REMEDIATION ENGINEERING CERTIFICATION REPORT

(Volume I - Text)

For

The Vatrano Road Site
Albany, New York

(New York State Department of Environmental Conservation
Inactive Hazardous Waste Site Number – 401036)

Prepared For:

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December 1998 (Revised)

Prepared By:

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CHA Project # 6429.07.40

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1.0 INTRODUCTION

This report has been prepared to document the procedures and present results of the PCB remediation that took place from October to December of 1997 at the Vatrano Road Inactive Hazardous Waste Site in Albany, New York. The objective of the remediation was to restore the site to pre disposal conditions, to the extent feasible, while eliminating or mitigating all significant threats to public health and the environment. Previous investigations have determined that PCB contamination constituted the biggest threat to the public and the environment at this site. Based upon this objective, after careful consideration, the General Electric Company determined that the best remedial method for this site would be the excavation and proper disposal of the contaminated soils. This decision was made with the approval of the NYSDEC, as evidenced by condition 7 of the most recent order on consent for the site, a copy of which is included as Appendix A.

The remediation was designed to address soils contaminated with PCBs at concentrations in excess of 10 ppm, by removing said contaminated soil and replacing it with clean backfill. In September of 1997 a public information fact sheet (Appendix S) was distributed to surrounding residents of the site before any remediation activities commenced. The area to be excavated and anticipated depth was determined from previous investigations (Appendix R). From these previous investigations, it was determined that the site would be broken into fifteen adjacent areas with various target final excavation depths. Physical limitations on the actual volume excavated were dictated by proper embankment maintenance adjacent to existing buildings, the active rail line and on site utilities.

As stated above, the goal of this remediation was to remove soil containing PCB concentrations in excess of 10 ppm. The final depth of the excavation in each area was determined by field screening results and laboratory analysis of individual soil samples from the bottom of the excavation.

This report contains discussions regarding the history and a description of the site, pre-remediation activities, health and safety issues, remedial activities, removal and disposal procedures, soil sampling and analysis, groundwater monitoring well abandonment and reinstallation, the final survey, and as built drawings. These items are followed with a summary and conclusions and finally a certification of the remediation. Documentation supporting the remediation is found in appendices to this report.

2.0 QA/QC ASSIGNMENTS

Quality assurance and quality control was maintained throughout the remediation project through visual observations, inspection and materials testing and analysis. All visual observations and inspections can be found in the daily construction observation reports in Appendix U. Laboratory analysis results and methods are discussed in the text of the report and copies of the various laboratory reports are found in the various appendices. A complete list of all subcontractors used during the remediation can be found in Appendix V.

2.1 CLOUGH HARBOUR & ASSOCIATES LLP (QA Engineer)

Clough Harbour and Associates LLP (CHA) is a leader in the hazardous and nonhazardous waste remediation field in New York. CHA has construction inspection, design and remediation experience relative to more than sixty municipal and industrial landfills, various industrial sites and municipal projects.

2.1.1 Principal-in-Charge

Mr. Frank Lavardera: As a Principal at Clough Harbour and Associates LLP, Mr. Lavardera was responsible for the overall management of CHA staff assigned to the project.

2.1.2 Project Manager

Mr. Carsten Floess, PE, Ph.D.: Responsible for overall management of the project for CHA. Coordinated communications between G.E., NYSDEC, Four Seasons and Conrail. Mr. Floess was also responsible for the oversight of CHA project engineers and field inspectors. Mr. Floess , as a registered professional engineer in New York State, certified this remediation.

2.1.3 Project Engineer

Mr. Keith Ziobron, PE.: Responsible for overall management and oversight of the technical environmental applications of the remediation. Responsible for coordination of all testing laboratories and QC of their methods and data. Also, responsible for QA/QC of field sample collection methods and field-testing procedures. Mr. Ziobron is a registered professional engineer in New York State.

2.1.4 Project Engineer

Mr. Vince Mazzone, PE.: Responsible for design and construction related issues during the remediation. Reviewed all submittals from the General Contractor (Four Seasons).

2.1.5 Field Scientist

Mr. Steven Pidgeon: Responsible for all on site CHA remediation oversight and documentation. Mr. Pidgeon was responsible for collecting and field screening soil samples, documenting the results, and sending soil samples for laboratory testing. Mr. Pidgeon insured that the Health and Safety Plan was followed for all CHA personnel that visited the site. In addition, Mr. Pidgeon was responsible for writing daily construction observation reports (Appendix U) and measuring quantities.

2.1.6 Laboratory and Field-Testing Oversight:

Mrs. Rogina Camilli was responsible for coordinating laboratory equipment and ordering supplies and coordinated laboratory sample preparation and communications. Mrs. Camilli also provided oversight relative to the PCB field screening procedures.

2.1.7 Health and Safety

Miss Jholee Magee was responsible for ensuring all CHA site personnel were properly health and safety trained before accessing the site. Miss Magee was also responsible for ordering project related health and safety supplies and reviewing all health and safety documentation related to this project. Miss Magee also prepared CHA's site specific Health and Safety Plan for this project.

2.2 FOUR SEASONS ENVIRONMENTAL INC. (Contractor)

Four Seasons Environmental Inc. of Greensboro, North Carolina was selected by GE as the primary contractor and provided operational remediation services throughout the project. Four Seasons provided a work plan (Appendix W) and a health and safety plan (Appendix W). Four Seasons was responsible for site security and the health and safety of any individual visiting the site. The two major responsible personnel for this project are listed below.

2.2.1 Project Manager

Mr. Michael Stoneman, PG.: Responsible for project oversight and coordination of all subcontractors used by Four Seasons. Mr. Stoneman coordinated with other agencies such as Niagara Mohawk and Conrail. Mr. Stoneman also was responsible for staffing the entire project.

2.2.2 Site Foreman

Mr. Karl Kidd was responsible for the daily remediation operations on the site and coordinated with all subcontractors and neighborhood tenants. Mr. Kidd maintained health and safety equipment, monitored site air quality, collected air samples and wrote daily construction reports. Mr. Kidd also supervised all other Four Seasons workers on site.

2.3 ADIRONDACK ENVIRONMENTAL LABORATORIES

Adirondack Environmental Laboratories of Albany, New York was the primary laboratory contracted by GE to provide soil sample analysis for the project. All samples were analyzed using Analytical Services Protocol (ASP). Laboratory results are found in various appendices of this report. ASP reports are found in Appendix O.

2.4 ANALYTICAL LABORATORIES

Analytical Laboratories of Albany, New York was contracted to analyze the asbestos samples collected during the asbestos survey.

2.5 NORTHEAST ANALYTICAL LABORATORIES

Northeast Analytical Laboratories of Albany, New York was initially used to analyze all soil samples and water samples from previous CHA investigations and at the beginning of this investigation. Wipe samples from various materials before removal were also sent to this laboratory. Their services were ended at the beginning of the remediation due to their inability to provide ASP results and their omission from the NYSDOH Environmental Laboratory Approval Program (ELAP).

2.6 NEW YORK STATE DEPARTMENT OF CONSERVATION (NYSDEC)

Mr. Russell Shaver of the NYSDEC Division of Hazardous Waste Remediation, Region 4, was the on site NYSDEC construction inspection representative. Mr. Shaver periodically observed the remediation for compliance with the NYSDEC approved remedial plan and NYSDEC guidelines.

Mr. Craig Lapinski of the NYSDEC Division of Environmental Remediation was the NYSDEC's project manager and Environmental Engineer for the project. Mr. Lapinski attended all scheduled on site meetings and provided suggestions on any remediation related technical questions.

3.0 SITE DESCRIPTION, HISTORY AND CHARACTERIZATION

Figure 1 shows the location of the Vatrano Road site in the city of Albany, New York, east of Central Avenue near the Town of Colonie border. Immediately adjacent to the site on its southern border is property owned by Consolidated Rail Corporation. This property contains two sets of active railroad tracks. Approximately 400 feet south of the tracks is the east flowing Patroon Creek that is adjacent to the East-West oriented Interstate 90.

The site is owned by the Vatrano Reality Company and is less than two acres in size. The immediate area consists of commercial and light industrial facilities with residential areas to the north. Figure 2 shows the main portion of the site as a relatively flat (Elevation approximately 215 ft M.S.L.) open lot between buildings 14 and 16 of the Vatrano Commercial Park with Vatrano Road forming the northern border of the site. Active utilities on site include an underground phone line that runs north-south approximately fifteen feet from building 16. The surrounding buildings are serviced by city water, natural gas lines, and sewer lines running underneath Vatrano Road. Overhead utilities run along Vatrano Road as well as parallel to the railroad tracks adjacent to the southern boundary of the site. As can be seen from Photographs 1 & 2 the site was thickly vegetated and construction wastes were present over a majority of the site. The middle of the site contained a large pile of soil and construction materials with vegetation growing through it.

During the period between 1956 and 1981, the General Electric Company's Apparatus Division operated a motor and transformer repair facility in the buildings at 12 and 14 Vatrano Road. It is believed that PCB contamination found at the Vatrano Road Site resulted from the repair operation since the insulating oils in some transformers contained polychlorinated biphenyls (PCB's).

SOURCE: N.Y.S.D.O.T. 7.5' Topographic
QUADRANGLE: ALBANY, NY

SCALE: 1" = 2000'

CLOUGH, HARBOUR & ASSOCIATES LLP
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS
III WINNERS CIRCLE ALBANY, NEW YORK, 12205

PROJ. NO.: 6429.07.30

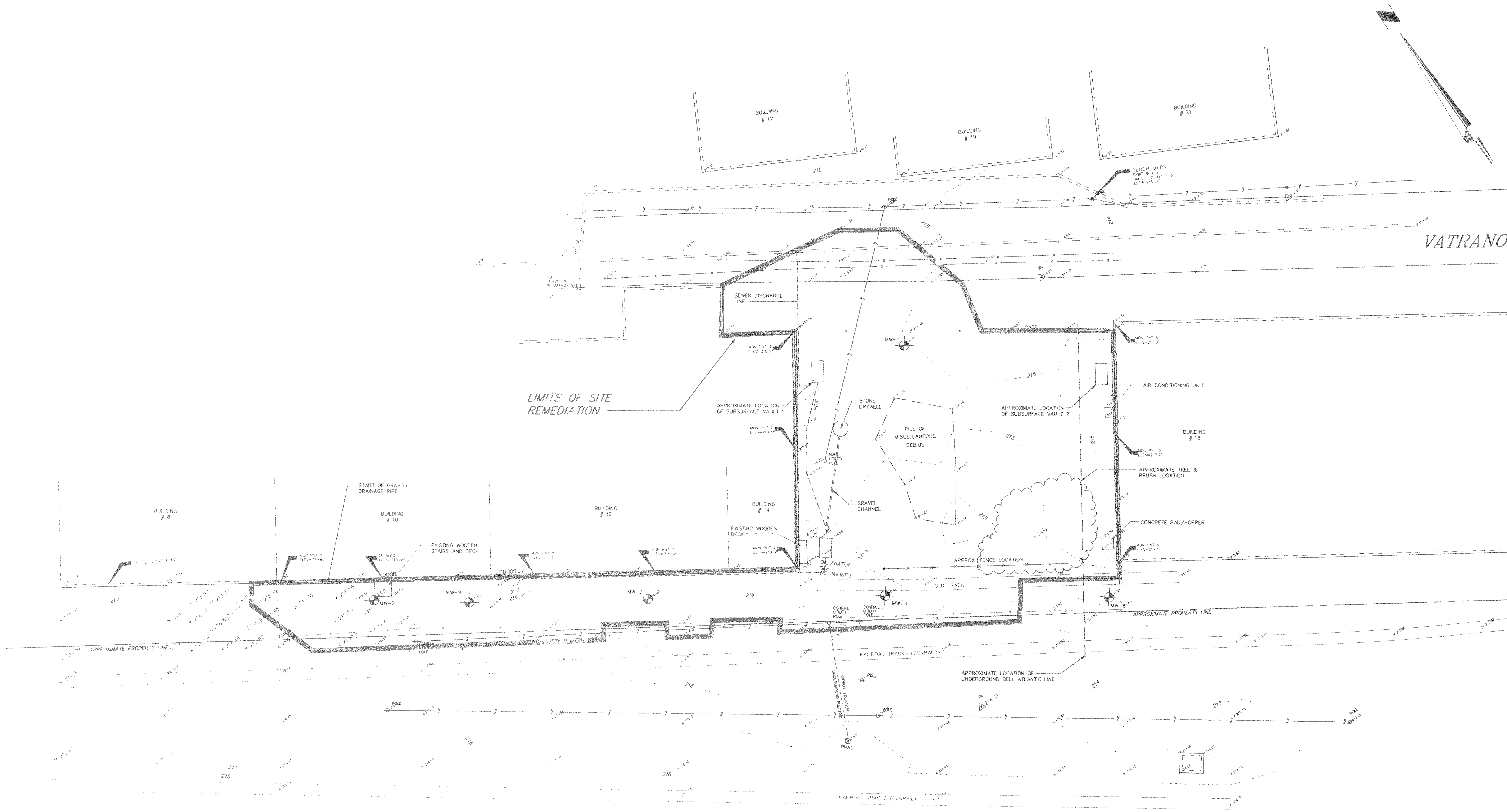
DATE: JANUARY, 1998

FIGURE 1

SITE LOCATION MAP

THE VATRANO ROAD SITE
ALBANY, NEW YORK

Figure 2



SURVEY NOTES:

1. TOPOGRAPHIC BASE MAPPING PREPARED BY CLOUGH HARBOUR & ASSOCIATES FROM A FIELD SURVEY COMPLETED JUNE 18, 1997.
2. NORTH ORIENTATION IS BASED ON A MAGNETIC READING TAKEN AT THE TIME OF THE FIELD SURVEY.
3. ELEVATIONS ARE BASED ON NGVD 1929.
4. UNDERGROUND UTILITIES ARE SHOWN BASED ON ACTUAL LOCATION WHERE POSSIBLE. OTHERS ARE SHOWN BASED ON LOCATION OF PHYSICAL EVIDENCE COMBINED WITH RECORD DRAWINGS. THE ACTUAL LOCATION OF UNDERGROUND UTILITIES MAY VARY FROM WHAT IS SHOWN AND OTHERS MAY EXIST.

Revisions	Drawn By	App'd By	Date

	Date
Designed By: S.P.	1/98
Drawn By: J.D.F.	1/98
Checked By: C.H.F.	1/98

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518-453-4500

CHA Project No. 6429.07

REMEDIATION OF THE VATRANO ROAD SITE

NYSDEC ID #401036
ALBANY, NEW YORK

SITE REMEDIATION

EXISTING CONDITIONS

SCALE: 1" = 20'

DATE: FEBRUARY, 1998

Drawing No.

FIGURE 2

SHEET 1 OF 1

PHOTO #1

CLOUGH, HARBOUR & ASSOCIATES LLP
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

FRONT OF SITE
EXISTING CONDITIONS

PHOTO #2

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ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

REAR OF SITE
THICK BRUSH

In 1987, an anonymous caller contacted the New York State Department of Environmental Conservation (NYSDEC) to inform them of an "up-welling" of liquid on the subject property. As a result, a series of investigations were conducted. Since the results of these investigations showed the presence of polychlorinated biphenyl (PCB) and low level halogenated volatile organic contamination, the NYSDEC listed the site as a Class 2 Inactive Hazardous Waste Site. As a result, the NYSDEC required that a remedial investigation/feasibility study (RI/FS) be performed to define site conditions, and ultimately determine how best to remediate the site. The RI/FS culminated in a Record of Decision (ROD) which was published by NYSDEC in March of 1993.

In the spring of 1997, GE contracted Clough, Harbour and Associates LLP to develop a site remediation plan for Vatrano Road. In order to develop a site remediation plan, supplemental field investigations were completed to better characterize the site. These investigations were conducted during the summer of 1997 (see Appendix R). The compilation of the data collected from these investigations and the older Phase I and Phase II studies led to the completion of the Remedial Project Plan for The Vatrano Road Site in September 1997. This plan was used as the guide for this remediation project.

4.0 PRE-REMEDIATION ACTIVITIES

This section describes actions taken before the actual remedial activities were initiated.

4.1 AIR SAMPLING AND RESULTS

The project Community Health and Safety Plan required three rounds of off site air sampling be completed (before, during and after remediation). The samples were collected and analyzed for VOC's via New York State Department of Health (NYSDOH) method 311-2 "Volatile Organic's in Air." Fugitive dust samples were collected and analyzed by National Institute for Occupational Safety and Health (NIOSH) Method 5503 "PCB's in Air." Three samples were collected for each sampling event, one upwind and two downwind of the site. The results from all three rounds of sampling showed levels below the detection limits for VOC's and PCB's. The laboratory results for the air samples are found in Appendix D.

4.2 UNDERGROUND STORAGE TANK(UST) SAMPLING AND RESULTS

A total of 1750 gallons of liquids were pumped from the three on site UST's or concrete vaults. Figure 2 shows the locations of the three tanks labeled vault 1 (Photo 3), vault 2 and oil water separator. Vault 1 and vault 2 were analyzed for volatiles via EPA method 8260 and semivolatiles via method 8270. In addition, both were tested for PCB's by method 8081. Vault 2 showed no evidence of volatiles, semivolatiles or PCB's above detection limits. The only compound found above detection limits in vault 1 was Aroclor 1260 at 320 ug/l (ppb). The results of the laboratory analysis are found in Appendix I. A summary of selected components of all site tank results is found in Table 1. The oil water separator was tested during a previous investigation in the summer of 1997.

PHOTO #3

CONCRETE TANK AT NORTHEAST CORNER OF BUILDING 14

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PHOTO #4

HOPPER CONTAINING WHITE NON-HAZARDOUS POWDER AT SOUTHWEST CORNER OF BUILDING 16

CLOUGH, HARBOUR & ASSOCIATES LLP
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

TABLE 1

TANK/VAULT WASTE CHARACTERIZATION RESULTS SUMMARY

Parameter	Vault 1	Vault 2	Oil/Water Separator
pH	NA	NA	6.7
Lead	NA	NA	0.019 mg/l
Toluene	ND	ND	15 ug/l
Chlorobenzene	ND	ND	6.4 ug/l
Ethylbenzene	ND	ND	41 ug/l
Total Xylene	ND	ND	82 ug/l
1,3-Dichlorobenzene	ND	ND	5.1 ug/l
1,4-Dichlorobenzene	ND	ND	15 ug/l
Aroclor 1248	ND	ND	0.181 ug/l
Aroclor 1260	320 ug/l	ND	2.05 ug/l

ND: Below Detection Limits NA: Not Analyzed

Based on these results all tanks' liquid contents were suitable for disposal as solid waste at a permitted industrial waste treatment disposal facility. The liquids from all three tanks were transported by Environmental Products and Services to the International Petroleum Corp. disposal facility in Wilmington, Delaware. Vault 1 and the oil water separator were excavated and transported by Buffalo Fuels Corporation with the contaminated soil to CWM Chemical Services, Inc. at Model City, New York due to the significant contamination that existed in the soils surrounding the tanks. Vault 2 was crushed and filled with clean fill as no significant soil contamination existed around the tank.

4.3 ASBESTOS SAMPLING AND REMOVAL

Due to the large quantity of construction debris which included roofing products found on site, General Electric requested that Clough, Harbour and Associates LLP (CHA) conduct an asbestos survey of the site. On October 14, 1997 a representative number of samples for analysis was collected by a CHA employee certified in asbestos inspection (NYSDOL AH-9600125). Seven samples were submitted to Analytical Laboratories of Albany, NY and analyzed by EPA method 600. Four of the samples were found to contain asbestos (Appendix G). The results of the asbestos survey led to the subcontracting of a certified asbestos removal contractor. From October 27-29, 1997 Environmental Products and Services of Albany, New York performed asbestos removal operations. All materials were placed in a roll off box that was covered and properly placarded. The roll-off box was removed on October 29, 1997 by Tonawanda Tank Transport Services and sent to CWM Chemical Services, Inc., Model City, NY (Manifest in Appendix P).

4.4 HOPPER SAMPLING

As seen on Figure 2, a large hopper on a concrete pad was located near the southwest corner of building 16. The hopper contained a small amount of an unknown white powder substance (Photo 4). Before the hopper was removed, the contents of the hopper were placed in a drum with the inside of the hopper pressure washed and the wash water collected and stored in a drum (see section 8.4 for disposal). The white powder was submitted to Columbia Analytical Services of Rochester, New York and analyzed for volatile Organics (8260 TCLP), metals (As, Ba, Cd, Cr, Pb, Hg, Se & Ag), semivolatiles (8270 TCLP), chlorinated herbicides (8150 TCLP) and organochlorine pesticides (8080 TCLP). The results were below detection limits for all compounds analyzed. Appendix J contains the analytical laboratory results for the white powder.

4.5 CLEARING AND GRUBBING

Since the site contained construction debris and was heavily vegetated, the first step in the remediation was to remove the vegetation and construction materials from the surface the site. Any roofing materials were considered to contain asbestos and were removed by Environmental Products and Services during the asbestos remediation phase. The next step was to clear all vegetation. Living vegetation was cut six inches above ground level and chipped directly into the back of a clean dump truck. This material was then removed and placed off site in a non contaminated area. Any vegetation six inches above the ground and below was considered contaminated and placed in the contaminated debris pile in the center of the site.

4.6 SAMPLING AND DISPOSAL OF NONHAZARDOUS MATERIALS

Construction materials in contact with the ground were considered contaminated and were placed in the center of the site in a pile awaiting disposal with the contaminated soils. Large metal debris such as old railroad rails, hoppers etc. were decontaminated using steam pressure washers and visually inspected. Chain link fencing was cut six inches from the ground surface and disposed of as scrap. The remainder was disposed of with the contaminated soil. In addition, wipe samples were taken from some of the metals and sent to Northeast Environmental labs for PCB analysis (Appendix K). One wipe sample (WS-2) contained 24.7 ppm Aroclor 1260. This piece was placed on the contaminated waste pile and disposed of with the contaminated soil to the CWM, Inc. Model City, New York disposal facility. The uncontaminated scrap metal was sent to R. Freedman and Son, Inc.of Green Island, New York (Appendix Q).

PHOTO #5

ABOVE GROUND LAYER OF VEGETATION REMOVED

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PHOTO #6

BEHIND BUILDING 10-14

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5.0 HEALTH AND SAFETY

A site specific health and safety plan was developed by CHA for its employees and can be found in Appendix T. Four Seasons also developed a site specific health and safety plan for its employees and any subcontractors (Appendix W). The Community Health and Safety Plan written by CHA is included in Appendix T. Health and Safety was stressed to every worker on the site. Mr. Karl Kidd of Four Seasons Environmental was the site Health and Safety Officer.

5.1 PROTECTIVE CLOTHING, EQUIPMENT AND ON SITE MONITORING

The basic safety and protective clothing worn on site were work boots, safety glasses, hard hat, and work gloves. This equipment was supplemented with disposable rubber gloves, Tyvek Suits, disposable over boots and full faced respirators. The level of protection was determined based on tasks that were to be accomplished. All of the above gear was worn by work personnel during decontamination procedures or when contaminated soil was being excavated or moved.

The site was surrounded with a protective orange construction fence labeled with PCB contamination warning signs. The contaminated areas were clearly marked and decontamination areas were delineated. Personnel without proper protective gear were not allowed in the contamination or exclusion zone. The excavated contaminated soil pile was covered with polyethylene plastic at the end of the work day to ensure water would not infiltrate the pile as well as eliminate wind blown particles from being generated. A silt fence was erected on the back (South) side of the site adjacent to the Conrail property to ensure no soil would leave the project area. Conrail required all fencing to be at least ten feet from the center line of the railroad tracks. Gutters were installed behind buildings 10-14 to prevent run off from the roof undermining or filling any open excavations in this area during inclement weather.

On site monitoring equipment included a Miniram Model PDM-3 particulate meter and an HNu Photoionization Detector with a 10.4 eV lamp. Daily perimeter air monitoring surveys were conducted when construction was on going. Each instrument was calibrated daily. The action level for fugitive dust was 0.15 mg/m^3 and 10 ppm for VOC's. At no times were these levels reached or exceeded around the perimeter of the site nor in the ambient air of the construction zone. The air monitoring data sheets can be found in Appendix F. In addition, air samples were collected at one upwind and two downwind perimeter site locations before, during, and after construction and sent to Chemtex Environmental and Industrial Hygiene Services in Port Arthur, Texas. The samples were analyzed for volatiles and PCB's (see section 3.1) and the results can be found in Appendix D. No significant levels of contamination were found in any of the rounds of sampling.

5.2 PERSONAL DECONTAMINATION PROCEDURES

Personnel leaving the contamination zone passed through a contamination reduction zone. This consisted of an area adjacent to the contaminated zone lined with polyethelyne plastic. Personnel removed any soiled clothing and placed them in a plastic bag. Plastic bags containing soiled personnel protective gear ie. Disposable boots, gloves and Tyvek suits were removed with the contaminated soil. This disposable decontamination method eliminated the need for soap, water, brushes, and buckets and did not generate any liquids that would have to be containerized.

5.3 EQUIPMENT DECONTAMINATION

Equipment was decontaminated using mechanical methods brushes, chisels, hammer, and brooms) followed by a high pressure (steam) wash. At the request of the NYSDEC, any equipment working behind buildings 10-14 required a separate decontamination due to the volatile organic contaminants known to exist in this area. All rinsate from this area was containerized in 55 gallon drums and properly labeled. Rinsate was collected by constructing temporary pits sealed with plastic over which equipment could be decontaminated. This rinsate was then pumped into 55 gallon drums to await proper disposal.

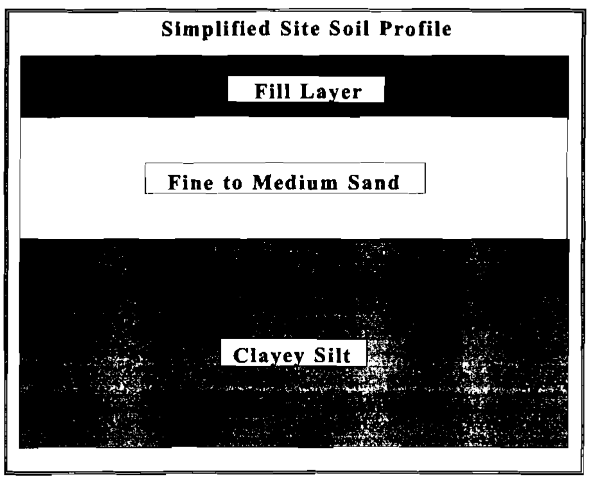
6.0 REMEDIAL ACTIVITIES

This section describes the actual operations involved in excavating and backfilling the contaminated soils. Coordination with nearby building tenants and Niagara Mohawk was essential during the work, allowing the daily operations of nearby businesses to continue during the remediation.

Once the clearing and grubbing were completed, a survey grid was laid out by a surveyor from Boswell Engineering. This grid also outlined the various areas that were to be excavated.

6.1 EXISTING SITE SOIL CONDITIONS

Photo 7 shows a typical soil section from the site. As seen in the photo, the first one to three feet of soil consists of a black coarse sand to fine gravel fill material with cinders and miscellaneous construction debris including bricks. This fill material is underlain by an orange brown, fine to medium sand with silt unit approximately five (west) to 11(east) feet thick. This unit is underlain by a grayish clayey silt layer approximately thirty feet thick. A simplified site soil profile is shown below.



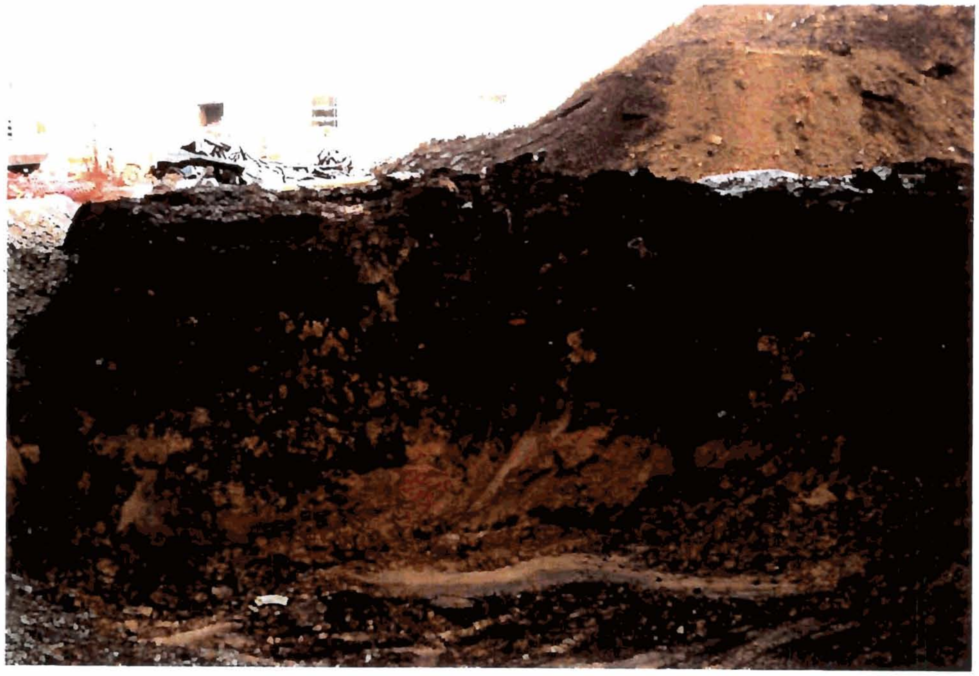


PHOTO #7

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TYPICAL ON SITE
SOIL SECTION

PHOTO #8

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& LANDSCAPE ARCHITECTS

WOODEN PLATFORM ATTACHED TO THE
SOUTHEAST CORNER OF
BUILDING 14

6.2 GENERAL SOIL SAMPLING AND EXCAVATION PROCEDURES AND RESULTS

The site remediation plan broke the site down into fifteen distinct areas based on anticipated excavation depths determined from previous investigations. A total of 47 soil samples were planned to be collected across the site. Soil sample locations during the remediation were based upon the original plan, field considerations, and visual (staining) or measured (photoionic) indications of possible contamination. Samples were collected using clean sample containers to collect the soil directly. Containers were labeled with the date, the sample collection area (1-15 on Figure 3), the sample number, and its elevation in feet M.S.L. For example, sample 8S-5(212) refers to sample number 5 collected in area 8 at elevation 212.

Once the planned excavation elevation was reached in an area, soil samples of the floor area were collected. If these samples were determined to be below the 10 ppm criteria no further excavation was conducted. If the sample was found to be contaminated above 10 ppm then additional soil was excavated. The minimum additional excavation conducted based on a failing test was a 10ft X 10ft X 1ft (deep) area. The additional excavation could be larger based on field observations. Once additional excavation was completed, the area was resampled and retested. This procedure would continue until a "clean"(less than 10 ppm PCB) sample was obtained, or further excavation was limited by the established slope stability safety guidelines. Additional soil samples around the periphery of a particular area were collected at the discretion of the field scientist.

Figure 3 shows the sampling locations for this remediation project. Over 100 samples were collected. Samples shown with a closed or black circle symbol (14S-17,21,22,25 and 15S-75) indicate an area where contamination above 10 ppm was left in place due to building, utility, or railroad stability. In these instances an attempt was made to delineate how deep or far out the contamination extends. Several numbers may be listed next to one sample location symbol. This shows that samples were taken at different elevations at the same sampling location. Shaded areas on Figure 3 indicate areas that had to be excavated deeper than the remediation plan indicated. The final elevation excavated is shown for each of these shaded areas. In all areas, including the shaded areas, the bottom of the excavation was remediated to PCB levels below the 10 ppm target level. Due to the possibility of the presence of volatiles in the areas adjacent to buildings 10 through 14, the head space of each sample was screened for photoionic evidence of volatile organic contamination with an HNu meter (Table 2, Appendix C).

It should be noted that all accessible soils with PCB concentrations is excess of 10 ppm were removed during this remedial program. The few remaining areas where documented evidence indicates the presence of PCBs at concentrations in excess of 10 ppm can not be further remediated due to structural concerns associated with existing buildings, the adjacent railroad, or existing utilities.

6.3 FIELD SCREENING AND LABORATORY SAMPLE SELECTION AND ANALYSIS

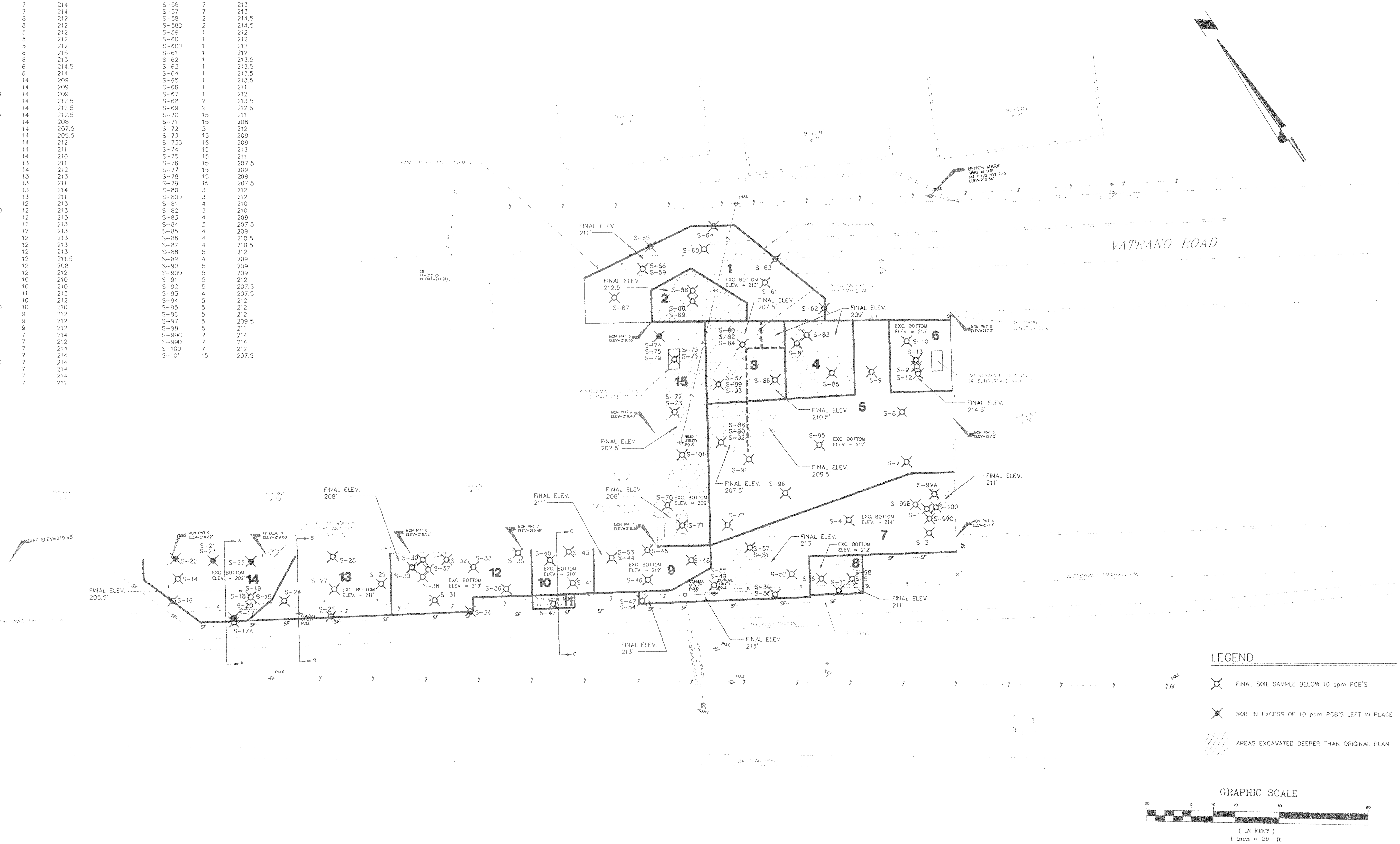
The immunoassay screening system that was used on-site was developed by Millipore, Inc. for PCB field screening. The test is a go/no go test with detection limits of 2, 5, 10 and 50 ppm. Immunoassay is an analytical screening method which utilizes the recognition of specific molecular configurations to detect a substance in a complex matrix. This method is based upon animal immune systems that recognize foreign proteins on viruses, bacteria and other substances. The immune system makes antibodies that recognize unique molecular configurations on germs and allows them to destroy the invaders through a complex series of events. The chosen immunoassay test for PCBs employs antibody-coated tubes which specifically latch onto the PCBs in soil extract. This test utilizes an enzyme that reacts with antibodies. PCBs compete with the enzyme for antibody sites in the tube. The more PCBs in the soil sample, the greater the number of antibody sites occupied by PCBs rather than enzyme. Color development reagents that react with the enzyme are added to the solution, and following a prescribed test period, a resultant lesser degree of color indicates that a higher PCB concentration is present. Conversely, a greater degree of color indicates the presence of lower concentrations of PCBs. The procedures for conducting the field immunoassay tests can be found in Appendix X.

Figure 3

TABLE OF SAMPLES

SAMPLE NO.	AREA	ELEVATION
S-1	7	214
S-2	6	215
S-3	7	214
S-4	7	214
S-5	8	212
S-6	8	212
S-7	5	212
S-8	5	212
S-9	5	212
S-10	6	215
S-11	8	213
S-12	6	214.5
S-13	6	214
S-14	14	209
S-15	14	209
S-15D	14	209
S-16	14	212.5
S-17	14	212.5
S-17A	14	212.5
S-18	14	208
S-19	14	207.5
S-20	14	205.5
S-21	14	212
S-22	14	211
S-23	14	210
S-24	13	211
S-25	14	212
S-26	13	213
S-27	13	211
S-28	13	214
S-29	13	211
S-30	12	213
S-30D	12	213
S-31	12	213
S-32	12	213
S-33	12	213
S-34	12	213
S-35	12	213
S-36	12	213
S-37	12	211.5
S-38	12	208
S-39	12	212
S-40	10	210
S-41	10	210
S-42	11	213
S-43	10	212
S-40D	10	210
S-44	9	212
S-45	9	212
S-46	9	212
S-47	7	214
S-48	7	212
S-49	7	214
S-50	7	214
S-50D	7	214
S-51	7	214
S-52	7	214
S-53	7	211

SAMPLE NO.	AREA	ELEVATION
S-54	7	213
S-55	7	213
S-56	7	213
S-57	7	213
S-58	2	214.5
S-58D	2	214.5
S-59	1	212
S-60	1	212
S-60D	1	212
S-61	1	212
S-62	1	213.5
S-63	1	213.5
S-64	1	213.5
S-65	1	213.5
S-66	1	211
S-67	1	212
S-68	2	213.5
S-69	2	212.5
S-70	15	211
S-71	15	208
S-72	5	212
S-73	15	209
S-73D	15	209
S-74	15	213
S-75	15	211
S-76	15	207.5
S-77	15	209
S-78	15	209
S-79	15	207.5
S-80	3	212
S-80D	3	212
S-81	4	210
S-82	3	210
S-83	4	209
S-84	3	207.5
S-85	4	209
S-86	4	210.5
S-87	4	210.5
S-88	5	212
S-89	4	209
S-90	5	209
S-90D	5	209
S-91	5	212
S-92	5	207.5
S-93	4	207.5
S-94	5	212
S-95	5	212
S-96	5	212
S-97	5	209.5
S-98	5	211
S-99C	7	214
S-99D	7	214
S-100	7	212
S-101	15	207.5



Revisions:	Drawn By:	App'd By:	Date:

Designed By:	Date:
S.P.	1/98
Drawn By:	**Date:**
J.F.	1/98
Checked By:	**Date:**
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CHA Project No. 6429.07

REMEDIATION OF THE VATRANO ROAD SITE

NYSDEC ID #401036
ALBANY, NEW YORK

REMEDIAL PROJECT

CLOSURE PERFORMANCE SAMPLE LOCATIONS AND FINAL EXCAVATED ELEVATIONS

SCALE: 1" = 20'

DATE: FEBRUARY, 1998

Drawing No. **FIG. 3**

SHEET 1 OF 1

Though the field screening tests are precise, they are not as accurate as laboratory analysis. It would be impractical to submit most of the samples to a lab for verification due to the constraints of having to backfill certain areas quickly in the interest of safety and nearby business operations. The first few samples were sent to the lab for verification to establish the accuracy of the field immunoassay screening tests early in the project. The data from the lab showed that using a lower field standard than the ten or even five parts per million (ppm) standard was warranted. It was decided to use the two ppm immunoassay standards to indicate areas that would be considered remediated below 10 ppm. In addition, a total of eleven duplicate immunoassay tests were performed during the course of the remediation to ensure repeatability of the field screening test results. Table 2 shows a comparison of PCB values between immunoassay tests and laboratory tests.

TABLE 2
PCB IMMUNOASSAY FIELD SCREENING AND LABORATORY ANALYSIS COMPARISONS
(Aroclor 1260 Only)

Sample #	Immunoassay Result (PPM)	Laboratory Result (PPM)	Comments
7S-1(214)	>5<10	13	
6S-2(215)	>5<10	14.8	
8S-5(212)	>5<10	23	
6S-12(214.5)	<5	16.7	
6S-13(214)	<5	0.652	
14S-17(212.5)	>10	270	Southern Embankment
14S-18(208)	>10	370	
14S-20(205.5)	<2	0.16	2.5 ft below 14S-18
14S-23(210)	>10	2400	Near Pipe on Slope
13S-29(211)	<2	0.02	
12S-39(212)	<2	5.1	
7S-54(213)	<2	0.73	
15S-71(208)	<2	0.80	
15S-76(207.5)	<2	0.025	
15S-79(207.5)	<2	0.11	
4S-85(209)	<2	0.041	
4S-89(209)	<2	1.7	
5S-90(209)	=2	0.042	

As can be seen from Table 2, the results of the laboratory analyses were consistently less than 10 ppm when the field screening immunoassay standard of 2 ppm was used instead of the 5 ppm standard. In all cases, when a laboratory sample indicated a PCB concentration above 10 ppm, further excavation was completed until a value of 2 ppm or less by field immunoassay screening was achieved. Table 2 also shows that false positives were not a significant problem during the remediation. This table shows that any sample indicating a 2 ppm or less concentration by the field screening method would not exceed a concentration of 10 ppm when analyzed by the laboratory. This indicates that the field screening immunoassay data collected was accurate enough to make excavation decisions based solely on the field test results. The immunoassay field screening results are provided in Table 1 (Appendix B).

6.4 LABORATORY ANALYSIS PROCEDURES AND RESULTS

According to the Remediation Plan, fifteen to 20 percent of the total soil samples would be split and sent in for laboratory confirmation. A total of 19 samples were sent to the lab for analysis. Eight of these were analyzed solely for PCB's by EPA method 8080. Due to the presence of VOC's especially adjacent to buildings 10-14, eleven samples were analyzed for the Target Compound list (includes PCB's). These were selected based on their proximity to the buildings and based on head space readings taken by the HNu meter. A summary of the results of the analysis of these eleven samples is found in Table 3. The complete laboratory analysis data for all samples is found in Appendix N with the ASP reports found in Appendix O. In addition, one field blank filled with distilled water was turned in at the end of the project and analyzed for PCB's by EPA method 8080. No PCB's were detected in this field blank.

It should be noted that the inability of Northeast Analytical Laboratories to provide analysis by Analytical Protocol Services (ASP) resulted in switching laboratories to Adirondack Environmental Services of Albany, New York. As requested by the NYSDEC, samples 6S-13, 7S-1, and 6S-2 were reanalyzed by Adirondack Environmental Services. All subsequent samples were sent to Adirondack Environmental Services.

TABLE 3

SELECTED SUMMARY OF LABORATORY RESULTS (PPM)

Parameter	Sample #												
	Standard[1]	Pipe 1	14S-18	14S-20	14S-23	13S-29	12S-39	15S-71	15S-76	15S-79	4S-85	4S-89	5S-90
Tetrachloroethene	0.70	ND	25	ND	2.4	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	1.7	ND	ND	ND	12	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.5	27	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	1.2	12	ND	ND	2.3	ND	ND	ND	ND	ND	ND	ND	ND
Cis-1,2 Dichloroethene	0.1	ND	ND	ND	15	ND	ND	ND	ND	ND	ND	ND	ND
1,4 Dichlorobenzene	8.5	ND	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4 Trichlorobenzene	3.4	ND	ND	ND	0.48	ND	ND	ND	ND	.250	ND	ND	ND
Toluene	1.5	32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	0.9	360	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	0.03	340	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	12	<2.5	8.6	17.3	10.7	5.8	3.7	2.0	2.9	12.7	1.8	1.3	2.1
Lead	500	2950	109	53	476	110	37	10.0	4.3	3.8	2.1	3.1	4.6
Mercury	0.1	0.52	0.23	<0.06	0.32	0.10	<0.05	0.13	<0.06	0.06	0.07	<0.06	0.08
Total Cyanide	Varies	3.7	<5	<1	<1	<1	<1	<1.1	<1.2	<1.2	<1.2	<1.2	<1.2

[1] Standards based on NYSDEC TAGM-Determination of Soil Cleanup Objectives and Cleanup Levels, Jan 1994. ND: Below Detection Limits

A sample of the soil like material filling the inside of the pipe found behind building 12 leading to the oil water separator was also sent to the lab and analyzed for target compounds. It should be noted that the pipe was in various stages of decay and in some areas was missing entirely. The results of this material are summarized in Table 3. As the Table indicates it is difficult to make correlations between the material found inside the pipe and the nearby soils especially since the soil samples were taken at various depths. The material inside the pipe also contained 330 ppm of Aroclor 1254 and 240 ppm of Aroclor 1260. The presence of Aroclor 1260 is consistent with the soil samples from the area. High levels of this PCB were also found in nearby sample 14S-23. The levels of lead and mercury seem to correlate well between the material inside the pipe and sample 14S-23.

6.5 EXCAVATION OF CONTAMINATED SOIL

The majority of the excavations were dug using a tracked excavator. Hand digging was necessary at some instances around the building footings. As per the remedial plan a 1V:2H slope was maintained away from any building footings and a 1V:1.5H to 1V:2H slope was maintained away from the line marking a 10 foot offset from the centerline of the railroad tracks. In addition, only very shallow excavations were made around utility poles along Conrail's right-of-way to ensure their stability. After an excavation was deemed completed by the field scientist, polyethylene plastic was placed on any side slopes of an excavation before backfilling. Excavated soil was temporarily stockpiled near the center of the site between buildings 14 and 16. Trucks were then loaded from the stockpile for off-site disposal. All excavated soils were properly containerized, removed from the site, and disposed of at a RCRA permitted disposal facility.

Excavation took place between October 30 and December 17, 1997. The description in the following sections is written in the same order that the actual excavations were accomplished. The plan for the excavations can be found in the Four Season's Work Plan (Appendix W)

6.5.1 Areas 5, 6, 7 and 8 Excavation and Sampling

It was necessary to start with these areas in order to build a haul road which would run from the southeast corner of the site and turn north through the middle of the site. The first thirteen samples came from these areas (Figure 3). No large areas of extra excavation were required, however, there were small isolated areas that required deeper excavation. These areas are shaded on Figure 3. The underground telephone lines running North-South through this area required that some hand digging be performed.

6.5.2 Area 14 Excavation and Sampling

During excavation in this area a gravity fed collection pipe adjacent to buildings 10-14 leading to the oil water separator was uncovered (photo 9). This pipe was in various stages of disrepair. After discussion with Vatrano Reality, the NYSDEC, and GE it was decided to remove the pipe and segregate it until its contents could be analyzed. Once the contents of the pipe were analyzed, it was determined that it could be placed in with the rest of the soil and sent to Model City. It was also decided to plug up all pipes leading from buildings 10 through 14 with a cement grout as this disposal system is no longer working and could cause future contamination.

Figure 3 shows that there was PCB contamination adjacent to the building and this contamination exists to an elevation of 210 feet. Sample S-17 taken on the southern slope of the excavation contained greater than 10 ppm PCB's. Sample S-17A was taken two feet horizontally into this slope (at the same elevation) and showed a PCB concentration less than 10 ppm. Embankment restrictions bordering the Conrail tracks prevented further excavation of this area. A ten square foot area of the floor had to be excavated to an elevation of 205.5 approximately two feet into the water table due to consistently high PCB concentrations. Sample S-20 at elevation 205.5 ft had a PCB concentration of 0.16 ppm according to the laboratory analysis. The laboratory analysis did not indicate any significant volatile concentrations.

It is important to note that all accessible soils containing PCBs in excess of 10 ppm from this area were excavated, removed from the site, and properly disposed. This is evidenced by the analysis of closure performance sample S-20.

As seen from Table 3, samples 14S-18, 14S-20 & 14S-23 show slightly elevated levels of arsenic and mercury in this area when compared to recommended soil cleanup objectives for heavy metals (NYSDEC-Soil Cleanup Objectives and Cleanup Levels, Jan. 24, 1994, TAGM, Appendix A, Table 4) The suspected source of this contamination is the waste pipe behind the building that was removed.

PHOTO #9

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BEGINNING OF GRAVITY FED PIPE BEHIND BUILDING 10 THAT RUNS TO OIL WATER SEPARATOR

PHOTO #10

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PIPE TO SOUTH OF OIL WATER SEPARATOR ADJACENT TO REAR SOUTHWEST CORNER OF BUILDING 14

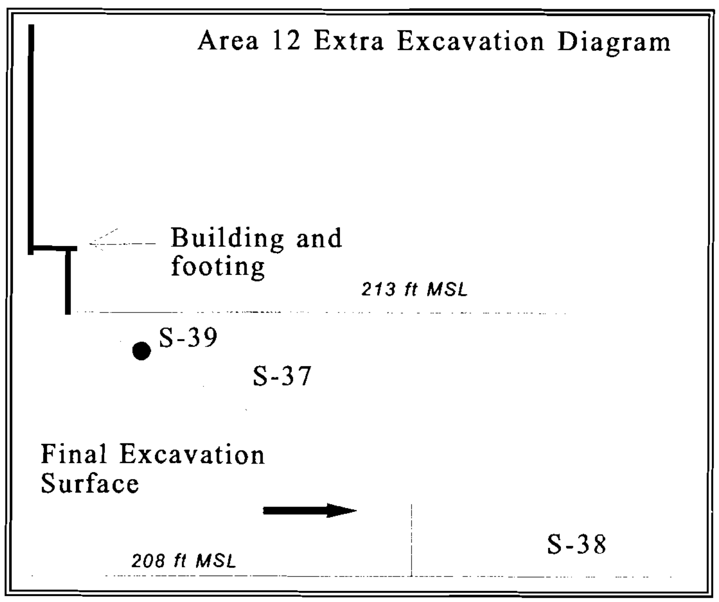
All soil located between the slopes in these areas was taken to the Model City disposal site. Since the source was removed, and this area is protected with three to seven feet of clean fill, it is unlikely that a dispersion path exists for this residual contamination. In addition, these parameters have been included in the post remediation groundwater monitoring program required by the NYSDEC Record of Decision for the site. This program is detailed in the Operation, Maintenance and Monitoring Plan for the site. The results from the monitoring program will be used to evaluate impacts from the potential dispersion of these parameters.

6.5.3 Area 13 Excavation and Sampling

This area required no extra excavation. Samples taken along the edges of the excavation (S-28 and S-26) showed PCB concentrations less than the 10 ppm standard. Only the top six inches of soil was excavated in approximately a 6-foot square area adjacent to the Conrail pole for safety reasons. Visual observations indicated this area to be uncontaminated.

6.5.4 Area 12 Excavation and Sampling

Due to higher than expected PCB concentrations found in the Northwest corner of area 12, an extra wedge of material had to be removed. Samples S-37 and S-39 were located on the slope of this extra excavation and showed PCB concentrations less than 10 ppm. Sample S-38 was located at an elevation of 208 ft (five feet lower than planned) and was below the 10 ppm PCB target concentration. This area of extra excavation is shown as the shaded area on Figure 3 and a cross section sketch is shown at right.



6.5.5 Area 10 & 11 Excavation and Sampling

Excavation in these areas went as planned with no extra excavation necessary. Sample S-43 near the building contained less than 10 ppm PCB's.

6.5.6 Area 9 Excavation and Sampling

Area 9 required a 10 X 10 foot area to be excavated an extra foot as sample S-44's immunoassay result indicated a PCB concentration higher than 10 ppm. Sample S-53's immunoassay indicated a value less than 10 ppm and no further excavation was necessary. It was noted that the gravity fed pipe that started from behind building 10 continued into area 9 and made a right angle turn northwards toward the oil water separator found in area 15. (See photo 10).

6.5.7 Area 1 and 2 Excavation and Sampling

This area was excavated at night (photo 11) to minimize traffic disruption on Vatrano Road. Excavation proceeded cautiously in these areas as water, sewer and gas lines were within the excavation area. A 10 X 10 ft area had to be excavated an extra foot in Area 1 as shown by the shaded area on Figure 3. Several samples were taken along the periphery of area 1 to ensure that no further lateral excavation was needed. Samples S-62 through S-65 were taken half way up the cut face of area 1 and based on immunoassay screening all were below 10 ppm PCB's. Area 2 required extensive extra excavation. The initial plan only called for the removal of the asphalt and underlying subbase. Sampling results led to excavating down to an elevation of 212.5 ft to reach soil with less than 10 ppm PCB concentration. Both of these areas were backfilled with compacted, new subbase material as shown in photo 12.

6.5.8 Area 15 Excavations and Sampling

Area 15 contained two connected vaults, associated pipes and a stone dry well system (photos' 13, 14, 15 & 16). The approximate locations of these structures is shown on Figure 2. All these structures were removed and disposed of with the contaminated soils. Almost all of Area 15 had to be excavated to 207.5 or approximately 1.5 feet into the water table before sampling indicated PCB's below 10 ppm.

PHOTO #11

NIGHT TIME EXCAVATION
OF VATRANO ROAD

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PHOTO #12

VATRANO ROAD
COMPACTED SUBBASE

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PHOTO #13

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LOOKING NORTHEAST AT OIL WATER SEPARATOR. NOTE SOIL AND DEBRIS PILE IN CENTER OF SITE

PHOTO #14

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PIPE DISTRIBUTION BOX COMING FROM NORTHERN END OF OIL WATER SEPARATOR

PIPE SITTING ON GRAVEL CHANNEL
(TO LEFT OF SCALE)
NORTH OF OIL WATER SEPARATOR

PHOTO #15

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EXCAVATED AREA NORTH OF OIL WATER SEPARATOR SHOWING
ROUNDED STONE DRYWELL

PHOTO #16

Samples S-74, 75 and 79 were taken adjacent to the north end of the east wall of building 14 near a sewer service line that is still in use. The contamination in this area existed until elevation 207.5 but could not be excavated due to the sewer line and building stability considerations. Area 15 also contained an active Niagara Mohawk Power pole used to provide power to building 14 and across to the railroad.

Area 15 had to be excavated in parts with the last part being the area surrounding the power pole. This pole was removed after a new pole was placed into a cleaned area at the area 15 and area 9 boundary line (see Figure 4).

It is important to note that all accessible soils containing PCBs in excess of 10 ppm from this area were excavated, removed from the site, and properly disposed. As stated above, the only portion of area 15 where PCBs were left in place was the area in the vicinity of the building 14 sewer line which could not be disturbed due to structural limitations.

6.5.9 Areas 3, 4 & 5 Excavation and Sampling

These areas were the last to be excavated, and as can be seen on Figure 3 all of area 3 and 4 had to be excavated to a deeper elevation than was originally planned. Several different final elevations were used for these areas depending on what the sampling results indicated. The deepest cut had to be made to an elevation of 207.5 ft. Area 5 also contained the contaminated soil stockpile (photo 17). Sample 95 came from the area below the center of the stockpile to ensure no additional contamination existed.

6.6 BACKFILLING OF EXCAVATIONS

All excavations were backfilled using clean sand except for the gravel subbase used under the road. Laboratory analysis of these materials can be found in Appendix L. Once an area was deemed clean by the field scientist, polyethylene plastic was placed over any side slopes and then backfill was placed either by direct dumping or from an uncontaminated track hoe (photo 18). The track hoe bucket and tracks were used to compact the backfill. The backfill was placed in lifts not to exceed 2 ft. A walk behind plate compactor was used to compact backfill in areas adjacent to buildings and other structures.

PHOTO #17

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COVERED CONTAMINATED SOIL PILE

PHOTO #18

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BACKFILLING OPERATIONS BEHIND BUILDING 14

6.7 RESURFACING VATRANO ROAD

Callanan Brothers of South Bethleham, NY was subcontracted by Four Seasons to repave the areas excavated under Vatrano Road. Proper traffic maintenance procedures were followed and traffic was allowed to use the road throughout the paving operations. The gravel subbase was compacted using a roller.

6.8 REMOVAL AND INSTALLATION OF POWER POLES

Niagara Mohawk removed the power pole and detached overhead lines of the power pole in area 15 and installed a new pole on the border of area 9 and 15. In addition, a second pole was installed just to the east of the double set of Conrail utility poles near the rear of area 7. This work was done in clean areas only and no decontamination of equipment was necessary.

PHOTO #19

NEWLY PAVED AREA

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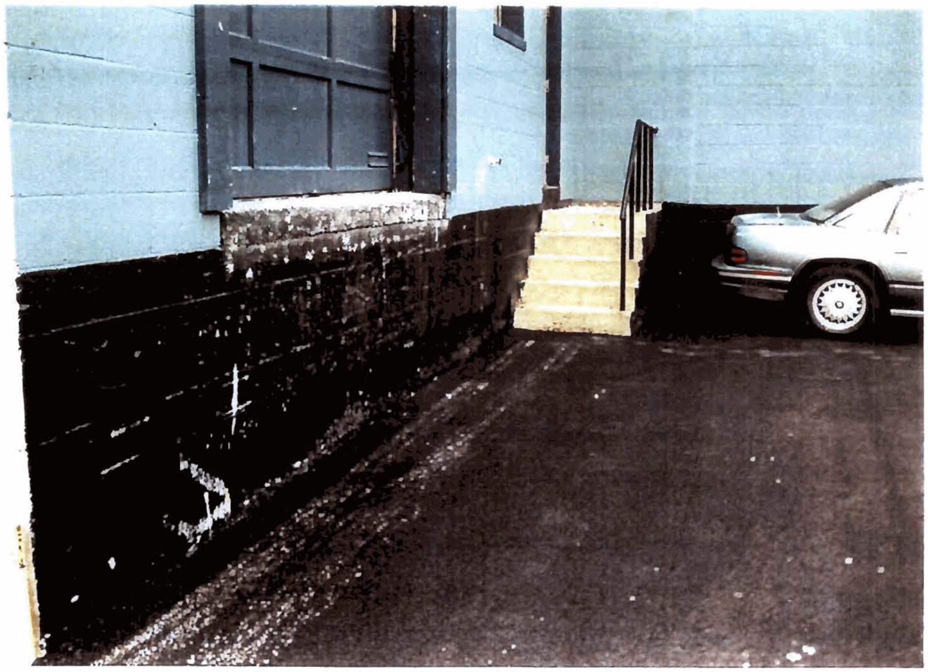

PHOTO #20

NEW PAVEMENT ADJACENT TO BUILDING 14

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7.0 SOIL DISPOSAL

Manifests and certificates of disposal for all contaminated soils leaving the site can be found in Appendix P. Soil was disposed of by excavating the contaminated stockpile using a track hoe and loading into awaiting trucks from Buffalo Fuels Corporation. (Photo 21). The trucks were lined with polyethylene plastic in their beds before loading. Each truck was carefully loaded ensuring no material was spilled. As an added precaution, large sheets of polyethylene plastic were laid on top of the haul road to ensure against cross contamination. Once a truck was full, it was properly covered to ensure that no material would be spilled during transport. Each truck was also inspected to ensure it was properly placarded (photo 22). All contaminated soil was trucked to CMW Chemical Services Inc. for disposal at their hazardous waste landfill in Model City, New York.

PHOTO #21

LOADING CONTAMINATED SOIL INTO TRUCKS

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PHOTO #22

PROPERLY PLACARDED TRUCK

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8.0 GROUNDWATER MONITORING WELLS

In order to maximize the total amount of contaminated soils removed it was necessary to remove or abandon the existing on site groundwater monitoring wells. The plan called for these wells to be reinstalled once the soils from an area had been remediated and backfilled.

8.1 ABANDONMENT OF GROUNDWATER MONITORING WELLS

There were six groundwater monitoring wells on site (Figure 2). All of these wells were abandoned by Soil and Materials Testing Inc. (SMT) of Castleton, New York. Each well was abandoned by excavating around the steel protective casing which was then pulled out with heavy equipment. As much of the plastic riser was removed as possible. All old well material and auger cuttings was put in the contaminated soils stockpile and taken to Model City, New York. This process was followed by over drilling the well with 4.25 inch hollow stem augers to a depth at least one foot past the bottom of the well. The borehole was then grouted up to the surface. Tools and augers were pressure washed between each well to ensure no cross contamination, and the liquids from the decontamination were stored in labeled drums.

8.2 INSTALLATION OF NEW GROUNDWATER MONITORING WELLS

Six new groundwater monitoring wells were installed by SMT on 12/2 to12/3/97 and 12/19/97 as shown on Figure 4. Well diagrams for the new wells can be found in Appendix E. Each well was drilled to a similar depth as the well it replaced. The top of the water table was screened in each well with the exception of the deep well (MW-9). The wells were installed with a rotary drill rig using 4.25 inch hollow stem augers to advance the boring. Each well was constructed using 2 inch diameter schedule 40 PVC risers attached to a ten-foot section of PVC number 10 slot screen (MW-9 screen was a five-foot section of 6 slot PVC). Each well screen was surrounded by #0 washed sand filter pack. On top of the sand pack a layer of bentonite chips was placed followed by a slurry of cement grout. The PVC is protected by a five foot long protective steel casing anchored with concrete. Each steel cover is provided with a lock. Well MW-1 was surrounded by four steel protective pipes filled with concrete to guard against traffic due to its proximity to the road and parking area. Proper decontamination procedures (steam cleaning) were followed between each well and all decontamination water was placed in labeled drums.

8.3 DEVELOPMENT OF NEW GROUNDWATER MONITORING WELLS

SMT Inc. was subcontracted by Four Seasons to develop each newly installed monitoring well. Each well was surged by forcing air down the well throughout the screened interval. Each well was then pumped using a jet pump. The waters from development were containerized using 55 gallon drums. All equipment was decontaminated between wells. Well development took place on December 4, 1997 for wells MW-2, 3 and 9. Wells MW-1, 4, and 5 were developed on December 12, 1997. The goal of the well development was to reach turbitities below 50 Ntu's. This goal was achieved in all wells except the deep well (MW-9). The lowest turbidity achieved from this well was 293 Ntu's. The high turbidity can be attributed to the silt and clays that exist at the screened interval.

8.4 REMOVAL OF DRUMS

A total of nineteen 55 gallon drums were used at the site to store auger cuttings, decontamination water, and water pumped from well development. All drums were properly labeled and secured behind building 16. On December 29, 1997 Buffalo Fuels Corporation removed all nineteen drums and delivered them to the CWM Chemical Services Inc. hazardous waste disposal facilities in Model City, New York for final disposal. The manifests and certificates of disposal for the drums are found in Appendix Q.

8.5 GROUNDWATER ELEVATIONS

Groundwater depths were measured in each well on December 29, 1997. Depths were measured using an electronic meter that produces an audible sound when the probe encounters the water. The tape is calibrated in hundredths of feet. All depths were measured from the top of the PVC riser. The depths are converted into elevations by subtracting the measured stick up of the PVC riser from the surveyed ground elevation. The measured elevation of the groundwater is documented on the next page in Table 4.

TABLE 4
ON-SITE GROUNDWATER ELEVATIONS
(12/29/97)

Well #	Ground Elevation (MSL)	Elevation of Screened Interval	PVC Stickup	Water Elevation (MSL)
MW-1	215.23 ft	200.23-210.23 ft	2.42 ft	209.71 ft
MW-2	216.20 ft	198.70-208.70 ft	2.65 ft	207.44 ft
MW-3	215.53 ft	198.03-208.03 ft	2.24 ft	207.40 ft
MW-4	214.58 ft	198.08-208.08 ft	2.46 ft	207.44 ft
MW-5	214.54 ft	197.54-207.54 ft	2.46 ft	207.22 ft
MW-9	215.95	164.95-169.95 ft	1.33 ft	204.87 ft

PHOTO #23

NEW DECK ATTACHED TO BUILDING 10.
MW–2 IN BACKGROUND

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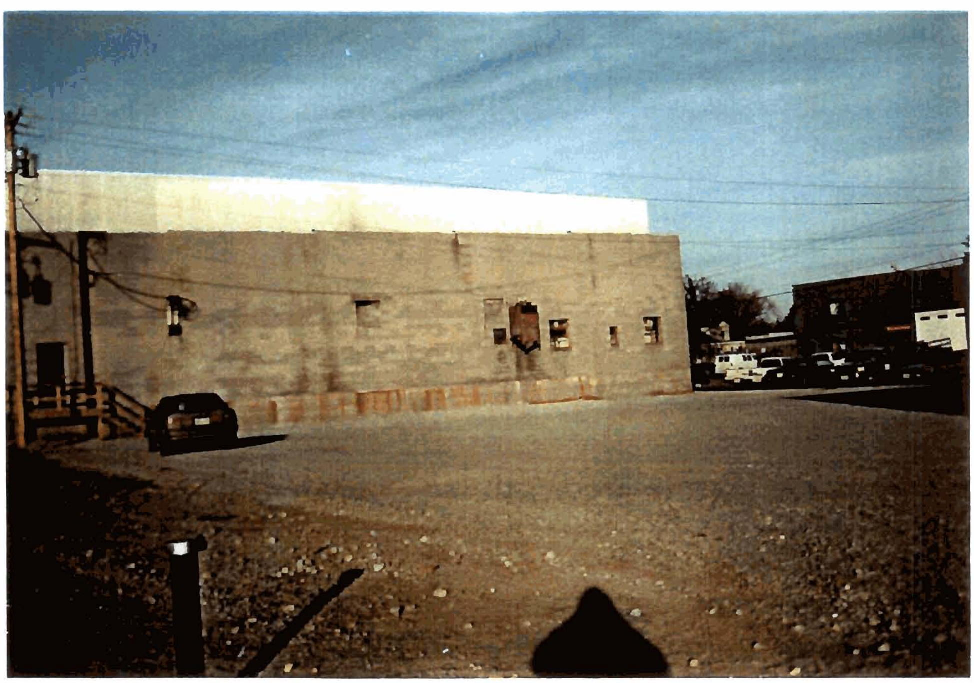

PHOTO #24

COMPLETED GRAVEL PARKING AREA
LOOKING NORTH. MW–5 IN FOREGROUND

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9.0 FINAL CONSTRUCTION AND SURVEY

As seen from photos 23 and 24 new decks were constructed behind building 10 and on the side of building 14. These were built to replace the structures that had to be removed in order to facilitate remedial activities. These new structures are built to local building codes. A copy of the specifications can be found in Appendix H. Once all excavation and backfilling was accomplished, a six-inch layer of gravel was placed and compacted between buildings 14 and 16. This is to serve as a new parking area. The area behind buildings 10-14 requires final grading, top soil, and seeding. This was completed during August, September and October of 1998 by Four Seasons Environmental. Photos 25 and 26 shows the final condition of the site. A final survey of the site was conducted by Boswell Engineering of Albany, New York and is shown in Figure 4.

It should be noted that Vatrano Realty, the owners of the site, elected to pave the area between buildings 14 and 16. While this activity was conducted without the knowledge of CHA, it is our opinion that this activity will not compromise the integrity of the remedial activities conducted to date.

PHOTO #25

LOOKING SOUTHEAST BEHIND BUILDING 10–14. NOTE NEW MONITORING WELLS

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PHOTO #26

COMPLETED PARKING AREA
LOOKING SOUTH

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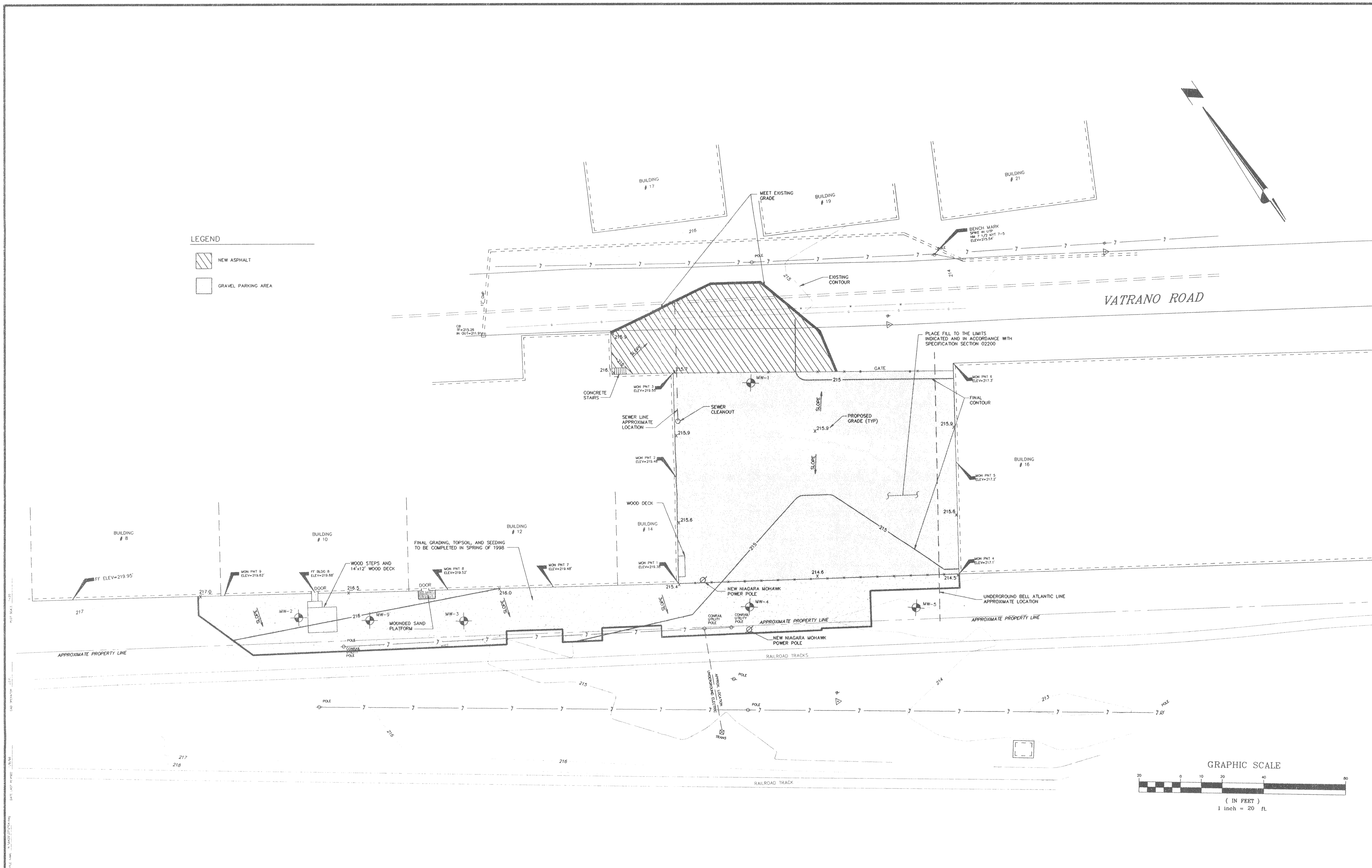
Figure 4 Final As Built



Revisions:	Drawn By:	App'd By:	Date:

Designed By:	Date:
V.M.	7/97
Drawn By:	Date:
M.S.	7/97
Checked By:	Date:
C.H.F.	7/97

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CHA Project No. 6429.07

REMEDIATION OF THE VATRANO ROAD SITE

NYSDEC ID #401036
ALBANY, NEW YORK

SITE REMEDIATION

FINAL GRADING PLAN

SCALE: 1" = 20'

DATE: FEBRUARY, 1998

Drawing No.
FIGURE 4

SHEET 1 OF 1

10.0 SUMMARY AND CONCLUSIONS

The goal of this remediation project was to remove as much PCB contamination as possible including the oil water separator system. This goal was achieved. PCB contaminated soil was left in only three limited areas of the site (see Figure 3) due to structural limitations associated with existing buildings, railroad tracks, and site utilities. New monitoring wells that meet the NYSDEC's 6 NYCRR Part 360 Solid Waste Management Facilities (Jan. 1997) regulations were constructed and developed. In addition, the site has become less hazardous due to the removal of construction debris found across the site, including roofing materials containing asbestos. The replacement of older, unsafe deck structures with new decks was an added benefit to the tenants of the site.

Since the probable source (waste pipe) of the volatile and metal constituents found has been removed and the area backfilled with clean fill, no further remedial action is recommended. Based upon the closure performance and waste characterization analyses performed during the course of the remedial program, CHA has concluded that only residual concentrations of the VOCs are present in soils which remain on-site. This conclusion is based upon the analytical data summarized in Table 3 of this Report. Based upon these results, it is anticipated that any soils containing higher VOC concentrations were removed and properly disposed during the remedial program, as the soils which are known to have contained VOCs at elevated concentrations also contained PCBs at concentrations in excess of 10 ppm.

Based upon the data collected and presented to date, it is CHA's opinion that the residual VOC and metals concentrations which are potentially present on site do not pose a significant threat to human health and the environment. However, per the conditions of the March 1993 NYSDEC Record of Decision for the site, the existing monitoring network will be sampled semi-annually for two years and then yearly until the 5 year point, at which time a review of the remedial action will take place. CHA has elected to address this issue via the monitoring program established by the Operation, Maintenance and Monitoring Plan that has been prepared for the site. This plan presents the historic groundwater monitoring data for the site, and outlines the measures that will be taken to monitor the ground water quality during the post remediation period. A copy of the Operation, Maintenance, and Monitoring Plan has been submitted to the NYSDEC for review and approval.

The final site finishing/landscaping activities, which were performed per the punch list provided as Appendix Y of the draft version of this report, were completed to the satisfaction of CHA by mid October of 1998. These activities included:

- The provision of topsoil and the establishment of vegetation in all disturbed areas in accordance with the contract documents.
- Fine grading behind buildings 10, 12, & 14 to eliminate local depressions. The raising of the grade around the new deck behind building 12 so that the step height off the deck does not exceed 18 inches.
- The maintenance of a silt fence until vegetation is established.
- The removal of a chipped wood pile.
- The provision of stone splash pads under all downspouts, and the provision of erosion protection to protect new topsoil and seed.
- The installation of a 6' high chain link fence without gate at rear of the lot between buildings 14 and 16.

With the completion of these activities, CHA now considers the remediation of the Vatrano Road site to be complete. It should be noted that Vatrano Realty, the owners of the site, elected to pave the area between buildings 14 and 16. While this activity was conducted without the knowledge of CHA, it is our opinion that this activity will not compromise the integrity of the remedial activities conducted to date.

Finally, per the conditions of the July 1997 Order on Consent for this remedial action, it is understood that within sixty (60) days after receipt of the final engineering report and certification, the NYSDEC shall notify GE in writing whether the Department is satisfied that all construction activities have been completed in compliance with the NYSDEC approved Remedial Design. It is further understood that once the NYSDEC concludes that all construction activities have been completed in accordance with the approved Remedial Design, the Site will be redesignated as a Class 4 inactive hazardous waste site in the *NYSDEC Registry of Inactive hazardous Waste Disposal Sites*, which indicates that the Site has been properly closed but requires continued monitoring. In addition, following satisfactory completion of all activities required by the Operation, Maintenance, Monitoring Plan, the Site shall be evaluated to determine if it qualifies for deletion from the *Registry*.

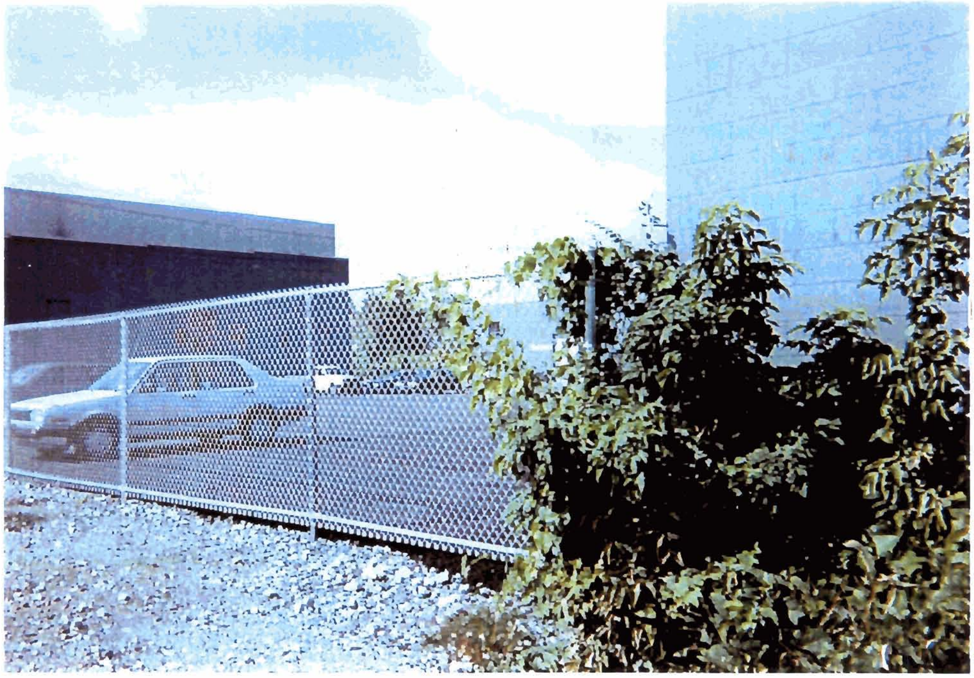

PHOTO #27

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PAVED PARKING AREA BETWEEN BUILDING 14 and BUILDING 16

PHOTO #28

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SOUTHEAST LIMIT OF TOP SOIL/SEEDING

11.0 DEED RESTRICTIONS

Deed restrictions will be placed on the property after the five year monitoring program is complete. These restrictions will include documentation that the subsurface soil next to buildings 10, 12, & 14 and the railroad tracks to the south contains PCB's in excess of 10 ppm.

12.0 VATRANO ROAD CERTIFICATION

Clough, Harbour and Associates LLP, provided full time inspection of the Vatrano Road Remediation Project with qualified environmental scientists and engineers. Clough, Harbour and Associates LLP hereby certifies that the information contained in this Remedial Engineering Project Certification Report is true and accurate and that all work was completed in substantial conformance with the Remedial Project Plan. All conclusions were based on CHA's review of project documentation, knowledge, experience, and professional judgement.

Prepared by:

Steven Pidgeon
Project Geologist

Certified By:

Carsten H. Floess, PE
Associate