MAY 01 1992

Central Vermont Public Service Corporation

April 27, 1992

Cindy Woods
Hazardous Sites Management
Department of Environmental Conservation
103 South Main Street
Waterbury VT 05671-0404

Dear Ms. Woods:

Per your request, enclosed is additional information regarding the soil and groundwater studies which Central Vermont Public Service Corporation is conducting at its Bay Street property in St. Johnsbury. I have included a complete copy of our consultant's phase II report and a summary of the Ground Penetrating Radar survey.

As I indicated in my first letter to Bob Finucane, CVPS is building a new Service Center at another location in St. Johnsbury. We expect to be in our new facility in 1993 at which point we will demolish the structure currently located at Bay Street. We will continue to operate an electrical substation at this location.

If you have questions or require additional information, please call me at 747-5572.

Sincerely,

Cheryl H. Bennett

Cheryl H. Bennett, Manager
Environmental Programs

Enclosures
chb/pc

77 Grove Street,
Rutland, Vermont 05701
802-773-2711

ST. JOHNSBURY PHASE II SITE ASSESSMENT

Prepared for

CVPS
77 Grove Street
Rutland, Vermont 05701

Prepared by

WEHRAN ENGINEERING CORPORATION
1 Mill Street
Burlington, Vermont 05401

WE Project No. 00641.01

January 1992

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SHEET

1.0 INTRODUCTION

1.1 BACKGROUND

In December 1990, Wehran Engineering (Wehran) completed a Phase I Site Assessment for the Bay Street Substation in St. Johnsbury, Vermont. The conclusions of the Phase I report identified the disposal of debris, potential presence of underground storage tanks and the historical presence of various industrial activities. Based upon these findings Wehran recommended conducting a geophysical survey, drilling and installation of monitoring wells, and the collection of surface and subsurface soils, and groundwater samples.

1.2 PURPOSE

The basis for conducting the Phase II study was a direct result of a Phase I Site Assessment conducted in December 1990, which identified potential environmental concerns associated with the site. The purpose of the Phase II Site Assessment was to evaluate whether a release of hazardous or regulated material had occurred at the CVPS Bay Street Substation site.

1.3 SCOPE OF WORK

The scope of work for the Phase II study included a ground penetrating radar (GPR) survey, the collection of surface soil samples, the completion of subsurface soil borings and the installation of groundwater monitoring wells. The results of the Phase II study will be used to determine if a release of regulated or hazardous materials has occurred at the site.

2.0 LOCATION AND DESCRIPTION

2.1 PROPERTY LOCATION

The property under investigation is located in St. Johnsbury, Vermont. The site is a single parcel divided by the Passumpsic River. Bay Street parallels the site to the west and River Street provides the eastern boundary.

2.2 PROPERTY DESCRIPTION

The site is a single ten-acre parcel divided into two sections by the Passumpsic River. The major portion of the site is on the west side of the river. The second, smaller portion is a strip of land that is the embankment on the east side of the river parallel to River Street (see Figure 2-1). The property on the west side of the river consists of approximately one acre. The site consists of a wooded, natural area and industrially developed land. Bay Street provides the western boundary with a former railroad yard on the opposite side of Bay Street, and oil distributors are located to the south. The northern boundary is adjoined by various industrial businesses.

Figure 2-1 uses letters to represent approximate locations of possible historical practices where a discharge of hazardous or regulated material may have occurred. The locations identified were the areas targeted during the Phase II investigation. A full discussion of the significance of each letter is found in the Phase I report.

WehranEnviroTech

ST. JOHNSBURY PHASE II SITE ASSESSMENT

Prepared For

CVPS

Rutland, Vermont

January 1992

Wehran Engineering Corporation

Burlington, Vermont

Environmental Engineers • Scientists • Constructors

3.0 INVESTIGATION METHODS

To determine if a release of regulated or hazardous materials to groundwater and/or soil has occurred, a limited subsurface investigation was conducted at the site. The methods used for the investigation include ground penetrating radar, soil borings, surface soil samples, groundwater monitoring well installation, and the collecting and analyzing of soil and water samples.

3.1 GROUND PENETRATING RADAR

A ground penetrating radar (GPR) study was completed at the site in November 1990. The GPR study was conducted prior to commencing with the subsurface investigation in order to determine the location of potential underground storage tanks and to define the limits of buried debris. The results indicated the presence of the 4,000 gallon gasoline tank known to be onsite, and only one subsurface disposal location. The complete results of the GPR study were completed under a separate cover dated December 20, 1990.

3.2 SURFACE SOIL SAMPLES

On April 17, 1991, two Wehran scientists collected surface soil samples at the Bay Street Substation site. The location of the surface soil samples was based upon the Phase I study. These soil samples were obtained from three locations identified on Figure 2-1 (Letters H, F, and C). Two samples were collected from the locations that correspond to Letter H and are identified as SS-1 and SS-2. The second location corresponds to Letter F and the samples are identified as SS-3 and SS-4. Four samples were collected from the area represented by the Letter C and are identified as SS-5, SS-6, SS-7, and SS-8. At each sample area, half of the soil samples were analyzed for polychlorinated biphenyls (PCBs), and half were analyzed for base/neutral extractable organic compounds. The soil samples were collected using a post-hole auger. The auger was driven approximately six inches into the ground, and the collected soils were placed in amber jars for laboratory analysis. The post-hole augers were decontaminated between each boring following Wehran's standard operating procedures. The complete analytical results for the samples are included in Appendix A of this report.

3.3 SOIL BORINGS

On April 24 and 25, 1991, a Wehran scientist provided oversight for Tri-State Drilling of West Burke, Vermont for the completion of soil borings. The locations of the soil borings were based upon the Phase I study and the GPR study. The borings were advanced below the water table (where present) using a 4.25 inside diameter(ID) hollow-stem auger. At each location soil samples were collected at five foot intervals with a 2-inch outside diameter (OD), 24-inch long split-spoon sampler in accordance with the American Society for Testing and Materials ASTM-D-1586 (ASTM, 1983). The number of blows required to drive the sampler 24 inches with a 140-pound weight falling freely for 30 inches (Standard Penetration Test) were recorded as a measure of material density. At location MW3, the upgradient well, continuous sampling was conducted.

Geologic descriptions of the soil samples were made immediately in the field in accordance with the Modified Burmister Soil Classification System and a detailed geologic log was prepared (see Appendix B).

Prior to the initiation of drilling, all equipment was decontaminated by steam cleaning. Equipment included the drill rig, rods, bits, augers and split-spoon samplers.

Figure 2-1 identifies the location of the soil borings as SB-1, SB-3, SB-5 and SB-2/MW-2 (Proposed MW-2 could not be completed as a monitoring well due to the lack of soil saturation and auger refusal, and therefore only a boring was completed). Upon completion, each soil boring was sealed using a bentonite slurry. Three additional soil borings were drilled and completed as monitoring wells. The identification of these locations on Figure 2-1 are MW-3, MW-4, and MW-5.

A composite soil sample from each split spoon was collected in a glass container, covered with aluminum foil and sealed with a threaded cap. A headspace analysis was conducted by measuring the vapors released from the soils. This was accomplished by rigorously shaking the partially filled jars to allow for the equitable distribution of potential volatile organic vapors and then inserting the probe of an HNU photoionization detector, through the aluminum foil. The HNU measures the total concentration of the vapors present. The results of the headspace testing was recorded in the field notebook and are presented in the boring logs (see Appendix B).

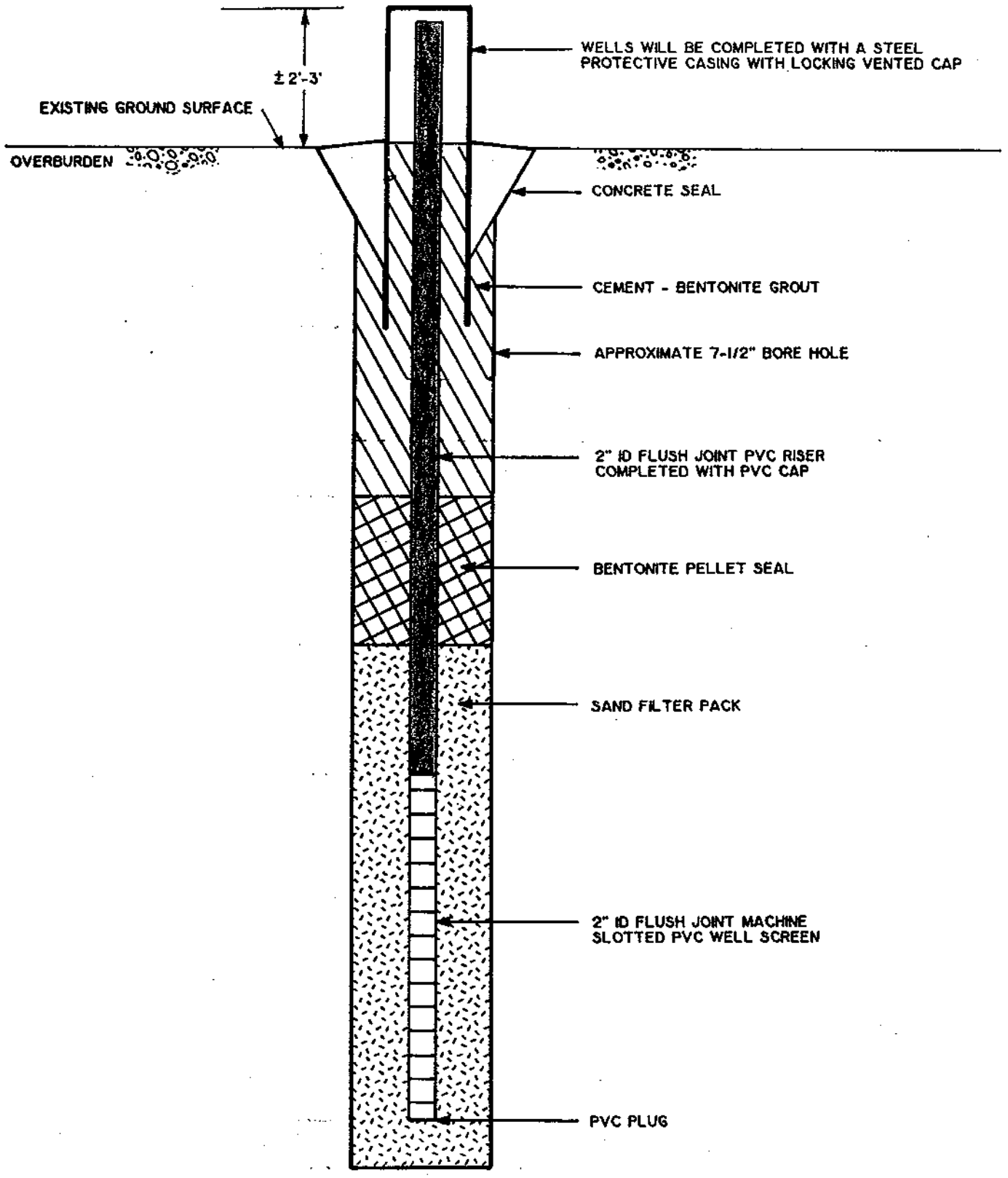
Soil samples to be laboratory analyzed were collected at pre-selected locations. The parameters were chosen based upon the boring location and the corresponding letter that

identifies the potential historical source of discharge. Samples at specific depths were based on specific characteristics of the analytical parameters, as well as historical site conditions. Additional soil borings were recommended in the forebay (Area A) and deeper sampling at SB-4. However, due to the presence of concrete, either at or close to the ground surface, the hollow-stem auger method could not penetrate through the material.

3.4 GROUNDWATER MONITORING WELLS

On April 24 and 25, 1991 a Wehran scientist provided oversight for the installation of groundwater monitoring wells. The installation of the groundwater monitoring wells was completed in accordance with the ASTM "Proposed Recommended Practice for Design and Installation of Groundwater Monitoring Wells in Aquifers" which was developed by the ASTM Subcommittee D18,21 (1984). Figure 3-2 illustrates a typical monitoring well installation. The monitoring wells were constructed of new, two-inch ID Schedule 40, flush-jointed polyvinyl chloride (PVC) riser and 0.010 inch machine slotted screen. Each monitoring well was completed with a sand filter pack installed approximately two feet above and 0.5 feet below the well screen. A minimum of two feet of bentonite pellets was placed above the top of the sand pack. A protective casing with a locking cap was securely placed over the PVC to prevent damage. The monitoring well construction details are presented on the boring logs in Appendix B. Following monitoring well installation, each well was developed by bailing the standing water to remove drill cuttings and fine-grain sediments from in and around the well screen that could potentially clog the screen and to improve the hydraulic connection with the aquifer.

The locations of the groundwater monitoring wells are identified on Figure 2-1 as MW-3, MW-4 and MW-5. Four monitoring wells were initially recommended for installation at the site. However, due to site conditions only three could be installed. Proposed MW-1 was not installed due to auger refusal at four feet below grade. There was no recovery from the split spoon sample collected at the two to four foot interval, therefore, no soils could be collected. Proposed location MW-2 was grouted closed at 25.5 feet due to auger refusal possibly at bedrock and the lack of soil saturation that would have indicated the presence of groundwater. An alternative location was chosen for MW-2 and was identified as MW-5.



WehranEnviroTech

MONITORING WELL INSTALLATION IN OVERBURDEN

FIGURE 3-2

Scale: NTS

Date: 1/16/91

Project No: 006410I

4.0 ANALYTICAL RESULTS

Industrial and Environmental Analysts (IEA) of Essex Junction, Vermont conducted the laboratory analyses and provided all sampling containers for the project. All samples were Federal Expressed to the IEA laboratory designated for the specific sample analyses.

4.1 SURFACE SOIL

The surface soil samples were analyzed for the presence of PCBs and base/neutral extractable organic compounds. The results of the surface soil samples indicate the presence of some base/neutral extractable organic compounds. There were no PCBs detected in any of the samples analyzed.

The analytical results indicate that a total of eighteen base/neutral extractable organic compounds, including acenaphthene (11 to 140 micrograms per kilogram [μg/kg]), acenaphthylene (24 to 150 μg/kg), anthracene (44 to 580 μg/kg), benzo (a) anthracene (120 to 2,000 μg/kg), benzo (b) fluoranthene (170 to 1,700 μg/kg), benzo (k) fluoranthene (49 to 1,400 μg/kg), benzo (g,h,i) perylene (140 to 520 μg/kg), benzo (a) pyrene (120 to 1,600 μg/kg), bis(2-ethylhexyl)phthalate (70 to 170 μg/kg), chrysene (140 to 2,000 μg/kg), dibenzo (a,h) anthracene (27 μg/kg), di-n-butylphthalate (15 μg/kg), fluoranthene (200 to 3,200 μg/kg), fluorene (24 to 190 μg/kg), indeno (1,2,3-cd) pyrene (63 to 550 μg/kg), naphthalene (16 to 49 μg/kg), phenanthrene (130 to 2,000 μg/kg), and pyrene (670 to 3,400 μg/kg) were detected in the soil samples. Micrograms per kilogram is equivalent to parts per billion. Table 4-1 identifies the concentrations of the base/neutral extractable organic compounds that were detected in the soils. The complete analytical results are included in Appendix A.

Sixteen of the eighteen base/neutral extractable organic compounds that were detected are classified as polynuclear aromatic hydrocarbon (PAH) compounds. The other two compounds are phthalate esters. The phthalate esters were detected in low concentration (15 to 170 μg/kg) and do not appear to represent a significant soil contamination problem at the site. PAHs are present in the environment from both natural and anthropogenic (man-made) sources.

Table 4-1
SURFACE SOIL SAMPLING RESULTS
(µg/kg, ppb)

4,391 1409 19,649 11,772

Parameters	SS-1	SS-3	SS-6	SS-8
naphthalene	16J	24J	49J	29J
acenaphthylene	37J	24J	150J	86J
acenapthene	11J	U	140J	28J
Fluorene	24J	U	190J	47J
Phenanthrene	700	130J	2000	950
anthracene	46J	44J	580	290J
Di-n-Butylphthalate	U	15J	U	U
Fluoranthene	880	200J	3200	2000
Pyrene	670	240J	3400	2000
Chrysene	510	140J	2000	1300
Benzo(a)Arthracene	220J	120J	2000	1200
bis(2-Ethylhexyl)phthalate	U	70J	170J	72J
Benzo(b)Fluoranthene	350J	170J	1700	1100
Benzo(k)Fluoranthene	390	49J	1400	830
Benzo(a)Pyrene	230J	120J	1600	1000
Benzo(g,h,i)Perylene	140J	U	520	420
Dibenzo(a,h)Anthracene	27J	U	U	U
Indeno(1,2,3-cd)Pyrene	140J	63J	550	420

U = Indicates that the compound was analyzed for but not detected.

J = Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound met the identification criteria of the method. The concentration listed is an estimated value which is less than the specified minimum detection limit but is greater than zero.

Total PAHs were observed in concentrations ranging from 1,324 μg/kg at SS-3 to 19,179 μg/kg at SS-6. Currently, the State of Vermont and the USEPA do not have any established soil cleanup levels for PAHs in the soil. Based on the analytical results, PAHs are present in the soils. However, these total PAHs do not represent a significant soil contamination risk to the site considering the industrial nature of the site and the surrounding area.

4.2 SOIL BORING

The location of the soil borings and associated analytical methods are identified on Table 4-2. Although nine locations were selected for soil borings, only four had soils collected for laboratory analysis. Those locations not sampled were due to either a lack of access for the drill rig to the area, auger refusal at shallow depths, or a lack of soil recovery.

Presented in Table 4-3 are the analytical results for the soil boring samples that were submitted for chemical characterization that had detectable concentrations. Also included on Table 4-3 are average metal concentrations from soil samples collected by the St. Johnsbury Waste Water Treatment Facility (WWTF) and the Average Trace Metal Content in soils for the United States (EPA SW874). The soil samples collected by the WWTF may be representative of background metal concentrations in the rural environmental setting in St. Johnsbury. Comparison between the analytical results of the soil samples (Bay Street vs WWTF and Average US Trace Metal Content) indicate that arsenic, cadmium, chromium, lead, mercury, nickel and zinc were detected above the WWTF soil concentrations and in specific locations above the Average US Trace Metal Content. However, the metal concentrations that were detected are not significantly higher than the WWTF and the Average US Trace Metal Content soils (i.e., less than an order of magnitude). Additionally, the Bay Street site is located in an industrial area and the background metal concentrations are generally much higher. The base/neutral extractable organic compounds that were detected in the soil were located in an area where treated poles were stored. Therefore, these poles could be the potential source of the compounds detected. As previously discussed, PAHs are present in the environment from both natural and anthropogenic sources.

Additional analyses were completed for volatile organic compounds (EPA Method 8240), total petroleum hydrocarbons (EPA Method 418.1), and PCBs (EPA Method

8080). The results indicate non-detectable concentrations at the quantification limits. VOCs were analyzed at MW-4, SB-3, SB-1, MW-3, MW-2, and a field blank. PCBs were analyzed at MW-1, SB-3, MW-2, and MW-3. TPH were analyzed at MW-4, SB-1, and MW-3.

Currently, the USEPA and the State of Vermont do not have any established soil cleanup levels. However, Wehran believes that both the PAH and metal concentrations detected do not indicate that the site has a PAH or metals contamination problem.

Table 4-2
LOCATION AND ANALYTICAL METHODS OF SOIL BORING SAMPLING

Location	Depth (Ft)	Analytical Methods
SB-4	5 - 7	Total metals Vt RCRA
MW-4	2 - 5 5 - 7	VOC - EPA-8240 TPH-IR - EPA-418.1
SB-1	5 - 7	TPH-IR - EPA 418.1 VOC - EPA 8240
MW-1	0 - 5	PCB - EPA-8080
SB-3	2 - 4 7 - 9	PCB - EPA-8080 Total metals, Vt RCRA VOC - EPA-8240
MW-2	2 - 4 5 - 7	PCB, PAH - EPA-8310 - EPA-8270 Total metals - Vt RCRA VOC - EPA-8240
MW-3	2 - 4 8 - 10 20 - 22 26 - 28 28 - 30	PCB - EPA-8080 Total metals, Vt RCRA VOC - EPA-8240 TPH-IR - EPA-418.1 VOC - EPA-8240
SB-5-1	2 - 4	PCB - EPA-8080

Table 4-3
AVERAGE SOIL CONCENTRATIONS & RESULTS

Parameter	St. Johnsbury WWTF Average Concentration (mg/kg)[1]	Average Trace Metal Content in Soils for the U.S. (mg/kg)[2]	Sample Locations					
			MW-2-2 5' - 7'	MW-2-4 2' - 4'	MW-2-5 2' - 4'	MW-3-4 8' - 10'	SB-3-2 7' - 9'	SB-4-2 5' - 7'
Arsenic[5]	2.0	5.0	11.2	N/A	N/A	5.97	7.81	2.58
Cadmium[5]	0.2	0.6	<0.65	N/A	N/A	<0.65	<0.64	0.93
Chromium[5]	14.1	100.0	12.3	N/A	N/A	12.4	11.9	35.20
Lead[5]	2.0[3]	10.0	170.0	N/A	N/A	225.0	117.0	8.00
Mercury[5]	0.3	0.03	0.089	N/A	N/A	0.278	0.803	<0.057
Nickel[5]	17.5	40	25.2	N/A	N/A	17.8	16.1	23.50
Zinc[5]	46.3	50	107.0	N/A	N/A	131.0	196.0	360.00
Selenium[5]	2.0	0.3	<0.51	N/A	N/A	<0.60	<0.61	<0.56
Silver[5]	0.2	0.05	<3.2	N/A	N/A	<3.3	<3.2	<2.8
Barium[5]	N/A[4]	430.0	98.3	N/A	N/A	135.0	114.0	105.0
Phenanthrene[6]				1600	1600			
Anthracene[6]				480	560			
Fluoranthene[6]				4400	2900			
Pyrene[6]				2800	2600			
Chrysene[6]				1600	1700			
Benzo(b)fluoranthene[6]				1100	1600			
Benzo(k)fluoranthene[6]				1200	1400			
Acenaphthylene[6]				BQL[7]	230			
Benzo(a)anthracene[6]				BQL	1700			
Benzo(g,h,i)perylene[6]				BQL	890			
Benzo(a)pyrene[6]				BQL	1700			
bis(2-Ethylhexyl)phthalate[6]				BQL	240B			
Indeno(1,2,3-cd)pyrene[6]				BQL	900			

13,180 18,020

1. Data provided from Eastern Analytical, Inc., Concord, NH at the approval of St. Johnsbury, WWTF.
2. From USEPA Hazardous Waste Land Treatment SW-874.
3. Sample result was below laboratory detection limit. Therefore, the detection limit concentration was used as assumed background level.
4. N/A = Not analyzed.
5. Units expressed mg/kg.
6. Units expresses in µg/kg. There are no average PAH concentrations available for the ST. Johnsbury WWTF. No PAH analyses were completed for MW-2-2, MW-3-4, SB-3-2, or SB-4-2.
7. BQL = Below quantitation Limits.
8. Present in laboratory blank.

4.3 GROUNDWATER

On April 29, 1991 a Wehran scientist collected groundwater samples from the three onsite wells. The sampling began with the upgradient well, MW-3. Samples were collected first by; purging a minimum of three well volumes or completely evacuating the well; and following recovery, water was collected using a disposable bailer. The sampling order began with VOCs, metals and TPH analyses. Once the sample was collected and identified with the sample location, date and time, the containers were placed in a cooler. A chain-of-custody was completed for each sample collected with the date, time of collection and sampler clearly identified. The chain-of-custody accompanied the cooler to the laboratory.

The analytical parameters and locations for the groundwater monitoring wells are identified on Table 4-4. Table 4-5 identifies the groundwater sampling results. The analytical results indicate concentrations of total metals present in the water sample. The results were then compared to the State drinking water standards as provided in the VTDEC Groundwater Protection Rule and Strategy dated September 8, 1988 (see Appendix C for the complete listing). The Vermont groundwater standards are also presented as total concentrations. The analytical results for samples collected do not indicate any exceedances of the State drinking water standards with the exception of one location, MW-5 which exceeded the cadmium regulatory enforcement levels by 1.34 $\mu g/\ell$.

Table 4-4
LOCATION AND ANALYTICAL METHODS OF GROUNDWATER SAMPLES

Location	Analytical Methods
MW-3	Total Metals, Vt RCRA VOC - EPA-624 TPH-IR - EPA-418.1
MW-4	VOC - EPA-624 TPH-IR - EPA-418.1
MW-5	Total Metals - Vt RCRA VOC - EPA-624

Table 4-5
GROUNDWATER SAMPLING RESULTS

Compound	Enforcement (µg/ℓ)	Sample Location Results (µg/ℓ)		
		MW-3	MW-4	MW-5
Arsenic	50.0	<10.0	N/A[1]	<10.0
Barium	1.0 mg/ℓ	247.0	N/A	65.1
Cadmium	5.0	<5.0	N/A	6.34
Chromium	50.0	<10.0	N/A	13.5
lead	20.0	<10.0	N/A	<10.0
Mercury	2.0	<0.20	N/A	<0.20
Nickel	350.0	<40.0	N/A	<40.0
Selenium	NES[2]	<5.0	N/A	<5.0
Silver	50.0	<20.0	N/A	<10.0
Zinc	5.0 mg/ℓ[3]	<20.0	N/A	<20.0
VOC[4]	See Appendix B	2J[5, 6]	5J[5, 6]	7J[5,6]
TPH	NES[2]	1.1 mg/ℓ	<1.0 mg/ℓ	N/A

1. N/A = Not analyzed
2. No enforcement standards
3. Secondary groundwater quality standards
4. Volatile organic compounds, EPA Method 624
5. Below enforcement standards of 2.42 mg/ℓ
6. Laboratory results identify toluene present at less than the quantification limit

5.0 SITE SURVEY

A site survey was completed by CVPS personnel. The results of the survey were submitted to Wehran Engineering. Sheet 5-1 includes the monitoring well elevations as provided to Wehran. Monitoring well data, as provided in Table 5-1 were used to determine groundwater flow direction. A reliable groundwater contour map could not be developed for the site. This was due to the inability to penetrate through the concrete present near the ground surface in the vicinity of MW-3 and MW-5 due to the drilling method. The additional well in this area would have provided the third data point needed to triangulate and to determine the groundwater flow direction. The location of MW-4, almost 2,000 feet south as well being almost horizontally in line with MW-3 and MW-5, does not allow for a proper reference point. The purpose of placing MW-4 in its location was to determine the impact of potential offsite sources of hazardous or regulated material. Following completion of MW-4 Wehran was informed that MW-4 was, in fact, not on CVPS property as had been originally believed. Wehran is aware that CVPS is negotiating with the property owner. However, a probable conclusion can be drawn from the data that groundwater flow is east, towards the Passumpsic River.

Table 5-1
MONITORING WELL DATA

Well Data	MW-3	MW-4	MW-5
TOC*	571.20	552.08	571.11
Well Depth	28.90	10.44	25.14
Static Water Level	20.74	7.18	24.32
Elevation	550.50	549.36	546.79
Headspace Analysis	ND	ND	ND

*TOC = Top of Casing
ND = Non-detectable

6.0 SUMMARY AND CONCLUSIONS

Based upon the information reviewed and summarized in this site assessment report, Wehran presents the following findings with regard to the Bay Street Substation located in St. Johnsbury, Vermont.

- Surface soil samples indicated the presence of PAHs but no-detectable concentrations of PCBs in the locations sampled. The concentration of PAHs present do not represent a significant soil contamination problem at the site and do not represent a significant risk to human health or the environment.
- Results of the soil boring samples indicated the presence of metals and PAHs. Currently, the USEPA and the State of Vermont do not have any established soil clean-up levels. Given the industrial nature of the area, the metal concentrations and PAHs detected do not indicate that the site has a metals or PAH contamination problem at the locations sampled.
- Groundwater samples were collected at MW-3, MW-4 and MW-5. The analytical results indicated that only cadmium exceeded Vermont regulatory enforcement levels by 1.34 $\mu g/\ell$ at MW-5.
- Due to the presence of concrete in Areas A and D, as identified in Figure 2-1, soil samples could not be obtained at depth with the drilling methods being used by Tri State Drilling. The use of coring equipment to penetrate through the concrete was not within the scope of the project at this phase.
- Due to the presence of the concrete, only three of the four proposed groundwater monitoring wells were installed onsite.

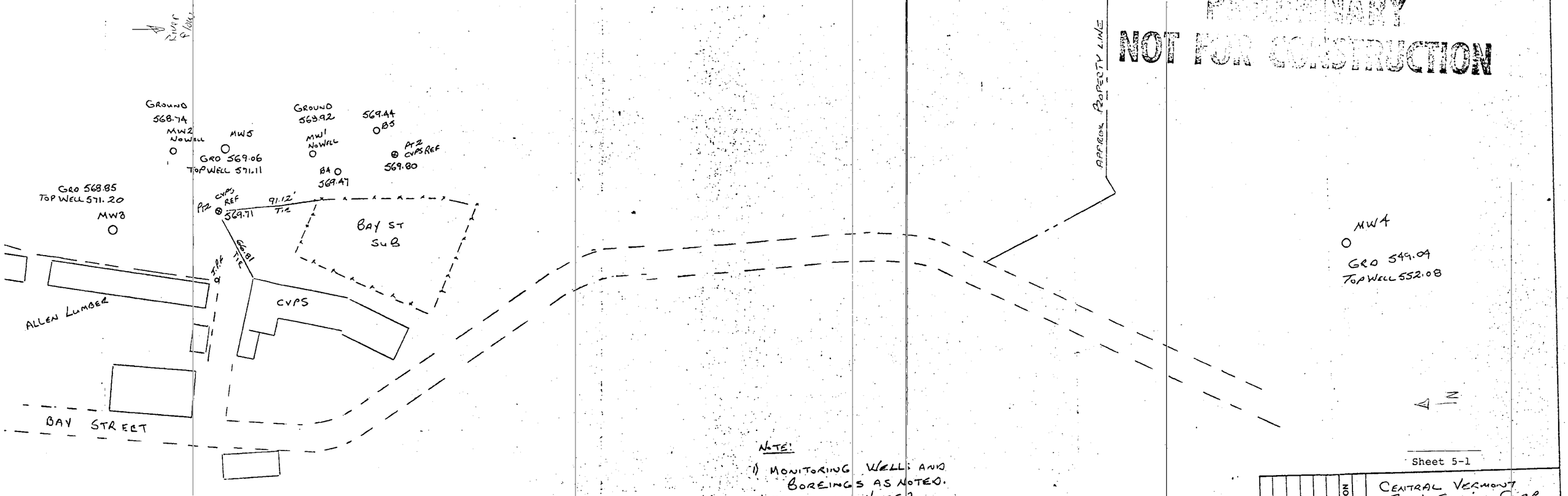
The conclusions drawn from the data indicates that additional work should be completed at the site. Insufficient data were collected from the areas where disposal of material was likely to occur. This was due to the layer of concrete present at shallow depths.

7.0 RECOMMENDATIONS

In order to determine the impact of the material buried beneath the concrete on potential receptors, Wehran would recommend utilizing drilling equipment that can penetrate through the concrete. By using proper coring techniques, groundwater monitoring wells and soil borings could be completed in areas that were previously inaccessible. The additional data collected from the groundwater monitoring wells could provide confirmation of groundwater flow direction and assist in determining the possible impact on the environment.

8.0 LIMITATIONS

1. The observations described in this report were made under the conditions stated herein. The findings presented in the report were based solely upon the services described in Wehran's proposal letter dated March 7, 1990, and not on scientific tasks or procedures beyond the scope of the described services.
2. The information presented in this report was obtained from Federal, State, and local officials, the parties herein referenced, and records maintained by governmental and local agencies. Although there is some overlap in the information provided by these sources, Wehran did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this site assessment.
3. Unless otherwise specified in the report, Wehran did not perform physical, chemical, or biological testing or analyses to determine the presence of asbestos at the site.
4. The objective of this assessment was to provide environmental data for the evaluation of the properties located at the Bay Street Substation, St. Johnsbury, Vermont. Further investigative site information which was not available to Wehran at the time of this assessment may result in modification of the finding stated above. This report has been prepared in accordance with generally accepted site assessment practices. No other warranty, expressed or implied, is made.
5. No conclusion can be drawn regarding the potential presence of radon in the atmosphere in the interiors of the Bay Street Substation in St. Johnsbury, Vermont. Radon gas cannot be detected or inferred to occur without conducting specific analytical procedures.



PRELIMINARY
NOT FOR CONSTRUCTION

NOTE:

1) MONITORING WELLS AND BOREINGS AS NOTED.
2) ELEVATIONS NOTED.
3) PARTIALLY TAKEN FROM LAND AT BAY STREET DEVELOPMENT MAP AB-5-35
4) ELEVATIONS BASED ON USGS DATUM

Sheet 5-1

BY	DESCRIPTION
REVISIONS	

CENTRAL VERMONT PUBLIC SERVICE CORP.
BAY ST
ST JOHNSBURY, VERMONT

APPENDIX A
ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES

CLIENT : IEA-Vermont

JOB NO.: 11170

SOIL

PRIORITY POLLUTANT
BASE/NEUTRAL COMPOUNDS
ug/kg (Dry Weight)

Dilution Factor (DF)	33.30	37.80	37.00	37.00	Lower Limits of Detection (LLD) with no dilution
Method Blank I.D.	>D3303	>D3303	>D3303	>D3303	
Lab I.D.	298SVB	11170001	11170003	11170006	
Client I.D.	SBLK	237-108-1 551	237-108-3 553	237-108-6 556	
Compound					
N-Nitrosodimethylamine	U	U	U	U	10
bis(-2-Chloroethyl)Ether	U	U	U	U	10
1,3-Dichlorobenzene	U	U	U	U	10
1,4-Dichlorobenzene	U	U	U	U	10
1,2-Dichlorobenzene	U	U	U	U	10
bis(2-chloroisopropyl)Ether	U	U	U	U	10
Hexachloroethane	U	U	U	U	10
N-Nitroso-Di-n-Propylamine	U	U	U	U	10
Nitrobenzene	U	U	U	U	10
Isophorone	U	U	U	U	10
bis(-2-Chloroethoxy)Methane	U	U	U	U	10
1,2,4-Trichlorobenzene	U	U	U	U	10
Naphthalene	U	16J	24J	49J	10
Hexachlorobutadiene	U	U	U	U	10
Hexachlorocyclopentadiene	U	U	U	U	10
2-Chloronaphthalene	U	U	U	U	10
Dimethyl Phthalate	U	U	U	U	10
Acenaphthylene	U	37J	24J	150J	10
2,6-Dinitrotoluene	U	U	U	U	10
Acenaphthene	U	11J	U	140J	10
2,4-Dinitrotoluene	U	U	U	U	10
Diethylphthalate	U	U	U	U	10
Fluorene	U	24J	U	190J	10
1,2-Diphenyl hydrazine	U	U	U	U	10
4-Chlorophenyl-phenylether	U	U	U	U	10
4-Bromophenyl-phenylether	U	U	U	U	10
N-Nitrosodiphenylamine	U	U	U	U	10
Hexachlorobenzene	U	U	U	U	10
Phenanthrene	U	700 ✓	130J	2,000 ✓	10
Anthracene	U	46J	44J	580 ✓	10
Di-n-Butylphthalate	U	U	15J	U	10
Fluoranthene	U	880 ✓	200J	3,200 ✓	10
Benzidine	U	U	U	U	80
Pyrene	U	670 ✓	240J	3,400 ✓	10
Butylbenzylphthalate	U	U	U	U	10
3,3'-Dichlorobenzidine	U	U	U	U	20
Chrysene	U	510 ✓	140J	2,000 ✓	10
Benzo(a)Anthracene	U	220J	120J	2,000 ✓	10
bis(2-Ethylhexyl)Phthalate	U	U	70J	170J	10

CLIENT: IEA - VT

JOB NO. 20910-11170

SOIL

PCBs
Units: ug/kg (dry weight)

Dilution Factor (DF)	1.00	1.10	1.33	1.37	1.07	
Method Blank I.D.	DF2B 223D 002	DF2B 223D 002	DF2B 223D 002	DF2B 223D 002	DF2B 223D 002	Lower Limits of Detection (LLD) with no Dilution*
Lab I.D.	QC1934 P	11170 002	11170 004	11170 005	11170 007	
Client I.D.	METHOD BLANK	237-180-2 552	237-180-4 554	237-180-5 555	237-180-7 557	
Compound						
Aroclor - 1016	U	U	U	U	U	53
Aroclor - 1221	U	U	U	U	U	53
Aroclor - 1232	U	U	U	U	U	53
Aroclor - 1242	U	U	U	U	U	53
Aroclor - 1248	U	U	U	U	U	53
Aroclor - 1254	U	U	U	U	U	53
Aroclor - 1260	U	U	U	U	U	53

*MDL (Minimum Detection Limit) = LLD x DF

iea

Dilution Factor (DF)	33.30	37.80	37.00	37.00	Lower Limits of Detection (LLD) with no dilution
Method Blank	>D3303	>D3303	>D3303	>D3303	
Lab I.D.	298SVB	11170001	11170003	11170006	
Client I.D.	SBLK	237-108-1 551	237-108-3 553	237-108-6 556	
Compound					
Di-n-Octyl Phthalate	U	U	U	U	10
Benzo(b)Fluoranthene	U	350J	170J	1,700	10
Benzo(k)Fluoranthene	U	390	49J	1,400	10
Benzo(a)Pyrene	U	230J	120J	1,600	10
Benzo(g,h,i)Perylene	U	140J	U	520	10
Dibenzo(a,h)Anthracene	U	27J	U	U	10
Indeno(1,2,3-cd)Pyrene	U	140J	63J	550	10

*MDL (Minimum Detection Limit) = LLD X DF

CLIENT : IEA-Vermont

JOB NO.: 11170

SOIL

PRIORITY POLLUTANT
BASE/NEUTRAL COMPOUNDS
ug/kg (Dry Weight)

Compound					Lower Limits of Detection (LLD) with no dilution
Dilution Factor (DF)	37.00				
Method Blank I.D.	>D3303				
Lab I.D.	11170008				
Client I.D.	237-108-8 SS				
N-Nitrosodimethylamine	U				10
bis(-2-Chloroethyl)Ether	U				10
1,3-Dichlorobenzene	U				10
1,4-Dichlorobenzene	U				10
1,2-Dichlorobenzene	U				10
bis(2-chloroisopropyl)Ether	U				10
Hexachloroethane	U				10
N-Nitroso-Di-n-Propylamine	U				10
Nitrobenzene	U				10
Isophorone	U				10
bis(-2-Chloroethoxy)Methane	U				10
1,2,4-Trichlorobenzene	U				10
Naphthalene	29J				10
Hexachlorobutadiene	U				10
Hexachlorocyclopentadiene	U				10
2-Chloronaphthalene	U				10
Dimethyl Phthalate	U				10
Acenaphthylene	86J				10
2,6-Dinitrotoluene	U				10
Acenaphthene	28J				10
2,4-Dinitrotoluene	U				10
Diethylphthalate	U				10
Fluorene	47J				10
1,2-Diphenyl hydrazine	U				10
4-Chlorophenyl-phenylether	U				10
4-Bromophenyl-phenylether	U				10
N-Nitrosodiphenylamine	U				10
Hexachlorobenzene	U				10
Phenanthrene	950 ✓				10
Anthracene	290J				10
Di-n-Butylphthalate	U				10
Fluoranthene	2,000 ✓				10
Benzidine	U				80
Pyrene	2,000 ✓				10
Butylbenzylphthalate	U				10
3,3'-Dichlorobenzidine	U				20
Chrysene	1,300 ✓				10
Benzo(a)Anthracene	1,200 ✓				10
bis(2-Ethylhexyl)Phthalate	72J				10

Dilution Factor (DF)	37.00				Lower Limits of Detection (LLD) with no dilution
Method Blank	>D3303				
Lab I.D.	11170008				
Client I.D.	237-108-8 SA				
Compound					
Di-n-Octyl Phthalate	U				10
Benzo(b)Fluoranthene	1,100				10
Benzo(k)Fluoranthene	830				10
Benzo(a)Pyrene	1,000				10
Benzo(g,h,i)Perylene	420				10
Dibenzo(a,h)Anthracene	U				10
Indeno(1,2,3-cd)Pyrene	420				10

*MDL (Minimum Detection Limit) = LLD X DF

APPENDIX A
ANALYTICAL RESULTS FOR SOIL BORINGS

Industrial & Environmental Analysts, Inc.
P.O. Box 626
Essex Junction, Vermont 05453
(802) 878-5138
FAX (802) 878-6765

LAB RESULTS

5/13/91

Wehran Engineering
1 Mill Street, Chace Mill
Burlington, VT 05401-1532

IEA # 237116
Date Received: 4/26/91 Date Collected: 4/26/91
Total Samples Received: 21 Total Parameters Requested: 57
Reviewed & Approved by _____

Attention: Andrea Asch

Sa#	Sample I.D.	Parameter Studied	Results	Comments
1	SB-4-2 5-7'	Arsenic, total by graphite furnace	2.58 mg/Kg	
8	SB-3-2 7-9'	Arsenic, total by graphite furnace	7.81 mg/Kg	
11	MW-2-2 5'-7'	Arsenic, total by graphite furnace	11.2 mg/Kg	
18	MW-3-4 8'-10'	Arsenic, total by graphite furnace	5.97 mg/Kg	
1	SB-4-2 5-7'	Barium, total	105 mg/Kg	
8	SB-3-2 7-9'	Barium, total	114 mg/Kg	
11	MW-2-2 5'-7'	Barium, total	98.3 mg/Kg	
18	MW-3-4 8'-10'	Barium, total	135 mg/Kg	
1	SB-4-2 5-7'	Cadmium, total	0.93 mg/Kg	
8	SB-3-2 7-9'	Cadmium, total	<0.64 mg/Kg	
11	MW-2-2 5'-7'	Cadmium, total	<0.65 mg/Kg	
18	MW-3-4 8'-10'	Cadmium, total	<0.65 mg/Kg	
1	SB-4-2 5-7'	Chromium, total	35.2 mg/Kg	
8	SB-3-2 7-9'	Chromium, total	11.9 mg/Kg	
11	MW-2-2 5'-7'	Chromium, total	12.3 mg/Kg	
18	MW-3-4 8'-10'	Chromium, total	12.4 mg/Kg	
21	Field Blank	GC/MS Purgeables (special)	-	See attached sheets.
3	MW-4-2 5-7'	IR Petroleum hydrocarbons (special)	<10 mg/Kg	
5	SB-1-2 5-7'	IR Petroleum hydrocarbons (special)	<10 mg/Kg	
16	MW-3-2 26'-28'	IR Petroleum hydrocarbons (special)	<10 mg/Kg	
1	SB-4-2 5-7'	Lead, total by graphite furnace	8.00 mg/Kg	
8	SB-3-2 7-9'	Lead, total by graphite furnace	117 mg/Kg	
11	MW-2-2 5'-7'	Lead, total by graphite furnace	170 mg/Kg	
18	MW-3-4 8'-10'	Lead, total by graphite furnace	225 mg/Kg	
1	SB-4-2 5-7'	Mercury, total	<0.057 mg/Kg	

Comments:

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LAB RESULTS

5/13/91

Wehran Engineering
1 Mill Street, Chace Mill
Burlington, VT 05401-1532

IEA # 237116
Date Received: 4/26/91
Date Collected: 4/26/91
Total Samples Received: 21
Total Parameters Requested: 57
Reviewed & Approved by _____

Attention: Andrea Asch

Sa#	Sample I.D.	Parameter Studied	Results	Comments
8	SB-3-2 7-9'	Mercury, total	0.803 mg/Kg	
11	MW-2-2 5'-7'	Mercury, total	0.089 mg/Kg	
18	MW-3-4 8'-10'	Mercury, total	0.278 mg/Kg	
1	SB-4-2 5-7'	Nickel, total	23.5 mg/Kg	
8	SB-3-2 7-9'	Nickel, total	16.1 mg/Kg	
11	MW-2-2 5'-7'	Nickel, total	25.2 mg/Kg	
18	MW-3-4 8'-10'	Nickel, total	17.8 mg/Kg	
13	MW-2-4 2'-4'	Polynuclear aromatic hydrocarbons(special)	-	See attached sheets.
1	SB-4-2 5-7'	Selenium, total by graphite furnace	<0.56 mg/Kg	
8	SB-3-2 7-9'	Selenium, total by graphite furnace	<0.61 mg/Kg	
11	MW-2-2 5'-7'	Selenium, total by graphite furnace	<0.51 mg/Kg	
18	MW-3-4 8'-10'	Selenium, total by graphite furnace	<0.60 mg/Kg	
1	SB-4-2 5-7'	Silver, total by graphite furnace	<2.8 mg/Kg	
8	SB-3-2 7-9'	Silver, total by graphite furnace	<3.2 mg/Kg	
11	MW-2-2 5'-7'	Silver, total by graphite furnace	<3.2 mg/Kg	
18	MW-3-4 8'-10'	Silver, total by graphite furnace	<3.3 mg/Kg	
6	MW-1-1 0-5'	SW-846 Method 8080 (special)	-	See attached sheets.
7	SB-3-1 2-4'	SW-846 Method 8080 (special)	-	See attached sheets.
10	MW-2-1 2'-4'	SW-846 Method 8080 (special)	-	See attached sheets.
15	MW-3-1 2'-4'	SW-846 Method 8080 (special)	-	See attached sheets.
20	SB-5-1 2'-4'	SW-846 Method 8080 (special)	-	See attached sheets.
2	MW-4-1 2-5'	SW-846 Method 8240 (special)	-	See attached sheets.
4	SB-1-1 5-7'	SW-846 Method 8240 (special)	-	See attached sheets.
9	SB-3-3 7-9'	SW-846 Method 8240 (special)	-	See attached sheets.
12	MW-2-3 5'-7'	SW-846 Method 8240 (special)	-	See attached sheets.

Comments:

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LAB RESULTS

5/13/91

Wehran Engineering
1 Mill Street, Chace Mill
Burlington, VT 05401-1532

IEA # 237116
Date Received: 4/26/91
Date Collected: 4/26/91
Total Samples Received: 21
Total Parameters Requested: 57
Reviewed & Approved by _____

Attention: Andrea Asch

Sa#	Sample I.D.	Parameter Studied	Results	Comments
17	MW-3-3 28'-30'	SW-846 Method 8240 (special)	-	See attached sheets.
19	MW-3-5 20'-22'	SW-846 Method 8240 (special)	-	See attached sheets.
14	MW-2-5 2'-4'	SW-846 Method 8270 Base/neutrals (s)	-	See attached sheets.
1	SB-4-2 5-7'	Zinc, total	360 mg/Kg	
8	SB-3-2 7-9'	Zinc, total	196 mg/Kg	
11	MW-2-2 5'-7'	Zinc, total	107 mg/Kg	
18	MW-3-4 8'-10'	Zinc, total	131 mg/Kg	

Comments:

Analysis Report: EPA Method 8270
Base/Neutral Fraction

Client:	Wehran-VT	IEA ID:	237-116-14
Project:	00641.01	Sample:	MW2-5 (2-4')
Report Date:	05/13/91	Type:	Water
Collected:	04/24/92	Container:	Glass
Received:	04/26/91		
Extracted:	05/06/91		
Analyzed:	05/08/91	Dilution	
By:	Mace	Factor:	1.0

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Acenaphthene	10	BQL
2	Acenaphthylene	10	230
3	Anthracene	10	560
4	Benzo(a)anthracene	10	1700
5	Benzo(b)fluoranthene	10	1600
6	Benzo(k)fluoranthene	10	1400
7	Benzo(g,h,i)perylene	10	890
8	Benzo(a)pyrene	10	1700
9	Benzyl Alcohol	20	BQL
10	bis(2-Chloroethoxy)methane	10	BQL
11	bis(2-Chloroethyl)ether	10	BQL
12	bis(2-Chloroisopropyl)ether	10	BQL
13	bis(2-Ethylhexyl)phthalate	10	240B
14	4-Bromophenyl phenyl ether	10	BQL
15	Benzyl butyl phthalate	10	BQL
16	4-Chloroaniline	20	BQL
17	2-Chloronaphthalene	10	BQL
18	4-Chlorophenyl phenyl ether	10	BQL
19	Chrysene	10	1700
20	Dibenzo(a,h)anthracene	10	BQL
21	Dibenzofuran	10	BQL
22	Di-n-butyl phthalate	10	BQL
23	1,3-Dichlorobenzene	10	BQL
24	1,4-Dichlorobenzene	10	BQL
25	1,2-Dichlorobenzene	10	BQL
26	3,3'-Dichlorobenzidine	20	BQL
27	Diethyl phthalate	10	BQL
28	Dimethyl phthalate	10	BQL
29	2,4-Dinitrotoluene	10	BQL
30	2,6-Dinitrotoluene	10	BQL
31	Di-n-octylphthalate	10	BQL
32	Fluoranthene	10	2900
33	Fluorene	10	BQL
34	Hexachlorobenzene	10	BQL
35	Hexachlorobutadiene	10	BQL
36	Hexachlorocyclopentadiene	10	BQL
37	Hexachloroethane	10	BQL
38	Indeno(1,2,3-cd)pyrene	10	900

Analysis Report: EPA Method 8270
Base/Neutral Fraction

Client: Wehran-VT
Project: 00641.01
IEA ID: 237-116-14
Sample: MW2-5 (2-4')

Number	Compound	PQL (ug/L)	Result (ug/L)
39	Isophorone	10	BQL
40	2-Methylnaphthalene	10	BQL
41	Naphthalene	10	BQL
42	2-Nitroaniline	50	BQL
43	3-Nitroaniline	50	BQL
44	4-Nitroaniline	50	BQL
45	Nitrobenzene	10	BQL
46	N-Nitroso-di-n-propylamine	10	BQL
47	N-Nitrosodiphenylamine	10	BQL
48	Phenanthrene	10	1600
49	Pyrene	10	2600
50	1,2,4-Trichlorobenzene	10	BQL

Comments:

PQL = Practical quantitation limit.
BQL = Below quantitation limit.

BASE/NEUTRAL EXTRACTABLES
SW-846 METHOD 8270

IEA Sample Number: 181-564
Sample Identification: SVB249 lab blank
Date Extracted: 5/6/91
Date Analyzed: 5/8/91 By: Mace

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Acenaphthene	10	BQL
2	Acenaphthylene	10	BQL
3	Anthracene	10	BQL
4	Benzo(a)anthracene	10	BQL
5	Benzo(b)fluoranthene	10	BQL
6	Benzo(k)fluoranthene	10	BQL
7	Benzo(g,h,i)perylene	10	BQL
8	Benzo(a)pyrene	10	BQL
9	Benzyl alcohol	20	BQL
10	bis(2-Chloroethoxy)methane	10	BQL
11	bis(2-Chloroethyl)ether	10	BQL
12	bis(2-Chloroisopropyl)ether	10	BQL
13	bis(2-Ethylhexyl)phthalate	10	83J
14	4-Bromophenyl phenyl ether	10	BQL
15	Benzyl butyl phthalate	10	BQL
16	4-Chloroaniline	20	BQL
17	2-Chloronaphthalene	10	BQL
18	4-Chlorophenyl phenyl ether	10	BQL
19	Chrysene	10	BQL
20	Dibenzo(a,h)anthracene	10	BQL
21	Dibenzofuran	10	BQL
22	Di-n-butylphthalate	10	BQL
23	1,3-Dichlorobenzene	10	BQL
24	1,4-Dichlorobenzene	10	BQL
25	1,2-Dichlorobenzene	10	BQL
26	3,3'-Dichlorobenzidine	20	BQL
27	Diethyl phthalate	10	BQL
28	Dimethyl phthalate	10	BQL
29	2,4-Dinitrotoluene	10	BQL
30	2,6-Dinitrotoluene	10	BQL
31	Di-n-octylphthalate	10	BQL
32	Fluoranthene	10	BQL
33	Fluorene	10	BQL
34	Hexachlorobenzene	10	BQL
35	Hexachlorobutadiene	10	BQL
36	Hexachlorocyclopentadiene	10	BQL
37	Hexachloroethane	10	BQL
38	Indeno(1,2,3-cd)pyrene	10	BQL
39	Isophorone	10	BQL

BASE/NEUTRAL EXTRACTABLES
SW-846 METHOD 8270

IEA Sample Number: 181-564
Sample Identification: SVB249
Date Extracted: 5/6/91
Date Analyzed: 5/8/91 By: Mace

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
40	2-Methylnaphthalene	10	BQL
41	Naphthalene	10	BQL
42	2-Nitroaniline	50	BQL
43	3-Nitroaniline	50	BQL
44	4-Nitroaniline	50	BQL
45	Nitrobenzene	10	BQL
46	N-Nitroso-di-n-propylamine	10	BQL
47	N-Nitrosodiphenylamine	10	BQL
48	Phenanthrene	10	BQL
49	Pyrene	10	BQL
50	1,2,4-Trichlorobenzene	10	BQL

Comments:

BQL = Below Quantitation Limit
J = Estimated Value

Industrial & Environmental Analysts, Inc.
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GC/MS Purgeables
SW-846 Method 8240

IEA Sample No.: 237116 12

Sample Identification: MW-2-3 5'-7'

Date Analyzed: May 8, 1991 **By:** Young

Number	Compound	Soil Quantitation Limit µg/Kg	Concentration µg/Kg
1	ACETONE	100	BQL
2	BENZENE	5	BQL
3	BROMODICHLOROMETHANE	5	BQL
4	BROMOFORM	5	BQL
5	BROMOMETHANE	10	BQL
6	2- BUTANONE	100	BQL
7	CARBON DISULFIDE	5	BQL
8	CARBON TETRACHLORIDE	5	BQL
9	CHLOROBENZENE	5	BQL
10	CHLORODIBROMOMETHANE	5	BQL
11	CHLOROETHANE	10	BQL
12	2- CHLOROETHYL VINYL ETHER	10	BQL
13	CHLOROFORM	5	BQL
14	CHLOROMETHANE	10	BQL
15	1,1- DICHLOROETHANE	5	BQL
16	1,2- DICHLOROETHANE	5	BQL
17	1,1- DICHLOROETHENE	5	BQL
18	1,2-DICHLOROETHENE (TOTAL)	5	BQL
19	1,2- DICHLOROPROPANE	5	BQL
20	cis- 1,3- DICHLOROPROPENE	5	BQL
21	trans- 1,3- DICHLOROPROPENE	5	BQL
22	ETHYLBENZENE	5	BQL
23	2- HEXANONE	50	BQL
24	METHYLENE CHLORIDE	5	BQL
25	4- METHYL- 2- PENTANONE	50	BQL
26	STYRENE	5	BQL
27	1,1,2,2- TETRACHLOROETHANE	5	BQL
28	TETRACHLOROETHENE	5	BQL
29	TOLUENE	5	BQL
30	1,1,1- TRICHLOROETHANE	5	BQL
31	1,1,2- TRICHLOROETHANE	5	BQL
32	TRICHLOROETHENE	5	BQL
33	VINYL ACETATE	50	BQL
34	VINYL CHLORIDE	10	BQL
35	XYLENES (TOTAL)	5	BQL

Comments: BQL - BELOW QUANTITATION LIMIT

Analysis Report: EPA Method 8310
Polynuclear Aromatic Hydrocarbons

Client:	Wehran-VT	IEA ID:	237-116-13
Project:	00641.01	Sample:	MW2-4 (2-4')
Report Date:	05/13/91	Type:	Soil
Collected:	04/24/91	Container:	Glass
Received:	04/26/91		
Extracted:	05/08/91		
Analyzed:	05/08/91	Dilution	
By:	Rich	Factor:	1.0

Number	Compound	PQL (ug/kg dry wt.)	Result (ug/kg dry wt
1	Acenaphthylene	350	BQL
2	Acenapthene	350	BQL
3	Anthracene	350	480
4	Benzo(a)Anthracene	350	BQL
5	Benzo(a)pyrene	350	BQL
6	Benzo(b)fluoranthene	350	1100
7	Benzo(g,h,i)perylene	350	BQL
8	Benzo(k)fluoranthene	350	1200
9	Chrysene	350	1600
10	Dibenzo(a,h)anthracene	350	BQL
11	Fluoranthene	350	4400
12	Fluorene	350	BQL
13	Indeno(1,2,3-cd)pyrene	350	BQL
14	Phenanthrene	350	1600
15	Napthalene	350	BQL
16	Pyrene	350	2800

Comments:

BQL = Below Quantitation Limit
PQL = Practical Quantitation Limit

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Pesticides/PCBs

SW-846 Method 8080 Compounds

IEA Sample No. 237116 10
Sample Identification MW-2-1 2'-4'
Date Analyzed May 8, 1991 **By** Travis

Number	Compound	Soil Quantitation Limit µg/Kg	Concentration µg/Kg
1	alpha - BHC	10	BQL
2	beta - BHC	10	BQL
3	delta - BHC	10	BQL
4	gamma - BHC (Lindane)	10	BQL
5	Heptachlor	10	BQL
6	Aldrin	10	BQL
7	Heptachlor epoxide	10	BQL
8	Endosulfan I	10	BQL
9	Dieldrin	20	BQL
10	4,4'-DDE	20	BQL
11	Endrin	20	BQL
12	Endosulfan II	20	BQL
13	4,4'-DDD	20	BQL
14	Endosulfan sulfate	20	BQL
15	4,4'-DDT	20	BQL
16	Endrin Ketone	20	BQL
17	Methoxychlor	100	BQL
18	alpha-Chlordane	100	BQL
19	gamma-Chlordane	100	BQL
20	Toxaphene	200	BQL
21	PCB 1016	100	BQL
22	PCB 1221	100	BQL
23	PCB 1232	100	BQL
24	PCB 1242	100	BQL
25	PCB 1248	100	BQL
26	PCB 1254	200	BQL
27	PCB 1260	200	BQL

Comments

BQL - BELOW QUANTITATION LIMIT
Chlordane (technical) = <100 µg/Kg
Endrin aldehyde = <20 µg/Kg
Quantitation limit adjusted for % moisture.

Analysis Report: EPA Method 8080

Client:	Wehran-VT	IEA ID:	237-116-15
Project:	00641.01	Sample:	MW3-1 (2-4')
Report Date:	05/13/91	Type:	Soil
Collected:	04/24/91	Container:	Glass
Received:	04/26/91		
Extracted:	05/06/91		
Analyzed:	05/08/91	Dilution	
By:	Travis	Factor:	1.0

Number	Compound	PQL (ug/kg dry wt.)	Result (ug/kg dry wt.)
1	Aldrin	10	BQL
2	alpha-BHC	10	BQL
3	beta-BHC	10	BQL
4	delta-BHC	10	BQL
5	gamma-BHC	10	BQL
6	alpha-Chlordane	100	BQL
7	gamma-Chlordane	100	BQL
8	4,4'-DDD	20	BQL
9	4,4'-DDE	20	BQL
10	4,4'-DDT	20	BQL
11	Dieldrin	20	BQL
12	Endosulfan I	10	BQL
13	Endosulfan II	20	BQL
14	Endosulfan sulfate	20	BQL
15	Endrin	20	BQL
16	Endrin Ketone	20	BQL
17	Heptachlor	10	BQL
18	Heptachlor epoxide	10	BQL
19	Methoxychlor	100	BQL
20	Toxaphene	100	BQL
21	PCB 1016	100	BQL
22	PCB 1221	100	BQL
23	PCB 1232	100	BQL
24	PCB 1242	100	BQL
25	PCB 1248	100	BQL
26	PCB 1254	200	BQL
27	PCB 1260	200	BQL

Comments:

BQL = Below Quantitation Limit.
PQL = Practical Quantitation Limit.
Quantitation limit adjusted for % moisture.
Chlordane (Technical) <100 ug/kg.
Endrin aldehyde <20 ug/kg.

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Pesticides/PCBs

SW-846 Method 8080 Compounds

IEA Sample No. 237116 6
Sample Identification MW-1-10-5'
Date Analyzed May 8, 1991 **By** Travis

Number	Compound	Soil Quantitation Limit µg/Kg	Concentration µg/Kg
1	alpha - BHC	8.0	BQL
2	beta - BHC	8.0	BQL
3	delta - BHC	8.0	BQL
4	gamma - BHC (Lindane)	8.0	BQL
5	Heptachlor	8.0	BQL
6	Aldrin	8.0	BQL
7	Heptachlor epoxide	8.0	BQL
8	Endosulfan I	8.0	BQL
9	Dieldrin	16	BQL
10	4,4'-DDE	16	BQL
11	Endrin	16	BQL
12	Endosulfan II	16	BQL
13	4,4'-DDD	16	BQL
14	Endosulfan sulfate	16	BQL
15	4,4'-DDT	16	BQL
16	Endrin Ketone	16	BQL
17	Methoxychlor	80	BQL
18	alpha-Chlordane	80	BQL
19	gamma-Chlordane	80	BQL
20	Toxaphene	160	BQL
21	PCB 1016	80	BQL
22	PCB 1221	80	BQL
23	PCB 1232	80	BQL
24	PCB 1242	80	BQL
25	PCB 1248	80	BQL
26	PCB 1254	160	BQL
27	PCB 1260	160	BQL

Comments

BQL - BELOW QUANTITATION LIMIT
Chlordane (technical) = <80 µg/Kg
Endrin aldehyde = <16 µg/Kg

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GC/MS Purgeables
SW-846 Method 8240

IEA Sample No.: 237116 19

Sample Identification: MW-3-5 20'-22'

Date Analyzed: May 8, 1991 **By:** Young

Number	Compound	Soil Quantitation Limit ug/Kg	Concentration ug/Kg
1	ACETONE	100	BQL
2	BENZENE	5	BQL
3	BROMODICHLOROMETHANE	5	BQL
4	BROMOFORM	5	BQL
5	BROMOMETHANE	10	BQL
6	2- BUTANONE	100	BQL
7	CARBON DISULFIDE	5	BQL
8	CARBON TETRACHLORIDE	5	BQL
9	CHLOROBENZENE	5	BQL
10	CHLORODIBROMOMETHANE	5	BQL
11	CHLOROETHANE	10	BQL
12	2- CHLOROETHYL VINYL ETHER	10	BQL
13	CHLOROFORM	5	BQL
14	CHLOROMETHANE	10	BQL
15	1,1- DICHLOROETHANE	5	BQL
16	1,2- DICHLOROETHANE	5	BQL
17	1,1- DICHLOROETHENE	5	BQL
18	1,2-DICHLOROETHENE (TOTAL)	5	BQL
19	1,2- DICHLOROPROPANE	5	BQL
20	cis- 1,3- DICHLOROPROPENE	5	BQL
21	trans- 1,3- DICHLOROPROPENE	5	BQL
22	ETHYLBENZENE	5	BQL
23	2- HEXANONE	50	BQL
24	METHYLENE CHLORIDE	5	BQL
25	4- METHYL- 2- PENTANONE	50	BQL
26	STYRENE	5	BQL
27	1,1,2,2- TETRACHLOROETHANE	5	BQL
28	TETRACHLOROETHENE	5	BQL
29	TOLUENE	5	BQL
30	1,1,1- TRICHLOROETHANE	5	BQL
31	1,1,2- TRICHLOROETHANE	5	BQL
32	TRICHLOROETHENE	5	BQL
33	VINYL ACETATE	50	BQL
34	VINYL CHLORIDE	10	BQL
35	XYLENES (TOTAL)	5	BQL

Comments: BQL - BELOW QUANTITATION LIMIT

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GC/MS Purgeables
SW-846 Method 8240

IEA Sample No.: 237116 17

Sample Identification: MW-3-3 28'-30'

Date Analyzed: May 8, 1991 **By:** Harris

Number	Compound	Soil Quantitation Limit µg/Kg	Concentration µg/Kg
1	ACETONE	100	BQL
2	BENZENE	5	BQL
3	BROMODICHLOROMETHANE	5	BQL
4	BROMOFORM	5	BQL
5	BROMOMETHANE	10	BQL
6	2- BUTANONE	100	BQL
7	CARBON DISULFIDE	5	BQL
8	CARBON TETRACHLORIDE	5	BQL
9	CHLOROBENZENE	5	BQL
10	CHLORODIBROMOMETHANE	5	BQL
11	CHLOROETHANE	10	BQL
12	2- CHLOROETHYL VINYL ETHER	10	BQL
13	CHLOROFORM	5	BQL
14	CHLOROMETHANE	10	BQL
15	1,1- DICHLOROETHANE	5	BQL
16	1,2- DICHLOROETHANE	5	BQL
17	1,1- DICHLOROETHENE	5	BQL
18	1,2-DICHLOROETHENE (TOTAL)	5	BQL
19	1,2- DICHLOROPROPANE	5	BQL
20	cis- 1,3- DICHLOROPROPENE	5	BQL
21	trans- 1,3- DICHLOROPROPENE	5	BQL
22	ETHYLBENZENE	5	BQL
23	2- HEXANONE	50	BQL
24	METHYLENE CHLORIDE	5	BQL
25	4- METHYL- 2- PENTANONE	50	BQL
26	STYRENE	5	BQL
27	1,1,2,2- TETRACHLOROETHANE	5	BQL
28	TETRACHLOROETHENE	5	BQL
29	TOLUENE	5	BQL
30	1,1,1- TRICHLOROETHANE	5	BQL
31	1,1,2- TRICHLOROETHANE	5	BQL
32	TRICHLOROETHENE	5	BQL
33	VINYL ACETATE	50	BQL
34	VINYL CHLORIDE	10	BQL
35	XYLENES (TOTAL)	5	BQL

Comments: BQL - BELOW QUANTITATION LIMIT

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GC/MS Purgeables
SW-846 Method 8240

IEA Sample No.: 237116 2

Sample Identification: MW-4-12-5'

Date Analyzed: May 8, 1991 **By:** Harris

Number	Compound	Soil Quantitation Limit µg/Kg	Concentration µg/Kg
1	ACETONE	100	BQL
2	BENZENE	5	BQL
3	BROMODICHLOROMETHANE	5	BQL
4	BROMOFORM	5	BQL
5	BROMOMETHANE	10	BQL
6	2- BUTANONE	100	BQL
7	CARBON DISULFIDE	5	BQL
8	CARBON TETRACHLORIDE	5	BQL
9	CHLOROBENZENE	5	BQL
10	CHLORODIBROMOMETHANE	5	BQL
11	CHLOROETHANE	10	BQL
12	2- CHLOROETHYL VINYL ETHER	10	BQL
13	CHLOROFORM	5	BQL
14	CHLOROMETHANE	10	BQL
15	1,1- DICHLOROETHANE	5	BQL
16	1,2- DICHLOROETHANE	5	BQL
17	1,1- DICHLOROETHENE	5	BQL
18	1,2-DICHLOROETHENE (TOTAL)	5	BQL
19	1,2- DICHLOROPROPANE	5	BQL
20	cis- 1,3- DICHLOROPROPENE	5	BQL
21	trans- 1,3- DICHLOROPROPENE	5	BQL
22	ETHYLBENZENE	5	BQL
23	2- HEXANONE	50	BQL
24	METHYLENE CHLORIDE	5	BQL
25	4- METHYL- 2- PENTANONE	50	BQL
26	STYRENE	5	BQL
27	1,1,2,2- TETRACHLOROETHANE	5	BQL
28	TETRACHLOROETHENE	5	BQL
29	TOLUENE	5	BQL
30	1,1,1- TRICHLOROETHANE	5	BQL
31	1,1,2- TRICHLOROETHANE	5	BQL
32	TRICHLOROETHENE	5	BQL
33	VINYL ACETATE	50	BQL
34	VINYL CHLORIDE	10	BQL
35	XYLENES (TOTAL)	5	BQL

Comments: BQL - BELOW QUANTITATION LIMIT

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GC/MS Purgeables
SW-846 Method 8240

IEA Sample No.: 237116 4

Sample Identification: SB-1-15-7'

Date Analyzed: May 8, 1991 **By:** Young

Number	Compound	Soil Quantitation Limit µg/Kg	Concentration µg/Kg
1	ACETONE	100	BQL
2	BENZENE	5	BQL
3	BROMODICHLOROMETHANE	5	BQL
4	BROMOFORM	5	BQL
5	BROMOMETHANE	10	BQL
6	2- BUTANONE	100	BQL
7	CARBON DISULFIDE	5	BQL
8	CARBON TETRACHLORIDE	5	BQL
9	CHLOROBENZENE	5	BQL
10	CHLORODIBROMOMETHANE	5	BQL
11	CHLOROETHANE	10	BQL
12	2- CHLOROETHYL VINYL ETHER	10	BQL
13	CHLOROFORM	5	BQL
14	CHLOROMETHANE	10	BQL
15	1,1- DICHLOROETHANE	5	BQL
16	1,2- DICHLOROETHANE	5	BQL
17	1,1- DICHLOROETHENE	5	BQL
18	1,2-DICHLOROETHENE (TOTAL)	5	BQL
19	1,2- DICHLOROPROPANE	5	BQL
20	cis- 1,3- DICHLOROPROPENE	5	BQL
21	trans- 1,3- DICHLOROPROPENE	5	BQL
22	ETHYLBENZENE	5	BQL
23	2- HEXANONE	50	BQL
24	METHYLENE CHLORIDE	5	BQL
25	4- METHYL- 2- PENTANONE	50	BQL
26	STYRENE	5	BQL
27	1,1,2,2- TETRACHLOROETHANE	5	BQL
28	TETRACHLOROETHENE	5	BQL
29	TOLUENE	5	BQL
30	1,1,1- TRICHLOROETHANE	5	BQL
31	1,1,2- TRICHLOROETHANE	5	BQL
32	TRICHLOROETHENE	5	BQL
33	VINYL ACETATE	50	BQL
34	VINYL CHLORIDE	10	BQL
35	XYLENES (TOTAL)	5	BQL

Comments: BQL - BELOW QUANTITATION LIMIT

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Pesticides/PCBs
SW-846 Method 8080 Compounds

IEA Sample No. 237116 7
Sample Identification SB-3-1 2-4'
Date Analyzed May 8, 1991 **By** Travis

Number	Compound	Soil Quantitation Limit µg/Kg	Concentration µg/Kg
1	alpha - BHC	10	BQL
2	beta - BHC	10	BQL
3	delta - BHC	10	BQL
4	gamma - BHC (Lindane)	10	BQL
5	Heptachlor	10	BQL
6	Aldrin	10	BQL
7	Heptachlor epoxide	10	BQL
8	Endosulfan I	10	BQL
9	Dieldrin	20	BQL
10	4,4'-DDE	20	BQL
11	Endrin	20	BQL
12	Endosulfan II	20	BQL
13	4,4'-DDD	20	BQL
14	Endosulfan sulfate	20	BQL
15	4,4'-DDT	20	BQL
16	Endrin Ketone	20	BQL
17	Methoxychlor	100	BQL
18	alpha-Chlordane	100	BQL
19	gamma-Chlordane	100	BQL
20	Toxaphene	200	BQL
21	PCB 1016	100	BQL
22	PCB 1221	100	BQL
23	PCB 1232	100	BQL
24	PCB 1242	100	BQL
25	PCB 1248	100	BQL
26	PCB 1254	200	BQL
27	PCB 1260	200	BQL

Comments

BQL - BELOW QUANTITATION LIMIT
Chlordane (technical) = <100 µg/Kg
Endrin aldehyde = <20 µg/Kg
Quantitation limit adjusted for % moisture.

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GC/MS Purgeables
SW-846 Method 8240

IEA Sample No.: 237116 9

Sample Identification: SB-3-3 7-9'

Date Analyzed: May 8, 1991 **By:** Young

Number	Compound	Soil Quantitation Limit µg/Kg	Concentration µg/Kg
1	ACETONE	100	BQL
2	BENZENE	5	BQL
3	BROMODICHLOROMETHANE	5	BQL
4	BROMOFORM	5	BQL
5	BROMOMETHANE	10	BQL
6	2- BUTANONE	100	BQL
7	CARBON DISULFIDE	5	BQL
8	CARBON TETRACHLORIDE	5	BQL
9	CHLOROBENZENE	5	BQL
10	CHLORODIBROMOMETHANE	5	BQL
11	CHLOROETHANE	10	BQL
12	2- CHLOROETHYL VINYL ETHER	10	BQL
13	CHLOROFORM	5	BQL
14	CHLOROMETHANE	10	BQL
15	1,1- DICHLOROETHANE	5	BQL
16	1,2- DICHLOROETHANE	5	BQL
17	1,1- DICHLOROETHENE	5	BQL
18	1,2-DICHLOROETHENE (TOTAL)	5	BQL
19	1,2- DICHLOROPROPANE	5	BQL
20	cis- 1,3- DICHLOROPROPENE	5	BQL
21	trans- 1,3- DICHLOROPROPENE	5	BQL
22	ETHYLBENZENE	5	BQL
23	2- HEXANONE	50	BQL
24	METHYLENE CHLORIDE	5	BQL
25	4- METHYL- 2- PENTANONE	50	BQL
26	STYRENE	5	BQL
27	1,1,2,2- TETRACHLOROETHANE	5	BQL
28	TETRACHLOROETHENE	5	BQL
29	TOLUENE	5	BQL
30	1,1,1- TRICHLOROETHANE	5	BQL
31	1,1,2- TRICHLOROETHANE	5	BQL
32	TRICHLOROETHENE	5	BQL
33	VINYL ACETATE	50	BQL
34	VINYL CHLORIDE	10	BQL
35	XYLENES (TOTAL)	5	BQL

Comments: BQL - BELOW QUANTITATION LIMIT

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Pesticides/PCBs

SW-846 Method 8080 Compounds

IEA Sample No. 237116 20
Sample Identification SB-5-1 2'-4'
Date Analyzed May 8, 1991 **By** Travis

Number	Compound	Soil Quantitation Limit µg/Kg	Concentration µg/Kg
1	alpha - BHC	80	BQL
2	beta - BHC	80	BQL
3	delta - BHC	80	BQL
4	gamma - BHC (Lindane)	80	BQL
5	Heptachlor	80	BQL
6	Aldrin	80	BQL
7	Heptachlor epoxide	80	BQL
8	Endosulfan I	80	BQL
9	Dieldrin	160	BQL
10	4,4'-DDE	160	BQL
11	Endrin	160	BQL
12	Endosulfan II	160	BQL
13	4,4'-DDD	160	BQL
14	Endosulfan sulfate	160	BQL
15	4,4'-DDT	160	BQL
16	Endrin Ketone	160	BQL
17	Methoxychlor	800	BQL
18	alpha-Chlordane	800	BQL
19	gamma-Chlordane	800	BQL
20	Toxaphene	1600	BQL
21	PCB 1016	800	BQL
22	PCB 1221	800	BQL
23	PCB 1232	800	BQL
24	PCB 1242	800	BQL
25	PCB 1248	800	BQL
26	PCB 1254	1600	BQL
27	PCB 1260	1600	BQL

Comments

ample

BQL - BELOW QUANTITATION LIMIT
Chlordane (technical) = <800 µg/Kg
Endrin aldehyde = <160 µg/Kg
Quantitation limit elevated due to sample dilution prior to analysis.
Sample diluted due to presence of non-target compounds.

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GC/MS Purgeables
EPA Method 624 Compounds

IEA Sample No. 237116 21
Sample Identification Field Blank **Date Collected** April 26, 1991
Date Analyzed May 2, 1991 **By** Stephenson

Number	Compound	Quantitation Limit µg/L	Results Concentration µg/L
1	BENZENE	5.0	BQL
2	BROMODICHLOROMETHANE	5.0	BQL
3	BROMOFORM	5.0	BQL
4	BROMOMETHANE	10	BQL
5	CARBON TETRACHLORIDE	5.0	BQL
6	CHLOROBENZENE	5.0	BQL
7	CHLOROETHANE	10	BQL
8	2-CHLOROETHYLVINYL ETHER	5.0	BQL
9	CHLOROFORM	5.0	BQL
10	CHLOROMETHANE	10	BQL
11	DIBROMOCHLOROMETHANE	5.0	BQL
12	1,2-DICHLOROBENZENE	5.0	BQL
13	1,3-DICHLOROBENZENE	5.0	BQL
14	1,4-DICHLOROBENZENE	5.0	BQL
15	1,1-DICHLOROETHANE	5.0	BQL
16	1,2-DICHLOROETHANE	5.0	BQL
17	1,1-DICHLOROETHENE	5.0	BQL
18	1,2-DICHLOROETHENE-TOTAL	5.0	BQL
19	1,2-DICHLOROPROPANE	5.0	BQL
20	cis-1,3-DICHLOROPROPENE	5.0	BQL
21	trans-1,3-DICHLOROPROPENE	5.0	BQL
22	ETHYL BENZENE	5.0	BQL
23	METHYLENE CHLORIDE	5.0	BQL
24	1,1,2,2-TETRACHLOROETHANE	5.0	BQL
25	TETRACHLOROETHENE	5.0	BQL
26	TOLUENE	5.0	BQL
27	1,1,1-TRICHLOROETHANE	5.0	BQL
28	1,1,2-TRICHLOROETHANE	5.0	BQL
29	TRICHLOROETHENE	5.0	BQL
30	TRICHLOROFLUOROMETHANE	5.0	BQL
31	VINYL CHLORIDE	10	BQL

Comments: BQL - BELOW QUANTITATION LIMIT

APPENDIX A
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES

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LAB RESULTS

7/17/91

Webran Engineering
1 Mill Street, Chace Mill
Burlington, VT 05401-1532

IEA # 2371261
Date Received: 5/3/91
Date Collected: 5/3/91
Total Samples Received: 3
Total Parameters Requested: 25

Attention: Andrea Asch

Reviewed & Approved by Bubl

Sa#	Sample I.D.	Parameter Studied	Results	Comments
1	MW-3	Arsenic, total by graphite furnace	<10.0 µg/L	
2	MW-5	Arsenic, total by graphite furnace	<10.0 µg/L	
1	MW-3	Barium, total	247 µg/L	
2	MW-5	Barium, total	65.1 µg/L	
1	MW-3	Cadmium, total	<5.00 µg/L	
2	MW-5	Cadmium, total	6.34 µg/L	
1	MW-3	Chromium, total	<10.0 µg/L	
2	MW-5	Chromium, total	13.5 µg/L	
1	MW-3	GC/MS Purgeables	-	See attached sheets.
2	MW-5	GC/MS Purgeables	-	See attached sheets.
3	MW-4	GC/MS Purgeables	-	See attached sheets.
1	MW-3	IR Petroleum hydrocarbons	1.1 mg/L	
3	MW-4	IR Petroleum hydrocarbons	<1.0 mg/L	
1	MW-3	Lead, total by graphite furnace	<10.0 ug/L	
2	MW-5	Lead, total by graphite furnace	<10.0 ug/L	
1	MW-3	Mercury, total	<0.20 ug/L	
2	MW-5	Mercury, total	<0.20 ug/L	
1	MW-3	Nickel, total	<40.0 ug/L	
2	MW-5	Nickel, total	<40.0 ug/L	
1	MW-3	Selenium,total by graphite furnace	<5.0 ug/L	
2	MW-5	Selenium,total by graphite furnace	<5.0 ug/L	
1	MW-3	Silver, total	<20.0 µg/L	*
2	MW-5	Silver, total	<10.0 µg/L	
1	MW-3	Zinc, total	<20.0 µg/L	
2	MW-5	Zinc, total	<20.0 µg/L	

Comments: PLEASE NOTE THIS IS A REVISED REPORT.
*Silver for sample MW-5 was run at 2x dilution due to matrix interference.

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GC/MS PURGEABLES
EPA 624 COMPOUND LIST

IEA Sample Number: 237-126-3
Sample Identification: MW-4
Date Analyzed: May 10, 1991 By: IEA-NJ

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	***
13	1,3-Dichlorobenzene	5	***
14	1,4-Dichlorobenzene	5	***
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	BQL
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	5 J
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl Chloride	10	BQL

Comments:

BQL = Below Quantitation Limit
J = Compound present at less than the quantitation limit.
*** = Non-target compounds.
O&P-Dichlorobenzene = <10 ug/L.
m-Dichlorobenzene = <5 ug/L.

Industrial & Environmental Analysts, Inc.
P.O. Box 626
Essex Junction, Vermont 05453
(802) 878-5138
FAX (802) 878-6765

GC/MS PURGEABLES
EPA 624 COMPOUND LIST

IEA Sample Number: 237-126-1
Sample Identification: MW-3
Date Analyzed: May 8, 1991 By: IEA-NJ

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	***
13	1,3-Dichlorobenzene	5	***
14	1,4-Dichlorobenzene	5	***
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	BQL
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	2 J
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl Chloride	10	BQL

Comments:

BQL = Below Quantitation Limit
J = Compound present at less than the quantitation limit.
*** = Non-target compounds.
O&P-Dichlorobenzene = <10 ug/L.
m-Dichlorobenzene = <5 ug/L.

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GC/MS PURGEABLES
EPA 624 COMPOUND LIST

IEA Sample Number: 237-126-2
Sample Identification: MW-5
Date Analyzed: May 10, 1991 By: IEA-NJ

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	***
13	1,3-Dichlorobenzene	5	***
14	1,4-Dichlorobenzene	5	***
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	1,2-Dichloroethene (total)	5	BQL
19	1,2-Dichloropropane	5	BQL
20	cis-1,3-Dichloropropene	5	BQL
21	trans-1,3-Dichloropropene	5	BQL
22	Ethylbenzene	5	BQL
23	Methylene chloride	5	BQL
24	1,1,2,2-Tetrachloroethane	5	BQL
25	Tetrachloroethene	5	BQL
26	Toluene	5	7
27	1,1,1-Trichloroethane	5	BQL
28	1,1,2-Trichloroethane	5	BQL
29	Trichloroethene	5	BQL
30	Trichlorofluoromethane	5	BQL
31	Vinyl Chloride	10	BQL

Comments:

BQL = Below Quantitation Limit

*** = Non-target compounds.
O&P-Dichlorobenzene = <10 ug/L.
m-Dichlorobenzene = <5 ug/L.

APPENDIX B
BORING LOGS

WehranEnviroTech

TEST BORING LOG

Boring No. MW-4

Project CVPS St. Johnsbury Bay St. Sub Station	**Sheet No.** 1 of 1
Client CVPS	**Job No.** 00641.01
Boring Contractor TRISTATE DRILLING + BORING	**G.S. Elevation**

Groundwater					Cas.	Samp.	Core	Tube
Date	**Water Depth**	**Water Elev.**	**Intake**	**Type**	HSA	SS		
4/25/91	~5.0'			**Diam.**	4 1/4	1 3/8		
				Weight		140 lbs		
				Fall		30"		

W.L. Ref. Elev.
Date Started 4/25/91
Date Finished 4/25/91
Driller Neil Faulkner
Inspector [illegible]

Well Construction	Depth (Feet)	Samples No.	Type	Rec.	Blows per 6 inches	Classification	Remarks
PVC Riser; Sand Pack; Screen (PVC)	0						
	5	S1	SS	.9		[illegible] sand and [illegible] saturated [illegible]; [illegible] sand and [illegible] GRAVEL saturated	HNu spoon / Headspace: 0 / -0- ; VOC [illegible] collected
						Refusal at 7.5'	
	10						
	15						
	20						
	25						
	30						
	35						
	40						
	45						
	50						

WehranEnviroTech

TEST BORING LOG

Boring No. MW-5

Project	CVPS St Johnsbury [illegible] Substation
Client	CVPS
Boring Contractor	TRISTATE BORING + DRILLING
Sheet No. 1 of	1
Job No.	00641.01
G.S. Elevation	
W.L. Ref. Elev.	
Date Started	4/25/91
Date Finished	4/25/91
Driller	Neil Faulkner
Inspector	Christine [illegible]

Groundwater

Date	Water Depth	Water Elev.	Intake
4/25/91	23.1'		

	Cas.	Samp.	Core	Tube
Type	HSA	SS		
Diam.	4 1/4	1 3/8		
Weight		140 lbs		
Fall		30"		

Well Construction	Depth (Feet)	No.	Type	Rec.	Blows per 6 inches	Classification	Remarks: HNu Spoon	Remarks: HNu Ambient ppm
Bentonite Grout; 2" PVC Riser	0–5						0	0
	5	S1	SS	.7	1-1-1-1	Multicolor [illegible] [illegible] little fine gravel, loose [illegible]		
Bentonite	10	S2	SS	.3	2-1-2-5	Black [illegible] and [illegible] gravel [illegible] wet, loose	0	0
Sand Pack; 2" PVC Screen	15	S3	SS	1.0'	4-[illegible]-2	[illegible] brown [illegible] [illegible]	0	0
	20	S4	SS	.5'	[illegible]	[illegible] wet, loose	0	1.0
						23.5' Refusal (bedrock)		

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

WehranEnviroTech

TEST BORING LOG

Boring No. MW-2

Project	CVPS St. Johnsbury Bay St. Substation
Client	CVPS
Boring Contractor	TRISTATE DRILLING and BORING
Sheet No. 1 of	1
Job No.	00641.01
G.S. Elevation	
W.L. Ref. Elev.	
Date Started	4/24/91
Date Finished	4/24/91
Driller	Neil Faulkner
Inspector	Christos S[illegible]

Groundwater

Date	Water Depth	Water Elev.	Intake
4/24/91	25.0'		

	Cas.	Samp.	Core	Tube
Type	HSA	SS		
Diam.	4 1/4"	1 7/8		
Weight		140 lbs		
Fall		30"		

Well Construction	Depth (Feet)	No.	Type	Rec.	Blows per 6 inches	Classification	HNU Spoon PPM	HSpace PPM	Remarks
Bentonite Grout	0								
		S1	SS	.7'	3-3-4-6	.5' Black, grey, yellow, white slag and trash (paper [illegible] wood [illegible]) over .2' [illegible] silt [illegible] layers [illegible], dry to damp	0	0	PCE + [illegible] PAH collected
	5	S2	SS	1.9'	2-2-4-3	Layer of SAND and trash w/ Clayey silt [illegible] to medium fine SAND mixed with debris [illegible] gravel throughout. Dry	0	0	VOC, RCRA collected
	10	S3	SS	1.35	1-1-1-1	.25' trash over .5' Dk brown [illegible] SAND [illegible] .25' over .2' trash over .6' brown black fine SAND over .5' trash over .1' sandy silt w/ wood, [illegible]	0	0	
	15	S4	SS	1.6	4-2-2-2	SAME AS ABOVE (successive [illegible] layers)	0	0	
	20	S5	SS	1.8	1-1-2-4	.15' brown over .2' dk grey/black fine SAND over 1.45' sand and clayey silt damp to wet, soft	0	15	
	25	S6	SS	.85'	52/6"	SAME AS ABOVE wet to saturated	0	1.0	
	30					Refusal at 25.5' completed as boring			
	35								
	40								
	45								
	50								

WehranEnviroTech

TEST BORING LOG
Boring No. SB-3

Project	CVPS St Johnsbury Bay st Substation
Client	CVPS
Boring Contractor	TRISTATE DRILLING and BORING
Sheet No. 1 of	1
Job No.	00641.01
G.S. Elevation	
W.L. Ref. Elev.	
Date Started	4/24/91
Date Finished	4/24/91
Driller	Neil Faulkner
Inspector	CHRISTOS STATKAS

Groundwater					Cas.	Samp.	Core	Tube
Date	**Water Depth**	**Water Elev.**	**Intake**	**Type**	HSA	SS		
4/24/91	—			**Diam.**	4 1/4"	1 3/8		
				Weight		140lbs		
				Fall		30"		

Well Construction	Depth (Feet)	Samples No.	Type	Rec.	Blows per 6 inches	Classification	Remarks		
Bentonite Grout	0								
		S1	SS	.4'	4-2-2-	Multicolor m-c SAND and f-m GRAVEL, Rock fragments roots wood [illegible] dry	0	0	PCB collected
	5								
		S2	SS	.6'	1-1-2-4	Trash, grass [illegible] compacted w/ [illegible] at the [illegible] depth	0	0	VOC collected TOTAL METAL
	10								
		S3	SS	.6'	7-5-6-11	Boulder at the top, Brown to dk Brown fine SAND and silt [illegible] fine gravel dry	0	0	
	15					End of Boring			
	20								
	25								
	30								
	35								
	40								
	45								
	50								

WehranEnviroTech

TEST BORING LOG

Boring No. CB-1

Project C.V.P.S. [illegible] Waterbury Bay St Substation	**Sheet No. 1 of** 1
Client C.V.P.S	**Job No.** 00641.01
Boring Contractor TRISTATE BORING + DRILLING	**G.S. Elevation**

Groundwater					**Cas.**	**Samp.**	**Core**	**Tube**	**W.L. Ref. Elev.**
Date	**Water Depth**	**Water Elev.**	**Intake**	**Type**	HSA	SS			**Date Started** 4/25/91
4/25/91				**Diam.**	4 1/4	1 3/8			**Date Finished** 4/25/91
				Weight		140 lbs			**Driller** Neil Faulkner
				Fall		30"			**Inspector** CHRISTOS SIATRAS

Well Construction	Depth (Feet)	Samples No.	Type	Rec.	Blows per 6 inches	Classification	Remarks: HNu Sample	HNu Headspace	Remarks
Bentonite Grout	0								
	5	S1	SS	1.8	3-2-1-2	.6 Brown fine SAND and fine GRAVEL over 1.2' fine SAND and SILT loose, moist to dry	0	0	collected VOC TPH
	10	S2	SS	1.5	5-5-6-9	Brown fine SAND and fine GRAVEL saturated, moist [illegible]	0	0	
	15	S3	SS	–	50/6"	Spoon advanced to 15.5' no Recovery / wet	0	0	[illegible] 15
						Refusal at 15.5'			
	20								
	25								
	30								
	35								
	40								
	45								
	50								

WehranEnviroTech

TEST BORING LOG
Boring No. MW-3

Project	C.V.P.S. St Johnsbury Bay St. Substation
Client	C.V.P.S.
Boring Contractor	TRISTATE DRILLING & BORING
Sheet No.	1 of 1
Job No.	00641.01
G.S. Elevation	
W.L. Ref. Elev.	
Date Started	4/24/91
Date Finished	4/24/91
Driller	NEIL Faulkner
Inspector	CHRISTOS S[illegible]

Groundwater

Date	Water Depth	Water Elev.	Intake
4/24/91	19.0'		

	Cas.	Samp.	Core	Tube
Type	HSA	SS		
Diam.	4 1/4	1 3/8		
Weight		140 lbs		
Fall		30"		

Well Construction	Depth (Feet)	Samples No.	Type	Rec.	Blows per 6 inches	Classification	HNu Spoon PPM	HNu Space PPM	Remarks
borehole grout; 2" riser pipe	0	S1	SS	1.2'	4-3-2-3	.7' of Black dk brown fine SAND and SILT, trace gravel, soil loose, [illegible] roots, organic [illegible] over .2' of Brown m. SAND over [illegible] SAND [illegible]	0	0	
		S2	SS	.7'	2-1-1-1	.3' brown [illegible] SAND and SILT [illegible] Clayey [illegible] over black [illegible] SILT [illegible] loose soil, moist	0	0	PCB/sample collected
	5	S3	SS	–	1-1-1-	No Recovery / Brick at the tip	–	–	
		S4	SS	.5'	1-1-1/2'	Brown m SAND, trace gravel, contains [illegible] [illegible] soil loose, wet	0	0	
	10	S5	SS	.4'	2-1-3-6	Brick at the tip, 0.2' m-c SAND trace f.m. gravel [illegible] spoon, wet	0	0	TOC/VOC samples collected
		S6	SS	.9'	–	.4' black [illegible] m-c SAND w/ trace water [illegible] f.m. gravel, glass, [illegible] Brick [illegible] Black staining [illegible] wet	0	1.4	
bentonite seal		[illegible]	[illegible]	.8'	2-2-3-3	.7' Grey Brown f.m. SAND and SILT, wet, soil [illegible] [illegible] white [illegible], black stains	0	0	
sand pack; well screen	15	[illegible]	[illegible]	1.1'	2-1-1-5	.4' same as [illegible] over .5' orange [illegible] black brown f.m. SAND and silt with [illegible], over .2' of black organic [illegible] wet	0	1.0	
		[illegible]	[illegible]	.3	8-6-5-6	.2 f. m-c SAND with trace wood, orange staining [illegible] black m SAND saturated, w/ pieces wood	0	3.5	
	20	[illegible]	[illegible]	–	3-2-	No Recovery / spoon wet [illegible] water			
		[illegible]	[illegible]	1.4	1-1-1-4	1.1' Grey-white SILTY and CLAYEY SILT, [illegible] of organic [illegible] over .3' of f.m. [illegible] and SILT [illegible]	0	1.5	[illegible]
		[illegible]	[illegible]	1.7	2-1-2-3	1.3' Black grey SAND and Clayey SILT, soft, wet, over .4' [illegible] SAND [illegible] trace, moist, wet	0	1.0	
	25	[illegible]	[illegible]	.85'	2-2-2-5	.2' Grey f. m-c SAND trace silt saturated over .65' Black grey Fine SAND trace clay/some silt [illegible] wet	0	0	[illegible]
		[illegible]	[illegible]	1.3'	10-20-24-22	f. m-c SAND and [illegible] GRAVEL angular SATURATED	0	0	[illegible]
		[illegible]	SS	1.0	36-50/6"	SAME AS ABOVE	0	0	
	30					REFUSAL AT 28.5' (Bedrock)			
	35								
	40								
	45								
	50								

APPENDIX C
ST. JOHNSBURY WASTEWATER TREATMENT FACILITY SOIL RESULTS, TRACE METAL CONTENTS OF SOILS, AND GROUNDWATER PROTECTION RULE

Eastern Analytical, Inc. 130 Hall Street, Concord NH 03301 (603) 228-052

LABORATORY REPORT

Jun 2 87

Wayne Wheeler
Whitman & Howard, Inc
5 S. State Street
Concord, NH 03301

AUG 23 1991

Sample Identification:
Sample Qty/Type: 18 soil
Parameters: Metals
Date Rec: May 7 87
EAI ID#: 3523 WHI

Results:

Parameter	Sample ID F1-1	F1-2	F2-1	F2-2	F3-1	F3-2	Det. Limit
Arsenic	<DL	<DL	<DL	<DL	<DL	<DL	2 mg/Kg
Cadmium	<DL	<DL	<DL	<DL	<DL	<DL	0.2 mg/Kg
Chromium	17	1.5	13	12	12	12	0.5 mg/Kg
Copper	15	0.8	4.2	4.9	3.4	3.8	0.5 mg/Kg
Lead	<DL	<DL	<DL	<DL	<DL	<DL	2 mg/Kg
Mercury	1.5	<DL	<DL	<DL	<DL	0.9	0.1 mg/Kg
Nickel	13	<DL	7.2	7.5	7.2	7.6	0.5 mg/Kg
Zinc	48	5.1	40	45	39	39	0.2 mg/Kg
Selenium	<DL	<DL	<DL	<DL	<DL	<DL	2 mg/Kg
Silver	<DL	<DL	<DL	<DL	<DL	<DL	0.2 mg/Kg

Parameter	F4-1	F4-2	F4-3	F5-1	F5-2	F5-3	Det. Limit
Arsenic	<DL	<DL	<DL	<DL	<DL	<DL	2 mg/Kg
Cadmium	<DL	<DL	<DL	<DL	<DL	<DL	0.2 mg/Kg
Chromium	15	16	15	16	16	16	0.5 mg/Kg
Copper	9.8	9.1	7.2	9.5	9.6	12	0.5 mg/Kg
Lead	<DL	<DL	<DL	<DL	<DL	<DL	2 mg/Kg
Mercury	<DL	<DL	<DL	<DL	<DL	<DL	0.1 mg/Kg
Nickel	13	11	11	11	12	12	0.5 mg/Kg
Zinc	45	55	48	57	57	51	0.2 mg/Kg
Selenium	<DL	<DL	<DL	<DL	<DL	<DL	2 mg/Kg
Silver	<DL	<DL	<DL	<DL	<DL	<DL	0.2 mg/Kg

Parameter	F6-1	F7-1	F7-2	F7-3	F8-1	F8-2	Det. Limit
Arsenic	<DL	<DL	<DL	<DL	<DL	<DL	2 mg/Kg
Cadmium	<DL	<DL	<DL	<DL	<DL	<DL	0.2 mg/Kg
Chromium	10	16	17	17	16	16	0.5 mg/Kg
Copper	14	14	16	17	9.9	15	0.5 mg/Kg
Lead	<DL	<DL	<DL	<DL	<DL	<DL	2 mg/Kg
Mercury	0.3	0.3	<DL	<DL	<DL	1.5	0.1 mg/Kg
Nickel	8.5	16	15	14	13	15	0.5 mg/Kg
Zinc	35	51	54	56	53	55	0.2 mg/Kg
Selenium	<DL	<DL	<DL	<DL	<DL	<DL	2 mg/Kg
Silver	<DL	<DL	<DL	<DL	<DL	<DL	0.2 mg/Kg

Results are expressed in mg/L. <DL = Less Than Detection Limit.

Authorized Signature: _____
William Brunkhorst
Laboratory Director

TABLE 5
TRACE METAL CONTENT OF SOILS

Metal	Common Range (ppm)	Average (ppm)
Aluminum	10,000-300,000	71,000
Antimony	2-10	
Arsenic	1-50	5
Barium	100-3,000	430
Beryllium	0.1-40	6
Cadmium	0.01-0.7	0.6
Calcium	Variable	
Chromium	1-1,000	100
Cobalt	1-40	8
Copper	2-100	30
Iron	10-4,000	200
Lead	2-200	10
Magnesium	600-6,000	5,000
Manganese	20-3,000	600
Mercury	0.01-0.3	0.03
Nickel	5-500	40
Potassium	Variable	
Selenium	0.01-2	0.3
Silver	0.01-5	0.05
Sodium	Variable	
Thallium		
Vanadium	20-500	100
Zinc	10-300	50

From U.S. EPA. Hazardous Waste Land Treatment: SW-874.

3195Y

TABLE 1

Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter, except as noted)	Preventive Action Limit (micrograms per liter, except as noted)
Acifluorfen	9.0	0.9 (10%)
Acrylamide	0.01	0.001 (10%)
Alachlor	0.50	0.05 (10%)
Aldicarb	10.0	5.0 (50%)
Aldicarb Sulfoxide	10.0	5.0 (50%)
Aldicarb Sulfone	10.0	5.0 (50%)
Aldicarb Sulfone*	42.0	21.0 (50%)
Ametryn	60.0	30.0 (50%)
Arsenic	50.0	25.0 (50%)
Ammonium Sulfamate	1.5 milligrams/liter (mg/l)	0.75 mg/l (50%)
Atrazine	3.0	0.3 (10%)
Bacteria Total Coliform	Less than one in 100 ml for membrane filter method or not present in any 10 ml portion by fermentation tube method for both preventive action limit and enforcement standard	
Barium	1.0 mg/l	0.50 mg/l (50%)
Baygon	3.0	0.30 (10%)
Bentazon	17.5	8.75 (50%)
Benzene	5.0	0.5 (10%)
Bromacil	80.0	8.0 (10%)
Butylate	50.0	5.0 (10%)
Cadmium	5.0	2.5 (50%)
Carbaryl	700.0	350.0 (50%)

*Value to be used in cases where other Aldicarb substances are not detected.

TABLE 1 (Cont'd)

Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter, except as noted)	Preventive Action Limit (micrograms per liter, except as noted)
Carbofuran	36.0	18.0 (50%)
Carbon Tetrachloride	5.0	0.5 (10%)
Carboxin	700.0	350.0 (50%)
Chloramben	105.0	52.5 (50%)
Chlordane	0.027	0.0027 (10%)
Chlorobenzene	100.0	50.0 (50%)
Chlorothalonil	1.5	0.15 (10%)
Chromium	50.0	25.0 (50%)
Cyanazine	9.0	4.5 (50%)
Cyanide	154.0	77.0 (50%)
Dacthal	3.5 mg/l	1.75 mg/l (50%)
Dalapon	560.0	280.0 (50%)
Diazinon	0.63	0.31 (50%)
1,2-Dibromoethane	0.01	0.001 (10%)
1,2-Dibromo-3-Chloropropane	0.025	0.0025 (10%)
Dicamba	9.0	4.5 (50%)
o-,m-Dichlorobenzene	620.0	310.0 (50%)
p-Dichlorobenzene	75.0	7.5 (10%)
1,2-Dichlorethane	5.0	0.5 (10%)
1,1-Dichloroethene	7.0	0.7 (10%)
Cis-1,2-Dichloroethene	70.0	35.0 (50%)
Trans-1,2-Dichloroethene	70.0	35.0 (50%)
Dichloromethane	5.0	0.5 (10%)

TABLE 1 (Cont'd)

Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter, except as noted)	Preventive Action Limit (micrograms per liter, except as noted)
2,4 D	70.0	35.0 (50%)
1,2-Dichloropropane	0.56	0.056 (10%)
1,3-Dichloropropene	0.2	0.02 (10%)
Dieldrin	0.002	0.0002 (10%)
Dimethrin	2.1 mg/l	1.05 mg/l (50%)
Dinoseb	7.0	3.5 (50%)
p-Dioxane	7.0	0.7 (10%)
2,3,7,8-TCDD	2.2E-7	2.2E-8 (10%)
Diphenamid	200.0	100.0 (50%)
Disulfoton	0.30	0.15 (50%)
Diuron	14.0	7.0 (50%)
Endothall	140.0	70.0 (50%)
Endrin	0.32	0.16 (50%)
Epichlorohydrin	0.28	0.028 (10%)
Ethylbenzene	680.0	340.0 (50%)
Ethylene Glycol	7.0 mg/l	3.5 mg/l (50%)
Ethylene Dibromide	0.0005	0.00005 (10%)
Ethylene thiourea	0.25	0.025 (10%)
Fenamiphos	1.8	0.9 (50%)
Fluometuron	90.0	45.0 (50%)
Fonofos	14.0	7.0 (50%)
Glyphosate	700.0	350.0 (50%)
Heptachlor	0.076	0.0076 (10%)

TABLE 1 (Cont'd)

Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter, except as noted)	Preventive Action Limit (micrograms per liter, except as noted)
Heptachlor expoxide	0.038	0.0038 (10%)
Hexachlorobenzene	0.02	0.002 (10%)
n-Hexane	4.0 mg/l	2.0 mg/l (50%)
Hexazinone	210.0	105.0 (50%)
Lead	20.0	10.0 (50%)
Lindane	0.2	0.02 (10%)
Maleic Hydrazide	3.5 mg/l	1.75 mg/l (50%)
MCPA	3.6	1.8 (50%)
Mercury	2.0	1.0 (50%)
Methomyl	175.0	87.5 (50%)
Methoxychlor	340.0	170.0 (50%)
Methylene Chloride	5.0	2.5 (50%)
Methyl Ethyl Ketone	170.0	85.0 (50%)
Methyl Parathion	2.0	1.0 (50%)
Metolachlor	10.0	1.0 (10%)
Metribuzin	175.0	87.5 (50%)
Nickel	350.0	175.0 (50%)
Nitrate/Nitrite	10 mg/l / 1 mg/l	5 mg/l / 0.5 mg/l (50%)
Oxamyl	175.0	87.5 (50%)
Paraquat	3.0	0.3 (10%)
Pentachlorophenol	220.0	110.0 (50%)
PCBs	0.008	0.0008 (10%)
Picloram	490.0	245.0 (50%)
Prometon	100.0	50.0 (50%)

TABLE 1 (Cont'd)

Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter-except as noted)	Preventive Action Limit (micrograms per liter-except as noted)
Pronamide	52.0	5.2 (10%)
Propachlor	92.0	46.0 (50%)
Propazine	14.0	7.0 (50%)
Propham	120.0	60.0 (50%)
Silver	50.0	25.0 (50%)
Simazine	35.0	17.5 (50%)
Styrene	5.0	0.5 (10%)
Tebuthiuron	35.0	3.5 (10%)
Terbacil	90.0	45.0 (50%)
Terbufos	0.18	0.09 (50%)
Tetrachloroethene	~~0.70~~ 5	0.07 (10%)
Toluene	2.42 mg/l	1.21 mg/l (50%)
Toxaphene	0.031	0.0031 (10%)
1,1,1-Trichloroethane	200.0	100.0 (50%)
Trichloroethene	5.0	0.5 (10%)
Trifluralin	1.7	0.17 (10%)
2,4,5-T	21.0	10.5 (50%)
2,4,5-TP	10.0	5.0 (50%)
Vinyl chloride	2.0	0.2 (10%)
Xylenes	400.0	200.0 (50%)

§12-703 Secondary Ground Water Quality Standards

(1) The Secretary, in cooperation with the Commissioners of Agriculture and Health, hereby adopts and may make additions or changes by rule to, the Secondary Ground Water Quality Standards upon consideration of available water quality standards information as published by the USEPA or the Vermont Department of Health.

TABLE 2

Note: For each substance in Table 2 the preventive action limit is 50% of the enforcement standard.

Substance	Enforcement Standard (milligrams per liter-except as noted)	Preventive Action Limit (milligrams per liter-except as noted)
Chloride	250	125
Color	15 color units	7.5 color units
Copper	1.0	.5
Foaming Agents MBAS (Methylene-Blue Active Substances)	.5	.25
Iron	.3	.15
Manganese	.05	.025
Odor	3 (Threshold Odor No.)	1.5 (Threshold Odor No.)
Sulfate	250	125
Total Dissolved Solids (TDS)	500	250
Zinc	5	2.5