 550 gallon #2 heating oil single wall USTs. Both of the heating oil tanks were perforated and had failed. Evidence of soil and groundwater contamination was observed in both of those tank excavations. Headspace PID readings of soil samples from the excavations ranged from 80 ppm to 143 ppm. All excavations were backfilled pending additional investigation.

Work and Health and Safety Plans

As a result of the findings of the Tank Closure Assessment, the Sites Management Section (SMS) requested additional investigation at the property. Dufresne-Henry prepared a Work Plan and a Health and Safety Plan for the proposed activities at the site. A copy of the proposed work plan was forwarded to the Hazardous Materials Management Division (HMMD) for review on September 19, 1996. The work plan was approved, with a request for QA/QC samples, in a letter dated September 20, 1996. Copies of these documents will be found in Appendix B. The remainder of this report describes the on-site activities and subsequent findings based on that work plan.

Site Description

The former Police, Fire, and Rescue complex is located on the north side of Vermont Routes 11 and 30 in Manchester, Vermont. The 1.75± acre property consists of three separate buildings, a paved parking lot, and a small wooded area. The site is nearly flat. The property is served by

the municipal water supply and wastewater systems. The surrounding land use to the east, south, and west is commercial retail. The area to the north is primarily residential.

Site History

The early history of the site is not known. A report titled "Phase I Environmental Site Assessment of Police, Fire, and Rescue Properties, Routes 11 & 30, Manchester, Vermont" was prepared by Clough, Harbour & Associates in March 1995. Information in that report indicates the parcel containing the buildings was purchased by the Town in 1959. Prior to 1959 the property was held by private individuals with no indications of commercial or industrial use. With the exception of the UST's, nothing of concern to this investigation was disclosed in that report. No other UST's are known to exist on the property. The property is currently unoccupied.

The most recent (September 1996) Vermont Hazardous Waste Sites List maintained by the HMMD contains nine (9) sites in Manchester. While several of the sites are within a half-mile radius of the site, none are thought to have any impact on the subject property.

Monitoring Well Installation

Four (4) shallow groundwater monitoring wells were installed on September 30, 1996 by M & W Soils Engineering, Inc. of Charlestown, New Hampshire. All borings and well installations were under the field observation of Dufresne-Henry personnel. The wells are designated MW-1 through MW-4. Well MW-1 is located on the east side of the former firehouse, approximately 15 feet southeasterly of the former tank location. Well MW-2 is located near the northeastern corner of the former police department, less than 10 feet northeasterly of the former tank location. Well MW-3 is located in the parking lot southwestery of the former rescue squad. Well MW-4 is located in the parking lot southwestery of the former firehouse. A site sketch showing the well locations is included as Appendix C. Logs of the borings and monitoring well installation reports are included in Appendix D.

During boring advancement split spoon soil samples were taken at various intervals as determined by the Dufresne-Henry inspector. All soil samples were screened for the presence of Volatile Organic Compounds (VOC's) with an HNu PI-101 (10.2 eV lamp, calibrated with

isobutylene). The screening was done at ambient air temperature.

In wells MW-1, MW-3, and MW-4 no evidence of contamination by visual or olfactory sense was observed in the samples or on the tools. All PID screenings were 0 ppm. The general geologic column in all of the wells is sand and gravel fill to approximately 5', silt to approximately 10', gravel to approximately 15', followed by silt to the limit of the boring. The water table was encountered between 7' and 7'6". In MW-2, an attempt was made to ream the hole with 4 1/4" hollow stem augers. The bottom of the boring could not be reached due to boulders. The rig was offset approximately 3' to the west. At a depth less than 5', slightly oily smelling soil was encountered. The only split spoon sample from the offset location was from 7' - 9'. No evidence of contamination was observed in that sample, or in any of the soil augered up from lower depths. The extent of the shallow soil contamination appears to be limited.

A ten foot long, two-inch diameter PVC monitoring well was installed in each boring. Each well was constructed from .010" machine slotted screen. Each well was backfilled with clean silica sand to a point above the screen and a bentonite seal installed. The wells were protected at the ground surface by grouting in watertight aluminum monitoring well boxes. All excess soil was put on the polyencasulated stockpile from the tank closure.

Site Geology

Surficial geology at the site is published as recent stream alluvium. The site has been filled on the order of 5' - 7'. Soil under the fill is typically sand and gravel consistent with stream alluvium. At depths of 15' or greater, silt was typically encountered. The occasionally clayey nature of this material indicates deposition in a quiet environment. These fine grained deposits are likely the result of high level lakes dammed by Shelburne ice during the Pleistocene Epoch.

Published data indicates bedrock at the site is most likely Monkton Quartzite. The contact with the Dunham Formation (a dolomite) is just to the east of the site. The Monkton Quartzite is generally described as slightly greenish-gray quartzite interbedded with yellow or gray weathering gray or buff dolomites. Where weathered, the quartzite is often a deep red color. The degree of fracturing is not known. The age is Lower Cambrian. Bedrock outcroppings were not observed on the site. No bedrock was encountered in the borings.

Site Hydrogeology

Since installation the monitoring wells have been sounded twice; October 3, 1996 and October 22, 1996. At this time there is too little data that is too inconsistent to be certain of the direction of groundwater flow. The gradient is very flat, but appears to generally be toward the southwest. This is in the general direction of the tributary to the Batten Kill. A site plan showing the groundwater contours as of October 22, 1996, as well as a summary table of sounding data to date, is included as Appendix E.

Potential Receptors

A large number of residences, commercial retail, and other businesses exist within a one-half mile radius of the site. All are on the municipal water supply system. The nearest surface water is a drainage swale on the opposite side of Routes 11 and 30 southeast of the site. The swale may be fed by a culvert running along the eastern property line of the subject parcel. The swale enters an unnamed tributary to the Batten Kill with closest approaches to the property of approximately 300 feet to the south and approximately 400 to the west. No sheen or other evidence of contamination was observed in the swale. It is not expected that any sensitive receptors have been, or will be impacted.

Monitoring Well Sampling

The four (4) Dufresne-Henry monitoring wells were sampled on October 3, 1996 following the standard protocols which are on file with the HMMD. The sampling was performed by Dufresne-Henry personnel. Three well volumes were purged prior to drawing a sample. No sheens were observed in any of the wells. The refrigerated samples were shipped to Eastern Analytical, Inc. of Concord, New Hampshire on October 3, 1996 via overnight carrier. The samples were analyzed for the VOC's BTEX and MTBE by EPA Method 8015/8020. No compounds above detection limits for the method used were found in any well. A copy of the contract laboratory analytical report is included as Appendix F.

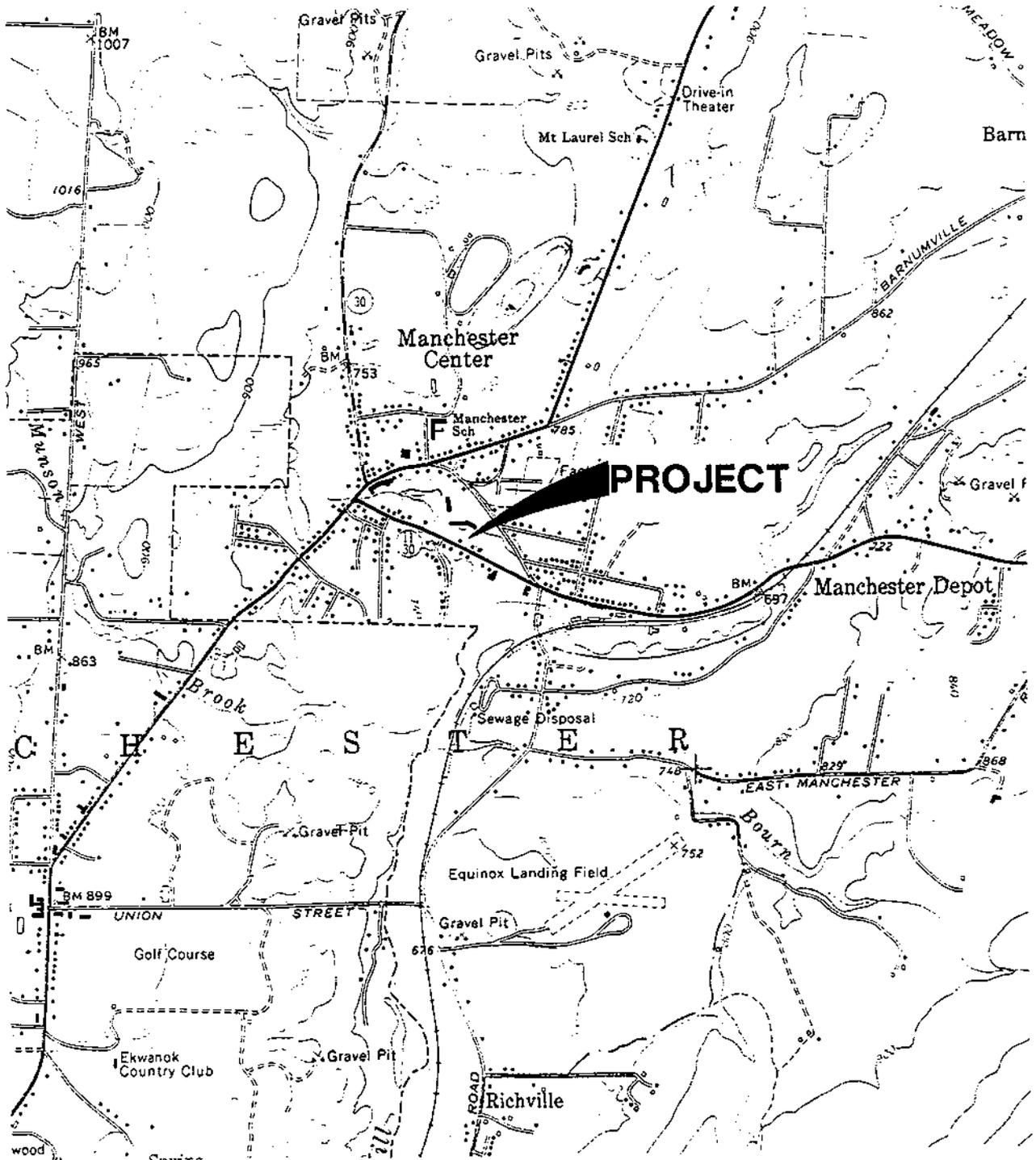
Summary and Recommendations

In summary, four (4) shallow groundwater monitoring wells were installed on the site and sampled. Analysis of groundwater samples from those wells found no BTEX or MTBE above detection limits for the method used. The only evidence of soil contamination during the boring program was a small zone in MW-2 behind the former police station. Any soil contamination near this, or the other failed tank location, is expected to be minimal.

All properties in the vicinity of the site are connected to the municipal water supply system. The nearest surface water is a drainage swale on the opposite side of Routes 11 and 30. No evidence of contamination was observed in the swale. The majority of the buildings in the immediate vicinity are likely to be of slab on grade construction. It is not expected that any sensitive receptors have been, or will be, impacted by leakage from the site UST's.

Based on these findings, it is recommended that the site be considered for a Site Monitoring Activity Complete (SMAC) designation.

APPENDIX A
SITE LOCATION MAP



SCALE
1:24,000

TAKEN FROM A USGS QUAD. SHEET FOR MANCHESTER, VT
FIELD CHECKED IN 1968

DH
Dunn & Henry, Inc.
A DIT Company
Precision Park
No. Springfield,
Vermont 05150
Tel. (802)886-2261 Fax (802)886-2260

SITE LOCATION PLAN
PREPARED FOR THE FORMER
TOWN OF MANCHESTER
POLICE, FIRE, & RESCUE COMPLEX
MANCHESTER,
VERMONT

| |
|---------------------|
| Project No. 4160053 |
| Proj. Mgr. B. H. C. |
| Date NOV., '96 |
| SLP-1 |

APPENDIX B

WORK PLAN, SITE HEALTH AND SAFETY PLAN

Proposed Work Plan
Initial Site Investigation

**POLICE, FIRE, AND RESCUE COMPLEX
MANCHESTER, VERMONT**

This work plan outlines the tasks to be completed for an Initial Site Investigation at the Police, Fire, and Rescue Complex in Manchester, Vermont. This plan has been prepared as a result of a #2 heating oil release discovered during a UST Closure Assessment. Two of the three UST's were noted as failed, with soil and groundwater impacted. Per discussions between the SMS and the Town, the work will proceed under the "Expressway Program".

The purpose of the investigation is to determine the existence and extent of subsurface petroleum contamination at the site. The proposed monitoring wells will be used to help ascertain the extent of a contamination plume and provide basic hydrogeologic data. At this time it is anticipated that four (4) shallow groundwater monitoring wells will be installed. One well will be in the immediate vicinity of each of the failed UST's. One well will be installed in the probable upgradient direction, and one well will be installed in the probable downgradient direction. All borings and monitoring well installations will be performed by M & W Soils Engineering, Inc. of Charlestown, New Hampshire under the field supervision of Dufresne-Henry personnel. All field personnel are OSHA certified for hazardous site operations under 29 CFR part 1910.120.

BORINGS

It is anticipated that the borings for the monitoring wells will be done using 4 1/4" hollow stem augers. Monitoring well borings will be taken a minimum of five (5) feet into the prevailing water table. It is anticipated that the wells will be approximately 15 feet deep. Petroleum based pipe dope for use on drill rods, tools, or casing will not be allowed. No type of drilling mud, including polymers, will be used. Should flowing sands be encountered, clean water obtained locally will be used to increase hydraulic head. If flowing sands are particularly problematic, casing will be used.

SOIL SAMPLING

Soil samples will typically be taken at 5 foot intervals using a split spoon sampler. Sampling at other intervals may occur and will be a field decision of the Dufresne-Henry inspector. Possible reasons include abrupt changes in drill rate and suspected zones of contamination. It is likely that continuous sampling will be done in the immediate vicinity of the former UST's identified as having failed. The split spoon sampler allows retrieval of relatively undisturbed soil samples from a known depth for classification and Volatile Organic Compound (VOC) screening. All soil samples and material from the auger flights will be screened for VOC's by headspace analysis with a Photovac MicroTIP HL-2000 photoionization detector (10.6 eV lamp, calibrated with Isobutylene). The act

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

MONITORING WELLS

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

DECONTAMINATION

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

WATER SAMPLING

Water quality samples will be obtained from the Dufresne-Henry installed monitoring wells following a period of stabilization. The samples will be taken by Dufresne-Henry personnel. Protocols for the sampling have been previously forwarded and are on file with the WMD. Samples will be obtained with disposable bailers which will be left in the wells to facilitate future sampling. Samples will not be obtained from any well exhibiting free product. The samples will be analyzed for BTEX and MTBE by EPA Method 602/8020 by Eastern Analytical, Inc. of Concord, New Hampshire.

SITE SURVEY

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

RECEPTOR ASSESSMENT

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

REPORTING

A report will be prepared summarizing the findings and recommendations of the investigation including the monitoring well installation, groundwater quality and overall characterization of shallow subsurface conditions, and the likely impacts on potential receptors. Conclusions and recommendations regarding the need for long term treatment and/or monitoring will be included. The report will be submitted within 60 days of the date of this submission.

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

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 Corporate
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 Emergency Vehicle

SIGNATURE SHEET 12

PROJECT: MANCHESTER, VT INITIAL SITE INVESTIGATION
JOB NO.: 4160053

HEALTH AND SAFETY PLAN
FOR

INITIAL SITE INVESTIGATION

FORMER POLICE, FIRE, AND RESCUE COMPLEX

MANCHESTER, VERMONT

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

PROPOSED ON-SITE ACTIVITIES:

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

PROPOSED DATE(S) OF WORK: Borings: September 30, 1996
Sampling: Week of September 30, 1996

ANTICIPATED WEATHER CONDITIONS: temperatures in the 50's - 70's, possible rain, light wind.

PROPOSED SITE INVESTIGATION TEAM:

| Personnel | Responsibilities |
|------------------------|---|
| Bruce Cox | Project Manager |
| Bruce Cox | Site Safety Officer |
| Bruce Cox/Oscar Garcia | Field Team Leader (Monitoring Wells/Sampling) |
| Jeff Wilson | Site Representative |
| Matt Moran | ANR Representative |

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

PROJECT: MANCHESTER, VT INITIAL SITE INVESTIGATION
JOB NO.: 4160053

Background Information

Site Status: X Active Inactive Unknown

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

The former Police, Fire, and Rescue complex is located on the north side of VT Route 11 a short distance east of the intersection with Route 7. Each service is in a separate building. The on site roads and parking areas are paved. All of the buildings are on the municipal water and wastewater systems. Other known utilities include overhead electric lines. Stormwater pipes may exist on the site.

Each of the buildings had its own UST. All have been removed. The UST's at the Police and Fire stations had failed.

DIG SAFE was contacted on September 25, 1996. The site is OK'd after 7:45 am on September 27, 1996. The DIG SAFE number is 963904039. Mark out of the water and sewer lines was coordinated through Jeff Wilson, Town Manager, on September 23, 1996.

Site History:

The parcel containing the structures has belonged to the Town since 1959. No industrial or manufacturing use prior to that time is known.

Field Monitoring or Sampling Data From Previous Site work:

A Tank Closure Assessment was conducted by Dufresne-Henry, Inc. on June 26, 1996. Three tanks were removed; one 550 gallon diesel tank (Rescue), and two 550 gallon #2 heating oil tanks (Police and Fire). The Police and Fire UST's had failed. Evidence of soil and groundwater contamination was observed. PID readings of soil samples were as high as 140 ppm.

A Phase I ESA of the property was prepared by Clough, Harbour & Associates in March 1995. The site history above was extracted from that report. With the exception of the UST's (in place at the time of the assessment), nothing of potential concern to this investigation was noted.

HAZARD REFERENCE

Waste Types:

Liquid Solid Sludge Vapor Unknown
(soil)

Waste Characteristics:

Corrosive Ignitable Radioactive
 Volatile Toxic Reactive
 Unknown Other Persistent

Specific Substances of Greatest Concern (if known): #2 heating oil.

Hazard Evaluation:

Task: Mon. Well Install. Low Medium High

Identification of Hazards: #2 heating oil.

Task: Decontamination Low Medium High

Identification of Hazards: #2 heating oil.

Task: Sampling Low Medium High

Identification of Hazards: #2 heating oil.

Task: Low Medium High

Identification of Hazards:

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

Drill rig, traffic, weather.

PROJECT: MANCHESTER, VT INITIAL SITE INVESTIGATION
JOB NO.: 4160053

Hazard Assessment:

OVERALL HAZARD: Serious Moderate Low
 Unknown

On-Site Control

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

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

The area of the removed UST by the former Police Department.

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

The area of the removed UST by the former Police Department.

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

The drill rig and a 15 foot radius around the borehole.

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

The area of the removed UST by the former Police Department.

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

SITE ACTIVITIES

Required Personal Protective Equipment (PPE)

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

Note: Breathing space PID readings of 50 ppm, explosimeter readings over 25% of the LEL, O₂ deficiency or enrichment, or H₂S readings will result in shutting down the job and consulting with State officials and the client.

PROJECT: MANCHESTER, VT INITIAL SITE INVESTIGATION
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Specific protective equipment for each level of protection is as follows:

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

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

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

Rationale for change in level of protection:

Upgrade to Level C with PID readings of 10 ppm or more for 5 minutes in the breathing space. PID readings over 50 ppm in the breathing space, explosimeter readings of over 25% of the LEL, O₂ deficiency or enrichment, or H₂S readings will result in shutting down the job and consulting with State officials and the client.

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

Monitoring Procedures

Site Monitoring Equipment:

Photovac MicroTIP (Model HL-2000, 10.6 eV lamp)
 Explosimeter
 Draeger Tube & Pump
 O₂ Meter
 Other: H₂S meter

Methods and Frequency of Monitoring:

Air space and soil samples: Photovac MicroTIP HL-2000.
Air space: explosimeter/O₂ meter/H₂S meter.

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

PROJECT: MANCHESTER, VT INITIAL SITE INVESTIGATION
JOB NO.: 4160053

Decontamination and Disposal

Personnel Decontamination Procedure:

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

Equipment Decontamination:

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

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

All decon waste and disposables will remain on-site.

PROJECT: MANCHESTER, VT INITIAL SITE INVESTIGATION
JOB NO.: 4160053

SITE OPERATING PROCEDURES/SAFETY GUIDELINES

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

PROJECT: MANCHESTER, VT INITIAL SITE INVESTIGATION
JOB NO.: 4160053

Special Procedures:
Confined Space Entry

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

Other:

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

Monitoring of individual breathing space will be monitored by a Photovac MicroTIP HL-2000, explosimeter, O₂ meter, and H₂S meter as outlined in monitoring procedures. Monitoring of weather related hazards will be dictated by existing conditions.

EMERGENCY SITUATIONS

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

Personnel Injury to Dufresne-Henry Employees in the Exclusion Zone

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

Personnel Injury to Dufresne-Henry Employees in the Support Zone

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

Fire/Explosion

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

Personal Protective Equipment Failure

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

Other Equipment Failure

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

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

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

PROJECT: MANCHESTER, VT INITIAL SITE INVESTIGATION
JOB NO.: 4160053

EMERGENCY INFORMATION

AMBULANCE: Manchester Phone: 9-1-1

HOSPITAL: Southern Vermont Medical Ctr Phone: (802) 447 - 5007
Hospital Drive
Bennington, Vt
(see attached map)

POLICE: Manchester Phone: 9-1-1

FIRE DEPARTMENT: Manchester Phone: 9-1-1

POISON CENTER: Burlington Phone: (802) 658 - 3456

ANR INCIDENT RESPONSE: Office Phone: (802) 241 - 3888
Matt Moran (802) 241 - 3243

CORPORATE:

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

Project Manager: Bruce Cox

NEAREST PHONE: Friendly's (next door)

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

EMERGENCY VEHICLE:

PROJECT: MANCHESTER, VT INITIAL SITE INVESTIGATION
JOB NO.: 4160053

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

| <u>Name</u> | <u>Company</u> |
|-----------------------|--|
| <u>Bruce Cox</u> | <u>Dufresne-Henry, Inc.</u> |
| <u>Oscar Garcia</u> | <u>Dufresne-Henry, Inc.</u> |
| <u>Myron Domingue</u> | <u>M & W Soils Engineering, Inc.</u> |
| <u>Mike Hitchcock</u> | <u>M & W Soils Engineering, Inc.</u> |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Copies of this SSP have been given to:

Approval Signatures:
PM _____
Div. Dir. _____



State of Vermont

SEP 24 1996

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

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

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

September 20, 1996

JEFFREY WILSON
TOWN OF MANCHESTER
PO Box 909
MANCHESTER VT 05255

RE: Work Plan and Cost Estimate for Manchester Police, Fire, and Rescue Complex
(Site #96-2033)

Dear Mr. Wilson:

The Sites Management Section (SMS) has reviewed the Dufresne-Henry, Inc. work plan dated September 19, 1996 for the above referenced site. The proposed work plan includes:

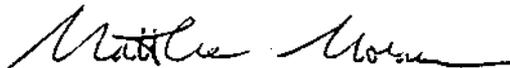
- installing four groundwater monitoring wells;
- screening split spoon soil samples with a photoionization detector;
- collecting groundwater samples from all monitoring wells and analyzing them for BTEX and MTBE compounds;
- performing a site survey and receptor assessment; and
- preparing a summary report which should include detailed well logs, analytical data, a site map that includes the location of the stockpiled soils, an area map which shows nearby potential receptors, a groundwater contour map, conclusions, and recommendations.

According to the Site Investigation Guidance Consultant Fee Schedule, only \$60.00 per EPA Method 8020 water analysis is eligible for reimbursement. In addition to collecting a groundwater sample from each monitoring well, please have your consultant also collect one duplicate sample and one field blank sample for analysis. Total costs for the six samples (4 MWs and 2 QA/QC samples) should not exceed \$360.00, which is \$40.00 less than the proposed costs for analysis of four (4) samples.

With the above cost estimate modifications, the total Dufresne-Henry cost estimate is \$5,760.00. The SMS approves of the eligibility of these costs for reimbursement from the Petroleum Cleanup Fund. Please have your consultant initiate on-site work within 30 days of your receipt of this letter. The SMS requests the submittal of the site investigation report within 60 days of your receipt of this letter. The SMS looks forward to the completion of this work.

The underground storage tanks at Manchester Police, Fire, and Rescue Complex are eligible for participation in the Petroleum Cleanup Fund (PCF) as set forth in 10 V.S.A. §1941. An owner or permittee of an underground storage tank that does not hold private insurance that would otherwise provide coverage for this situation, is eligible for reimbursement from the fund for certain expenses. You must provide written proof to the SMS that you hold no other applicable insurance in order to receive reimbursement from the PCF. The owner or permittee must pay for the removal and/or repair of the failed tank(s). Provided that the contamination is from the 550-gallon heating oil underground storage tanks, the fund will reimburse the tank owner or permittee for all eligible cleanup costs of up to \$1 million. All expenditures must be pre-approved by the Agency or performed in accordance with the "Site Investigation Guidance" expressway program in order for reimbursement to occur. Please refer to the enclosed guidance document titled, "Procedures for Reimbursement from the Petroleum Cleanup Fund" for additional information concerning the PCF. The Secretary of the Agency of Natural Resources reserves the right to seek cost recovery in accordance with 10 V.S.A. §1941(f). If you have any questions or comments, please feel free to call me at (802) 241-3243.

Sincerely,



Matthew Moran, Site Project Manager
Sites Management Section

Enclosures - (1)

cc: Bruce Cox, Dufresne-Henry, Inc. w/o enclosure

mattm/wp/962033wp

APPENDIX C

SITE PLAN



CENTER HILL ROAD

PAVED DRIVE

WOODS

APPROX. PROPERTY LINE

APPROX. STOCKPILE LOCATION

FORMER TANK LOCATION (TYP.)

Diesel - double-walled UST
- no contamination @ pull



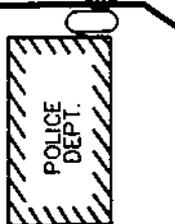
PAVEMENT

MW-3

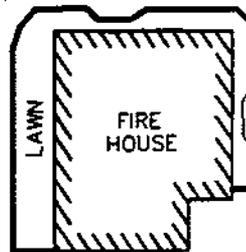
UTILITY POLE

APPROX. PROPERTY LINE

MW-2



LAWN



MW-1

ELECTRIC TRANSFORMER

PAVEMENT

MW-4

NOTE:

BASED ON PLAN BY
CLOUGH, HARBOUR, &
ASSOC., DATED 3-95,
DWG. #4795.07.01

SCALE 1" = 60'

ROUTES 11 & 30

D **L** **H**
Duke & Henry, Inc.
 A DHI Company
 Precision Park
 No. Springfield,
 Vermont 05150
 Tel. (802)886-2261 Fax (802)886-2260

SITE PLAN
 AT THE FORMER
**TOWN OF MANCHESTER
 POLICE, FIRE, & RESCUE COMPLEX**
MANCHESTER, VERMONT

| |
|---------------------|
| Project No. 4160053 |
| Proj. Mgr. B.H.C. |
| Date NOV., '96 |
| B SP-1 |

APPENDIX D

BORING LOGS
AND
MONITORING WELL INSTALLATION REPORT

BORING LOCATION MW-1 INCLINATION V BEARING DATE START/FINISH 9/30/96 / 9/30/96
 CASING ID CORE SIZE TOTAL DEPTH 17 FT DRILLED BY: M & W SOILS ENGINEERING, INC. (M.D.)
 GROUND EL (AD) 99.03 DEPTH TO WATER/DATE 5.97 FT/ 10/3/96 LOGGED BY: B. COX

| ELEV AD FT | SAMPLE | | | SAMP OD IN | LENGTH | | REMARKS ON ADVANCE OF BORING | SIZE/TYPE BIT USED TO ADVANCE BORING | SOIL AND ROCK DESCRIPTION |
|---------------|----------|--------------|--------------------|---------------|--------|----------------|------------------------------|--------------------------------------|---|
| | DEPTH FT | TYPE AND NO. | B | | REC IN | PENETRATION IN | | | |
| 95.53 | 3.5 | | | | | | 4 1/4" HSA | 8"/CCH | 0" - 2.5" Bituminous concrete pavement. 2.5" - 3'6" Medium brown sandy GRAVEL with occasional cobbles. Dry. No odor or staining. |
| 93.53 | 5.5 | SS-1 | 4 3 1 2 | 2 | 3 | 24 | | | Medium brown, very loose - loose, gravelly SAND fill. Very fine - occasionally medium grained, moderately well sorted sand. 20%± non plastic fines. 20%± fine rounded gravel. Possible old ground at 5'±. Moist. No odor or staining. 0 ppm |
| 91.53 | 7.5 | SS-2 | 4 6 4 6 | 2 | 13 | 24 | | | Medium brown gray, loose - medium dense, gravelly, sandy, SILT. Very fine - fine grained, well sorted sand. 10% fine gravel. 70%± non plastic fines Wet bottom 2". No odor or staining. 0 ppm. |
| 89.53 | 9.5 | SS-3 | 10 14 5 4 | 2 | 1 | 24 | | | Medium brown, silty, sandy, GRAVEL. Saturated. No odor or staining. 0 ppm. |
| 89.03 | 10 | | | | | | 4 1/4" HSA | 8"/CCH | Probable GRAVEL as above, to 8'6", with SILT below |
| 87.03 | 12 | | 6 8 7 8 | 2 | 0 | 24 | | | Probable SILT. |
| 85.03 | 14 | SS-4 | 11 11 9 8 | 2 | 12 | 24 | | | Medium - dark gray, medium dense, inorganic SILT. Trace very fine grained sand. Saturated. No odor or staining. 0 ppm. |
| 84.03 | 15 | | | | | | 4 1/4" HSA | 8"/CCH | Probable SILT as above. |
| 82.03 | 17 | SS-5 | WOH 2 2 3 | 2 | 24 | 24 | | | Medium gray, soft, clayey SILT. Saturated. No odor or staining. 0 ppm. |
| | | | | | | | | | No refusal to depth. Set 10' of 2" dia, .010" slot, threaded, flush joint, Schd 40 PVC at 15.3'. Sand backfill to 1.8'. Bentonite seal 1.3' - 1.8'. Grouted in flush, watertight, aluminum monitoring well box. |

B - Penetration resistance, Blows/6" of a 140 lb hammer falling 30 in to drive a split spoon sampler.
 REC - Length of sample recovered.
 SS - Split spoon sample.
 U - Undisturbed samples
 S - Shelby tube N - Denison
 F - Fixed piston P - Pitcher
 O - Osterberg
 SAMP OD - Outside diameter of sampling spoon

NOTES
 HSA = Hollow Stem Auger
 CCH = Conical Cutter Head
 WOH = Weight Of Hammer
 ppm Refers to PID reading (10.2 eV lamp)
 Top of PVC elev = 98.65

FORMER POLICE, FIRE, AND RESCUE COMPLEX
 INITIAL SITE INVESTIGATION
 MANCHESTER, VERMONT
 DATE: 9/30/96 PROJECT: 4160053
 PAGE 1 OF 1 LOG OF BORING: MW-1

BORING LOCATION MW-2 INCLINATION V BEARING DATE START/FINISH 9/30/96 / 9/30/96
 CASING ID CORE SIZE TOTAL DEPTH 15.5 FT DRILLED BY: M & W SOILS ENGINEERING, INC. (M.D.)
 GROUND EL (AD) 101.13 DEPTH TO WATER/DATE 7.96 FT/ 10/3/96 LOGGED BY: B. COX

| ELEV AD FT | SAMPLE | | | SAMP OD IN | LENGTH | | REMARKS ON ADVANCE OF BORING | SIZE/TYPE BIT USED TO ADVANCE BORING | SOIL AND ROCK DESCRIPTION |
|---------------|-------------|--------------|---------------------------|---------------|-----------|-------------------|------------------------------|--------------------------------------|---|
| | DEPTH FT | TYPE AND NO. | B | | REC IN | PENETRATION IN | | | |
| 96.13 | 5 | | | | | | 4" SSA | 4.5"/FB | 0" - 2" Bituminous concrete pavement. 2" - 5' Medium brown sand and gravel with occasional cobbles. Old ground near bottom. |
| 94.13 | 7 | SS-1 | 7 10 7 8 | 2 | 2 | 24 | | | Medium - dark brown, medium dense, sandy GRAVEL. Very fine - fine grained, moderately well sorted sand. 10% - 20% non plastic fines. 70% fine gravel. Moist. No odor or staining. 0 ppm. |
| 92.13 | 9 | SS-2 | 4 5 4 11 | 2 | 11 | 24 | | | 7' - 8'6" Medium olive gray, loose, SILT. Non - slightly plastic inorganic fines. Old topsoil in upper 3". Saturated. Slight organic odor, no staining. 0 ppm. 8'6" - 9' GRAVEL. Saturated. 0 ppm. |
| 90.13 | 11 | SS-3 | 10 13 11 13 | 2 | 11 | 24 | | | Medium brown, medium dense, silty, sandy, GRAVEL. Gravel is largely shattered rock. Saturated. No odor or staining. 0 ppm. |
| 88.13 | 13 | SS-4 | 9 10 10 10 | 2 | 10 | 24 | | | Silty, sandy, GRAVEL similar to above, but with less shattered rock, and more rounded gravel. Saturated. No odor or staining. 0 ppm. |
| 85.63 | 15.5 | SS-5 | 14 17 23 25 4 | 2 | 12 | 30 | | | 13' - 15' GRAVEL as above, but slightly finer overall. Saturated. No odor or staining. 0 ppm. 15' - 15'6" Medium brown SILT. Saturated. No odor or staining. 0 ppm. |
| | | | | | | | | | Could not get 4 1/4" HSA to bottom of hole due cobbles and boulders. Offset 3' to west. Slightly oily smelling soil at less than 5'. Augered to 14' with 4" SSA. No refusal to depth. Set 10' of 2" dia, .010" slot, threaded, flush joint, Schd 40 PVC at 13'8". Sand backfill to 2.5'. Bentonite seal 1' - 2.5'. Grouted in flush, watertight, aluminum monitoring well box. |

| | | | |
|---|--|--|---------------------|
| B - Penetration resistance, Blows/6" of a 140 lb hammer falling 30 in to drive a split spoon sampler. REC - Length of sample recovered. SS - Split spoon sample. U - Undisturbed samples S - Shelby tube M - Denison F - Fixed piston P - Pitcher O - Osterberg SAMP OD - Outside diameter of sampling spoon | NOTES SSA = Solid Stem Auger FB = Finger Bit ppm Refers to PID reading (10.2 eV lamp) Top of PVC elev = 100.83 | INITIAL SITE INVESTIGATION FORMER POLICE, FIRE, AND RESCUE COMPLEX MANCHESTER, VERMONT DATE: 9/30/96 PROJECT: 4160053 | |
| | | PAGE 1 OF 1 | LOG OF BORING: MW-2 |

BORING LOCATION MW-3 INCLINATION V BEARING DATE START/FINISH 9/30/96 / 9/30/96
 CASING ID CORE SIZE TOTAL DEPTH 17 FT DRILLED BY: M & W SOILS ENGINEERING, INC. (M.D.)
 GROUND EL (AD) 99.82 DEPTH TO WATER/DATE 6.56 FT/ 10/3/96 LOGGED BY: B. COX

| ELEV AD FT | SAMPLE | | | SAMP OD IN | LENGTH | | REMARKS ON ADVANCE OF BORING | SIZE/TYPE BIT USED TO ADVANCE BORING | SOIL AND ROCK DESCRIPTION |
|---------------|-------------|--------------------|---------------------|---------------|-----------|------------------------|------------------------------------|---|--|
| | DEPTH FT | TYPE AND NO. | B | | REC IN | PENETRA- TION IN | | | |
| 94.82 | 5 | | | | | | 4 1/4" HSA | 8"/CCH | 0" - 5" Bituminous concrete pavement. 5" - 5' Medium brown, silty SAND with a trace of cobbles. |
| 92.82 | 7 | SS-1 | 3 7 8 11 | 2 | 24 | 24 | | | 5' - 6' Medium - dark brown, loose - medium dense ORGANIC SOIL. 6' - 7' Medium olive green, medium dense, SILT. Trace of very fine grained sand, and gravel. Occasional organic soil lenses. Moist. No odor or staining. 0 ppm. |
| 89.82 | 10 | | | | | | 4 1/4" HSA | 8"/CCH | Probable SILT as above with GRAVEL below 9'. |
| 87.82 | 12 | SS-2 | 11 10 17 9 | 2 | 16 | 24 | | | Medium gray, medium dense, alternating layers of silty GRAVEL and clayey SILT. Saturated. No odor or staining. 0 ppm. |
| 84.82 | 15 | | | | | | 4 1/4" HSA | 8"/CCH | Probable SILT and GRAVEL as above. |
| 82.82 | 17 | SS-3 | 3 3 2 2 | 2 | 18 | 24 | | | Medium - dark blue gray, very loose - loose, SILT. Non - very slightly plastic inorganic fines. Saturated. No odor or staining. 0 ppm. |
| | | | | | | | | | No refusal to depth. Set 10' of 2" dia, .010" slot, threaded, flush joint, Schd 40 PVC at 15.3'. Sand backfill to 2'. Bentonite seal 1' - 2'. Grouted in flush, watertight, aluminum monitoring well box. |

| | | | |
|---|---|--|--------------------------------------|
| B - Penetration resistance, Blows/6" of a 140 lb hammer falling 30 in to drive a split spoon sampler. REC - Length of sample recovered. SS - Split spoon sample. U - Undisturbed samples S - Shelby tube N - Denison F - Fixed piston P - Pitcher O - Osterberg SAMP OD - Outside diameter of sampling spoon | NOTES HSA = Hollow Stem Auger CCH = Conical Cutter Head ppm Refers to PID reading (10.2 eV lamp) Top of PVC elev = 99.54 | INITIAL SITE INVESTIGATION FORMER POLICE, FIRE, AND RESCUE COMPLEX | |
| | | MANCHESTER, VERMONT DATE: 9/30/96 PROJECT: 4160053 | PAGE 1 OF 1 LOG OF BORING: MW-3 |

BORING LOCATION MW-4 INCLINATION V BEARING DATE START/FINISH 9/30/96 / 9/30/96
 CASING ID CORE SIZE TOTAL DEPTH 17 FT DRILLED BY: M & W SOILS ENGINEERING, INC. (M.D.)
 GROUND EL (AD) 98.94 DEPTH TO WATER/DATE 5.75 FT/ 10/3/96 LOGGED BY: B. COX

| ELEV AD FT | SAMPLE | | | SAMP OD IN | LENGTH | | REMARKS ON ADVANCE OF BORING | SIZE/TYPE BIT USED TO ADVANCE BORING | SOIL AND ROCK DESCRIPTION |
|---------------|-------------|--------------|---------------------|---------------|-----------|-------------------|------------------------------|--------------------------------------|--|
| | DEPTH FT | TYPE AND NO. | B | | REC IN | PENETRATION IN | | | |
| 94.82 | 5 | | | | | | 4" SSA | 4.5"/FB | 0" - 2" Bituminous concrete pavement. 2" - 5' Medium brown, gravelly, silty, SAND fill with a trace of wood and other organic matter. |
| 92.82 | 7 | SS-1 | 4 5 8 7 | 2 | 16 | 24 | | | Medium gray brown, loose - medium dense, gravelly, sandy, SILT with a trace of organic matter. Moist - wet. Slight organic odor, no staining. 0 ppm. |
| 89.32 | 10.5 | | | | | | 4" SSA | 4.5"/FB | Probable SILT as above becoming gravelly at 10' |
| 87.32 | 12.5 | SS-1 | 27 32 14 9 | 2 | 13 | 24 | | | Medium brown, dense, silty, sandy, GRAVEL. Very fine - coarse grained, poorly sorted sand. 10%+ non plastic fines. 60%+ gravel including cobbles. Saturated. No odor or staining. 0 ppm. |
| 84.82 | 15 | | | | | | 4" SSA | 4.5"/FB | Probable GRAVEL similar to above. |
| 82.82 | 17 | SS-3 | 2 4 4 3 | 2 | 0 | 24 | | | Possible SILT (no recovery due to stone in spoon nose). |
| | | | | | | | | | No refusal to depth. Set 10' of 2" dia, .010" slot, threaded, flush joint, Schd 40 PVC at 15'. Sand backfill to 2'. Bentonite seal 1' - 2'. Grouted in flush, watertight, aluminum monitoring well box. |

| | | | |
|---|---|---|--------------------------------------|
| B - Penetration resistance, Blows/6" of a 140 lb hammer falling 30 in to drive a split spoon sampler. REC - Length of sample recovered. SS - Split spoon sample. U - Undisturbed samples S - Shelby tube N - Denison F - Fixed piston P - Pitcher O - Osterberg SAMP OD - Outside diameter of sampling spoon | NOTES SSA = Solid Stem Auger FB = Finger Bit ppm Refers to PID reading (10.2 eV lamp) Top of PVC elev = 98.54 | INITIAL SITE INVESTIGATION FORMER POLICE, FIRE, AND RESCUE COMPLEX | |
| | | MANCHESTER, VERMONT DATE: 9/30/96 PROJECT: 4160053 | PAGE 1 OF 1 LOG OF BORING: MW-4 |

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

TO DUFRESNE-HENRY, INC. ADDRESS NORTH SPRINGFIELD, VT
PROJECT NAME FORMER POLICE, FIRE & RESCUE LOCATION MANCHESTER DEPOT, VT
REPORT SENT TO BRUCE COX PROJ. NO. _____
SAMPLE SENT TO RETAINED BY DUFRESNE-HENRY OUR JOB NO. 6843-96

SHEET 1 OF 1
DATE 9/30/96
HOLE NO. MW-1
LINE & STA. _____
OFFSET _____

| | | | | | | |
|---------------------------|-----------------------------|-------------|------------------|-------------------|--------------------------------------|----------------------------|
| GROUND WATER OBSERVATIONS | | Type HSA | CASING 4 1/4" | SAMPLER 1 1/2" | CORE BAR | SURFACE ELEV. |
| AT <u>5'8"</u> | AT <u>IMMEDIATELY</u> HOURS | | | | | |
| AT _____ AT _____ HOURS | | Size I. D. | Hammer Wt. | Hammer Fall | DATE STARTED <u>9/30/96</u> | DATE COMPL. <u>9/30/96</u> |
| | | | | | BORING FORMAN <u>M.D. & M.H.</u> | INSPECTOR <u>B. COX</u> |
| | | | | | SOILS ENGR. | |

LOCATION OF BORING EAST SIDE OF OLD FIRE STATION

| Depth | CASING BLOWS PER FOOT | SAMPLE DEPTHS FROM-TO | TYPE OF SAMPLE | Blows per 6" on sampler | | | MOISTURE DENSITY OF CONSTANT | STRATA CHANGE ELEV. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness. Drilling time, seams and ect | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | NO. | PEN | REC |
| | | | | | | | | 2 1/2' | BITUMINOUS CONCRETE | | | |
| | | 3'6" - 5'6" | SS | 4 | 3 | | DENSE | 3'6" | BROWN COARSE SANDY GRAVELS WITH COBBLES AND BOULDERS | 1 | 24" | 6" |
| 5' | | 5'6" - 7'6" | SS | 4 | 6 | | MED. DENSE WET | | BROWN SILTY FINE SANDS - TRACE OF GRAVEL - OLD TOPSOIL | 2 | 24" | 12" |
| | | 7'6" - 9'6" | SS | 10 | 14 | | | 9'6" | SAME MATERIAL | 3 | 24" | 2" |
| | | | | 5 | 4 | | | | | | | |
| 10' | | 10' - 12' | SS | 6 | 7 | | MED. DENSE WET | | BROWN GRAVELLY SILTS WITH COBBLES | 4 | 24" | " |
| | | 12' - 14' | SS | 11 | 11 | | | 12'6" +/- | | 5 | 24" | 18" |
| | | | | 9 | 8 | | LOOSE - WET | | GREY SILTS | | | |
| 15' | | 15' - 17' | SS | WH | 2 | | | 17' | SAME MATERIAL | 6 | 24" | 24" |
| | | | | 2 | 3 | | | | | | | |
| 20' | | | | | | | | | TOP OF WELL AT 5'4" BOTTOM OF WELL AT 15'4" SILICA SANDS FROM 2' TO 15' BENTONITE SEAL FROM 1' TO 2' | | | |
| | | | | | | | | | MATERIALS USED: 10' OF 2" PVC 0.010" SCREEN 5' OF 2" PVC SOLID 10# OF BENTONITE CHIPS 200# OF SAND 40# OF CEMENT MIX 1 2" EXPANSION CAP 1 2" SCREW CAP 1 6" MANHOLE | | | |

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

| | | | |
|---|---|--|---|
| <p>Sample Type D-Dry C-Cored W-Washed UP-Unfinished Piston TP-Test Pit A-Auger V-Vane Test UT-Undisturbed Thinwall</p> | <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>140 lb. wt. x 30"-fall an 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense</p> | <p>summary EARTH BORING <u>17'</u> ROCK CORING _____ SAMPLES <u>6</u> HOLE NO. <u>MW-1</u></p> |
| | | <p>Cohesive Consistency 0-4 Soft 30 + Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff</p> | |

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

SHEET 1 OF 2
DATE 9/30/96
HOLE NO. MW-2/2A
LINE & STA.
OFFSET

TO DUFRESNE-HENRY, INC. ADDRESS NORTH SPRINGFIELD, VT
PROJECT NAME FORMER POLICE, FIRE & RESCUE LOCATION MANCHESTER DEPOT, VT
REPORT SENT TO BRUCE COX PROJ. NO.
SAMPLE SENT TO RETAINED BY DUFRESNE-HENRY OUR JOB NO. 6843-96

| | | | | | |
|---------------------------|----------------|--------|---------------|-------------|---------------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | SURFACE ELEV. |
| AT 8' | AT IMMEDIATELY | Hours | Type | HSA | SS |
| AT | AT | Hours | Size I. D. | 4 1/4" | 1 1/2" |
| | | | Hammer Wt. | 140# | BIT |
| | | | Hammer Fall | 30" | |
| | | | DATE STARTED | 9/30/96 | |
| | | | DATE COMPL. | 9/30/96 | |
| | | | BORING FORMAN | M.D. & M.H. | |
| | | | INSPECTOR | B. COX | |
| | | | SOILS ENGR. | | |

LOCATION OF BORING BEHIND OLD POLICE STATION

| Depth | CASING BLOWS PER FOOT | SAMPLE DEPTHS FROM-TO | TYPE OF SAMPLE | Blows per 6" on sampler | | | MOISTURE DENSITY OF CONSTANT | STRATA CHANGE ELEV. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness, Drilling time, seams and ect | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|--|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | NO. | PEN | REC |
| | | | | | | | MW-2: | 2" | BITUMINOUS CONCRETE | | | |
| 5' | | 5' - 7' | SS | 7 | 10 | | MED. DENSE WET | | BOULDERS AND GRAVELS WITH OLD TOPSOIL | 1 | 24" | 3" |
| | | 7' - 9' | SS | 4 | 5 | | | | SAME MATERIAL | 2 | 24" | 11" |
| | | 9' - 11' | SS | 4 | 11 | | | 8'6" | OLD GROUND | | | |
| 10' | | 9' - 11' | SS | 10 | 13 | | MED. DENSE WET | 9' | BROWN SANDY SILTS | 3 | 24" | 12" |
| | | 11' - 13' | SS | 9 | 10 | | | | | 4 | 24" | 12" |
| | | 13' - 15'6" | SS | 10 | 10 | | MED. DENSE WET | | BROWN SANDY GRAVELS WITH COBBLES | | | |
| 15' | | | | 14 | 17 | | | | | 5 | 30" | 24" |
| | | | | 23 | 25 | | | 15' | SAME MATERIAL | | | |
| | | | | 4 | | | LOOSE - WET | 15'6" | BROWN SANDY SILTS | | | |
| 20' | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 5' | | | | | | | MW-2A: | | REDRILLED HOLE WITH 4" FA AND STUCK IN WELL (SLIGHT ODOR OF OIL FROM 0' TO 5') | | | |
| | | 7' - 9' | SS | 4 | 7 | | | | | 1 | 24" | 20" |
| | | | | 10 | 10 | | | | | | | |
| 10' | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | 13'8" | | | | |

| | | | |
|---|---|--|--|
| GROUND SURFACE TO _____ | USED _____ | CASING THEN _____ | summary |
| Sample Type D-Dry C-Cored W-Washed UP-Unfinished 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 an 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30 + Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff |
| | | | EARTH BORING _____ ROCK CORING _____ SAMPLES _____ HOLE NO. MW-2/2A |

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

SHEET 2 OF 2
DATE 9/30/96
HOLE NO. MW-2/2A
LINE & STA.
OFFSET

TO DUFRESNE-HENRY, INC. ADDRESS NORTH SPRINGFIELD, VT
PROJECT NAME FORMER POLICE, FIRE & RESCUE LOCATION MANCHESTER DEPOT, VT
REPORT SENT TO BRUCE COX PROJ. NO.
SAMPLE SENT TO RETAINED BY DUFRESNE-HENRY OUR JOB NO. 6843-96

| | | | | | |
|---------------------------|----------------------|-------------------|---------|----------|---------------------------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | SURFACE ELEV. |
| AT 8' | AT IMMEDIATELY HOURS | Type HSA | SS | | DATE STARTED 9/30/96 |
| | | Size I. D. 4 1/4" | 1 1/2" | | DATE COMPL. 9/30/96 |
| | | Hammer Wt. | 140# | BIT | BORING FORMAN M.D. & M.H. |
| AT | AT HOURS | Hammer Fall | 30" | | INSPECTOR B. COX |
| | | | | | SOILS ENGR. |

LOCATION OF BORING BEHIND OLD POLICE STATION

| Depth | CASING BLOWS PER FOOT | SAMPLE DEPTHS FROM-TO | TYPE OF SAMPLE | Blows per 6" on sampler | | | MOISTURE DENSITY OF CONSTANT | STRATA CHANGE ELEV. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness, Drilling time, seams and ect. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | NO. | PEN | REC |
| | | | | | | | | | TOP OF WELL AT 3'10" | | | |
| | | | | | | | | | BOTTOM OF WELL AT 13'8" | | | |
| | | | | | | | | | SILICA SANDS FROM 2'5" TO 13'8" | | | |
| | | | | | | | | | BENTONITE SEAL FROM 1' TO 2'6" | | | |
| | | | | | | | | | MATERIALS USED: | | | |
| | | | | | | | | | 10' OF 2" PVC 0.010" SCREEN | | | |
| | | | | | | | | | 4' OF 2" PVC SOLID | | | |
| | | | | | | | | | 10# OF BENTONITE CHIPS | | | |
| | | | | | | | | | 175# OF SAND | | | |
| | | | | | | | | | 40# OF CEMENT MIX | | | |
| | | | | | | | | | 1 2" EXPANSION CAP | | | |
| | | | | | | | | | 1 2" SCREW CAP | | | |
| | | | | | | | | | 1 8" MANHOLE | | | |

GROUND SURFACE TO 15'6" USED HSA CASING THEN DROVE SS 30"

| | | | | |
|---|---|--|--|---|
| Sample Type D-Dry C-Cored W-Washed UP-Unfinished 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 an 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense | Cohesive Consistency 0-4 Soft 30 + Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff | summary EARTH BORING 15'6" ROCK CORING SAMPLES 6 HOLE NO. MW-2/2A |
|---|---|--|--|---|

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

TO DUFRESNE-HENRY, INC. ADDRESS NORTH SPRINGFIELD, VT
PROJECT NAME FORMER POLICE, FIRE & RESCUE LOCATION MANCHESTER DEOPOT, VT
REPORT SENT TO BRUCE COX PROJ. NO. _____
SAMPLE SENT TO RETAINED BY DUFRESNE-HENRY OUR JOB NO. 6843-96

SHEET 1 OF 1
DATE 9/30/96
HOLE NO. MW-3
LINE & STA. _____
OFFSET _____

| | | | | | |
|---------------------------|-----------------------------|--------------------------|---------------|-----------|--------------------------------------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | SURFACE ELEV. |
| AT <u>6'7"</u> | AT <u>IMMEDIATELY</u> HOURS | Type <u>HSA</u> | <u>SS</u> | _____ | DATE STARTED <u>9/30/96</u> |
| AT _____ | AT _____ HOURS | Size I. D. <u>4 1/4"</u> | <u>1 1/2"</u> | _____ | DATE COMPL. <u>9/30/96</u> |
| | | Hammer Wt. _____ | <u>140#</u> | BIT _____ | BORING FORMAN <u>M.D. & M.H.</u> |
| | | Hammer Fall _____ | <u>30"</u> | _____ | INSPECTOR <u>B. COX</u> |
| | | | | | SOILS ENGR. _____ |

LOCATION OF BORING FRONT OF RESCUE BUILDING

| Depth | CASING BLOWS PER FOOT | SAMPLE DEPTHS FROM-TO | TYPE OF SAMPLE | Blows per 6" on sampler | | | MOISTURE DENSITY OF CONSTANT | STRATA CHANGE ELEV. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness. Drilling time, seams and ect. | SAMPLE | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|------|----------|------------------------------|---------------------|---|--------|-----|-----|
| | | | | From 0-6 | 6-12 | To 12-18 | | | | NO. | PEN | REC |
| | | | | | | | | 4' | BITUMINOUS CONCRETE | | | |
| | | | | | | | MED. DENSE | | BROWN SILTS AND FINE SANDS TRACE OF GRAVELS (FILL) | | | |
| 5' | | 5' - 7' | SS | 3 | 7 | | | | | 1 | 24" | 18" |
| | | | | 8 | 11 | | | 6' | OLD GROUND | | | |
| | | | | | | | MED. DENSE WET | 9'+/- | BROWN AND GREY LOAMY GRAVELLY SILTS | | | |
| 10' | | 10' - 12' | SS | 10 | 10 | | | | | 2 | 24" | 20" |
| | | | | 17 | 9 | | MED. DENSE WET | | GREY SANDY SILTS WITH FINE GRAVEL LAYERS | | | |
| 15' | | 15' - 17' | SS | WH | 3 | | | | | 3 | 24" | 23" |
| | | | | 2 | 3 | | | 17' | SAME MATERIAL | | | |
| 20' | | | | | | | | | TOP OF WELL AT 5'4" BOTTOM OF WELL AT 15'4" SILICA SANDS FROM 2' TO 15'4" BENTONITE SEAL FROM 1' TO 2' | | | |
| | | | | | | | | | MATERIALS USED: 10' OF 2" PVC 0.010" SCREEN 5' OF 2" PVC SOLID 25# OF BENTONITE CHIPS 200# OF SAND 40# OF CEMENT MIX 1 2" EXPANSION CAP 1 2" SLIDE CAP 1 6" MANHOLE | | | |

GROUND SURFACE TO 17'

USED HSA CASING THEN DROVE SS 24"

Sample Type
D-Dry C-Cored W-Washed
UP-Unfinished Piston
TP-Test Pit A-Auger V-Vane 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 an 2" O.D. Sampler
Cohesionless Density
0-10 Loose
10-30 Med. Dense
30-50 Dense
50+ Very Dense
Cohesive Consistency
0-4 Soft 30 + Hard
4-8 M/Stiff
8-15 Stiff
15-30 V-Stiff

summary

EARTH BORING 17'
ROCK CORING _____
SAMPLES 3
HOLE NO. MW-3

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

TO DUFRESNE-HENRY, INC. ADDRESS NORTH SPRINGFIELD, VT
PROJECT NAME FORMER POLICE, FIRE & RESCUE LOCATION MANCHESTER DEOPOT, VT
REPORT SENT TO BRUCE COX PROJ. NO. _____
SAMPLE SENT TO RETAINED BY DUFRESNE-HENRY OUR JOB NO. 6843-96

SHEET 1 OF 1
DATE 9/30/96
HOLE NO. MW-4
LINE & STA. _____
OFFSET _____

| | | | | | |
|---------------------------|-----------------------------|--------------------------|---------------|-----------|--------------------------------------|
| GROUND WATER OBSERVATIONS | | CASING | SAMPLER | CORE BAR | SURFACE ELEV. |
| AT <u>5'6"</u> | AT <u>IMMEDIATELY</u> HOURS | Type <u>HSA</u> | <u>SS</u> | _____ | DATE STARTED <u>9/30/96</u> |
| _____ | _____ HOURS | Size I. D. <u>4 1/4"</u> | <u>1 1/2"</u> | _____ | DATE COMPL. <u>9/30/96</u> |
| AT _____ | AT _____ HOURS | Hammer Wt. _____ | <u>140#</u> | BIT _____ | BORING FORMAN <u>M.D. & M.H.</u> |
| _____ | _____ HOURS | Hammer Fall _____ | <u>30"</u> | _____ | INSPECTOR <u>B. COX</u> |
| | | | | | SOILS ENGR. _____ |

LOCATION OF BORING FRONT OF FORMER FIRE STATION

| Depth | CASING BLOWS PER FOOT | SAMPLE DEPTHS FROM-TO | TYPE OF SAMPLE | Blows per 6" on sampler | | | MOISTURE DENSITY OF CONSTANT | STRATA CHANGE ELEV. | SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness, Drilling time, seams and ect | SAMPLE | | | |
|-------|-----------------------|-----------------------|----------------|-------------------------|------|-------|------------------------------|---------------------|---|--------|-----|-----|--|
| | | | | From 0-6 | 6-12 | 12-18 | | | | NO. | PEN | REC | |
| | | | | | | | | 2' | BITUMINOUS CONCRETE | | | | |
| 5' | | | | | | | | | BROWN LOAM, WOOD, SILTS, FINE SANDS - TRACE OF GRAVELS (FILL) SAME MATERIAL | | | | |
| | | 5' - 7' | SS | 4 | 5 | | | | | 1 | 24" | 16" | |
| | | | | 8 | 7 | | | | | | | | |
| 10' | | 10'6" - 12'6" | SS | 27 | 32 | | | 10' | | 2 | 24" | 14" | |
| | | | | 14 | 9 | | | | | | | | |
| 15' | | | | | | | | 13' | BROWN GRAVELLY SILTS AND SANDS WITH BOULDERS AND COBBLES | | | | |
| | | 15'6" - 17'6" | SS | 2 | 4 | | | | GREY SILTS | 3 | 24" | " | |
| | | | | 4 | 3 | | | | | "LO ST | | | |
| 20' | | | | | | | | 17'6" | SAME MATERIAL | | | | |
| | | | | | | | | | TOP OF WELL AT 5'5" BOTTOM OF WELL AT 15'5" SILICA SANDS FROM 2' TO 15'5" BENTONITE SEAL FROM 1' TO 2' MATERIALS USED: 10' OF 2" PVC 0.010" SCREEN 5' OF 2" PVC SOLID 5# OF BENTONITE CHIPS 100# OF SAND 40# OF CEMENT MIX 1 2' EXPANSION CAP 1 2' SCREW CAP 1 6" MANHOLE | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

GROUND SURFACE TO 17'6" USED HSA CASING THEN DROVE SS 24"

| | | | | |
|---|---|--|---|---|
| <p>Sample Type D-Dry C-Cored W-Washed UP-Unfinished Piston TP-Test Pit A-Auger V-Vane Test UT-Undisturbed Thinwall</p> | <p>Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p> | <p>140 lb. wt. x 30"-fall an 2" O.D. Sampler Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense</p> | <p>Cohesive Consistency 0-4 Soft 30 + Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff</p> | <p align="center">summary</p> <p>EARTH BORING <u>17'6"</u> ROCK CORING _____ SAMPLES <u>3</u> HOLE NO. <u>MW-4</u></p> |
|---|---|--|---|---|

FORMER POLICE, FIRE, AND RESCUE COMPLEX
INITIAL SITE INVESTIGATION
MANCHESTER, VERMONT

9/30/96

Dufresne-Henry, Inc. - Bruce Cox on site at 7:55 am.

M & W Soils Engineering, Inc. - Myron Domingue, Mike Hitchcock on site at 8:40 am.

MW-1

Started boring at 8:45 am. The rig and other equipment had been steam cleaned prior to arrival on site. All water used for cleaning split spoons and other tools was brought to the site by the boring contractor. Drilled with 4 1/4" hollow stem augers taking continuous split spoon samples starting at 3'6". All samples were screened for VOC's with an HNnu PI-101 (10.2 eV lamp, calibrated with isobutylene). Representative soil samples from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. No analytical soil samples were collected. Total depth of the boring was 17' with no refusal to depth. The general geologic column is gravel to 3'6", gravelly sand to 5'6", silt to 7'6", gravel to 10', and silt to the limit of the boring. No evidence of contamination by visual or olfactory senses was observed in the samples or on the tools. All PID readings were 0 ppm. The water table was encountered at approximately 7'6". Installed a 10' long, 2" diameter, .010" machine slotted, threaded, flush joint, Schedule 40 PVC well at 15.3'. All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 1.8'. A bentonite seal was installed from 1.3' - 1.8'. A watertight aluminum monitoring well box was grouted in at the surface.

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

MW-2

Started boring at 10:35 am. The rig and other equipment had been steam cleaned prior to arrival on site. All water used for cleaning split spoons and other tools was brought to the site by the boring contractor. Drilled with 4" solid stem augers taking split spoon samples at 5' intervals starting at 5'. All samples were screened for VOC's with an HNnu PI-101 (10.2 eV lamp, calibrated with

isobutylene). Representative soil samples from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. No analytical soil samples were collected. Total depth of the boring was 15.5' with refusal as described below. The general geologic column is gravel to 7', silt to 9', gravel to 15', and silt to the limit of the boring. In the initial boring, no evidence of contamination by visual or olfactory senses was observed in the samples or on the tools. All PID readings were 0 ppm. The water table was encountered at approximately 7'. In attempting to ream the hole with 4 1/4" hollow stem augers, refusal was encountered on boulders above the bottom. Offset 3' to the west. Augered to 14' with 4" solid stem augers. At a depth less than 5', slightly oily smelling soil was encountered. Installed a 10' long, 2" diameter, .010" machine slotted, threaded, flush joint, Schedule 40 PVC well at 13'8". All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 2.5'. A bentonite seal was installed from 1' - 2.5'. A watertight aluminum monitoring well box was grouted in at the surface.

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

MW-3

Started boring at 1:25 pm. The rig and other equipment had been steam cleaned prior to arrival on site. All water used for cleaning split spoons and other tools was brought to the site by the boring contractor. Drilled with 4 1/4" hollow stem augers taking split spoon samples starting at 5' intervals starting at 5'. All samples were screened for VOC's with an HNu PI-101 (10.2 eV lamp, calibrated with isobutylene). Representative soil samples from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. No analytical soil samples were collected. Total depth of the boring was 17' with no refusal to depth. The general geologic column is sand to 5', old ground to 6', silt to 9', gravel to 15', and silt to the limit of the boring. No evidence of contamination by visual or olfactory senses was observed in the samples or on the tools. All PID readings were 0 ppm. The water table was encountered at approximately 7'. Installed a 10' long, 2" diameter, .010" machine slotted, threaded, flush joint, Schedule 40 PVC well at 15.3'. All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 2'. A bentonite seal was installed from 1' - 2'. A watertight aluminum monitoring well box was grouted in at the surface.

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

MW-4

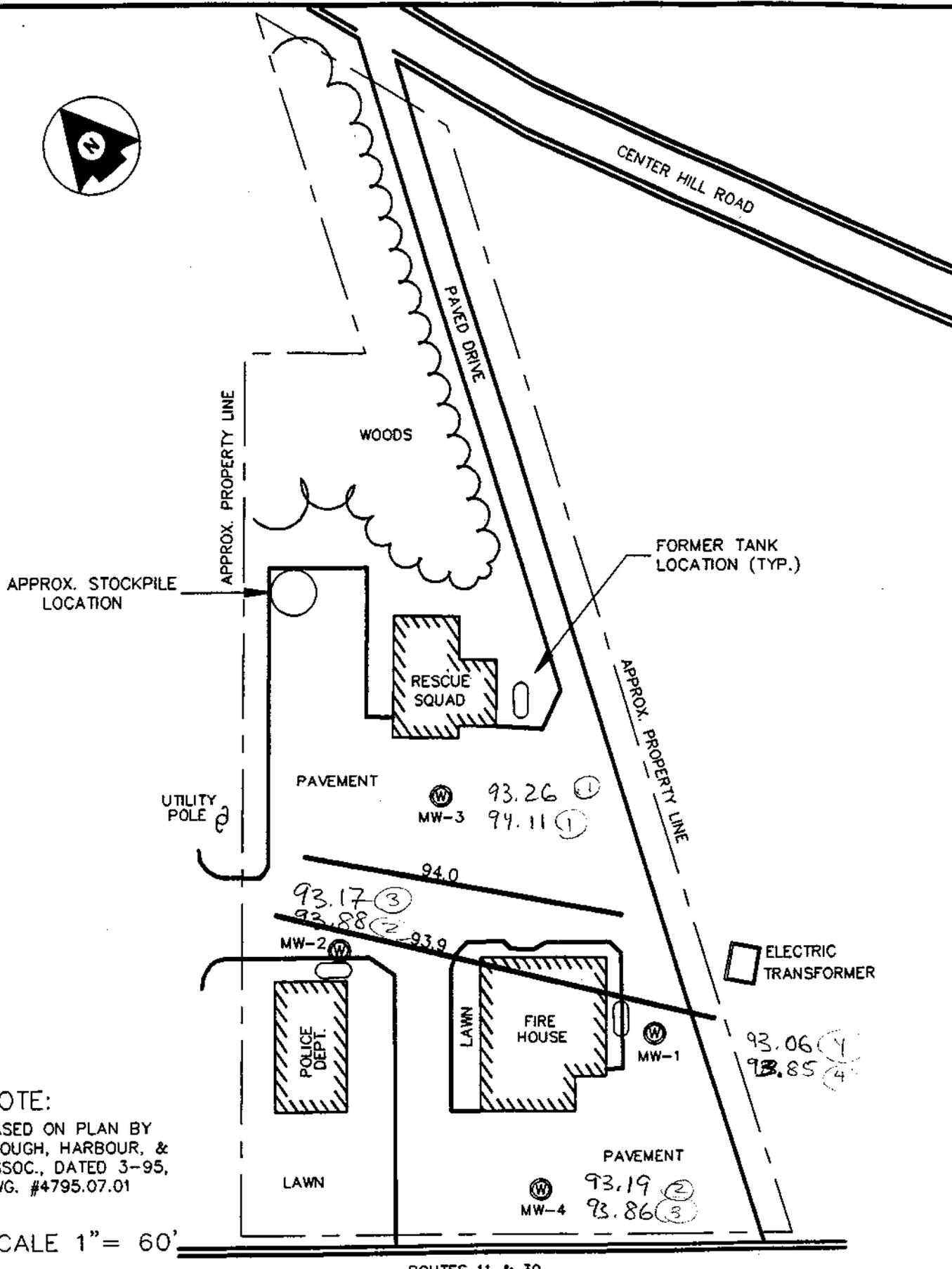
Started boring at 2:55 am. The rig and other equipment had been steam cleaned prior to arrival on site. All water used for cleaning split spoons and other tools was brought to the site by the boring contractor. Drilled with 4" solid stem augers taking split spoon samples starting at 5' intervals starting at 5'. All samples were screened for VOC's with an HNu PI-101 (10.2 eV lamp, calibrated with isobutylene). Representative soil samples from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. No analytical soil samples were collected. Total depth of the boring was 17' with no refusal to depth. The general geologic column is sandy fill to 5', silt to 10', gravel to approximately 15', and probable silt to the limit of the boring. No evidence of contamination by visual or olfactory senses was observed in the samples or on the tools. All PID readings were 0 ppm. The water table was encountered at approximately 7'. Installed a 10' long, 2" diameter, .010" machine slotted, threaded, flush joint, Schedule 40 PVC well at 15'. All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 1'. A bentonite seal was installed from 1' - 2'. A watertight aluminum monitoring well box was grouted in at the surface.

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

Visitors: Town of Manchester Sewer Department in the am.
Weather: Mostly sunny, 40's - 60's, light wind.
Off site: BHC at 4:10 pm. M&WSEI grouting monitoring well boxes.

APPENDIX E

GROUNDWATER CONTOUR MAP



APPROX. STOCKPILE LOCATION

APPROX. PROPERTY LINE

WOODS

PAVED DRIVE

CENTER HILL ROAD

FORMER TANK LOCATION (TYP.)

RESCUE SQUAD

PAVEMENT

MW-3 93.26 (1)
94.11 (1)

UTILITY POLE

APPROX. PROPERTY LINE

94.0

93.17 (3)
93.88 (2)

MW-2
POLICE DEPT.

LAWN
FIRE HOUSE
MW-1

ELECTRIC TRANSFORMER

93.06 (4)
93.85 (4)

LAWN

PAVEMENT

MW-4 93.19 (2)
93.86 (3)

NOTE:
BASED ON PLAN BY
CLOUGH, HARBOUR, &
ASSOC., DATED 3-95,
DWG. #4795.07.01

SCALE 1" = 60'

ROUTES 11 & 30

D **H**
Duffano-Henry, Inc.
A DHI Company
Precision Park
No. Springfield,
Vermont 05150
Tel. (802)886-2261 Fax (802)886-2260

GROUNDWATER CONTOURS
OBSERVED 10/22/98 AT THE FORMER
TOWN OF MANCHESTER
POLICE, FIRE, & RESCUE COMPLEX
MANCHESTER, VERMONT

| |
|---------------------|
| Project No. 4160053 |
| Proj. Mgr. B.H.C. |
| Date NOV., '98 |
| SP-1 |

FORMER POLICE, FIRE, AND RESCUE COMPLEX
MANCHESTER, VERMONT

SUMMARY TABLE – WATER TABLE ELEVATIONS

| DATE | MW-1 | MW-2 | MW-3 | MW-4 |
|----------|-------|-------|-------|-------|
| 10/3/96 | 93.06 | 93.17 | 93.26 | 93.19 |
| 10/22/96 | 93.85 | 93.88 | 94.11 | 93.86 |

APPENDIX F

CONTRACT LABORATORY ANALYTICAL REPORT



eastern analytical

professional laboratory services

Oscar Garcia
Dufresne-Henry
Precision Park
North Springfield, VT 05150

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 6820 DUFVT
Client Identification: Manchester PFR
Date Received: 10/04/96
Sample Quantity/Type: 6 aqueous

Dear Mr. Garcia:

Enclosed please find the laboratory report for the above identified project. All analyses were subjected to rigorous quality control measures to assure data accuracy.

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

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

If you have any questions regarding the results contained within, please feel free to directly contact me, the department supervisor, or the analytical chemist who performed the testing in question.

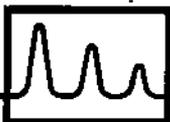
We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Will Brunkhorst, President

10/17/96

Date



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 6820 DUFVT

Client: Dufresne-Henry

Client Designation: Manchester PFR

Volatile Organic Compounds

| Sample ID: | MW-1 | MW-2 | MW-3 | MW-4 | MW-A |
|-------------------|---------|---------|---------|---------|---------|
| Matrix: | Aqueous | Aqueous | Aqueous | Aqueous | Aqueous |
| Date Received: | 10/3/96 | 10/3/96 | 10/3/96 | 10/3/96 | 10/3/96 |
| Units: | µg/L | µg/L | µg/L | µg/L | µg/L |
| Date of Analysis: | 10/8/96 | 10/8/96 | 10/8/96 | 10/8/96 | 10/8/96 |
| Analyst: | TML | TML | TML | TML | TML |
| EPA Method: | 8020 | 8020 | 8020 | 8020 | 8020 |
| Benzene | < 1 | < 1 | < 1 | < 1 | < 1 |
| Toluene | < 1 | < 1 | < 1 | < 1 | < 1 |
| Ethylbenzene | < 1 | < 1 | < 1 | < 1 | < 1 |
| Total Xylenes | < 1 | < 1 | < 1 | < 1 | < 1 |
| Chlorobenzene | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPA Method: | 8015 | 8015 | 8015 | 8015 | 8015 |
| MTBE | < 20 | < 20 | < 20 | < 20 | < 20 |

Approved By: Clifford Chase, Volatile Organics Supervisor

