

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

LETTER OF TRANSMITTAL

NOV 08 1994

(802) 886-2261

TO AGENCY OF NATURAL RESOURCES
DEPT. OF ENVIRON. CONSERV.
HAZ. MAT. MAN. DIV.
103 SOUTH MAIN ST/WEST OFFICE
WATERBURY, VT 05671-0404

DATE 11/7/94	JOB NO. 414030
ATTENTION MR. RICHARD GLESE	
RE: J.C. PENNET BENNINGTON SQUARE	

GENTLEMEN:

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

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1			REPORT - INITIAL SITE INVESTIGATION J.C. PENNET - BENNINGTON SQUARE BENNINGTON, VT

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SIGNED: Bruce Col

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NOV 0 8 1994

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

**INITIAL
SITE INVESTIGATION**

**J.C. Penney
Bennington Square
Bennington, VT 05201**

**SMS Site #94-1578
UST Facility #Unknown**

**A Facility Owned By:
Juster Development Co.
P.O. Box 18872
Washington, DC 20036
(202) 785-0388
Contact: John Dell'Anno**

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

November 7, 1994

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EXECUTIVE SUMMARY

An Initial Site Investigation has been completed at J.C. Penney in the Bennington Square shopping plaza in Bennington, Vermont. The investigation was in response to the discovery of #2 heating oil contaminated soil during a Tank Closure Assessment in January 1994. The problem appears to have been discovered in November 1993. The Closure Assessment noted the tank as failed with an estimated release volume between 1,200 gallons and 1,500 gallons. Approximately 5 to 10 cubic yards of soil was stockpiled on-site. Three test pit monitoring wells were also installed at that time.

Three additional groundwater monitoring wells were installed in the presumed downgradient direction from the former UST. PID readings of soil boring samples were below State guidelines for backfilling. Two of the three Dufresne-Henry wells and two of the three Enman Engineering wells were sampled and analyzed by EPA Method 602/8015. Only one well, that immediately adjacent to the former UST, had compounds above detection limits. Total BTEX was 60 $\mu\text{g}/\text{L}$ with no Benzene detected.

All properties in the vicinity of the site are on the municipal water system. The water supply will not be impacted. The nearest potential surface water receptor is the Roaring Branch of the Walloomsac River, approximately 100 feet south of the site. Available water table data indicates the direction of groundwater flow may be away from the river.

No corrective action for in-situ contamination is recommended at this time. It is recommended that the stockpile be analyzed and disposed of properly, and that one additional round of sampling be performed. Additional recommendations for corrective action or site monitoring will be made upon receipt of those results.

**INITIAL SITE INVESTIGATION
BENNINGTON SQUARE - J.C. PENNEY
BENNINGTON, VERMONT**

Introduction

Bennington Square is located on Kocher Drive in Bennington, Vermont. The J.C. Penney store is in the western 1/3 of the plaza. A site location map is included as Appendix A.

Enman Engineering, PC performed a Tank Closure Assessment at the site on January 31, 1994. The subject was one (1) 4,100 gallon #2 heating oil fiberglass UST. The condition of the tank was noted as failed. An estimated 1,200 to 1,500 gallons of product was released. Evidence of contaminated soil and groundwater was discovered. PID readings up to 30 ppm were observed. The water table was encountered at 5' - 6'. Three monitoring wells were installed in test pit excavations at the time of the closure assessment. Approximately 5 to 10 cubic yards of soil was stockpiled on-site.

Work and Health and Safety Plans

As a result of the findings of the Tank Closure Assessment, the Sites Management Section (SMS) requested an Initial Site Investigation in its letter to Juster Development Co. dated April 1, 1994. Dufresne-Henry, Inc. became involved with the project in late August 1994. Dufresne-Henry prepared a Work Plan, and a Health and Safety Plan for the proposed activities at the site. A copy of the work plan was sent to the HMMD for review on August 25, 1994 and additional information forwarded on August 31, 1994. The work plan was approved by the SMS

on August 31, 1994. 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 Bennington Square shopping plaza is located in the southeastern quadrant of the intersection of Kocher Drive/Northside Drive and VT Route 7. The site consists of one large building containing the majority of the stores, and two separate businesses. J.C. Penney is located in the western 1/3 of the plaza. The paved parking area is located on the north, west, and east sides of the plaza. There is a paved area to the south of the plaza for employee parking and truck traffic. The former UST at J.C. Penney was located immediately west of the at-grade shipping and receiving dock at the southeast corner of the store. At the time this study was performed, approximately 10 to 20 cubic yards of soil from the Tank Closure Assessment was stockpiled on the south side of the shipping and receiving dock. The pile was not polyencapsulated. The tank excavation had not been repaved.

The plaza property is surrounded by Kocher Drive and commercial-industrial property to the north, residential property to the east, the Roaring Branch and vacant land to the south, and VT Route 7 and commercial-industrial property to the west. The overall site is nearly level. The on-site stormwater system appears to discharge to the Roaring Branch of the Walloomsac River. The Roaring Branch is located approximately 100 feet south of the release site. The plaza property is on the municipal water and wastewater systems.

Site History

The history of the site is not completely known. J.C. Penney has occupied their current location since 1979. They apparently took possession shortly after the plaza was constructed. With the exception of the heating oil tank, no hazardous or regulated substances are stored or used in the J.C. Penney building.

Monitoring Well Installation

Three (3) of the proposed four shallow groundwater monitoring wells were installed on September 21 and 22, 1994 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 DH-1 through DH-3. Well DH-1 was installed immediately to the west of the pavement cut for the UST excavation. Well DH-2 was installed on the opposite side of the truck access road southwest of the former tank. Well DH-3 was installed further to the west from the former tank site than DH-1. The fourth proposed monitoring well was not installed due to difficult drilling conditions and because the apparent westerly end of the plume had been found. For purposes of this report the previously installed monitoring wells are designated EE-1 through EE-3. 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 depending on discovered and expected conditions. All samples were screened for the presence of Volatile Organic Compounds (VOC's) with an HNU PI-101 photoionization detector (10.2 eV lamp, calibrated with isobutylene). In DH-1 PID readings ranging from .2 ppm to 1 ppm were observed in all samples when headspaced at ambient temperature. A slight heating oil-like odor was observed in

soil from the auger flights at a depth of less than 10'. No visual evidence of contamination was observed in the samples or on the drilling tools. Soil consists of cobbles and boulders in a silty sand matrix. In DH-2, no evidence of contamination (visual, olfactory, or PID readings) were observed in the samples or on the tools. Soil were the same as observed in DH-1. In TB-1, a heating oil-like odor was noted from near the bottom of the boring. A PID reading of 9 ppm was observed. Given that evidence of contamination, the boring was abandoned and the location moved further to the west. In TB-2, an auger was broken off due to the difficult drilling conditions. A very slight oil odor was observed in samples below 5'. As a result of the bit and auger in the hole, the boring was abandoned and moved further to the west. In MW-3, refusal on the augers was at 7'6". An attempt was made to advance the boring using a 2 15/16" diameter roller bit. The bit was destroyed with no progress made. A well was installed although the depth of refusal was above the water table elevation at the time. It is expected that the well will contain water on a seasonal basis. The augers had a very faint oil odor upon removal. Due to the difficult drilling conditions and having apparently reached the end of the plume, no attempt was made to install the fourth well originally proposed.

A two inch diameter PVC monitoring well was installed at each well location. The well in DH-1 consists of 8' of .020" machine slotted screen, while DH-2 and DH-3 consist of 5' of the same material. 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.

Site Geology

Surficial geology at the site is published as glacial outwash. Outwash consists of generally horizontal layers of sand and gravel. In the vicinity of the site, the sediment has been reworked by both recent and Pleistocene flooding of the Roaring Branch.

The result is that most of the gravel fraction is dominated by cobbles and boulders in a silty sand matrix. The bed of the Roaring Branch consists of rounded cobbles and boulders of various rock types and sizes, indicative of their glacio-fluvial heritage.

Due to the overburden in the vicinity of the project, there are few bedrock outcroppings. As a result, published maps do not show the bedrock type in the area. Probable bedrock is Cheshire Quartzite or Dunham Dolomite. Both are of Lower Cambrian age. The quartzite in particular is very hard, partially explaining why drilling at the site is very difficult.

Site Hydrogeology

The proximity of the Roaring Branch of the Walloomsac River immediately to the south is presumed to control the regional direction of groundwater movement. The location of the former tank is approximately 100 feet from the river. The flow of the Roaring Branch in this area is primarily to the west.

As noted above the site soil consists of cobbles and boulders in a silty sand matrix. The silt is in proportions high enough to reduce the overall permeability of the deposit. Preferential pathways undoubtedly exist in areas where the sands and gravels are cleaner, i.e. have a lower fines content.

At the time that groundwater samples were obtained on September 26, 1994, the water levels in the wells was approximately 6.5' to 7' below the ground surface. The available data indicates the general direction of groundwater movement to be to the northwest. The gradient is moderately steep at approximately 1.2%. The water table elevations observed at the EE series of wells are slightly suspect due to the method of installation. Those wells were installed in test pits. The backfill around the wells can not be compacted as densely as the native soil. Although plastic was installed at

the surface, erosion around the edges indicated excess infiltration. Approximately 1.75" of rain fell between September 23 and September 26. It is suspected that the test pits may have acted as "bath tubs" giving a higher water table elevation than actually existed. A site sketch showing approximate water table contours as of the date of sampling is included as Appendix F.

Potential Receptors

All properties in the vicinity of the site are on the municipal water supply system. The Town of Bennington water supply is a surface impoundment on VT Route 9 far from the site, and Morgan Spring located south of Gage Street and east of Safford Street. Morgan Spring is generally used as an emergency supply. It is separated from the site by the Roaring Branch and a distance of about three-quarters of a mile. The only identified potential receptor is the Roaring Branch located approximately 100 feet to the south. At the time of the investigation the channel nearest the plaza was dry until a short distance downstream of the western edge of the J.C. Penney building. No evidence of oil sheens on the water, breakout on the stream bank, or stressed vegetation was observed. The plaza has a slab on grade foundation.

Monitoring Well Sampling

The three Dufresne-Henry monitoring wells and the three previously installed monitoring wells were sampled on September 26, 1994 following the standard protocols which accompanied our work plan. Wells DH-3 and EE-1 were dry as of that date. The bottom of DH-1 is approximately at the water table, EE-1 is apparently full of sediment to the water table. The sampling was performed by Dufresne-Henry personnel. Three well volumes were purged prior to drawing a sample. No free product was observed in any well. The refrigerated samples were

sent to Eastern Analytical, Inc of Concord, New Hampshire on September 26, 1994 via overnight service. The samples were analyzed for the VOC's BTEX and MTBE by EPA Method 602/8015. A copy of the contract laboratory analytical report is included in Appendix F.

The analysis found Toluene, Ethylbenzene, and Total Xylenes in well DH-1 at concentrations of 3 $\mu\text{g/L}$, 2 $\mu\text{g/L}$, and 55 $\mu\text{g/L}$ respectively. These concentration are significantly below the Vermont Enforcement Standards of 2,420 $\mu\text{g/L}$, 680 $\mu\text{g/L}$, and 400 $\mu\text{g/L}$ respectively. No compounds above detection limits for the method used were found in any of the other wells.

Summary and Recommendations

Potential problems with the 4,100 gallon #2 heating oil UST at J.C. Penney were apparently discovered in November 1993. The tank removal and Closure Assessment took place in late January 1994. The Closure Assessment, performed by a different party, noted the tank as failed with the estimated loss of 1,200 to 1,500 gallons of product. Three test pit monitoring wells were installed at that time and 5 to 10 cubic yards of soil stockpiled on site.

As part of this investigation, three (3) additional shallow groundwater monitoring wells were installed on the site. Two of those wells and two of the three previously installed monitoring wells were sampled. Results from the water quality sampling indicate that minimal contamination of groundwater has occurred in the vicinity of the former tank. BTEX concentrations were well below the Vermont Enforcement Standards. Observations during the monitoring well installation indicate that some contamination of soil has occurred. PID readings of soil samples from the borings were below the State guideline for backfilling. PID readings reported during the Tank Closure Assessment were above the threshold, but not by a large margin.

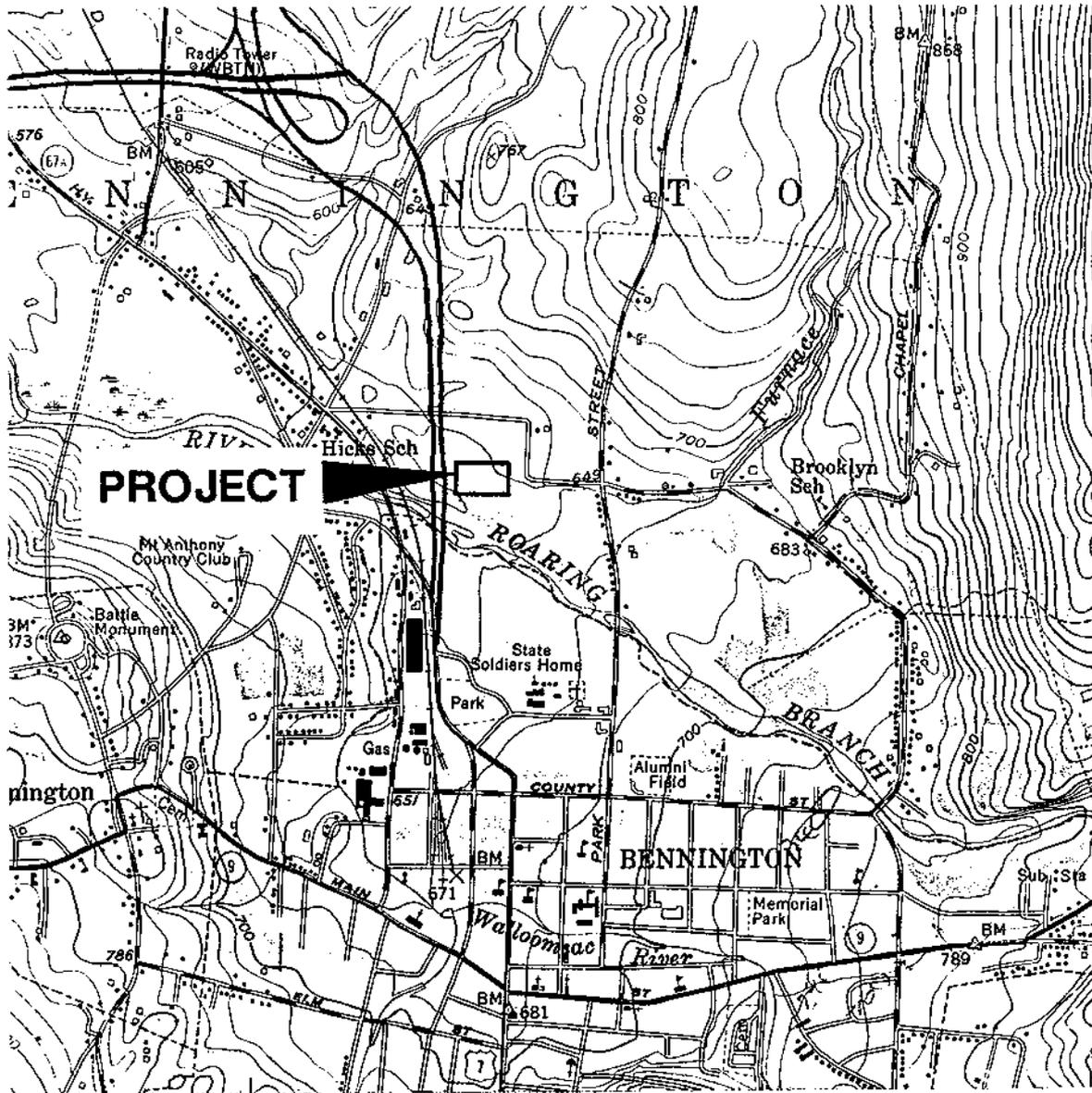
Although suspect, the observed direction of groundwater flow is away from the river. It appears that the plume could have migrated under the building. The lack of free product in all monitoring wells coupled with the low BTEX concentrations is evidence that the oil is no longer in the vicinity of the former tank. A period of 10 months has elapsed between the discovery of the problem and this investigation. Given the gravelly nature of the site and a heavy spring runoff, it is possible that the plume has dispersed and diluted to a significant degree. The lack of pavement over the tank removal excavation has likely been a contributing factor. It is our understanding the pavement has been repaired in the last several weeks.

All properties in the vicinity of the site are on the municipal water system. The municipal supplies are at significant distances from the site and will not be impacted. The nearest surface water receptor is the Roaring Branch of the Walloomsac River, approximately 100 feet south of the site.

Based on these findings, corrective action for in-situ contamination is not recommended at this time. Specific recommendations for additional work are as follows.

1. The soil stockpile should be analyzed and disposed of properly.
2. Collect one additional round of samples from all monitoring wells following spring runoff and analyze for BTEX. Recommendations for corrective action or site monitoring will be made upon receipt of those results.

APPENDIX A
SITE LOCATION MAP



PLAN
1:24,000

TAKEN FROM A USGS QUAD. SHEET FOR BENNINGTON, VT

D **D**
Durand-Henry, Inc.
 Precision Park
 No. Springfield,
 Vermont 05430
 Tel. 18021886-2261 Fax 18021886-2260

JUSTER DEVELOPMENT CO.
 BENNINGTON SQUARE

INITIAL SITE INVESTIGATION

BENNINGTON,

VERMONT

Project No. 414038

Proj. Mgr. B.H.C.

Date 10/94

A

APPENDIX B

**SITE INVESTIGATION REQUEST, WORK PLAN,
SITE HEALTH AND SAFETY PLAN**



State of Vermont

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

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Hazardous Materials Management Division
103 South Main Street/West Office
Waterbury, Vermont 05671-0404
(802) 241-3888
FAX (802) 244-5141

April 1, 1994

John Dell'Anno
Justice Development Co.
P.O. Box 365
Yonkers, NY 10704-0365

RE: Petroleum contamination at J.C. Penny, Bennington Square
(Site #94-1578)

Dear Mr. Dell'Anno:

The Sites Management Section (SMS) has received the March 4, 1994 report outlining the subsurface assessment for the above referenced site, conducted by Blair J. Enman, P.E., President of Enman Engineering, P.C. This report summarizes the degree and extent of contamination encountered during the assessment on January 1 and February 1, 1994.

One 4,100 gallon underground storage tank (UST) owned by the Justice Development Co. was removed. An estimated 1200 to 1500 gallons of #2 fuel oil has been released from an existing vertical break in the fiberglass UST. During the tank pull, soils screened within the tank excavation had peak concentrations of 30 ppm as measured by a photoionization detector (PID). Test pits for the three monitoring wells installed indicated a water table at approximately 6 to 7 feet below ground surface. All excavated soil was backfilled since the full extent of the contamination was unknown.

The Roaring Branch of the Walloonsac River is located 100 feet from the release site. Based on the above information, the SMS has determined that additional work is necessary at the site in order to determine the severity of contamination present. Therefore, the SMS is requesting that the Justice Development Co. retain the services of a qualified environmental consultant to perform the following:

1. Further define the degree and extent of contamination to the soil. This may be accomplished by obtaining soil borings, digging test pits, or performing a soil gas survey.
2. Determine the degree and extent of contamination, if any, to groundwater. This can be accomplished by collecting groundwater samples from the three previously installed monitoring wells and have the samples analyzed for BTEX and MTBE compounds. Additional wells and/or soil borings may need to be installed if the extent of the contamination cannot be determined above.
3. Actively recover any free product measured in the ground in excess of 1/8". If this is done manually, a log must be maintained which documents the dates product is measured, the thickness of the product and the amount removed.
4. Perform an assessment of the site to determine the potential for sensitive receptors to

be impacted by the contamination. This should include basements of adjacent buildings, the Roaring Branch of the Walloonsac River, and any public or private drinking water wells which are located within the vicinity of the site. If any water supplies appear at risk from this contamination, they should be sampled and analyzed using EPA 8020.

5. Determine the need for a long term treatment and/or monitoring plan which addresses the contamination present at the site. The need for such a plan should be based on the results of the above investigations.

6. Submit to the SMS a summary report which outlines the work performed as well as providing conclusions and recommendations. Included should be detailed well logs, analytical data, site map, area map, and a groundwater contour map.

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

The underground storage tanks at J.C. Penny in the Bennington Square are covered by the Petroleum Cleanup Fund as set forth in 10 V.S.A. Section 1941. An owner or permittee of an underground storage tank, who is not in significant violation of his or her permit, is eligible for reimbursement from the fund. The owner or permittee must pay for the removal or repair of the failed tank and for the first \$10,000 of the cleanup; after that the fund will reimburse the tank owner or permittee for additional cleanup costs up to \$1 million. Attached please find the document titled "Reimbursement Package for the Petroleum Cleanup Fund" which further explains this program. Additionally, the Secretary of the Agency of Natural Resources reserves the right to seek cost recovery of fund monies spent at the site if the Secretary concludes that the Justice Development Co. was in significant violation of the Vermont Underground Storage Tank statute (10 V.S.A., Chapter 59). If you have any questions, please feel free to call.

Sincerely,



Chuck Schwer, Supervisor
Sites Management Section

cc: Blair J. Enman, Enman Engineering, P.C.
Bennington Selectboard
DEC Regional Office

Proposed Work Plan
Initial Site Investigation

J.C. PENNY
BENNINGTON SQUARE
BENNINGTON, VERMONT

This work plan outlines the monitoring well program, sampling program, and receptor study for the Initial Site Investigation at J.C. Penny at Bennington Square in Bennington, Vermont. Contaminated soil was discovered at the site during a tank closure assessment (performed by others). One 4,100 gallon #2 heating oil UST was removed. Soil PID readings of up to 30 ppm were observed. It was estimated that 1,200 - 1,500 gallons of product were released from a crack in the tank. All excavated soil was backfilled pending additional investigations. Groundwater was encountered at 5 feet to 6 feet. Three monitoring wells were installed in test pits. It is our understanding that those wells may be of questionable quality.

The proposed monitoring wells will be used to help define the extent of the contamination plume and provide basic hydrogeologic data. It is anticipated that four (4) shallow wells will be installed. A site sketch of approximate proposed well locations will be found attached. 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. Hollow stem augers offer the advantages of minimal hole caving, ease of geologic sampling, and relatively easy monitoring well installation. They may be the most cost effective method given the expected subsurface conditions. Monitoring well borings will be taken to a depth of approximately 5' into the prevailing groundwater table or to refusal, whichever occurs first. It is expected that the wells will be 15' 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, or known, zones of contamination. 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 an HNU HW-101 photoionization detector (10.2 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. Soil samples for laboratory analysis may be obtained as part of this project. Water quality samples will not be obtained during the boring program.

MONITORING WELLS

Monitoring wells will be constructed from 2", 0.010" or .020" 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 above and 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. The remainder of the hole will be backfilled with native soil to about 2 feet from the surface. A bentonite seal will be installed and 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. Routine cleaning of equipment, such as split spoons, will use water obtained at the site and a product such as Alconox. Disposal of waste will be at the site. Excess contaminated soil will be polyencapsulated on site.

RECEPTOR STUDY

A field investigation will be performed to identify potential receptors including nearby water supply wells and surface water. The basement of any nearby buildings, if any, will be screened with the PID as deemed necessary.

WATER SAMPLING

Water quality samples will be obtained from all Dufresne-Henry installed monitoring wells following a period of stabilization. Samples will also be

obtained from the three existing monitoring wells, if they contain a sufficient volume, and any other nearby drinking water supplies identified during the receptor study. The samples will be taken by Dufresne-Henry personnel. Protocols for the sampling are on an attached document. Samples will not be obtained from any well exhibiting free product. The samples will be analyzed for VOC's (BTEX & MTBE) by EPA Method 8020 by Eastern Analytical, Inc.

REPORTING

A report summarizing the findings and recommendations of the investigation will be submitted within 45 days of the completion of well installation.

WATER QUALITY SAMPLING TECHNIQUES

Quality Assurance Document

Introduction

Sample collection for groundwater monitoring wells is performed with polyvinyl chloride (PVC) bailers for samples which are analyzed for inorganic parameters, and by Teflon bailers for organic parameters. Surface water samples are hand grab samples. All samples are collected in suitable containers and refrigerated and/or field preserved as appropriate until delivered to a certified laboratory for analysis. Samples are delivered to the laboratory as soon as possible and in all circumstances within the recommended delivery time for specific parameters. A Chain of Custody record is kept for each sample location and sampling occurrence.

Monitoring Wells

The casing and well guard are inspected for signs of vandalism or damage. The condition of the ground surface at the well head is examined for signs of surface water infiltration. Information regarding condition is noted as well as information regarding identification of the lock and key. Well casing diameter is noted. Weather conditions are noted as well as any recent rainfall or drought conditions.

Upgradient wells ("clean") are sampled prior to downgradient wells. Static water level is determined using an electronic water sounder or a tape and weight with an accuracy of ± 0.01 foot. Measurements are recorded to the nearest 0.02 foot from the top of the protective steel casing or monitoring well casing. The PVC bailer is washed with a non-ionic phosphate free detergent and rinsed with distilled water. The depth to the bottom of the well is determined and the volume of water required for purging is calculated. A minimum of three volumes of static water in the well is purged. The purged water is discarded. Teflon bailers are used for sample collection. The Teflon bailers are washed with detergent and rinsed with distilled water between sampling locations.

The color, odor, and turbidity of the sample is noted. Samples are obtained for parameters required for the specific well. An example of the parameters typically obtained immediately after the well has been flushed are: chemical oxygen demand (COD), chloride, and site specific metals. Samples may also be obtained for nitrates, calcium, manganese, sulfates, total organic compounds, total halogenated organic compounds, and volatile organic compounds. If volatile organic analysis (VOA) is required, these samples are obtained first. The VOA sample is slowly released into a clean VOA vial with as little disturbance to the sample as possible. The vial cap is retained in the hand during the process with the Teflon seal protected from all contamination. No free gases are permitted in the sample.

All samples which will be analyzed for dissolved metals and COD are field filtered using a pressurized 0.45u filter. Samples are placed in containers provided by the certified laboratory and labeled with an identification number, date, and method of preservation.

Sampling Protocol Addendum for: J.C. Penny
Bennington Square
Bennington, Vermont

1. The person(s) sampling the wells will utilize an HNU photoionization detector. Immediately upon removal of the well cap, the HNU will be used to make a preliminary determination as to the VOC activity in the well.
2. A bailer will then be lowered into the well to check for the presence of free product floating on the groundwater surface. If free product is found, the well will be purged until product ceases to be observed. Product will be stored in a container that will remain on-site. The well will be allowed to recover and be repurged and checked for free product. If free product is again observed, no water quality samples will be taken. If free product is not observed, the well will be sounded, purged, and sampled as outlined above.
3. Water samples will be forwarded to Eastern Analytical, Inc. of Concord, New Hampshire for analysis. Analysis will be for Volatile Organic Compounds "BTEX" and MTBE by EPA Method 8020.

Surface Water Sampling

Hand grab samples are collected at surface water sampling locations. Samples are obtained from mid-depth of the water column in a field cleaned sampling device. Samples which will be analyzed for dissolved metals, COD, and which have observable turbidity are filtered with a 0.045u filter and immediately preserved. Field parameters of temperature, pH, and specific conductance are also measured in the water column. Conditions in the vicinity of the sampling location are noted, depth of sample below water surface, and general flow conditions.

Sample Preservation and Handling

Samples collected which require fixing with preservative chemicals are placed in sample containers with the appropriate reagent. The samples are placed in insulated chests with ice packs or ice. Samples are kept refrigerated until they are delivered to the laboratory no later than allowable according to the holding times determined by Standard Methods. Sampling personnel contact the laboratory personnel regarding sampling delivery and analysis.

Record Keeping

Field data sheets are utilized to reconstruct sampling conditions at any time after sampling. These sheets shall contain all information regarding the site: name, date, time of sampling, weather, ambient air temperature, identification numbers, and sampler's name. Field data is to include information regarding the condition of the well head and casing, well specifics (total depth, static water level, diameter, length of casing above grade, volume of water purged), sampling date (equipment used, depth sample obtained, physical properties of sample), field measurements of pH, conductivity, temperature, and the number and type of sample containers.

Chain of custody record for all samples shall be maintained. A sample shall be considered to be in the custody of an individual if it is in the direct view of, or otherwise controlled by, the individual in custody. Storage of samples during custody shall be accomplished according to established preservation techniques in appropriately sealed and numbered storage containers. Chain of custody shall be maintained during the exchange of the samples or sealed sample container directly transferred from one individual to the next with the former custodian witnessing the signature of the recipient on the chain of custody record. Chain of custody forms shall contain the following information: sample location names, field identification numbers, signature of collector, date and time of collection, number of containers transferred, parameters for analysis, all signatures of individuals involved in the chain of possession, description of sample condition, and any comments regarding sample collection.

Quality Assurance and Control

To check the integrity of field sampling and equipment cleaning techniques, the following field control procedures are used. Field blanks, and occasionally trip blanks, are used as control or external QA/QC samples to detect contamination that may be introduced in the field (atmospheric or from sampling

equipment), in transit to or from the sampling site, during bottle preparation, and sample log-in or storage.

A "field blank" is collected after sampling a well that previously indicated high concentrations of the water quality parameters analyzed. The sampling equipment is cleansed and a sample of distilled water is obtained using the sampling equipment. The distilled water sample is then used to prepare the field blank.

A sample replicate is used periodically to provide quality assurance for the laboratory analysis techniques. A sample is split in the field and provided to the laboratory in two or more sampling containers.

Decontamination of Field Equipment

All field equipment is rinsed with de-ionized or distilled water. This includes the electronic water sounder probe, the bailer winch spool, Teflon coated bailer wire, filter unit, and bailers. In addition, the bailers are disassembled, washed with a non-phosphate detergent, and rinsed with pressurized distilled water.

Site Health and Safety

All sampling personnel shall receive an annual medical examination to determine the baseline physiological condition. Appropriate blood chemistry work and x-rays are taken as required.

Protective clothing is worn by all site technicians during sampling. This clothing includes protective rubberized overalls, rubber gloves, and steel-toed boots. Full-face respirators with organic filter cartridges, combustible gas and oxygen detection meters, and photoionization detectors are available for the sampler's protection.

Upon arrival at the site a visual survey is performed to determine the safety of the work place. No water quality testing is performed if there is any evidence of hazardous waste disposal or the uncovering of suspected hazardous materials. Upon arrival at a monitoring well location, the cap is removed from an upwind position. The well head is allowed to vent for at least five minutes while sampling equipment is set up. No smoking or use of flammable materials is permitted adjacent to a well head.

Data Transaction, Reduction and Report Generation

Data analysis and interpretation are the responsibility of the Project Manager or Project Team member responsible for a particular task of the project. The data are compiled in table form for ease of presentation to highlight the significant information. The data may be input into the computer and plotted on various types of graphs and maps, or analyzed by various statistical methods.

Sampling Protocol Addendum for: J.C. Penny
Bennington Square
Bennington, Vermont

1. The person(s) sampling the wells will utilize an HNU photoionization detector. Immediately upon removal of the well cap, the HNU will be used to make a preliminary determination as to the VOC activity in the well.
2. A bailer will then be lowered into the well to check for the presence of free product floating on the groundwater surface. If free product is found, the well will be purged until product ceases to be observed. Product will be stored in a container that will remain on-site. The well will be allowed to recover and be repurged and checked for free product. If free product is again observed, no water quality samples will be taken. If free product is not observed, the well will be sounded, purged, and sampled as outlined above.
3. Water samples will be forwarded to Eastern Analytical, Inc. of Concord, New Hampshire for analysis. Analysis will be for Volatile Organic Compounds "BTEX" and MTBE by EPA Method 8020.



State of Vermont

RECEIVED
SEP - 2 1994

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
Natural Resources Conservation Council
RELAY SERVICE FOR THE HEARING IMPAIRED
1-800-253-0191 TDD>Voice
1-800-253-0195 Voice>TDD

DUFRESNE-HENRY, INC.

Hazardous Materials Management Division
103 South Main Street/West Office
Waterbury, Vermont 05671-0404
(802) 241-3888
FAX (802) 244-5141

August 31, 1994

John Dell'Anno
Justice Development Co.
P.O. Box 365
Yonkers, NY 10704-0365

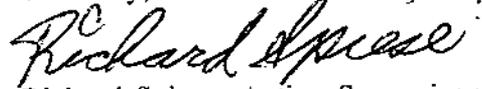
RE: Petroleum contamination at J.C. Penny in Bennington Square. (Site #94-1578)

Dear Mr. Dell'Anno:

The Sites Management Section (SMS) has received the August 31, 1994 workplan for the initial subsurface environmental site investigation at the above referenced site, proposed by Bruce H. Cox of Dufresne - Henry, Inc. (DHI). This workplan includes the installation of four monitoring wells, analysis of all groundwater samples, and a summary report. This includes a cost not to exceed \$6,550.00, including an additional \$500.00 for analytical costs. Typically, costs associated with this type of investigation do not exceed \$6,000.00, excluding analytical costs. However, due to site specific soil conditions, extra field time for the boring crew and DHI personnel will be needed. Therefore, the SMS approves this workplan as proposed.

Please keep the SMS informed of work scheduled to be performed at the site, as well as forwarding sampling and analytical results as they become available. The SMS looks forward to the completion of this work. Please feel free to call with any questions or comments.

Sincerely,


Richard Spiese, Acting Supervisor
Sites Management Section

CC: Bruce H. Cox, DHI

RS:JPF/wp50/941578r3

PROJECT: BENNINGTON SQUARE INITIAL SITE INVESTIGATION
JOB NO.: 414038

HEALTH AND SAFETY PLAN
FOR
BENNINGTON SQUARE INITIAL SITE INVESTIGATION

J. C. PENNEY

BENNINGTON, 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, decontamination, and sampling of installed wells and three (3) existing wells.

PROPOSED DATE(S) OF WORK: Borings; September 21 - 22, 1994
Sampling; Week of September 26, 1994

ANTICIPATED WEATHER CONDITIONS: temperatures 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 (Borings/Sampling)
John Dell'Anno	Site Representative
Richard Spiese	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: BENNINGTON SQUARE INITIAL SITE INVESTIGATION
JOB NO.: 414038

Background Information

Site Status: Active Inactive Unknown

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

Bennington Square is located on the south side of Kocher Drive in Bennington, Vermont. The work will take place on the south side of J.C. Penney near the truck loading dock. Site utilities are not known at this time, but are presumed to include sanitary sewer, water, stormwater, and electric power.

The area of potential contamination is the site of the former 4,100 gallon #2 heating oil tank.

DIG SAFE was contacted. The site is clear for work as of 8:45 am on September 16, 1994. The DIG SAFE # is 943704458. The Bennington Water and Sewer Department was contacted on September 14, 1994.

Site History:

The site history is not known. The plaza has been in existence since at least the early 1980's.

Field Monitoring or Sampling Data From Previous Site work:

A Tank Closure Assessment was performed by Enman Engineering, P.C. on January 31, 1994. The 4,100 gallon #2 heating oil tank was noted as failed. It was estimated that 1,200 - 1,500 gallons of product were released. Evidence of soil and groundwater contamination was observed. PID readings up to 30 ppm were observed. The water table was encountered at 5 - 6 feet. All contaminated soils were backfilled pending further investigation.

No other field monitoring or sampling data from previous site work are known to exist.

HAZARD REFERENCE

Waste Types:

Liquid Solid (soil) Sludge Vapor Unknown

Waste Characteristics:

Corrosive Ignitable Radioactive
 Volatile Toxic Reactive
 Unknown Other Persistent

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

Hazard Evaluation:

Task: Mon. Well Installation Low Medium High

Identification of Hazards: #2 heating oil.

Task: Decon. 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, truck traffic

PROJECT: BENNINGTON SQUARE INITIAL SITE INVESTIGATION
JOB NO.: 414038

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 truck access road upwind of the boring locations.

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

The site of the former UST.

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:

At the site of the former UST.

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

SITE ACTIVITIES

Required Personal Protective Equipment (PPE)

<u>Task</u>	<u>Entry Level of Protection</u>	<u>Monitoring Equipment</u>	<u>Upgrade/Downgrade Contingency</u>
Well Install.	D	HNU MW-101 Explosimeter O2 meter H2S 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: BENNINGTON SQUARE INITIAL SITE INVESTIGATION
JOB NO.: 414038

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 of 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 DESIGNEE.

Monitoring Procedures

Site Monitoring Equipment:

HNU (Model MW-101, 10.2 eV probe)
 Explosimeter
 Draeger Tube & Pump
 O2 Meter
 Other: H2S meter

Methods and Frequency of Monitoring:

Air space and soil samples will be monitored with an HNU HW-101.
Air space will be monitored with an explosimeter/O2 meter/H2S meter.
Frequency: Soil samples; as obtained.
Air; not to exceed every 15 minutes.

PROJECT: BENNINGTON SQUARE INITIAL SITE INVESTIGATION
JOB NO.: 414038

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. All decontamination will be done on-site. Routine washing of split spoon samplers, etc will use water obtained at the facility or brought to the site by the boring contractor, with disposal on-site.

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

All decon waste and disposables will remain on-site.

PROJECT: BENNINGTON SQUARE INITIAL SITE INVESTIGATION
JOB NO.: 414038

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: BENNINGTON SQUARE INITIAL SITE INVESTIGATION
JOB NO.: 414038

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 an HNU HW-101, explosimeter, O2 meter, and H2S meter as outlined in monitoring procedures. Monitoring of weather related hazards will be as required by ambient 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: BENNINGTON SQUARE INITIAL SITE INVESTIGATION
JOB NO.: 414038

EMERGENCY INFORMATION

AMBULANCE: Bennington Phone: (802) 442 - 8555

HOSPITAL: Putnam Memorial Hospital Phone: (802) 442 - 6361
Dewey Street
Bennington, VT
(see attached map)

POLICE: Bennington Phone: (802) 442 - 8555

FIRE DEPARTMENT: Bennington Phone: (802) 442 - 5555

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

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

CORPORATE:

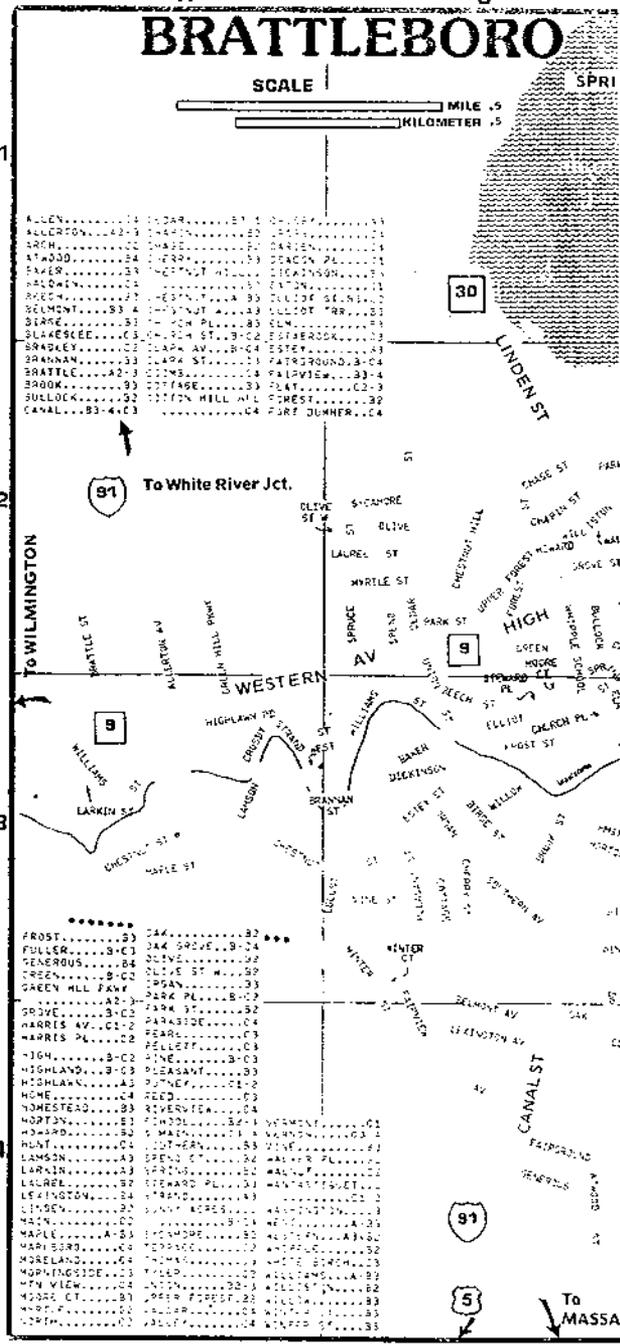
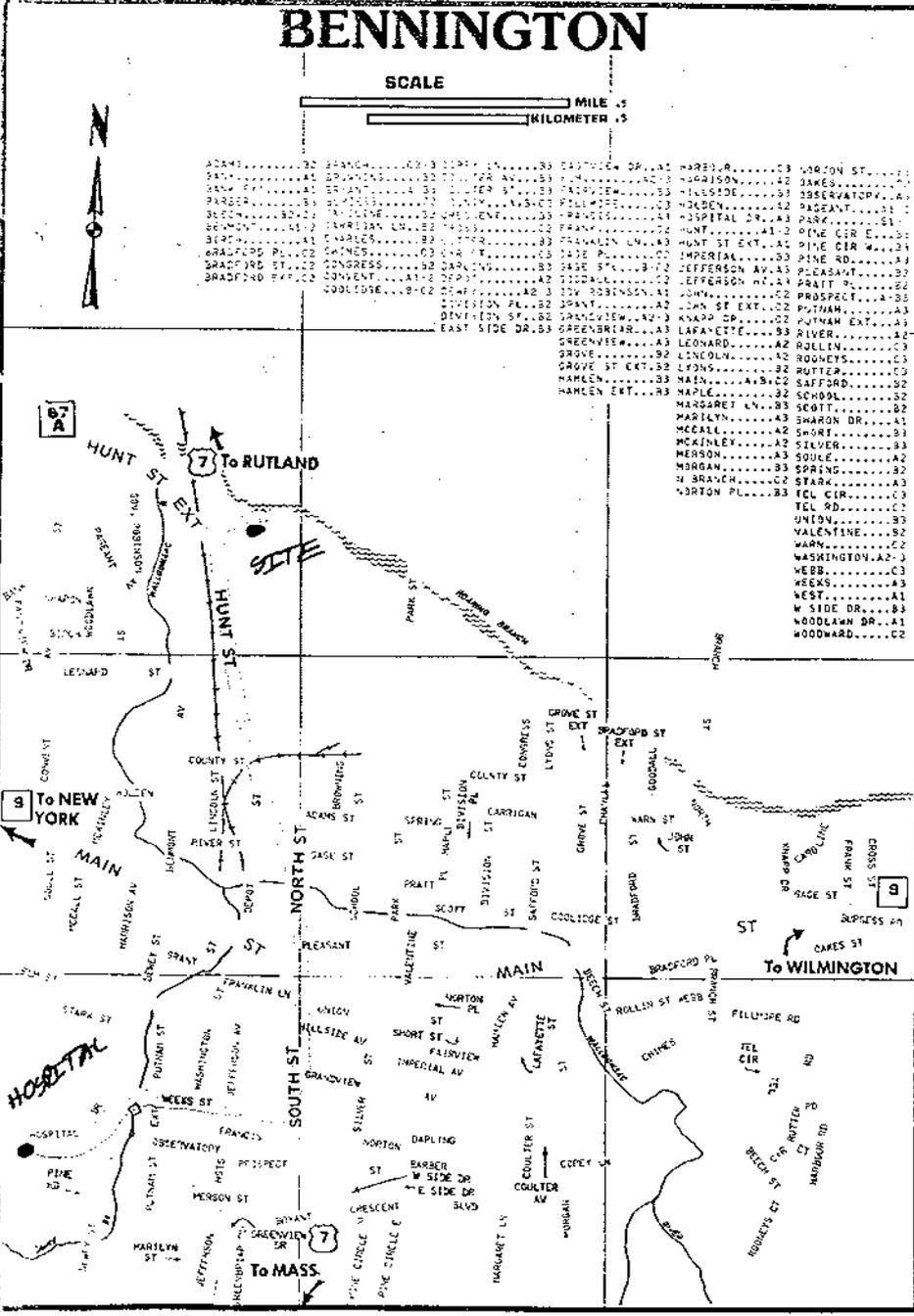
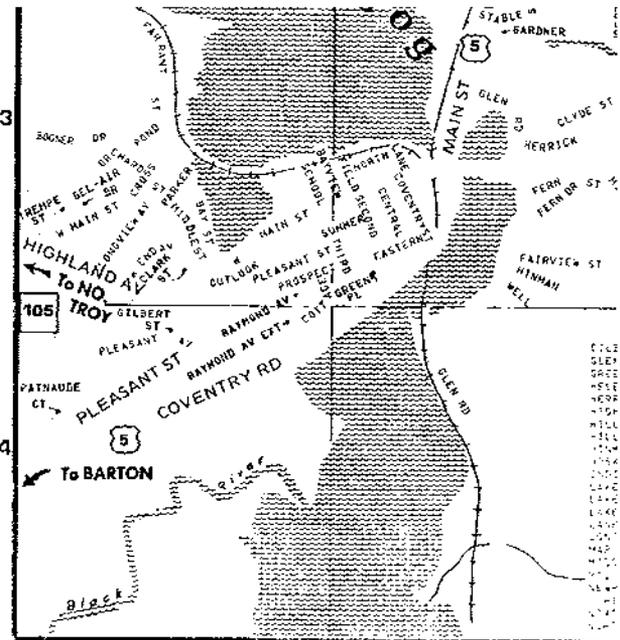
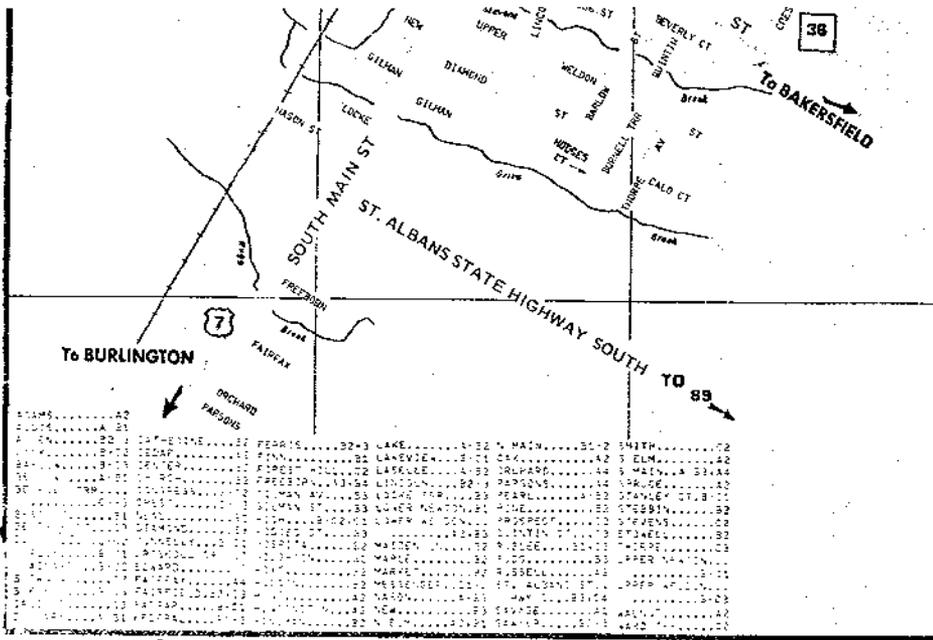
Dufresne-Henry N. Springfield, VT Phone: (802) 886-2261

Project Manager: Bruce Cox

NEAREST PHONE: At Bennington Square

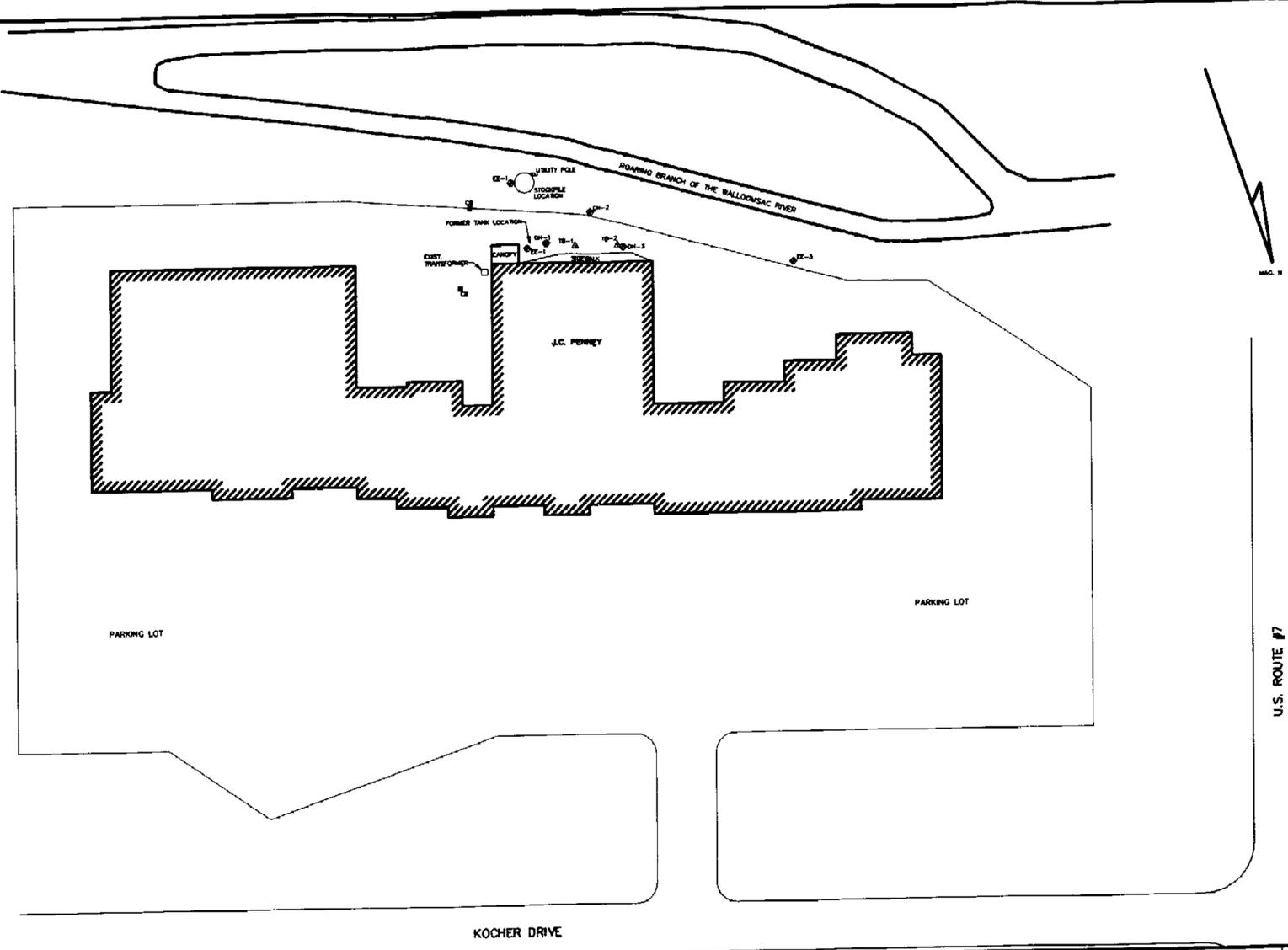
LOCATION OF ON-SITE FIRST AID KIT: Boring contractors vehicle.

EMERGENCY VEHICLE: The designated emergency vehicle on-site shall be that of the Dufresne-Henry, Inc. representative.



APPENDIX C

SITE PLAN

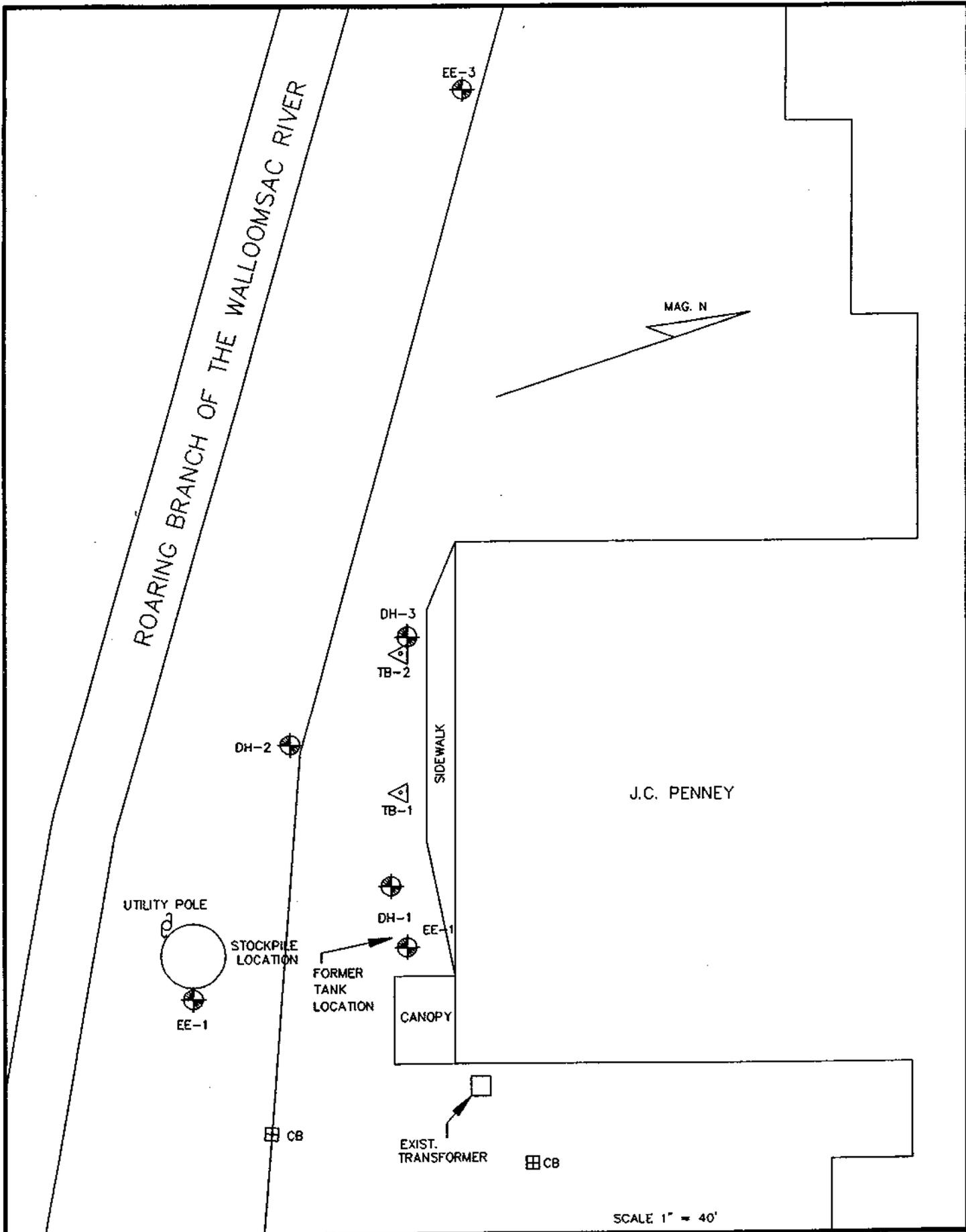


SCALE 1"=100'

DH
Dresser-Henry, Inc.
 Precision Parts
 No. Springfield,
 Vermont 05350
 Tel. 802/896-2261 Fax. 802/896-2260

JUSTER DEVELOPMENT CO.
BENNINGTON SQUARE
SITE SKETCH
INITIAL INVESTIGATION
BENNINGTON, VERMONT

Project No.	414038
Proj. Mgr.	BNC
Date	10/94
VERMONT	B



DH Dufresne-Henry, Inc.

Precision Park
No. Springfield,
Vermont 05150

Tel. 18021886-2261 Fax 18021886-2260

JUSTER DEVELOPMENT CO.
BENNINGTON SQUARE

INITIAL SITE INVESTIGATION

BENNINGTON, VERMONT

Project No. 414038
Proj. Mgr. B.H.C.
Date 10/94
A

APPENDIX D
BORING LOGS
AND
MONITORING WELL INSTALLATION REPORT

BORING LOCATION DH-1 INCLINATION V BEARING DATE START/FINISH 9/21/94 / 9/21/94
 CASING ID CORE SIZE TOTAL DEPTH 12 FT DRILLED BY: M & W SOILS ENGINEERING, INC. (M.D.)
 GROUND EL (AD) 499.25 DEPTH TO WATER/DATE 6.90 FT/ 9/26/94 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			
493.75	5.5						4" SSA	4 1/2"/FB	0" - 3" BITUMINOUS CONCRETE pavement. 3" - 2'± Medium brown, sandy GRAVEL with cobbles. 2' - 3'± Probable SAND. 3' - 5'± Cobbles GRAVEL.
492.75	6.5	SS-1	25 46	2	4	12			Light - medium brown, very dense, sandy GRAVEL. Very fine - medium grained, moderately well sorted sand. 10% - 20% non plastic fines. 50%+ gravel 1/8" - cobbles and boulders. Dry. No odor or staining. .2 ppm.
489.25	10						4 1/4" HSA	8"/CCH	Probable GRAVEL with abundant cobbles and boulders similar to above. Oily smelling gravel from augers before 10'.
487.50	11.75	SS-2	14 13 18 27*	2	3	21	* 27/3"		Medium brown, medium dense - dense, silty, sandy GRAVEL. Very fine - very coarse grained, poorly sorted sand of various rock types. 20%+ non plastic fines. 50%+ gravel 1/8" - cobbles and boulders. Saturated. Very slight oil odor, no staining of soil. Slight sheen in spoon. 1 ppm.
487.25	12						4 1/4" HSA	8"/CCH	Probable GRAVEL with cobbles and boulders similar to above.
									Refusal on HSA at 12' on a probable boulder. Set 8' of 2" dia, .020" slot, threaded, flush joint, Schd 40 PVC at 11'6". Sand backfill to 33". Bentonite seal 18" - 33". Grouted in flush 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 HSA = Hollow Stem Auger FB = Finger Bit CCH = Conical Cutter Head ppm Refers to PID reading (HNU w/10.2 eV lamp) Top of PVC elev = 498.95	INITIAL SITE INVESTIGATION BENNINGTON SQUARE - J.C. PENNEY	
		BENNINGTON, VERMONT DATE: 9/21/94 PROJECT: 414038	PAGE 1 OF 1 LOG OF BORING: DH-1

BORING LOCATION DH-3 INCLINATION V BEARING DATE START/FINISH 9/22/94 / 9/22/94
 CASING ID CORE SIZE TOTAL DEPTH 7.58 FT DRILLED BY: M & W SOILS ENGINEERING, INC. (M.D.)
 GROUND EL (AD) 499.27 DEPTH TO WATER/DATE DRY FT/ 9/26/94 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			
491.77	7.5						4" SSA 4 1/4" HSA	4 1/2"/FB 8"/CCH	0" - 3" BITUMINOUS CONCRETE pavement. 3" - 7'6" Medium brown, silty, sandy GRAVEL with abundant cobbles and boulders. Very slight oil odor in soil from augers.
									Tried advancing hole with 2 15/16" roller bit. Bit destroyed, no progress. Set 5' of 2" dia, .020" slot, threaded, flush joint, Schd 40 PVC at 7'6". Sand backfill to 2'. Bentonite seal 1' - 2'. Grouted in flush 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 HSA = Hollow Stem Auger FB = Finger Bit CCH = Conical Cutter Head ppm Refers to PID reading (HRU w/10.2 eV lamp) Top of PVC elev = 499.04	INITIAL SITE INVESTIGATION BENNINGTON SQUARE - J.C. PENNEY	
		BENNINGTON, VERMONT DATE: 9/22/94 PROJECT: 414038	PAGE 1 OF 1 LOG OF BORING: DH-3

BORING LOCATION TB-1 INCLINATION V BEARING DATE START/FINISH 9/22/94 / 9/22/94
 CASING ID CORE SIZE TOTAL DEPTH 8.5 FT DRILLED BY: M & W SOILS ENGINEERING, INC. (M.D.)
 GROUND EL (MSL) DEPTH TO WATER/DATE FT/ LOGGED BY: B. COX

ELEV MSL 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			
	5.5						4" SSA	4 1/2"/FB	0" - 3" BITUMINOUS CONCRETE pavement. 3" - 5'6" Medium brown, silty, sandy GRAVEL with cobbles.
	6.75	SS-1	38 41 26*	2	12	15			Dark tan - medium brown, very dense, silty, sandy GRAVEL. Very fine - occasionally coarse grained, moderately poorly sorted sand. 20%+ non plastic fines. 50%+ gravel 1/8" - cobbles. Dry. No odor or staining. 0 ppm.
	8.5						4 1/4" HSA	8"/CCH	Probable silty sandy GRAVEL with abundant cobbles and boulders. Oil odor from auger. 9 ppm.
									Refusal on HSA at 8'6". Drove split spoon.
	10.5	SS-2	50 28 13 23	2	7	24			Medium brown, very dense, silty sandy GRAVEL with cobble similar to above. Saturated. Moderate oil odor, no staining. 12 ppm.
									Could not advance HSA. No well installed.

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 HSA = Hollow Stem Auger FB = Finger Bit CCH = Conical Cutter Head ppm Refers to PID reading (HNU w/10.2 eV lamp)	INITIAL SITE INVESTIGATION BENNINGTON SQUARE - J.C. PENNEY	
		BENNINGTON, VERMONT DATE: 9/22/94 PROJECT: 414038	PAGE 1 OF 1 LOG OF BORING: TB-1

BORING LOCATION TB-2 INCLINATION V BEARING DATE START/FINISH 9/22/94 / 9/22/94
 CASING ID CORE SIZE TOTAL DEPTH 7.58 FT DRILLED BY: M & W SOILS ENGINEERING, INC. (M.D.)
 GROUND EL (MSL) DEPTH TO WATER/DATE FT/ LOGGED BY: B. COX

ELEV MSL 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			
	5						4" SSA	4 1/2"/FB	0" - 3" BITUMINOUS CONCRETE pavement. 3" - 5" Medium brown, silty, sandy GRAVEL with cobbles and boulders.
	6.33	SS-1	46 71 41*	2	8	16	* 4 1/4"		Light - medium brown, very dense, silty, sandy GRAVEL. Very fine - rarely coarse grained, mod- erately well sorted sand. 20% - 30% non plastic fines. 50%+ gravel 1/8" - cobbles. Dry. Very slight oil odor, no staining. .4 ppm.
	7.58						4" SSA	4 1/2"/FB	Probable GRAVEL with abundant cobbles and boulders as above.
									Refusal on SSA at 7'7". Broke off auger on hole No well installed.

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 (HNU w/10.2 eV lamp)	INITIAL SITE INVESTIGATION BENNINGTON SQUARE - J.C. PENNEY	
		BENNINGTON, VERMONT DATE: 9/22/94 PROJECT: 414038	PAGE 1 OF 1 LOG OF BORING: TB-2

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

TO DUFRESNE-HENRY ENGINEERING ADDRESS NORTH SPRINGFIELD, VT
PROJECT NAME J.C. PENNEY LOCATION BENNINGTON, VT
REPORT SENT TO BRUCE COX PROJ. NO. _____
SAMPLE SENT TO RETAINED BY DUFRESNE-HENRY OUR JOB NO. 6161-94

SHEET 1 OF 1
DATE 9/21/94
HOLE NO. MW-1
LINE & STA. _____
OFFSET _____

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	SURFACE ELEV.
AT <u>8 +/-</u>	AT <u>IMMEDIATELY</u>	Type	<u>HSA</u>	<u>SS</u>	DATE STARTED <u>9/21/94</u>
	HOURS	Size I. D.	<u>4 1/4"</u>	<u>1 1/2"</u>	DATE COMPL. <u>9/21/94</u>
AT _____	AT _____	Hammer Wt.	<u>140#</u>	<u>BIT</u>	BORING FORMAN <u>MD. & R.H.</u>
	HOURS	Hammer Fall	<u>30"</u>		INSPECTOR <u>B. COX</u>
					SOILS ENGR. _____

LOCATION OF BORING

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'	ASPHALT PAVEMENT			
							DRY		VERY DENSE BROWN COBBLES AND BOULDERS WITH LITTLE SAND AND GRAVEL	1	12'	6"
5'		5'6" - 6'6"	SS	25	44				DENSE SAME MATERIAL WITH MORE GRAVEL			
							WET		OIL SHEEN NOTED FROM 10'-11'6"	2	21'	6"
10'		10' - 11'9"	SS	14	13			12'	INSTALLED 2' PVC WELL AT 12' SLOTTED FROM 4'-12' WITH 0.020" SLOT SCREEN FILTER SAND TO 2'6" BENTONITE FROM 1'6"-2'6"			
				18	27/3"				MATERIALS USED: 8' OF 0.020" SLOT SCREEN 4' OF 2" PVC SOLID 1 8" MANHOLE COVER 1 2" EXPANSION CAP 1 2" SLIDE CAP 150# OF FILTER SAND 25# OF BENTONITE 40# OF CONCRETE MIX			
15'												

GROUND SURFACE TO 12' USED HSA CASING THEN _____

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 <u>12'</u> ROCK CORING _____ SAMPLES <u>2</u> HOLE NO. <u>MW-1</u>

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

TO DUFRESNE-HENRY ENGINEERING ADDRESS NORTH SPRINGFIELD, VT
PROJECT NAME J.C. PENNEY LOCATION BENNINGTON, VT
REPORT SENT TO BRUCE COX PROJ. NO. _____
SAMPLE SENT TO RETAINED BY DUFRESNE-HENRY OUR JOB NO. 6161-94

SHEET 1 OF 1
DATE 9/21/94
HOLE NO. MW-2
LINE & STA. _____
OFFSET _____

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	SURFACE ELEV.
AT <u>7'6"</u>	AT <u> </u> HOURS	Type <u>HSA</u>	<u>SS</u>		DATE STARTED <u>9/21/94</u>
*WELL COMPLETION		Size I. D. <u>4 1/4"</u>	<u>1 1/2"</u>		DATE COMPL. <u>9/21/94</u>
AT <u> </u>	AT <u> </u> HOURS	Hammer Wt. _____	<u>140#</u>	BIT	BORING FORMAN <u>MD. & R.H.</u>
		Hammer Fall _____	<u>30"</u>		INSPECTOR <u>B. COX</u>
					SOILS ENGR. _____

LOCATION OF BORING

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
								6"	TOPSOIL			
5'		5' - 7'	SS	17	39		DRY		VERY DENSE BROWN COBBLES AND BOULDERS WITH LITTLE SANDY GRAVEL	1	24"	16"
				34	45							
10'		10' - 10'7"	SS	53	40/1"			10'6"	SAME MATERIAL	2	7"	7"
15'									INSTALLED 2" PVC WELL AT 10'6" SLOTTED FROM 5'6"-10'6" WITH 0.020" SLOT SCREEN FILTER SAND TO 3'6" BENTONITE FROM 2'-3'6"			
									MATERIALS USED: 5' OF 0.020" SLOT SCREEN 5' OF 2" PVC SOLID 1 8" MANHOLE COVER 1 2" EXPANSION CAP 1 2" SLIDE CAP 75# OF FILTER SAND 25# OF BENTONITE 40# OF CONCRETE MIX			

GROUND SURFACE TO 10'7"

USED HSA CASING THEN _____

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

Cohensive Consistency
0-4 Soft 30 + Hard
4-8 M/Stiff
8-15 Stiff
15-30 V-Stiff

summary	
EARTH BORING	<u>10'7"</u>
ROCK CORING	_____
SAMPLES	<u>2</u>
HOLE NO.	<u>MW-2</u>

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

TO DUFRESNE-HENRY ENGINEERING ADDRESS NORTH SPRINGFIELD, VT
 PROJECT NAME J.C. PENNEY LOCATION BENNINGTON, VT
 REPORT SENT TO BRUCE COX PROJ. NO. _____
 SAMPLE SENT TO RETAINED BY DUFRESNE-HENRY OUR JOB NO. 6161-94

SHEET 1 OF 1
 DATE 9/21/94
 HOLE NO. MW-3
 LINE & STA. _____
 OFFSET _____

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	SURFACE ELEV.
AT <u>DRY</u>	AT <u>IMMEDIATELY</u> HOURS	Type	<u>HSA</u>		DATE STARTED <u>9/21/94</u>
		Size I. D.	<u>4 1/4"</u>		DATE COMPL. <u>9/21/94</u>
		Hammer Wt.		BIT	BORING FORMAN <u>MD. & R.H.</u>
AT _____	AT _____ HOURS	Hammer Fall			INSPECTOR <u>B. COX</u>
					SOILS ENGR. _____

LOCATION OF BORING

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"	ASPHALT PAVEMENT			
5'									BROWN COBBLES AND BOULDERS WITH SILTY SANDY GRAVEL			
								7'8"	REFUSAL TO AUGERS AND ROLLER BIT BEDROCK OR BOULDERS			
10'									TRIED TWO OTHER ATTEMPTS REFUSAL AROUND 8' DEPTH BROKE FLIGHT AUGER IN ONE HOLE			
									INSTALLED 2" PVC WELL AT 7'6" SLOTTED FROM 2'6"-7'6" WITH 0.020" SLOT SCREEN FILTER SAND TO 2' BENTONITE FROM 1'-2'			
									MATERIALS USED: 5' OF 0.020" SLOT SCREEN 3' OF 2" PVC SOLID 1 8" MANHOLE COVER 1 2" EXPANSION CAP 1 2" SLIDE CAP 100# OF FILTER SAND 25# OF BENTONITE 80# OF CONCRETE MIX			

GROUND SURFACE TO 7'8"

USED HSA CASING THEN _____

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 7'8"
 ROCK CORING _____
 SAMPLES 0
 HOLE NO. MW-3

BENNINGTON SQUARE - J.C. PENNEY
INITIAL SITE INVESTIGATION
BENNINGTON, VERMONT

9/21/94

Dufresne-Henry, Inc. - Bruce Cox, on site at 9:00 am.

M & W Soils Engineering, Inc. - Myron Domingue, Richard Holmes on site at 9:50 am±.

Met with Tony from the Bennington Water Department at 9:10 am. We verified the location of the water main and the building connections.

Met with the store manager at 9:40 am±. Filled him in on work to be done.

Utilities on the site were marked out upon my arrival. Dig Safe #943704458.

DH-1

Started boring at 10:07 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 obtained from J.C. Penney. Drilled with 4 1/4" hollow stem augers taking split spoon samples 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 (not for chemical analysis) from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. Positive PID readings ranging from .2 ppm to 1 ppm were observed in all samples. A slight heating oil like odor was observed. No visual evidence of contamination was observed in the samples or on the tools. Total depth of the boring was 12' with refusal on the augers on probable boulders. The water table was encountered at about 7 feet. The general geologic column under the bituminous pavement is cobbles and boulders in a silty sand matrix. Installed an 8' long, 2" diameter, .020" machine slotted, threaded, flush joint, Schedule 40 PVC well at 11'6". All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 33". A bentonite seal was installed from 18" - 33". A 6" watertight aluminum monitoring well box was grouted in flush with the surface. All excess soil was disposed of on site.

Materials: 8' of 2", .010" slot, threaded, flush joint, Schd 40 PVC.
3'10" of 2", solid wall, threaded, flush joint, Schd 40 PVC.
150 lb± of silica sand.
25 lb± of bentonite chips.
40 lb± of concrete mix.
1 push-on PVC cap.
1 expanding gasket cap.
1 6" aluminum monitoring well box.

DH-2

Started boring at 12:50 pm. Clean augers not previously used on the site were used. The bit and split spoons were washed in Alconox prior to reuse. All water used for cleaning split spoons and other tools was obtained from J.C. Penney. Drilled with 4 1/4" hollow stem augers taking split spoon samples 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 (not for chemical analysis) from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. With the exception of a reading of .1 ppm, no positive PID readings were observed. No evidence of contamination (visual, olfactory, or PID readings) was observed in the samples or on the tools. Total depth of the boring was 11' with refusal on the augers on probable boulders. The water table was encountered at about 7 feet. The general geologic column is cobbles and boulders in a silty sand matrix. Installed a 5' long, 2" diameter, .020" machine slotted, threaded, flush joint, Schedule 40 PVC well at 10'6". All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 3'6". A bentonite seal was installed from 2' - 3'6". A 6" watertight aluminum monitoring well box was grouted in flush with the surface. All excess soil was disposed of on site.

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

Visitors: Karl Pascal, store manager

Weather:

Off site at 4:20 pm.

9/27/94

Dufresne-Henry, Inc. - BHC on site at 8:25 am.

M & W Soils Engineering, Inc. - MD, RH on site at 9:03 am.

TB-1

Started boring at 9:10 am. Clean augers not previously used on the site were used. The bit and split spoons were washed in Alconox prior to reuse. All water used for cleaning split spoons and other tools was obtained from J.C. Penney. Drilled with 4 1/4" hollow stem augers taking split spoon samples 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 (not for chemical analysis) from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. Total depth of the boring was 10'6" with refusal on the augers on probable boulders at 8'6". An oil odor was observed on soil from the bottom auger. A headspace PID reading of 9 ppm was observed. The water table was encountered at about 7 feet. The general geologic column is cobbles and boulders in a silty sand matrix. Because of the discovery of oil, the hole was abandoned and moved further to the west. No well was installed.

TB-2

Started boring at 11:00 am±. Clean augers not previously used on the site were

used. The bit and split spoons were washed in Alconox prior to reuse. All water used for cleaning split spoons and other tools was obtained from J.C. Penney. Drilled with 4 1/4" hollow stem augers taking split spoon samples 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 (not for chemical analysis) from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. A very slight oil odor was observed in the 5' - 6'4" sample with a PID reading of .4 ppm. Total depth of the boring was 7'7" with refusal on the augers on probable boulders. At that depth the bottom of the lead auger broke off. As a result of the bit and auger in the ground, the boring had to be abandoned. The location was moved further to the west.

DH-3

Started boring at 1:00 pmt. Clean augers not previously used on the site were used. The bit and split spoons were washed in Alconox prior to reuse. All water used for cleaning split spoons and other tools was obtained from J.C. Penney. Drilled with 4 1/4" hollow stem augers taking split spoon samples 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 (not for chemical analysis) from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. Total depth of the boring was 7'6" with refusal on the augers on probable boulders. An attempt was made to advance the boring using a 2 15/16" roller bit. The bit was destroyed with no progress made. It was decided to install a well although it will probably be dry under existing water table conditions.

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

Visitors: none.

Weather: partly sunny, 60's, light breeze.

Off site at 3:20 pm.

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

TO DUFRESNE-HENRY ENGINEERING ADDRESS NORTH SPRINGFIELD, VT
PROJECT NAME J.C. PENNEY LOCATION BENNINGTON, VT
REPORT SENT TO BRUCE COX PROJ. NO. _____
SAMPLE SENT TO RETAINED BY DUFRESNE-HENRY OUR JOB NO. 6161-94

SHEET 1 OF 1
DATE 9/22/94
HOLE NO. P-1
LINE & STA. _____
OFFSET _____

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	SURFACE ELEV.
AT <u>7'6"</u>	AT <u>IMMEDIATELY</u> HOURS	Type <u>HSA</u>	<u>SS</u>		DATE STARTED <u>9/22/94</u>
		Size I. D. <u>4 1/4"</u>	<u>1 1/2"</u>		DATE COMPL. <u>9/22/94</u>
		Hammer Wt. _____	<u>140#</u>	<u>BIT</u>	BORING FORMAN <u>MD. & R.H.</u>
AT _____	AT _____ HOURS	Hammer Fall _____	<u>30"</u>		INSPECTOR <u>B. COX</u>
					SOILS ENGR. _____

LOCATION OF BORING

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'	ASPHALT PAVEMENT			
							DRY		VERY DENSE BROWN COBBLES AND BOULDERS WITH LITTLE SANDY GRAVEL	1	15'	6"
5'		6'6" - 8'9"	SS	38	41							
				26/3'								
		8'6" - 10'6"	SS	50	28		WET		DENSE SAME MATERIAL - FUEL OIL ODOR	2	24'	8"
				13	23			10'6"				
10'												
15'												

GROUND SURFACE TO 8'6"

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
Cohensive Consistency
0-4 Soft 30 + Hard
4-8 M/Stiff
8-15 Stiff
15-30 V-Stiff

summary	
EARTH BORING	<u>10'6"</u>
ROCK CORING	
SAMPLES	<u>2</u>
HOLE NO.	<u>P-1</u>

M & W Soils Engineering, Inc.

Main St. Charlestown, NH 03603

SHEET 1 OF 1
 DATE 9/22/94
 HOLE NO. P-2
 LINE & STA.
 OFFSET

TO DUFRESNE-HENRY ENGINEERING ADDRESS NORTH SPRINGFIELD, VT
 PROJECT NAME J.C. PENNEY LOCATION BENNINGTON, VT
 REPORT SENT TO BRUCE COX PROJ. NO.
 SAMPLE SENT TO RETAINED BY DUFRESNE-HENRY OUR JOB NO. 6161-94

GROUND WATER OBSERVATIONS		CASING SAMPLER CORE BAR		SURFACE ELEV.	
AT 7'6"	AT IMMEDIATELY	HOURS	Type	FA	SS
			Size I. D.	4"	1 1/2"
			Hammer Wt.		140# BIT
AT	AT	HOURS	Hammer Fall		30"
				DATE STARTED 9/22/94	
				DATE COMPL. 9/22/94	
				BORING FORMAN MD. & R.H.	
				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			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'	ASPHALT PAVEMENT			
5'		5' - 6'4"	SS	46	71		DRY		VERY DENSE BROWN COBBLES AND BOULDERS WITH LITTLE SANDY GRAVEL	1	16'	10'
				4 1/4'								
10'								8'	REFUSAL - BEDROCK OR BOULDER			

GROUND SURFACE TO 8'

USED 4" FA CASING THEN

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 8'
 ROCK CORING
 SAMPLES 1
 HOLE NO. P-2

BENNINGTON SQUARE - J.C. PENNEY
INITIAL SITE INVESTIGATION
BENNINGTON, VERMONT

9/21/94

Dufresne-Henry, Inc. - Bruce Cox, on site at 9:00 am.

M & W Soils Engineering, Inc. - Myron Domingue, Richard Holmes on site at 9:50 am±.

Met with Tony from the Bennington Water Department at 9:10 am. We verified the location of the water main and the building connections.

Met with the store manager at 9:40 am±. Filled him in on work to be done.

Utilities on the site were marked out upon my arrival. Dig Safe #943704458.

DH-1

Started boring at 10:07 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 obtained from J.C. Penney. Drilled with 4 1/4" hollow stem augers taking split spoon samples 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 (not for chemical analysis) from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. Positive PID readings ranging from .2 ppm to 1 ppm were observed in all samples. A slight heating oil like odor was observed. No visual evidence of contamination was observed in the samples or on the tools. Total depth of the boring was 12' with refusal on the augers on probable boulders. The water table was encountered at about 7 feet. The general geologic column under the bituminous pavement is cobbles and boulders in a silty sand matrix. Installed an 8' long, 2" diameter, .020" machine slotted, threaded, flush joint, Schedule 40 PVC well at 11'6". All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 33". A bentonite seal was installed from 18" - 33". A 6" watertight aluminum monitoring well box was grouted in flush with the surface. All excess soil was disposed of on site.

Materials: 8' of 2", .010" slot, threaded, flush joint, Schd 40 PVC.
3'10" of 2", solid wall, threaded, flush joint, Schd 40 PVC.
150 lb± of silica sand.
25 lb± of bentonite chips.
40 lb± of concrete mix.
1 push-on PVC cap.
1 expanding gasket cap.
1 6" aluminum monitoring well box.

DH-2

Started boring at 12:50 pm. Clean augers not previously used on the site were used. The bit and split spoons were washed in Alconox prior to reuse. All water used for cleaning split spoons and other tools was obtained from J.C. Penney. Drilled with 4 1/4" hollow stem augers taking split spoon samples 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 (not for chemical analysis) from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. With the exception of a reading of .1 ppm, no positive PID readings were observed. No evidence of contamination (visual, olfactory, or PID readings) was observed in the samples or on the tools. Total depth of the boring was 11' with refusal on the augers on probable boulders. The water table was encountered at about 7 feet. The general geologic column is cobbles and boulders in a silty sand matrix. Installed a 5' long, 2" diameter, .020" machine slotted, threaded, flush joint, Schedule 40 PVC well at 10'6". All pipe came from factory sealed plastic bags. The annular space was backfilled with clean silica sand to 3'6". A bentonite seal was installed from 2' - 3'6". A 6" watertight aluminum monitoring well box was grouted in flush with the surface. All excess soil was disposed of on site.

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

Visitors: Karl Pascal, store manager

Weather:

Off site at 4:20 pm.

9/27/94

Dufresne-Henry, Inc. - BHC on site at 8:25 am.

M & W Soils Engineering, Inc. - MD, RH on site at 9:03 am.

TB-1

Started boring at 9:10 am. Clean augers not previously used on the site were used. The bit and split spoons were washed in Alconox prior to reuse. All water used for cleaning split spoons and other tools was obtained from J.C. Penney. Drilled with 4 1/4" hollow stem augers taking split spoon samples 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 (not for chemical analysis) from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. Total depth of the boring was 10'6" with refusal on the augers on probable boulders at 8'6". An oil odor was observed on soil from the bottom auger. A headspace PID reading of 9 ppm was observed. The water table was encountered at about 7 feet. The general geologic column is cobbles and boulders in a silty sand matrix. Because of the discovery of oil, the hole was abandoned and moved further to the west. No well was installed.

TB-2

Started boring at 11:00 am±. Clean augers not previously used on the site were

used. The bit and split spoons were washed in Alconox prior to reuse. All water used for cleaning split spoons and other tools was obtained from J.C. Penney. Drilled with 4 1/4" hollow stem augers taking split spoon samples 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 (not for chemical analysis) from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. A very slight oil odor was observed in the 5' - 6'4" sample with a PID reading of .4 ppm. Total depth of the boring was 7'7" with refusal on the augers on probable boulders. At that depth the bottom of the lead auger broke off. As a result of the bit and auger in the ground, the boring had to be abandoned. The location was moved further to the west.

DH-3

Started boring at 1:00 pmt. Clean augers not previously used on the site were used. The bit and split spoons were washed in Alconox prior to reuse. All water used for cleaning split spoons and other tools was obtained from J.C. Penney. Drilled with 4 1/4" hollow stem augers taking split spoon samples 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 (not for chemical analysis) from each split spoon were stored in clear glass jars and retained by Dufresne-Henry. Total depth of the boring was 7'6" with refusal on the augers on probable boulders. An attempt was made to advance the boring using a 2 15/16" roller bit. The bit was destroyed with no progress made. It was decided to install a well although it will probably be dry under existing water table conditions.

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

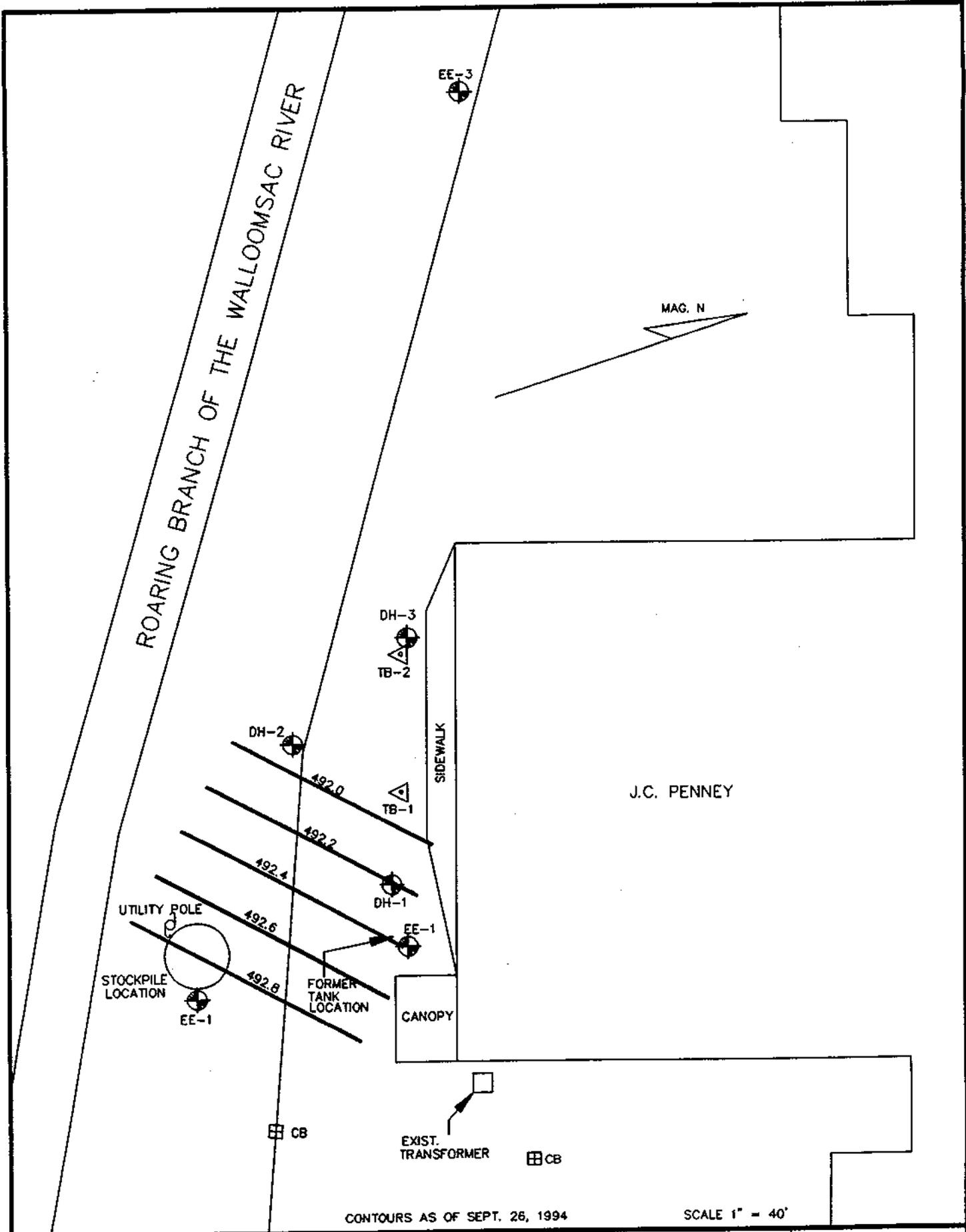
Visitors: none.

Weather: partly sunny, 60's, light breeze.

Off site at 3:20 pm.

APPENDIX E

GROUNDWATER CONTOUR MAP



CONTOURS AS OF SEPT. 26, 1994

SCALE 1" = 40'

Dufresne-Henry, Inc.
 Precision Park
 No. Springfield,
 Vermont 05450
 Tel. (802)886-2261 Fax (802)886-2260

JUSTER DEVELOPMENT CO.
 BENNINGTON SQUARE
GROUNDWATER CONTOURS
 BENNINGTON, VERMONT

Project No. 414038
Proj. Mgr. B.H.C.
Date 10/94
A

APPENDIX F

CONTRACT LABORATORY ANALYTICAL REPORT

October 7, 1994

Bruce Cox
Dufresne-Henry
Precision Park
N. Springfield, VT 05150

Subject: Laboratory Report

Eastern Analytical, Inc. ID #: 9841 DUF
Client Identification: 414038/J.C. Penney
Sample Quantity/Type: 4 aqueous
Date Received: 9/27/94

Dear Mr. Cox:

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,



William Brunkhorst
Lab Director

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 9841 DUF

Client: Dufresne-Henry
Client Designation: 414038/J.C. Penney

Sample Qty/Type: 4 aqueous
Date Received: September 27, 1994

Hazardous Substance List Volatile Organic Compounds

Sample ID:	DH-1	DH-2	EE-2	EE-3
Matrix:	Aqueous	Aqueous	Aqueous	Aqueous
Date of Analysis:	9/30/94	9/30/94	9/30/94	9/30/94
Units:	µg/L	µg/L	µg/L	µg/L
Analyst:	LB	LB	LB	LB
EPA Method:	602	602	602	602
Benzene	<1	<1	<1	<1
Toluene	3	<1	<1	<1
Ethylbenzene	2	<1	<1	<1
Total Xylenes	55	<1	<1	<1
EPA Method:	8015	8015	8015	8015
MTBE	<20	<20	<20	<20

Approved By: Timothy Schaper, Organics Supervisor



