



Interim Remedial Measure Work Plan - Selected Soils and Sediments

**Ward Products Site
Amsterdam, New York
Site Code 4-29-004**

Prepared by:

RETEC ENGINEERING, P.C.

Under Contract To:

**The RETEC Group, Inc.
1001 West Seneca Street, Suite 204
Ithaca, New York 14850-3342**

RETEC Project Number: NWR01-15852-100

Prepared for:

**New Water Realty Corporation
61 Edson Street
Amsterdam, New York 12010**

September 24, 2003

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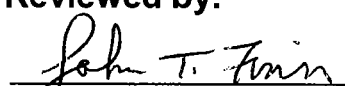
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September 24, 2003

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Statement of Limitations

Work for this project was performed, and this remedial design prepared, in accordance with generally accepted professional practices for the nature and condition of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of New Water Realty for specific application to the Ward Products site in Amsterdam, New York. No other warranty, express or implied, is made.

1 Introduction

This document is the Design and Work Plan for an Interim Remedial Measure (IRM) for the removal of selected deposits of material associated with the Ward Products facility in Amsterdam, New York. The material to be removed includes certain soils and sediments known or anticipated by New Water Realty Corporation (NWR) and RETEC Engineering, P.C. (RETEC), to exceed TCLP limits for cadmium.

The Remedial Investigations (RI) Report [Normandeau, 2001] and supplemental field data [Normandeau, 2002, and Normandeau, 2003] identified soil and sediment both on and off the site which contain cadmium, chromium, nickel, zinc, and lead in excess of the New York State Department of Environmental Conservation (NYSDEC) recommended cleanup objectives. Only cadmium has been detected in concentrations exceeding the TCLP limits except for a small quantity of material that was removed during a previous ("Drain Pipe") IRM that contained chromium and lead in excess of TCLP limits.

This Plan describes the rationale and procedures for the remediation of the impacted material and the elimination of the associated risk to public health and the environment. This Plan has been prepared in accordance with Section V of the Consent Order for this site [NYSDEC, 1997].

1.1 Site Description

The Ward Products site lies in an industrial area on the north side of Edson Street Extension, as shown in Figure 1. The site is an 8.6-acre property that consists of a large paved parking lot, a 69,556 square-foot single story building, and lawn and wooded areas. A drainage ditch begins north of the building and runs southeast, then southwest along the property line. It then runs under Edson Street before branching into two separate streams, referred to as the East Branch and West Branch. Both stream branches run south approximately 2,800 feet to the Mohawk River in the City of Amsterdam. Both streams are typically damp, but with negligible flow.

The Normandeau Associates, Inc. (NAI) reports [2001, 2002, 2003] provide more complete descriptions of the stratigraphy and hydrogeology, as well as the results of the environmental investigations conducted at the site.

1.2 Project Responsibilities

The principal organizations involved in designing and construction of the proposed IRM will be NWR, NYSDEC, RETEC, and the Contractor. Ward Products, LLC (WP) is the current occupant of the property and its facilities.

1.2.1 New Water Realty Corporation

As the site owner, NWR is responsible to NYSDEC for the remedial design, construction, and evaluation in accordance with the Order on Consent. NWR has the authority to monitor and control the quality of construction and related activities to ensure conformance with the engineering design plans and specifications. NWR has the authority to select and dismiss the Contractor(s) used to assist them with fulfilling these responsibilities. NWR also has the authority to select and accept or reject design plans and specifications, and materials and workmanship of the contractors and subcontractors.

1.2.2 NY State Dept. of Environmental Conservation

The NYSDEC will review NWR's remedial designs, plans, and specifications for substantial compliance with the agency's regulations. Reviews will be provided by both the Division of Environmental Remediation and the Division of Fish and Wildlife. Any substantial deviations from the requirements or approved design plans and their potential effect on the schedule must be approved by NYSDEC.

1.2.3 NY State Dept. of Health

The New York State Department of Health (NYSDOH) will review NWR's remedial designs, plans, and specifications, particularly those pertaining to the protection of human health, such as the proposed air monitoring program.

1.2.4 RETEC Engineering, P.C.

RETEC is the engineer responsible for the IRM design. RETEC will also be conducting field engineering and contractor supervision during the work and will make recommendations to NWR regarding field decisions during construction. RETEC will prepare a Final Engineering Report.

1.2.5 Contractor

The Contractor referred to in this Work Plan will be selected by NWR from among qualified companies. The Contractor will be responsible for the performance of the work in accordance with the drawings and specifications incorporated in this Work Plan. The Contractor will be given a copy of the Order on Consent and will be required to comply with it as a condition of their contracts.

1.3 Project Approach

The project approach is to excavate and remove on-site and off-site soils and sediments associated with the former operations of Ward Products that contain concentrations of contaminants in excess of TCLP limits.

The areas of the proposed excavation are shown in the attached Figures. Excavation will be performed under the supervision of RETEC.

The scope of work for this remedial action will include the following actions:

- Prepare the job site;
- Clear excavation areas as necessary;
- Excavate, characterize, and dispose of material;
- Import or regrade surface soil;
- Restore or improve runoff patterns;
- Hydroseed all disturbed areas;
- Document as-built conditions; and
- Demobilize from the site.

Materials previously analyzed by TCLP methods and found to be “hazardous” for disposal purposes (primarily the ditch sediments of concern), shall be directly loaded into trucks and disposed of off site accordingly. At RETEC’s direction, material such as the on-site soils that are to be excavated based on high concentrations of total metals (i.e. suspected but not analytically shown to be in exceedance of TCLP standards) will be stockpiled on site, sampled, and analyzed for possible disposal as non-hazardous soil.

If at any time during the course of the work the conditions at the site are discovered to be substantially different than anticipated in this Work Plan, thereby affecting the purpose of the work or the health and safety of personnel, the work area will be returned to a safe condition and work will be halted. A conference will then be convened among representatives of NYSDEC, NWR, the Contractor(s), and RETEC to determine the appropriate actions and modifications to this Work Plan and the Health and Safety Plan. Work will then resume in accordance with the revised plans.

The basis and details of these actions are described in Section 2 of this Work Plan. General requirements and general specifications for conducting the work are described in Section 3. Design drawings are shown in the attached Figures.

1.4 Schedule

The work may proceed upon approval of this Work Plan by NWR, NYSDEC, and NYSDOH, and receipt of access agreements and permits (see Section 2.2.3). NWR may elect to delay the field work until favorable seasonal weather.

Field construction is anticipated to take approximately 4 weeks, following contractor selection and mobilization.

A Final Engineering Report will be prepared within 60 days of contractor demobilization.

2 Remedial Design

2.1 Performance Criteria

The remedial goals for this project will be met by excavating and properly disposing of the TCLP “hazardous” soils and sediments within the excavation limits shown in the Figures. The anticipated vertical limits of excavation are tabulated in Appendix A.

Confirmatory excavation bottom samples will be collected from the on-site soil excavations and analyzed by Method 6010B for total cadmium. Excavation in these on-site sections will continue vertically until the excavation bottom is shown to comply with the total cadmium limit of 30 mg/Kg as described in Section 2.2.1.

Confirmatory excavation bottom samples will also be collected and analyzed (same method) from the off-site sediment excavations. Excavation in these off-site sections will continue vertically until the excavation bottom is shown to comply with the total cadmium limit of 50 mg/Kg as described in Section 2.2.1. Those off-site excavations include:

- A section of drainage ditch, 75-feet long, located immediately south of the Edson Street culvert;
- An area of roadway ditch, less than 1,000 square feet, north of the western culvert under Sam Stratton Road; and
- An area of roadway ditch, less than 2,000 square feet, north of the eastern culvert under Sam Stratton Road.

NWR and RETEC may elect to excavate additional on- and offsite “non-hazardous” material from the work zone, at their own discretion, based on the confirmation sampling results.

The Contractor shall cordon completed excavations with orange barricade fence and continue work elsewhere on the site while awaiting the analytical results (approximately 72 hours). As the excavations are anticipated to be shallow (6 to 18 inches), hazard to the public will be nominal. Any water collected within the sediment excavations will be filtered (for visual turbidity) and pumped downstream prior to re-excavation, if required. The confirmation samples will be collected every 20 linear feet on center, or 6 samples per 1,000 square feet. Split samples will be available to the NYSDEC representative upon request.

The following specific performance requirements are also key to the proposed remedial measure:

- Reduce exposure of on-site workers and visitors to contaminated material;
- Provide for adequate site drainage;
- Protect existing structures and properties to the extent practicable; and
- Protect human health and the environment during all phases of the work, particularly the safety of on-site WP employees and the quality of downwind air.

This remedial measure is not anticipated to produce rapid reductions in existing contaminant concentrations in site groundwater.

2.2 Design Basis

The design of this Soils and Sediments IRM was based on information provided in the following:

- The Remedial Investigations Report [Normandeau, 2001];
- Supplemental sediment data [Normandeau 2002, 2003]; and
- Preliminary results of the Risk Assessment [RETEC, 2002].

2.2.1 Definition of Media of Concern

The project approach is to excavate and remove (former Ward Products related) on-site soils and off-site sediments with contaminant concentrations in excess of the published TCLP limits as shown in the Figures and Appendix A. The delineation of the proposed excavation is driven by the occurrence of cadmium; all other known or suspected TCLP exceedances, such as those of chromium and lead, are seen to fall within the footprint of the cadmium exceedances.

The RI Report [NAI, 2001] included the results of several TCLP analyses for metals in soil and sediment, and some areas were shown to be in exceedance of the TCLP limits. Additional areas of soil and sediment are also determined (by NWR and RETEC) to *potentially* be in excess of TCLP limits based on the total cadmium concentrations reported by NAI.

A review of the relevant RI data, tabulated and graphically presented in Appendix B, indicates that ditch sediments at this site with a concentration of total cadmium equal to or greater than 50 mg/Kg have the potential to produce an exceedance of the 1.0 mg/L TCLP limit, if so tested. Likewise, on-site soils with a concentration of total cadmium equal to or greater than 30 mg/Kg have the potential to produce an exceedance of the 1.0 mg/L TCLP limit, if so

tested. The higher threshold value for sediments over soils (50 vs. 30 mg/Kg) is likely due to historical pre-leaching of the sediments by rainfall runoff.

An additional protective measure, to be combined with this IRM, is the excavation and removal of on-site soil containing total chromium in excess of 450 mg/kg. This value is the USEPA Preliminary Remediation Goal for protection of human health in industrial soil and has been identified in RETEC's draft Human Health Risk Assessment as being relevant to this site. As most of the so-impacted soil is already slated for excavation under the previous cadmium-based criteria, only two former sample locations (S-14 and S-53) are added to the proposed excavation plan to fulfill this additional protective measure.

In summary, the proposed project approach is to excavate within the defined areas and remove:

- On-site and off-site soils and sediments known to contain leachable cadmium in concentrations in excess of the TCLP limit of 1.0 mg/L;
- On-site and off-site ditch sediments containing an excess of 50 mg/Kg total cadmium;
- On-site soils containing an excess of 30 mg/Kg of cadmium; and
- On-site soils containing an excess of 450 mg/Kg of chromium.

The intent of this IRM is simply to remove TCLP "hazardous" soils and sediments associated with the Ward Products site.

2.2.2 Area, Depth and Volume of Impacted Media

Known or suspected TCLP exceedances in sediments are located in the site drainage ditch from an on-site concrete pipe outfall to a location 50 to 100-feet downstream of Edson Street. Additional locations are at two sample points near the upstream end of the ditch and at the inlets to the east and west culverts under Sam Stratton Road. Impacts are deepest at the pipe outfall (24-inches), but typically are between 6-inches and 18-inches deep.

Another possible off-site TCLP exceedance was identified in the Mohawk River sediments (sample point EB-17, with a total cadmium concentration of 64.6 mg/Kg at a depth of 0 to 0.5 feet). That location will be re-sampled, analyzed for TCLP metals, and addressed separately from this IRM.

Suspected TCLP exceedances in on-site soils are located primarily around the northeast corner of the building but extend sporadically uphill approximately 150-feet to sample location S-82. Impacts are deepest at S-12 (36-inches) and S-7 (30-inches), but typically are between 6-inches and 18-inches deep.

The total volume of impacted material is estimated to be in the magnitude of 650 cubic yards (or 975 tons, assuming 1.5 tons per cubic yard).

The soil and sediment analytical results, and the proposed depths of excavation at each sample location, are tabulated in Appendix A. The approximate aerial extent of the excavation is shown in the Figures.

2.2.3 Required Permits

The acceptability of the waste materials must be established with the proposed disposal facilities. Sampling and analysis of stockpiled soil will be performed to assure the material meets their acceptance criteria.

The generation of wastewater is anticipated to be limited to equipment and personnel decontamination and is expected to total less than 200 gallons. It may be possible to discharge the water to the sanitary sewer if a permit is negotiated with the Amsterdam Waste Water Treatment Plant.

To perform the work south of Edson Street, temporary property access agreements will be required from the property owners. These may include the Amsterdam Industrial Development Authority (AIDA), Universal Custom Millwork, Inc. (UCMI), and Safari Enterprises. An agreement with FGI Fiberglass would facilitate the work north of Edson Street.

CP Railroad will be notified of any proposed excavation within their right-of-way and a permit will be obtained. Barring the practicability of obtaining a permit, the right-of-way will be demarcated and excavation avoided therein. All equipment and vehicles shall use Edson Street to cross the railroad tracks.

Excavation within the ditches at Sam Stratton Road and Edson Street will require the written permission of the City of Amsterdam.

It is assumed that no New York State or federal permits will be required for the work, and that the off-site areas are not designated as wetlands, floodplains, or classified streams.

NWR and RETEC will verify requirements and obtain the permits described above prior to the start of work.

2.3 Technical Specifications

This section provides instructions to the Contractor for the implementation of the work. Additional requirements are provided in Section 3. The Construction Drawings are presented in the Figures section of this report. Site photographs are also provided in Appendix C.

2.3.1 Clearing and Grubbing

The Contractor shall clear and remove above-ground vegetation on an as-needed basis in consultation with RETEC. It is anticipated that significant clearing will be required north of the building and in the drainage ditch areas. Cleared vegetation shall be chipped and disposed off site. To the extent practicable, trees greater than 3-inches diameter outside of the excavation shall not be removed.

Subsurface vegetation (root balls, etc.) within the excavation shall be disposed of off site as impacted material.

The Contractor shall provide utility clearance for all work at the site. The Contractor shall assume liability for damage to utilities and property.

Measurement and Payment under this section shall be as follows:

- | | |
|---------------------------|--------------------|
| • Clearing | Time and Materials |
| • General Site Management | Lump Sum |

2.3.2 Soil and Sediment Excavation

RETEC will stake and flag the limits and depths of excavation and will be available on a continuous basis to discuss the work with the Contractor. The Contractor shall provide a survey rodman/laborer, if requested by RETEC. Final excavation depths will be determined by RETEC based on confirmation sampling results.

Excavated material predetermined to be TCLP “hazardous” by RETEC (primarily sediments) shall be loaded directly into haul trucks and immediately transported and disposed off site.

Excavated material not predetermined to be TCLP “hazardous” by RETEC (primarily on-site soil) shall be temporarily stockpiled on site. RETEC will sample and analyze the stockpiled material, on a rush turnaround basis, to determine disposal options. Temporarily stockpiled material, shall be placed on, and covered by, 8-mil polyethylene, with appropriate berms for runoff control, at an on-site location approved by RETEC, NWR, and WP.

Prior to removal, wet soil and sediment shall be allowed to drain and dewater within the excavation until dry enough to meet applicable transportation and disposal requirements and regulations.

As stated in Section 2.1, the Contractor shall cordon completed excavations with caution tape and continue work elsewhere on the site while awaiting analytical results of confirmatory excavation bottom samples (approximately 72 hours).

The Contractor may, in consultation with RETEC and NWR, remove sections of existing chain link fence to facilitate the work. Such fence shall be repaired by Contractor (or their subcontractor) to its original or better condition.

Measurement and Payment under this section shall be as follows:

- | | |
|------------------------------------|--------------------|
| • Excavation, Stockpiling, Loading | Time and Materials |
| • Rodman | Time and Materials |
| • Fence Work | Time and Materials |

2.3.3 Transportation and Disposal

The Contractor shall load, transport, and dispose of the excavated material. Trucks shall be lined, and loads shall be covered, by 6-mil (minimum) polyethylene.

All trucks shall access the site from the west via Widow Susan Road. Trucks will not be permitted to travel east on Edson Street through the residential neighborhood.

The Contractor shall propose in their Technical Execution Plan (see Section 3.3), for NWR's approval, off-site disposal facilities for both "hazardous" and "non-hazardous" solid waste. The selected facilities must be properly permitted to dispose of the waste. NWR may elect to be invoiced directly by the disposal facilities.

Existing analytical data will be made available to the selected disposal facilities prior to commencing the work. Additional analytical results generated during the work will be made available as soon as practicable.

NWR's designated representative will sign the transportation manifests prior to loads leaving the site.

Measurement and Payment under this section shall be as follows:

- | | |
|------------------|------------------------------------|
| • Transportation | Per Ton (by disposal weigh ticket) |
| • Disposal | Per Ton (by disposal weigh ticket) |

2.3.4 Site Restoration and Drainage

Currently, drainage outside the northeast wall of the existing on-site building is problematic. The Contractor shall place approximately 500-feet of drain tile (4-inch diameter corrugated HDPE, smooth bore, perforated) in a sloped trench (surveyed by RETEC), backfilled with washed #2 stone, along the entire northeast wall, thence 90-feet along the southeast wall, and thence draining to an existing manhole in the yard. Cleanouts shall be installed near the building corners. Excavated soil from the drain tile trench shall be stockpiled, analyzed, and disposed off site.

The Contractor shall perform such additional drainage and erosion control efforts as may be warranted based on field conditions to, at all times, prevent runoff from entering the warehouse occupied by WP.

On-site backfill shall be clean imported topsoil.

Soil conditions within the drainage ditch excavations (and on the excavated slope behind the building) may be highly erosional. The Contractor shall, in consultation with RETEC, line those excavations with geofabric and armor stone. The geofabric shall be Mirifi HP370, or approved equivalent, and the armor stone shall conform to NYSDOT "fine stone fill" specifications, shall be angular, and shall have the following approximate analysis:

Smaller than 8 inches	100%
Larger than 3 inches	50% to 100%
Percent passing #10 sieve	less than 10%

Placement of jute mesh for erosion control may also be required in some locations, as determined by RETEC.

All disturbed areas shall be regraded as necessary to restore or improve drainage patterns. The areas shall then be hydroseeded with the supplier's recommended lbs/acre of seed and nutrients. Grass seed mixture shall compliment existing grass areas, and shall comply with the tolerance for purity and germination established by the Official Seed Analysts of North America. It is the Contractor's responsibility to maintain the area until a vegetative cover is established.

Measurement and Payment under this section shall be as follows:

• Top Soil Backfill	Per Ton, Placed
• Site Regrading	Time and Materials
• Hydroseeding and Cover Establishment	Per Square Foot
• Drainage Improvements	Time and Materials

3 General Requirements

This section describes the general requirements for conducting the work, including health and safety requirements, quality assurance, the Technical Execution Plan, environmental monitoring and control, and project reporting.

3.1 Health and Safety

A Safety Qualification Form (provided by RETEC) shall be completed and submitted by the Contractor(s) during the bidding process for this work for RETEC's review and NWR's approval.

The selected Contractor shall comply with all applicable health and safety requirements including OSHA regulations 40 CFR 1926, 40 CFR 1910, and RETEC's site-specific Health and Safety Plan (HASP). RETEC's HASP will be reviewed by NYSDEC and NYSDOH prior to the work.

RETEC will provide a copy of the HASP to the Contractor under separate cover. Subjects covered in the HASP include:

- Health & Safety Risk Analysis;
- Personal Protective Equipment;
- OSHA Air Monitoring & Action Levels;
- Site Control;
- Decontamination;
- Emergency Response Plan;
- Lockout/Tagout;
- Heavy Equipment Operations;
- Excavation and Trenching;
- Material Safety Data Sheets; and
- Health and Safety Records and Reports.

Prior to the work, the Contractor shall provide to RETEC written evidence of the following items for each person who will be entering the work zone:

- Date of respirator fit test;
- Date of OSHA 40 hour training (or 8 hour refresher training); and
- Date of annual physical.

Persons without these items both up-to-date and on file with RETEC will not be allowed to enter the work zone.

Hours of operation shall be daylight hours between 8 AM and 5 PM, Monday through Friday, unless otherwise allowed in writing by NWR and WP.

Measurement and Payment under this section shall be as follows:

- H&S Compliance Lump Sum under General Site Management

3.2 Quality Assurance

The work will utilize standard quality assurance procedures including:

- Submittal by Contractor of weigh tickets for all earthen materials transported to or from the site;
- Submittal by Contractor, prior to the work, of sieve analyses for all imported earthen materials;
- Evaluation by RETEC of Contractor's proposed borrow source(s) for imported earthen materials. Materials must meet NYSDOT specifications, if applicable. Contractor must provide to RETEC analytical data indicating that imported material is non-contaminated; and
- Field verification by RETEC of excavation and placed material depths, areas, and volumes.

Measurement and Payment under this section shall be as follows:

- QA/QC Compliance Lump Sum under General Site Management

3.3 Technical Execution Plan

A Technical Execution Plan (TEP) shall be prepared and submitted by the Contractor(s) during the bidding process for this work for RETEC's review and NWR's approval. It shall describe:

- The materials, equipment, and methods to be used to perform the work;
- The proposed schedule for completing the work;
- Resumes of key project personnel;
- Names, addresses, contact persons, and other information relevant to the Contractor's proposed trucking and disposal subcontractors for:
 - ▶ Hazardous solids;
 - ▶ Hazardous liquids;
 - ▶ Non-hazardous solids; and
 - ▶ Non-hazardous liquids.

- A summary of the Contractor's standard health, safety, and site monitoring procedures.

The selected Contractor may be required by RETEC to provide additional clarifications to their Plan prior to, and during the course of, the work.

Measurement and Payment under this section shall be as follows:

- Submittal of TEP Lump Sum under General Site Management

3.4 Environmental Monitoring and Control

Environmental monitoring and mitigation procedures will be followed to manage impacted materials during construction and to control fugitive emissions.

3.4.1 Erosion and Sedimentation Control

The Contractor shall comply with general erosion and sedimentation control practices, including installation of hay bales and/or silt fence.

If the ditches are flowing during the work, the Contractor will be responsible for maintaining a downstream turbidity visibly (to RETEC) not greater than upstream. Contractor shall anticipate the possible need to pump flowing water around the ditch work areas and shall have sufficient pumps, filters, and hoses operational at the site within 24-hours notice.

Measurement and Payment under this section shall be as follows:

- Erosion Control Time and Materials

3.4.2 Air Monitoring

In accordance with 29 CFR 1910.120(h), and the NYSDOH generic Community Air Monitoring Plan, an on-site air monitoring program will be implemented by RETEC to identify and quantify airborne levels of hazardous substances and to determine the appropriate level of protection required for personnel working on site. Dust, which may include heavy metals impacted soil, is the primary vector of concern.

In addition to work area monitoring, RETEC will monitor community air quality upwind and downwind of the work area to provide real-time estimates of particulate releases to the community as a result of remedial activities.

Three MiniRam (or equivalent) monitors will be used for continuous (15-minute integrated) real-time dust monitoring. Measurements will be made upwind, downwind, and within the work area. One 8-hour time weighted average personal air sample will be collected in each new work area and

analyzed for total cadmium, chromium, lead, nickel, and zinc by NIOSH Method 7300.

The results of the monitoring will be used by RETEC to ensure that all action levels outlined in the site specific Health and Safety Plan are followed. Per NYSDEC TAGM 4031, an action level of 0.150 mg/M³ (or visible dust) will trigger the requirement for dust control measures by the Contractor such as a reduced rate of material handling, wetting of exposed soil surfaces, or encapsulation. The following table reviews the concentrations of on-site contaminants and indicates that the 0.150 mg/M³ action level will be protective of human health.

Contaminant of Concern	TWA (mg/M ³)	Maximum Known Soil Concentration (mg/mg)	Total Dust Concentration at TWA (mg/M ³)
Cadmium	0.005 OSHA	0.000628	7.96
Chromium	0.500 NIOSH	0.003550	141
Lead	0.050 OSHA	0.000614	81.4
Nickel	0.015 NIOSH	0.007890	1.90
Zinc	N/A	0.002080	N/A
Total Dust	0.150 NYSDEC	1.0	0.150

Although chlorinated VOCs are not anticipated to be encountered during this work, RETEC will periodically record airborne upwind, downwind, and work area VOC concentrations using a photoionization detector (PID) with an 11.7 eV bulb.

There are several air intakes and exhausts on the existing building. For example, a large duct near ground level (visible in the photo titled “East Corner of Building” in Appendix C) is an air intake associated with WP’s spiral grinding operations and is located within the excavation zone. The Contractor shall either install, in consultation with RETEC and to WP’s satisfaction, a temporary duct extension from the intake to above the building roofline, or the Contractor shall schedule material handling activities in that area around WP’s operational schedule and temporarily cover the duct. Doors and windows near excavation areas will be temporarily locked and cordoned with caution tape from the inside during material handling activities.

Measurement and Payment under this section shall be as follows:

- Air Monitoring N/A
- Dust Control Time and Materials

3.4.3 Mobilization, Demobilization, Decontamination

NWR, in consultation with WP, will provide designated equipment lay down areas to the Contractor. The Contractor shall confine their operations to the areas designated by NWR and WP.

The work areas shall be secured and barricaded by the Contractor (with temporary fencing and caution tape) to ensure the safety of the facility workers, visitors, and Contractor's personnel.

The Contractor shall provide portable sanitary facilities including toilet, eyewash station, hand washing station, and boot wash, at locations reasonably acceptable to WP.

Equipment and personnel which come in contact with impacted materials shall be cleaned prior to demobilization from the site. Equipment decontamination procedures shall consist of a hot water power wash to RETEC's satisfaction in a contained (6-mil polyethylene) decontamination pad. Temporary decon pads may be also constructed, to NYSDEC satisfaction, at the various work areas.

All decontamination water shall be containerized on site. Prior to transport and disposal, the water shall be tested by RETEC according to the acceptance criteria of the approved receiving facility.

Soil collected on the decontamination pad shall be combined with other excavated soil and disposed of at the approved receiving facility.

Small quantities of visibly contaminated PPE, plastic, and miscellaneous materials shall be containerized and disposed off site.

Measurement and Payment under this section shall be as follows:

- | | |
|-------------------|------------------------------------|
| • Mobe/Demobe | Time and Materials |
| • Decontamination | Time and Materials |
| • Transportation | Per Ton (by disposal weigh ticket) |
| • Disposal | Per Ton (by disposal weigh ticket) |

3.5 Additional General Requirements

During the course of this work:

- The Contractor shall establish locations of overhead and subsurface structures, including utilities, pipes, and monitoring wells, in the area of the work. Contractor shall repair, at no additional cost, structures damaged due to the work. Contractor is responsible for all utility clearances.

- Trucking of all materials both on site and off site shall be done in accordance with applicable DOT standards. Trucks hauling materials to and from the site shall use only designated haul roads approved by RETEC (i.e. Widow Susan Road) and shall ensure that the remedial activity does not conflict with other WP or neighboring operations. Trucking methods shall be protective of human health and the environment.
- The Contractor shall stage work to allow for emergency vehicle access to the electrical substation at all times.
- Contractor shall not disrupt or hinder the work of others.
- The Contractor shall perform all work in accordance with all applicable regulations and permits.

Measurement and Payment under this section shall be as follows:

- Additional Gen. Reqs. Lump Sum under General Site Management

3.6 Project Reporting

During the course of the work, the Contractor shall regularly provide to RETEC:

- Daily field logs;
- Equipment and material testing records; and
- Weigh tickets.

At the conclusion of each workday, the Contractor and RETEC will review the work completed and reach consensus on the quantities for payment.

During the course of the work, weekly progress meetings will be conducted with attendance by NYSDEC and NYSDOH, if needed.

RETEC shall provide weekly Progress Reports to NWR and NYSDEC. Progress Reports will include:

- The previous week's actions;
- Next week's planned actions;
- Sampling and analytical results;
- Design changes and other modifications to the design; and
- Revised project schedules.

Upon completion of the remedial activities, RETEC will prepare a Final Engineering Report, approved by a professional engineer licensed in the State of New York. The following items will be included in the Final Report:

- A description of all field work performed;
- As-built drawings;
- All pertinent analytical results;
- Copies of the bills of lading and manifests from the disposal of materials;
- Copies of the Contractor's testing records and weigh tickets; and
- Status of the site upon completion.

An Operation & Maintenance Plan will not be required for this work.

Measurement and Payment to Contractor under this section shall be as follows:

- Reporting Lump Sum under General Site Management

4 References

- New York State Department of Environmental Conservation, 1997. Order on Consent, Ward Products, Inc. Index # w4-0762-96-06, Site Code #4-29-004.
- Normandeau Associates, Inc., 2001. Remedial Investigations Report, Ward Products Corporation, July 2001.
- Normandeau Associates, Inc., 2002. Progress Report for January 2002, Ward Products Corporation, February 2002.
- Normandeau Associates, Inc., 2003. Progress Report for April 2003, Ward Products Corporation, May 2003.
- RETEC, 2002. Qualitative Human Health Risk Assessment, 2nd Draft, Former Ward Products Site, August 2002.

Figures

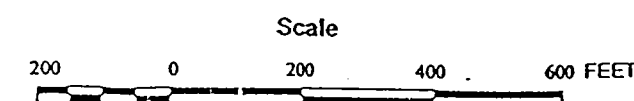


This Figure is Partially Based On:



Figure 1 - West Branch Drainage and
Sediment Sampling Locations.
Ward Products, Amsterdam, NY

■ APPROXIMATE LOCATIONS OF PROPOSED EXCAVATIONS



Ward Products Site
New Water Realty
NWR0-15852-100

SITE LOCATION
AMSTERDAM, NY

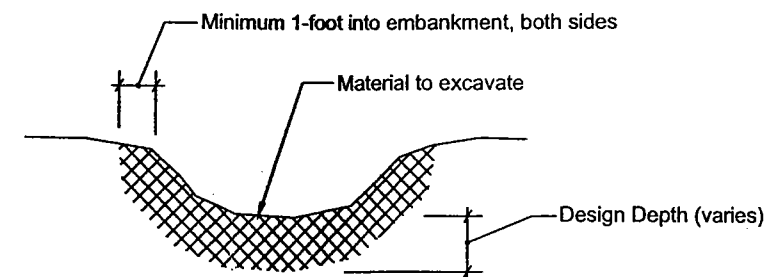
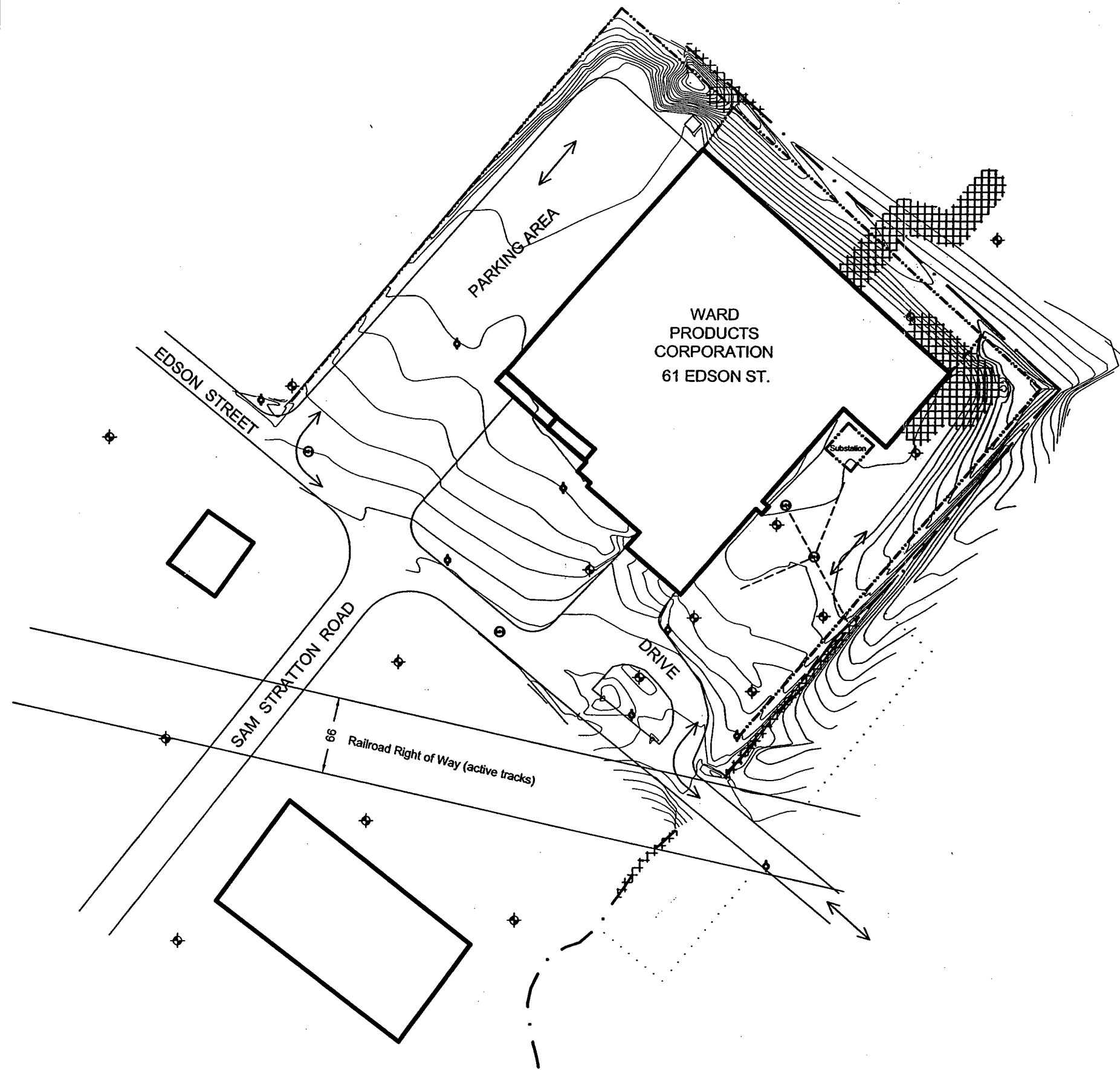
DATE: 09/19/02

DRWN: MRH

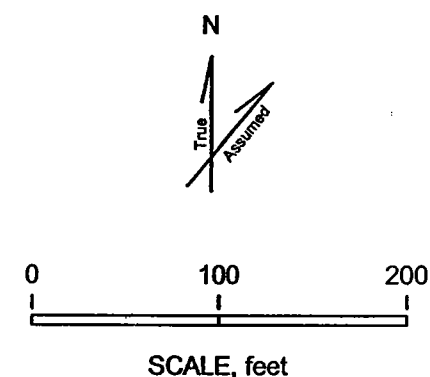
FILE:










LAYOUT:

FIGURE 1



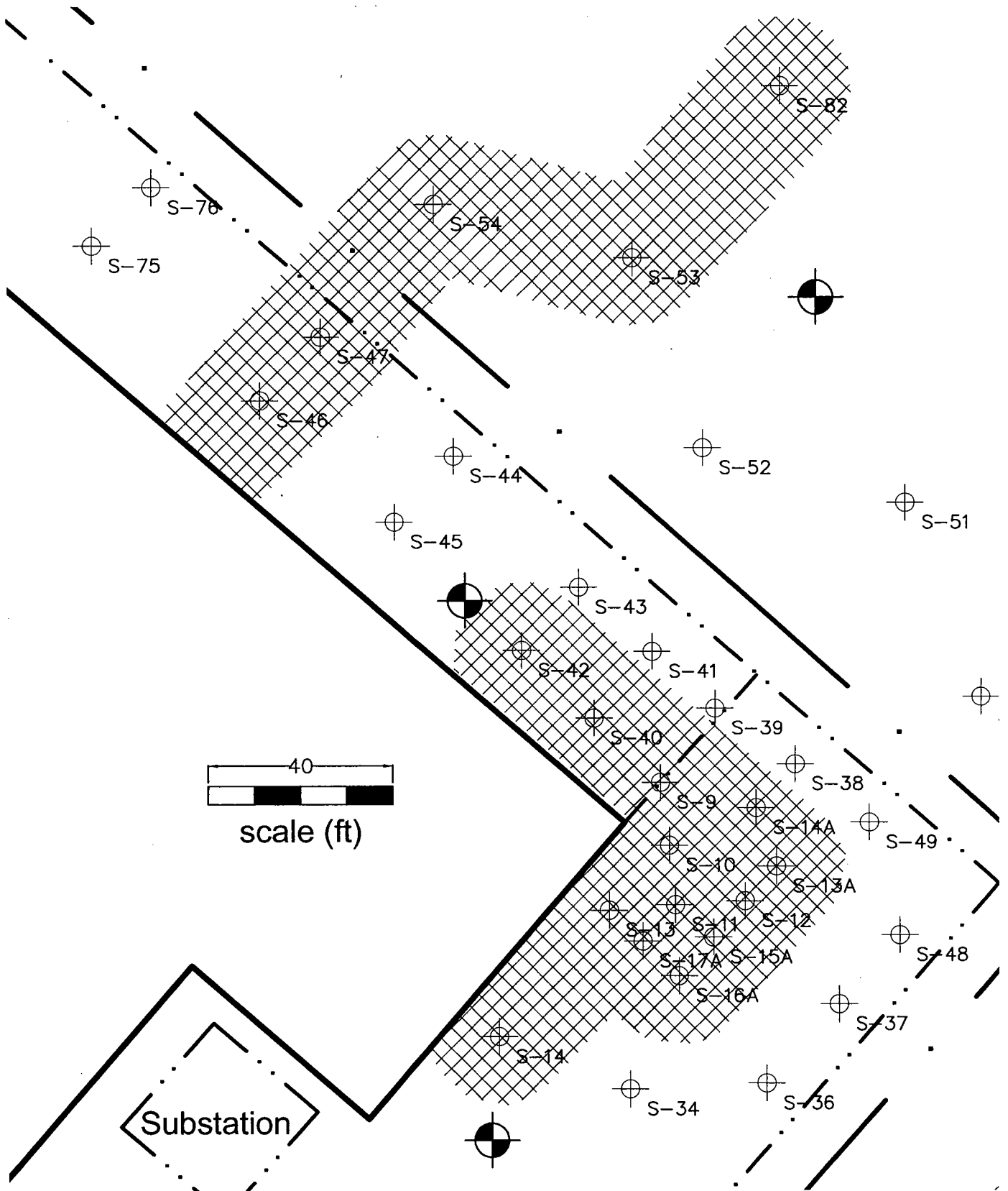
DITCH CROSS SECTION, TYPICAL



-  Excavation Area (Proposed)
-  Temporary Offsite Access Area (Proposed)
-  Truck Route (Proposed)
-  Underground Pipes
-  Surface Ditch
-  Chainlink Fence
-  Monitoring Well
-  Utility Pole
-  Manhole

NOTES:

1. Maximum excavation depth 36-inches.
Typical excavation depths 6-inches to 18-inches.
Excavation depths will be staked and flagged by the Engineer in the field.
2. Sam Stratton Road culvert excavations are not shown.



ONSITE SOIL EXCAVATION DETAIL

09/29/03

NWRO1-15852-100

Figure 3

APPENDIX A

Summary of Relevant Analytical Results and Locations and Depths of Proposed Excavation

TABLE 11 - SUMMARY OF LABORATORY RESULTS FOR EXTERIOR SOIL SAMPLES,
WARD PRODUCTS CORPORATION, 61 EDSON STREET, AMSTERDAM, NEW YORK.

Proposed Depth (inches) of Excavation	Sampling Location	Sampling Depth	Cadmium	Hexavalent Chromium	Total Chromium	Total Cyanide	Lead	Nickel	Zinc
	1	0-0.5 ft	2.2	6	68.6	0.17	20	63	146
	2	0-0.5 ft	1.78J	7	66.2	<1	18	50.1	108
	8	0-0.2 ft	13	<0.40	120	<1	103	225	660
		0.2-1.0 ft	7.9	<0.40	96.5	<1	113	183	381
		1-2 ft	0.35	<0.40	13.2	<1	11.1	21.5	63
		2-2.5 ft	0.65	<0.40	14.3	<1	19.3	23.5	100
12	9	0-0.2 ft	36.6	<0.40	250	<1	154	251	760
		0.2-1 ft	54.5	<0.40	472	<1	430	740	1240
		1-1.5 ft	14.9	<0.40	75	<1	117	99	195
18	10	0-0.2 ft	74.5	<0.40	650	<1	330	1780	1900
		0.2-1 ft	60.5	<0.40	447	<1	280	725	1120
18	11	0-0.2 ft	59.5	<0.40	810	<1	318	1750	2020
		0.2-1.0 ft	61.5	<0.40	735	<1	354	1760	2080
		1-1.3 ft	50	<0.40	565	<1	265	845	1290
36	12	0-0.2 ft	26.6	<0.40	206	<1	65	262	362
		0.2-1 ft	25	0.56	299	<1	71	338	444
		1-2 ft	22.6	<0.40	224	<1	50	169	282
		2-2.5 ft	42.7	<0.40	382	<1	193	510	860
	13	0-0.5 ft	7.8	5.8	135	NA	50	127	236
6	13A	0-0.2 ft	46.2	<0.40	111	<1	24.5	100	187
		0.2-1 ft	21	<0.40	146	<1	39.2	174	246
		1-1.7 ft	3.3	<0.40	29.6	<1	11.4	30.5	133
		2-2.5 ft	6.25	<0.40	134	<1	15.1	48.3	146
12	14	0-0.5ft	9.5	10.2	510	NA	22	991	222
12	14A	0-0.2 ft	30.2	<0.40	280	<1	84	290	420
		0.2-1.0 ft	87	<0.40	206	<1	41.8	171	515
		1-2 ft	0.95	<0.40	19.1	<1	12.3	23.6	64.5
		2-3 ft	1.5	<0.40	18	<1	10.2	25	61
	15	0-0.5 ft	28.9	3.8	126	NA	30	144	204
18	15A	0-0.2 ft	24.1	<0.40	207	<1	80.5	221	331
		0.2-1 ft	66	0.54	885	<1	300	855	1100
18	16A	0-0.2 ft	37.8	<0.40	409	<1	110	414	880
		0.2-1 ft	61	<0.40	695	<1	208	1120	1010
18	17A	0-0.2 ft	33	<0.40	302	<1	122	349	515
		0.2-1 ft	44.4	<0.40	479	<1	160	427	800
	Eastern US Background		0.1-1	NA	1.5-40	NA	4-61	0.5-25	9-50
	Ward Site Background		<0.25	<0.40	17	<1	6.6	16	46
	NYSDEC SCO		1 or SB	NE	10 or SB	SS	SB	13 or SB	20 or SB

Note:

All Concentrations in mg/Kg (ppm)
J - Estimated Value
NA - Not Available
NYSDEC SCO - Soil Cleanup Objective
SB - Site Background
SS - Site Specific

BOLD VALUES EXCEED NYSDEC SCO
Samples 1-2 Collected July 1997
Samples 13, 14 and 15 Collected January 1998
Samples 8-12 and 13A to 17A
Collected August 1999

TABLE 11 - SUMMARY OF LABORATORY RESULTS FOR EXTERIOR SOIL SAMPLES,
WARD PRODUCTS CORPORATION, 61 EDSON STREET, AMSTERDAM, NEW YORK (cont.).

Proposed
Depth (inches) of
Excavation

Sampling Location	Sampling Depth (Ft.)	Cadmium	Hexavalent Chromium	Total Chromium	Total Cyanide	Lead	Nickel	Zinc
22	0-0.2	13	<0.4	170	1.6	27	749	663
	0.2-1	8.3	<0.4	118	<1	18	593	678
23	0-0.2	7.7	<0.4	90	<1	20	206	367
	0.2-1	17	<0.4	67	<1	8.6	231	304
24	0-0.2	2.9	<0.4	54	<1	13	143	165
	0.2-1	0.43	<0.4	18	<1	5	24	59
25	0-0.2	5.3	<0.4	45	<1	9.5	106	231
	0.2-1	3.5	<0.4	63	<1	12	103	220
26	0-0.2	2.4	<0.4	32	<1	11	34	78
	0.2-1	1.3	<0.4	30	<1	8.9	33	78
27	0-0.2	<0.25	<0.4	14	<1	6.8	9.9	52
	0.2-1	<0.25	<0.4	20	<1	0.99	22	58
28	0-0.2	4.1	<0.4	69	<1	18	59	129
	0.2-1	16	<0.4	191	<1	47	172	292
29	0-0.2	<0.25	<0.4	15	<1	4.1	17	54
	0.2-1	<0.25	<0.4	17	<1	3.5	19	53
30	0-0.2	6.6	<0.4	60	16	12	49	88
	0.2-1	<0.25	<0.4	21	11	6.9	30	65
31	0-0.2	<0.25	<0.4	16	<1	5.2	19	49
	0.2-1	<0.25	<0.4	16	<1	4.3	20	59
32	0-0.2	4.5	<0.4	25	<1	7.4	26	63
	0.2-1	3.3	<0.4	42	<1	11	41	91
33	0-0.2	<0.25	<0.4	15	<1	4.5	17	52
	0.2-1	<0.25	<0.4	14	<1	4.3	20	51
34	0-0.2	0.96	<0.4	28	<1	7.7	32	73
	0.2-1	14	<0.4	294	16	76	188	395
35	0-0.2	<0.25	<0.4	14	<1	4	17	47
	0.2-1	<0.25	<0.4	15	<1	3.6	15	41
36	0-0.2	<0.25	<0.4	4.3	<1	1.5	5.1	18
	0.2-1	<0.25	<0.4	24	<1	4.3	16	41
37	0-0.2	<0.25	<0.4	25	<1	7.2	15	45
	0.2-1	0.64	<0.4	62	<1	15	35	77
38	0-0.2	2.3	<0.4	71	<1	30	58	156
	0.2-1	0.29	<0.4	29	<1	8	28	67
39	0-0.2	4.9	<0.4	82	<1	29	63	245
	0.2-1	<0.25	<0.4	17	<1	7	20	50
40	0-0.2	48	<0.4	702	11	134	605	626
	0.2-1	47	<0.4	229	16	82	681	336
41	0-0.2	12	<0.4	230	<1	55	136	372
	0.2-1	0.43	<0.4	21	13	9.5	24	78
42	0-0.2	263	<0.4	730	24	247	255	696
	0.2-1	1.3	<0.4	20	<1	4.9	16	50
43	0-0.2	0.96	<0.4	24	<1	12	34	88
	0.2-1	<0.25	<0.4	17	<1	4.6	18	55
Eastern US Background		0.1 - 1	NA	1.5 - 40	NA	4.0-61	0.5 - 25	9 - 50
Ward Site Background		<0.25	<0.4	17	<1	6.6	16	46
NYSDEC SCO		1 or SB	NE	10 or SB	SS	SB	13 or SB	20 or SB

Note: All concentrations in ppm.
NYSDEC SCO - Soil Cleanup Objective

Bold Values Exceed NYSDEC SCO
Samples Collected 1999

TABLE 11 - SUMMARY OF LABORATORY RESULTS FOR EXTERIOR SOIL SAMPLES,
WARD PRODUCTS CORPORATION, 61 EDSON STREET, AMSTERDAM, NEW YORK (cont.).

Proposed Depth (inches) of Excavation	Sampling Location	Sampling Depth (Ft)	Cadmium	Hexavalent Chromium	Total Chromium	Total Cyanide	Lead	Nickel	Zinc	
12	44	0-0.2	6.4	<0.4	62	<1	50.8	54.5	144	
		0.2-1	14.6	<0.4	236	<1	104	198	375	
	45	0-0.2	3.18	<0.4	37.4	<1	20	40.3	114	
		0.2-1	1.97	3.4	37.9	<1	25.6	31.9	94.9	
	46	0-0.2	3.96	<0.4	39	<1	13.6	27.1	89.2	
		0.2-1	38	<0.4	447	<1	252	369	585	
	47	0-0.2	1.36	<0.4	27.8	<1	18.3	31.8	86	
		0.2-1	44.7	<0.4	282	<1	137	427	549	
	48	0-0.2	<0.25	<0.4	11.8	<1	6.35	8.55	28.8	
		0.2-1	<0.25	<0.4	16.8	<1	9.65	12.8	34.6	
	49	0-0.2	0.82	0.72	28	<1	12.6	23.8	58.8	
		0.2-1	<0.25	<0.4	24.9	<1	10.4	24.6	64.8	
18	50	0-0.2	0.48	<0.4	28.3	<1	17.2	17.8	45.2	
		0.2-1	<0.25	<0.4	17.8	<1	12.8	12.6	36.5	
	51	0-0.2	<0.25	<0.4	13.5	<1	12.8	11.4	32.6	
		0.2-1	<0.25	<0.4	22.6	<1	12.9	19.4	53.3	
	52	0-0.2	0.42	<0.4	15.9	<1	15.5	15.5	44	
		0.2-1	<0.25	<0.4	11.3	<1	12.6	10.9	34.3	
	53	0-0.2	52.2	<0.4	730	<1	548	689	927	
		0.2-1	7.15	<0.4	102	<1	145	113	245	
	54	0-0.2	4.98	<0.4	423	<1	33.5	37	119	
		0.2-1	2.4	<0.4	463	<1	12.1	880	836	
	55	0-0.2	2.65	<0.4	53	<1	13.8	92.5	155	
		0.2-1	3.05	<0.4	21.4	0.9	17.7	24.7	73.9	
6	56	0-0.2	5.94	<0.4	51.4	<1	14.5	169	264	
		0.2-1	20.3	<0.4	266	<1	46.2	945	778	
	57	0-0.2	2.92	<0.4	34.3	<1	10.3	107	172	
		0.2-1	1.24	<0.4	23.7	<1	8.02	60.3	89.5	
	58	0-0.2	1.15	<0.4	27.2	<1	8.59	33.9	77.1	
		0.2-1	<0.25	<0.4	28.9	<1	7.49	18.5	50.1	
	59	0-0.2	5.89	<0.4	54.8	<1	13.8	95.7	175	
		0.2-1	0.26	<0.4	20.7	<1	8.8	54.9	88.2	
	60	0-0.2	2.51	<0.4	23.6	<1	10.4	28	58.9	
		0.2-1	0.34	<0.4	20.5	<1	8.06	23.3	48.9	
	61	0-0.2	7.92	<0.4	84.1	<1	40.9	236	385	
		0.2-1	0.56	<0.4	22.9	<1	10.6	76.1	117	
18	62	0-0.2	6.08	<0.4	41.1	<1	13.1	506	504	
		0.2-1	12.6	<0.4	91.1	<1	21.1	313	564	
	63	0-0.2	4.06	<0.4	35.4	<1	13.5	120	206	
		0.2-1	0.83	<0.4	31	<1	14	53.6	84.7	
	Eastern US Background			0.1 - 1	NA	1.5 - 40	NA	4.0-61	0.5 - 25	9.0-50
	Ward Site Background			<0.25	<0.4	17	<1	6.6	16	46
	NYSDEC SCO			1 or SB	NE	10 or SB	SS	SB	13 or SB	20 or SB

Note: All concentrations in ppm.

NYSDEC SCO - Soil Cleanup Objective

Bold Values Exceed NYSDEC SCO

Samples Collected 1999-2000

TABLE 11 - SUMMARY OF LABORATORY RESULTS FOR EXTERIOR SOIL SAMPLES.
WARD PRODUCTS CORPORATION, 61 EDSON STREET, AMSTERDAM, NEW YORK (cont.).

Proposed
Depth (inches) of
Excavation

Sampling Location	Sampling Depth (Ft.)	Cadmium	Hexavalent Chromium	Total Chromium	Total Cyanide	Lead	Nickel	Zinc
64	0-0.2	1.15	<0.4	41	<1	10.3	46.3	117
	0.2-1	<0.25	<0.4	20	<1	5.8	<2.5	41.6
65	0-0.2	10.4	<0.4	120	<1	40.5	112	266
	0.2-1	3	<0.4	63.8	<1	9.9	55.4	79.9
66	0-0.2	1.25	<0.4	25.4	<1	14.8	13	59.5
	0.2-1	<0.25	<0.4	45.8	<1	12.2	15.7	72.5
67	0-0.2	1.35	<0.4	27.4	<1	16.7	115	155
	0.2-1	<0.25	<0.4	10.2	<1	6.9	11.4	49.6
68	0-0.2	1	<0.4	33.3	<1	17.2	63	135
	0.2-1	<0.25	<0.4	12.5	<1	7.05	8.05	51.5
69	0-0.2	0.32	<0.4	25.3	<1	12.7	20.1	68
	0.2-1	<0.25	<0.4	16.5	<1	7.2	<2.5	45.2
70	0-0.2	<0.25	<0.4	26.8	<1	12.6	7.3	63
	0.2-1	<0.25	<0.4	51	<1	11.9	3.23	33.8
71	0-0.2	0.3	<0.4	14.8	<1	18.7	4.85	132
	0.2-1	<0.25	<0.4	12.3	<1	8.1	2.8	46.6
72	0-0.2	4.86	<0.4	78.7	<1	26.2	132	292
	0.2-1	<0.25	<0.4	11.8	<1	5.3	<2.5	39
73	0-0.2	<0.25	<0.4	19.7	<1	13.2	39.4	95
	0.2-1	<0.25	<0.4	15.2	<1	7.55	<2.5	50.4
74	0-0.2	<0.25	<0.4	8.75	<1	5.55	<2.5	30.3
	0.2-1	<0.25	<0.4	11.2	<1	10.6	<2.5	37.3
75	0-0.2	2.9	<0.4	56.5	<1	22.5	22.8	140
	0.2-1	6.95	<0.4	96	<1	38.1	94	263
76	0-0.2	<0.25	<0.4	14.1	<1	9.15	<2.5	66
	0.2-1	<0.25	<0.4	17.1	<1	4.8	<2.5	47
77	0-0.2	2.72	<0.4	54.2	<1	34	54	236
	0.2-1	0.95	<0.4	19.2	<1	24.7	3.86	73
78	0-0.2	2.28	<0.4	35.8	<1	27	10.8	132
	0.2-1	<0.25	<0.4	16	<1	6.4	<2.5	55.6
79	0-0.2	3.03	<0.4	42.5	<1	17.2	28.2	94.5
	0.2-1	1.35	<0.4	32	<1	17	19	160
80	0-0.2	2.67	<0.4	59	<1	28.8	30.1	157
	0.2-1	<0.25	<0.4	27	<1	19.8	8	106
81	0-0.2	<0.25	<0.4	13.1	<1	15.6	<2.5	44
	0.2-1	<0.25	<0.4	10.2	<1	7.5	<2.5	34.6
82	0-0.2	19.9	<0.4	171	<1	69.4	134	424
	0.2-1	47.5	<0.4	1134	<1	496	670	962
83	0-0.2	<0.25	<0.4	13	<1	16.9	<2.5	41.4
	0.2-1	<0.25	<0.4	15	<1	14.2	<2.5	43.8
84	0-0.2	<0.25	<0.4	10.2	<1	13.2	<2.5	35.3
	0.2-1	<0.25	<0.4	10.7	<1	10.4	<2.5	32.4
85	0-0.2	<0.25	<0.4	5.65	<1	10.6	<2.5	22.3
	0.2-1	<0.25	<0.4	8.3	<1	6.95	<2.5	24.7
86	0-0.2	<0.25	<0.4	12.1	<1	18.5	<2.5	45.7
	0.2-1	<0.25	<0.4	11.9	<1	17	<2.5	41.6
87	0-0.2	<0.25	<0.4	10.3	<1	15.6	<2.5	36.6
	0.2-1	<0.25	<0.4	14.1	<1	14.2	<2.4	44.4
88	0-0.2	<0.25	<0.4	9.15	<1	12.5	<2.5	31.2
	0.2-1	<0.25	<0.4	16.5	<1	10.8	<2.5	41.6
Eastern US Background		0.1 - 1	NA	1.5 - 40	NA	4.0-61	0.5 - 25	9.0-50
Ward Site Background		<0.25	<0.4	17	<1	6.6	16	46
NYSDEC SCO		1 or SB	NE	10 or SB	SS	SB	13 or SB	20 or SB

Note: All concentrations in ppm.

NYSDEC SCO - Soil Cleanup Objective

Bold Values Exceed NYSDEC SCO

Samples Collected 2000-2001

18

NORMANDEAU ASSOCIATES

REMEDIAL INVESTIGATIONS REPORT

July 2001

TABLE 7 - SUMMARY OF LABORATORY ANALYSES PERFORMED ON SOIL SAMPLES COLLECTED FROM BELOW THE FORMER LOCATION OF THE SOIL PILE.

INORGANICS	TOTAL CONCENTRATION (mg/kg)													NYSDEC SCO
	Sample 4	Sample 5			Sample 6			Sample 7			SOIL PILE	SITE BACKGROUND	EASTERN USA BACKGROUND	
		0-1 ft	1-2 ft	2-3 ft	0-1 ft	1-2 ft	2-3 ft	0-1 ft	1-2 ft	2-3 ft				
Cadmium	48.7	10.1	13.2	22.9	21.9	19.3	1.4	30.7	31.6	24.7-36.1	<0.25	0.1-1	1 or SB	
Chromium, Hexavalent	0.950	3.1	6.1	<0.40	<1.0	9.8	<0.40	16.8	30.2-44	<0.40	NA	10 or SB	10 or SB	
Chromium, Total	447	136	146	198	380	438	21.4	352	691	315-688	17	1.5-40	10 or SB	
Cyanide, Total	1.23	1.57	0.35	<1.0	0.61	0.17	<1.0	1.84	2.19	2.8-2.87	<1	NA	SS	
Lead	494	42	36	171	102	108	11.5	117	261	56-125	6.6	4-61	SB	
Nickel	1600	186	173	290	1840	404	62.5	1960	776	NA	16	0.5-25	13 or SB	
Zinc	3380	305	292	720	15600	665	126	4110	1440	NA	46.1	9-50	20 or SB	

Proposed
Depth (inches) of
Excavation

n/a

NOTE:

J - ESTIMATED VALUE
NA - NOT AVAILABLE
SB - SITE BACKGROUND
SS - SITE SPECIFIC

NYSDEC SCO - SOIL CLEANUP OBJECTIVES
SAMPLE 4 COLLECTED SEPT. 5, 1997
SAMPLES 5-7, DEPTH 0-2 FT COLLECTED NOV. 21, 1997
SAMPLES 5 & 6, DEPTH 2-3 FT COLLECTED AUGUST 25, 1999
BOLD VALUES ABOVE STANDARDS

TABLE 11 - SUMMARY OF LABORATORY ANALYSES PERFORMED ON SOIL SAMPLES COLLECTED ADJACENT TO DRAINAGE DITCH.

INORGANICS	TOTAL CONCENTRATION (mg/kg)							NYSDEC CLEANUP STANDARD
	Sample 7	Sample 8	Sample 9	Sample 10	Sample 11	Sample 12	SITE BACKGROUND	EASTERN USA BACKGROUND
Cadmium		6	32.8					0.1-1
Chromium, Hexavalent								NA
Chromium, Total	27.7	120	198	18.3	18.7	18.1	13.8-15.9	1.5-40
Cyanide, Total			0.22	0.32	0.18	0.19	ND-0.13	NA
Lead	20	65	247	19	24	25	9.3-15	4-61
Nickel	46.2	329	292	16.6	18.6	17.5	13.2-20.3	0.5-25
Zinc	187	283	790	80	67	58	49.2-122	9-50

Proposed
Depth (inches) of
Excavation

6

NOTE:

CONCENTRATIONS BASED ON DRY WEIGHT
 BLANK - NOT DETECTED (OR ND)
 NA - NOT AVAILABLE
 J - ESTIMATED
 SB - SITE BACKGROUND
 SS - SITE SPECIFIC
 SITE BACKGROUND CONCENTRATIONS BASED ON EXTERIOR SAMPLES 4-6

NORMANDEAU ASSOCIATES

TABLE 12 - SUMMARY OF LABORATORY RESULTS FOR SEDIMENT SAMPLES COLLECTED FROM DRAINAGE DITCH NORTH OF SAM STRATTON DRIVE.

Proposed Depth (inches) of Excavation	Sample Location	Total Cadmium	Leachable Cadmium	Total Chromium	Leachable Chromium	Total Hex. Chromium	Leachable Hex. Chromium	Total Cyanide	Leachable Cyanide	Total Lead	Leachable Lead	Total Nickel	Leachable Nickel	Total Zinc	Leachable Zinc
6	Upstream														
	0-0.5 ft	628	8.35	3130	0.128	36.8	<0.010	47.6	<0.0050	218	<0.10	3170	3.1	1010	1.15
	0.5-1.0 ft	2.5	0.022	49.8	<0.030	<10	<0.010	0.42	<0.0050	39	<0.10	57.3	0.077	240	0.418
	Midpoint														
24	0-1.0 ft	18.3	NA	146	NA	<10	NA	<0.12	ND	115	NA	227	NA	769	NA
	1-2 ft	13.4	NA	130	NA	<10	NA	0.23	ND	259	NA	148	NA	342	NA
	Outfall														
	0-0.5 ft	169	2.17	2490	0.307	106	<0.010	27	<0.0050	340	0.19	7890	3.1	1370	5.61
6	0.5-1.0 ft	143	2.75	3550	0.773	150	0.017	51.7	<0.0050	614	0.32	2250	3.21	2020	16.4
	Midpoint														
	0-0.5 ft	66.5	1.32	587	0.053	35	<0.010	3.35	<0.0050	219	0.2	396	0.794	241	0.728
	0.5-1.0 ft	<2.0	0.017	38.1	<0.030	<0.010	0.01	2.35	0.005	34	0.1	43.4	0.05	193	0.025
6	Upstream Culvert														
	0-0.5 ft	165	1.57	1730	0.042	32.5	<0.010	19.7	<0.0050	185	<0.10	1600	0.889	607	1.21
	0.5-1.0 ft	37.2	0.276	395	<0.030	25	<0.010	4.63	0.0189	37	<0.10	413	0.284	123	0.147
	Downstream Culvert														
18*	0-0.5 ft	171	1.5	1460	0.046	21.3	<0.010	9.35	<0.0050	227	<0.10	1860	1.36	1080	2.28
	0.5-1.0 ft	149	1.77	1360	0.058	9.3	0.016	10.3	<0.0050	133	<0.10	1580	1.61	808	1.61
	Downstream 50 ft														
	0-0.5 ft	111	1.33	943	0.031	29.5	<0.010	7.74	<0.0050	161	<0.10	996	0.84	553	1.17
18*	0.5-1.0 ft	61.6	1.16	313	<0.030	15	<0.010	6.94	<0.0050	25	<0.10	349	0.469	183	0.598
	Downstream 100 ft														
	0-0.5 ft	41.2	NA	263	NA	9.9	NA	1.67	NA	29	NA	204	NA	146	NA
	0.5-1.0 ft	3	NA	66.4	NA	4.3	NA	0.96	NA	ND	NA	58.4	NA	58	NA
18*	Downstream 200 ft														
	0-0.5 ft	45.4	NA	399	NA	ND	NA	2.83	NA	50	NA	212	NA	180	NA
	0.5-1.0 ft	39.2	NA	403	NA	10.2	NA	6.52	NA	18	NA	328	NA	95	NA
	Downstream 400 ft														
18*	0-0.2 ft	12.4	NA	252	NA	<0.40	NA	<1.0	NA	6.4	NA	97	NA	93	NA
	0.2-0.5 ft	5.65	NA	160	NA	<0.40	NA	<1.0	NA	9.9	NA	69.5	NA	93.5	NA
	0.5-1.0 ft	5	NA	102	NA	<0.40	NA	<1.0	NA	8.4	NA	48	NA	60.5	NA
	Sam Stratton EB Culvert														
18*	0-0.2 ft	20.5	NA	169	NA	<0.40	NA	<1.0	NA	16.4	NA	103	NA	95	NA
	0.2-0.5 ft	44.7	NA	287	NA	<0.40	NA	<1.0	NA	17.1	NA	266	NA	123	NA
	0.5-1.0 ft	71	NA	660	NA	<0.40	NA	6.5	NA	26.5	NA	605	NA	209	NA
	Sam Stratton WB Culvert														
6*	0-0.2 ft	67	NA	87.5	NA	<0.40	NA	<1.0	NA	16.3	NA	86.5	NA	103	NA
	0.2-0.5 ft	31.8	NA	700	NA	1.7	NA	<1.0	NA	24.1	NA	210	NA	130	NA
	0.5-1.0 ft	26.5	NA	214	NA	0.74	NA	<1.0	NA	18.8	NA	102	NA	85	NA
	Sediment Criteria - LEL	0.6	NE	26	NE	NE	NE	NE	NE	31	NE	16	NE	120	NE
Sediment Criteria - SEL		9	NE	110	NE	NE	NE	NE	NE	110	NE	50	NE	270	NE
RCRA TC Limit		NE	1	NE	5	NE	5	NE	NE	NE	5	NE	NE	NE	NE

NOTE:

* Final depth of offsite excavations to be determined based on confirmation sampling.

NA - Not Available, ND - Not Detected, NE-None Established

Total concentrations in mg/kg, Leachable concentrations in mg/L

NYSDEC Sediment Criteria for Metals: LEL - Lowest Effect Level, SEL - Severe Effect Level

TC Limit - Toxic Characteristic (RCRA) Standard (mg/L)

BOLD VALUES EXCEED SEL AND/OR TC LIMIT

**TABLE 1 - SUMMARY OF SEDIMENT CHEMISTRY RESULTS FOR WEST BRANCH DRAINAGE
DOWNSTREAM OF SAM STRATTON DRIVE, AMSTERDAM, NEW YORK.**

Sampling Location and Depth		WEST BRANCH				
		Cadmium	Chromium	Lead	Nickel	Zinc
WB1	0-0.5 ft.	29	398		102	
	0.5-1.0 ft.	15	316		52	
WB2	0-0.5 ft.	12	151		50	
	0.5-1.0 ft.	6	95		40	
WB3	0-0.5 ft.	13	119		69	
	0.5-1.0 ft.	16	184		106	
WB4	0-0.5 ft.	13	142		124	
	0.5-1.0 ft.	15	134		165	
WB5	0-0.5 ft.	13	116		115	
	0.5-1.0 ft.	9	70		91	
WB6	0-0.5 ft.	4.3	54		30	
	0.5-1.0 ft.	4.2	46		37	
WB7	0-0.5 ft.	<0.25	3.58		4.70	
WB8	0-0.5 ft.	<0.25	8.90		13	
WB9	0-0.5 ft.	<0.25	3.57		3.5	
WB10	0-0.5 ft.	0.3	10.2	15.7	10	70.5
	0.5-1.0 ft.	0.75	8.75	17.9	12.7	60.7
WB11	0-0.5 ft.	0.38	7.50	10.6	8.30	51.6
	0.5-1.0 ft.	0.38	9.10	13.7	11.1	70.5
WB12	0-0.5 ft.	0.36	8.70	10.8	8.75	54.0
	0.5-1.0 ft.	0.34	11.0	14.7	8.60	55.8
WB13	0-0.5 ft.	1.20	9.20	12.0	11.9	57.0
	0.5-1.0 ft.	1.0	5.70	9.10	6.65	39.7
WB14	0-0.5 ft.	0.31	7.45	17.9	9.50	58.2
	0.5-1.0 ft.	0.30	12.1	16.2	13.4	57.8
WB15	0-0.5 ft.	1.10	47.0	18.3	16.6	65.5
	0.5-1.0 ft.	0.25	9.42	10.9	14.0	54.6
WB16	0-0.5 ft.	<0.25	16.7	10.7	6.45	39.5
	0.5-1.0 ft.	0.61	162	955	15.0	117
NYSDEC Guidelines						
Lowest Effect Level		0.6	26	31	16	120
Severe Effect Level		9	110	110	50	270
Stream Background		<0.25	4.4 to 9.0		<2.5	

Note:

All concentrations in ppm

Stream background based on two samples collected from west drainage, lower value for chromium from upstream sample.

Lowest and severe effect levels from Table 2. Sediment Criteria for Metals, NYSDEC 1999

Bold values exceed severe effect level

WB1 to WB6 samples collected 2001, WB7 to WB9 collected January 2002, WB10 to WB16 collected December 2002.

TABLE 1 - SUMMARY OF SEDIMENT CHEMISTRY RESULTS FOR WEST BRANCH DRAINAGE AND MOHAWK RIVER IN AREA AROUND SAMPLE LOCATION WB-16.

Sampling Location and Depth		WEST BRANCH				
		Cadmium	Chromium	Lead	Nickel	Zinc
WB16A	0-0.5 ft.	<0.25	63.8	13.0	<2.50	53.2
	0.5-1.0 ft.	<0.25	83.6	12.0	<2.50	58.8
WB16B	0-0.5 ft.	<0.25	32.8	6.35	<2.50	29.0
	0.5-1.0 ft.	<0.25	25.9	15	<2.50	58.1
WB16C	0-0.5 ft.	<0.25	52.6	9.65	<2.50	45.8
	0.5-1.0 ft.	<0.25	18.0	11.1	<2.50	59.4
WB16	0-0.5 ft.	<0.25	16.7	10.7	6.45	39.5
	0.5-1.0 ft.	0.61	162	955	15.0	117
NYSDEC Guidelines						
Lowest Effect Level		0.6	26	31	16	120
Severe Effect Level		9	110	110	50	270
Stream Background		<0.25	4.4 to 9.0		<2.5	

Note:

All concentrations in ppm

Stream background based on two samples collected from west drainage, lower value for chromium from upstream sample.

Lowest and severe effect levels from Table 2. Sediment Criteria for Metals, NYSDEC 1999

Bold values exceed severe effect level

Samples at WB16 collected December 2002, samples WB16A-C collected April 2003.

**TABLE 2 - SUMMARY OF SEDIMENT CHEMISTRY RESULTS FOR EAST BRANCH DRAINAGE
DOWNSTREAM OF SAM STRATTON DRIVE, AMSTERDAM, NEW YORK.**

Sampling Location and Depth	EAST BRANCH				
	Cadmium	Chromium	Lead	Nickel	Zinc
EB1 0-0.5 ft.	1.4	30		26	
0.5-1.0 ft.	1.2	29		27	
EB2 0-0.5 ft.	6.1	80		65	
0.5-1.0 ft.	NA	NA		NA	
EB3 0-0.5 ft.	9.7	119		64	
0.5-1.0 ft.	8.8	82		61	
EB4 0-0.5 ft.	8.9	69		66	
0.5-1.0 ft.	19	198		259	
EB5 0-0.5 ft.	14	140		102	
0.5-1.0 ft.	19	156		126	
EB6 0-0.5 ft.	15	124		160	
0.5-1.0 ft.	18	111		201	
EB7 0-0.5 ft.	42	443		459	
0.5-1.0 ft.	31	238		58	
EB8 0-0.5 ft.	15	120		129	
0.5-1.0 ft.	36	385		348	
EB9 0-0.5 ft.	27	473		261	
0.5-1.0 ft.	37	405		305	
EB10 0-0.5 ft.	6.40	34		50	
0.5-1.0 ft.	3.58	48		45	
EB11 0-0.5 ft.	12.0	196	48.2	167	91.5
0.5-1.0 ft.	16.4	206	33.0	164	131
EB12 0-0.5 ft.	9.05	112	21.7	73.5	88.0
0.5-1.0 ft.	8.45	93.0	21.4	68.5	86.5
EB13 0-0.5 ft.	5.55	96.0	19.6	68.5	85.5
0.5-1.0 ft.	5.90	70.0	15.5	103	108
EB14 0-0.5 ft.	8.58	227	20.8	156	118
0.5-1.0 ft.	27.1	519	82	247	158
EB15 0-0.5 ft.	0.70	23.6	22.8	23.0	76.0
0.5-1.0 ft.	<0.25	8.30	7.80	8.90	37.0
EB16 0-0.5 ft.	1.55	25.7	16.9	22.9	58.0
Duplicate	1.70	40.3	16.6	45.0	79.0
0.5-1.0 ft.	0.42	20.2	8.10	17.1	62.5
EB17 0-0.5 ft.	64.6	64.5	28.0	37.0	110
0.5-1.0 ft.	5.50	210	24.4	74.5	92.5
EB18 0-0.5 ft.	2.05	69.6	33.0	14.0	50.8
EB19 0-0.5 ft.	6.55	211	15.8	80.2	90.2
EB20 0-0.5 ft.	0.25	14.4	<0.25	3.70	26.4
EB21 0-0.5 ft.	<0.25	7.10	<0.25	<2.50	30.2
EB22 0-0.5 ft.	2.55	45.4	5.85	14.30	61.7
0.5-1.0 ft.	1.85	46.8	7.10	9.50	58.2
NYSDEC Criteria					
Lowest Effect Level	0.6	26	31	16	120
Severe Effect Level	9	110	110	50	270
Stream Background	<0.25	4.4 to 9.0		<2.5	

Note:

All concentrations in ppm

Stream background based on two samples collected from west drainage, lower value for chromium from upstream sample.

Lowest and severe effect levels from Table 2. Sediment Criteria for Metals, NYSDEC 1999.

Bold values exceed severe effect level

EB1 to EB7 collected 2001, EB8 to EB10 collected January 2002, EB11 to EB17 samples collected December 2002.

APPENDIX B

Correlation of Total vs TCLP Cadmium Concentrations in Sediments and Soils

Data from Normandeau RI, July 2001, Bold values are TCLP exceedances.

Soils (only)

Chromium, total	Chromium, TCLP
139	0.0229
162	0.047
273	0.056
153	0.038
666	0.234
315	0.147
495	0.0287
11000	8.67

Sediments (only)

Chromium, total	Chromium, TCLP
3130	0.128
49.8	0
2490	0.307
3550	0.773
587	0.053
38.1	0
1730	0.042
395	0
1460	0.046
1360	0.056
943	0.031
313	0

Cadmium, total Cadmium, TCLP

31.9	0.248
56.9	0.611
62.8	1.75
263	1.82
314	1.42
36.1	1.01
24.7	0.624
32.6	1.06
62.8	1.75
65.9	1.69
192	3.2

Cadmium, total Cadmium, TCLP

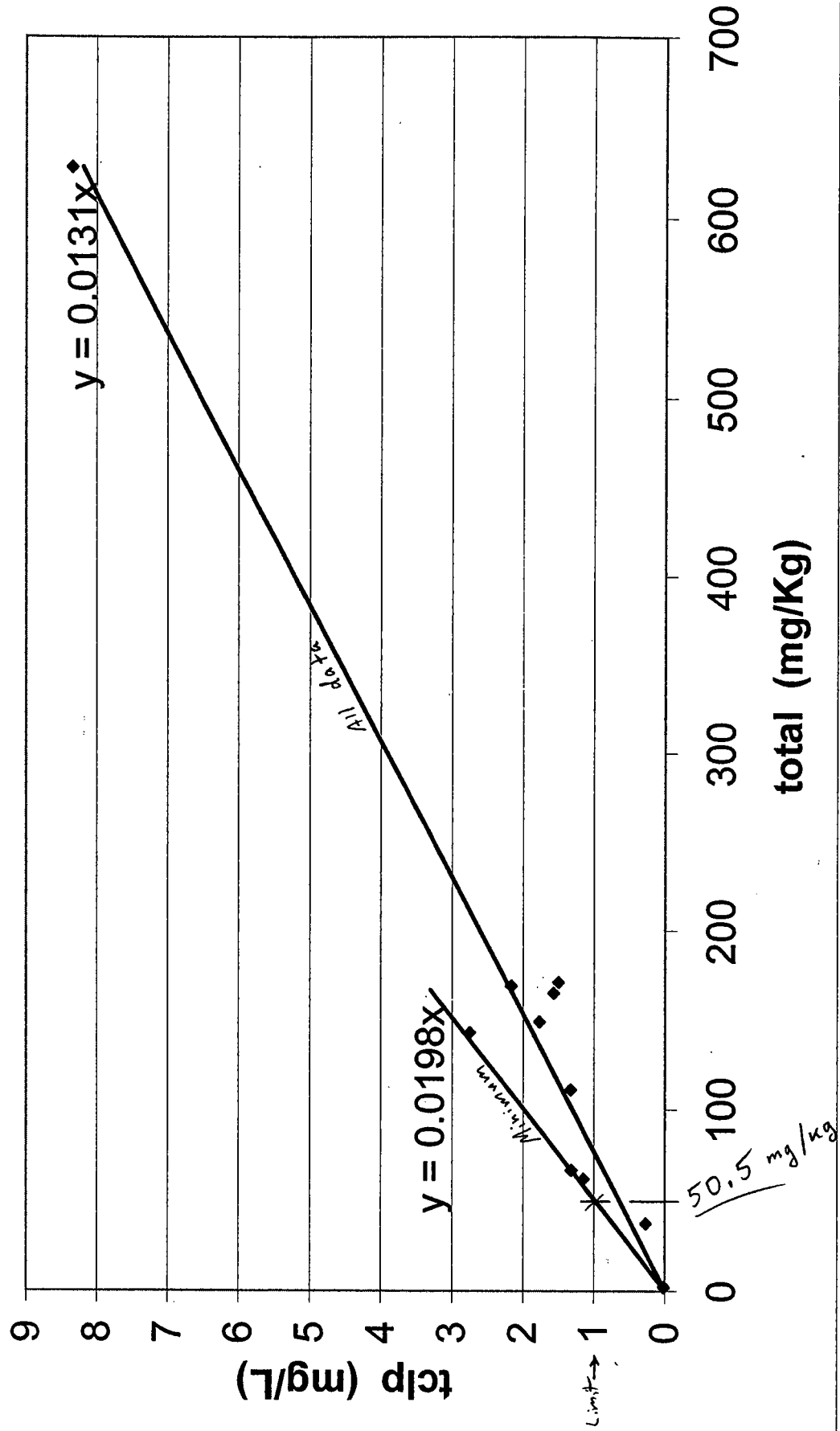
628	8.35
2.5	0.022
169	2.17
143	2.75
66.5	1.32
2	0.017
165	1.57
37.2	0.276
171	1.5
149	1.77
61.6	1.15
111	1.33

Lead, total

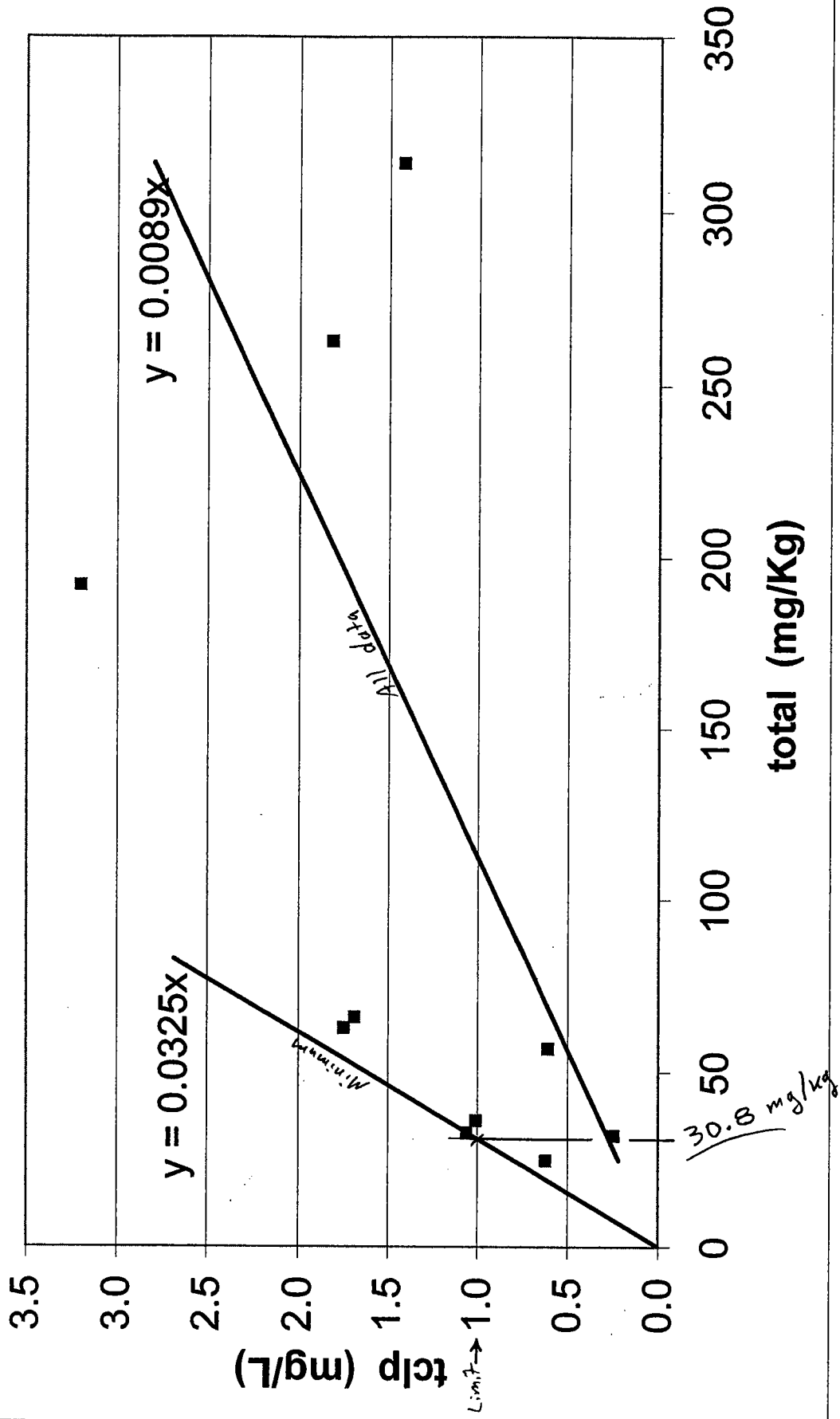
Lead, TCLP

218	0
39	0
340	0.19
614	0.32
219	0.2
34	0.1
185	0
37	0
227	0
133	0
151	0
25	0

Cadmium (in sediments)



Cadmium (in soils)



APPENDIX C

Site Photographs



North of Northeast Fenceline



Northeast of Building



East Corner of Building



Southeast Lawn



Ditch at Edson Street (North)



Ditch at Edson Street (South)



Ditch at Sam Stratton Road (East)



Ditch at Sam Stratton Road (West)